



सत्यमेव जयते

Government of India
Ministry of Earth Sciences
National Centre for Coastal Research

National Shoreline Assessment System (N-SAS)

<https://www.nccr.gov.in/NSAS/#>

National Assessment of Shoreline Changes
along Indian Coast

Volume 2 - West Coast

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Disclaimer:

This report is part of a series of reports that includes text summarizing methods, results, in addition to maps illustrating zones of shoreline change. Zones of shoreline change are being published for the purpose of coastline characterization. The report/maps are not intended to be equated to either as revenue maps of the respective State/ UT/ Government agencies or as the topographic maps of the Survey of India and are not meant for any legal purposes.

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PREFACE

The coastal zones of the world are constantly changing due to natural and anthropogenic activities. Natural processes such as waves, tides, littoral currents, sea-level rise, severe storm events etc. have an impact on shoreline changes at both local and regional levels. Human activities, on the other hand, further aggravate these changes, as they interrupt the natural coastal processes and alter the sediment transport, which leads to rapid changes in the coastline.

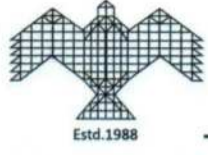
Considering the need for resolute coastal processes and shoreline management the National Centre for Coastal Research (NCCR), Chennai an attached office of the Ministry of Earth Sciences, is engaged in mapping the shoreline changes along the Indian coast to enhance the country's preparedness to face coastal hazards like storm surges, tsunami, etc. and to guide towards sustainable coastal development. NCCR has prepared a status report on shoreline changes for the period 1990 to 2018 (28 years), using 11 shoreline data sets, i.e. the years 1990, 2000, 2006, 2008, 2012, 2013, 2014, 2015, 2016, 2017 and 2018. It provides details of shoreline changes, 3 types of map, shoreline vulnerability for erosion /accretion, land loss/land gain, etc. for the entire mainland coast of India. These maps will be available online for each of the coastal states/ UT on the NCCR's website.

The National Assessment on Shoreline Changes along the Indian Coast was committed in 1998 by NCCR to provide the clearly defined Indian coast shoreline conditions and its decadal changes. National Shoreline Assessment System (N-SAS), an in-house web-based shoreline information system, was developed by NCCR to integrate the shoreline decadal changes information system to the coastal community.

I congratulate Dr M. V. Ramana Murthy, Director, NCCR, Dr R S. Kankara, Head, Coastal Processes and Shoreline Management Group, NCCR, the Project Team and expert committee, for bringing out the status report on Shoreline changes along the Indian coast for the period 1990-2018. I also thank Dr Shailesh Nayak, Former Secretary, MoES for conceptualising this important activity and reviewing the mapping work.

I hope this information will be very useful to coastal managers and other stakeholders in identifying critical areas for coastal management to protect the property and population living in coastal areas.


(M. Ravichandran)



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FOREWORD

The coastal zone is a region where land, ocean and atmosphere interact and hence it is dynamic in nature. In view of dynamic nature of the coast, the coastal areas have become more vulnerable to natural hazards and human activities which leads to coastal erosion. Considering coastal erosion, it is global problem affecting almost every country around the world having a coastline. Indian coasts are not adequately monitored until the advent of satellite remote sensing era in the 70s. India has a robust remote sensing program that the Indian Remote Sensing satellite (IRS) series were effectively used to monitor the coastal landforms. The coastal landform and shoreline are the results of geomorphological processes which needs an attention. In this outline, National Centre for Coastal Research (NCCR) initiated the Shoreline Change Assessment studies along the Indian coastlines to provide timely and accurate information through advanced remote sensing technologies, validated with field information. The shoreline change maps are generated with multirate satellite data in a time frame to understand the status of coastal protection measures. The entire digitized database are placed under GIS platform.

Now, the extended research has developed the National Shoreline Assessment System (N-SAS) an in-house developed web-based shoreline information system was prepared by NCCR. The focuses on improving the new emerging technologies and products of research will enhance effective early warning information and transfer to build decision support system.

This report provides a baseline information for initiating appropriate action for protecting the Indian coast, besides use by the scientific community as a well decision makers of the country.

As a Chairman, Research Advisory Committee of this program, I compliment Dr M. V. Ramana Murthy Director, Dr R S. Kankara, Group Head, Coastal Processes and Shoreline Management Group, NCCR for their sustained research and outstanding contributions in application of remote sensing for studying coastal processes. I am confident that, the present report will be useful and go a long way in conserving the coastal environment in the country. On this Occasion, I appreciate the efforts put by all those who have made the contributions to this significant task.


Shailesh Nayak



भारत सरकार
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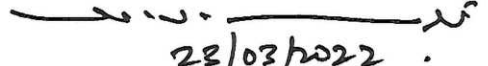
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FOREWORD

Indian mainland coastlines of about 6907 km have been exposed to rapid development over the past three decades, resulting in an urgent need for a shoreline management plan to optimize the use of coastal resources and prevent or minimize the impact of various anthropogenic activities. Population explosion along the coastal area has added to an increased demand for coastal resources. Precise information on shoreline changes is essential to address the various coastal problems such as coastal erosion, closure of river/lagoons/creeks mouths, etc. A thorough understanding of Long-term shoreline change, its behaviour, extent, etc are required before implementing any coastal protection scheme. It is also important to understand the causes of erosion to undertake proper safeguards in building structures, and infrastructure in eroding coastal areas. Coastal managers and policy makers need accurate information on long-term shoreline changes before implementing any structure on the coast. The systematic long-term shoreline change study can provide information on shoreline re-orientation due to structures, changes in beach width, land loss, land gain and historical rate of changes.

On this note, timely or advanced information on the coastal condition can effectively help in planning and better preparedness to mitigate coastal changes, the National Shoreline Assessment System (N-SAS) an in-house developed web-based shoreline information system was prepared by NCCR aimed at twin benefits of (i) accelerating the continuous shoreline change time series program and (ii) to identify the erosion and accretion hotspots for coastal monitoring and management. Furthermore, to provide much more reliable information, using a web-based system will be much helpful for the user departments and coastal communities to take necessary action plans and preventive measures in a real-time environment. This report represents the overall shoreline change assessment for the entire Indian coast.

Altogether, the combined shoreline mapping and web-based shoreline information system give a real-time shoreline status for coastal monitoring and management. I appreciate Dr. R. S. Kankara, Group Head, Coastal Processes and Shoreline Management Group, NCCR, Project Team for their efforts to present in this limelight period. Co-operation extended by all the colleagues of NCCR, and colleagues in other areas of NCCR for the successful completion of the project is acknowledged.


23/03/2022
[M.V.Ramana Murthy]

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Executive Summary

Coastal erosion is considered as one of the significant threatening hazards faced by the global countries, especially to the coastal populations for their livelihood. With the increasing trend of coastal population and rapid developmental activities along the shore, there is a need for prominent and precise information about the rate and trend of coastal erosion in the past and the present states. Therefore, a comprehensive analysis of shoreline change, which varies from one coastal region to another, is necessary for the appropriate coastal protection and management measures needed in the near future.

The National Centre for Coastal Research (NCCR) has carried out a study on shoreline changes along the mainland of Indian coast under the project entitled “Coastal Processes and Shoreline Management Group (CPSM)”. One of the significant purposes of this work is to develop a standard, dependable methods for mapping and analysing shoreline changes with frequent periodic updates on shoreline conditions, coastal erosion hotspots, etc., can be prepared for the Indian coast. Morphology of the coast varies from place to place, hence different proxies (wet/dry line in sandy shore, seaward facing vegetative line, seashore-facing direction of seawall, cliff-base or seaward facing edge of rocky coast) were used to estimate the shoreline change analysis along the Indian coast. A summary of Atlas on shoreline change entitled “National Assessment of Shoreline changes along Indian Coast - A status report for 26 years 1990-2016” was published on MoES foundation day on 27th July 2018. This report is an accompaniment to the summary of Atlas on shoreline change. This report interprets the results, provides information on shoreline changes for the 28 years (1990 to 2018), short-term (1990-2000, 2000-2006, 2006-2012 & 2012-2018). The Indian mainland coastal states were analysed separately in a state-wise manner and documented into different volumes to report the regional trends in shoreline change for different periods. About 6907.18 km long shoreline (in 1:25000 scale) distributed among nine coastal states and two union territories was analysed for the period 1990-2018 to estimate the shoreline change i.e., erosion, accretion and stable. Coastal erosion has become one of the most alarming threats in varying pockets along the Indian coast. Shoreline length used in the analysis is the shore face length (excluding the interior parts of river / creeks) obtained from Resources at-2, LISS-IV satellite data (by zooming in 1: 15000 scales). The shoreline analysis suggests that 33.6% of coast is eroding, 26.9% is accreting and 39.5% is in stable state.

The state wise analysis suggests that the more than 40% of erosion is noticed in 3 states/UT i.e. West Bengal (60.5%), Tamil Nadu (42.2%), Kerala (46%) and Pondicherry (56.2%) coast. While accretion is exceeding to 40% along Odisha (51%) and Andhra Pradesh (49.6%) coast. About 526 maps are prepared for entire Indian coast for identifying the vulnerable coastal areas in 1:25000 scale along with 66 district maps, 9 states / 2 UT maps. These maps shall be updated regularly as a part of N-SAS in coastal processes and shoreline management program. The project is aimed to generate the systematic information on coastal changes at various temporal scales, its nature, and extent, needed to evolve better management solutions.

1. Introduction

The shoreline is constantly influenced by sea-level variations, climate and ecosystems that occur over a wide range of time scales. The combination of natural and artificial activities often exacerbates the shoreline change and increases the risk factors to the coastal community. Shoreline change is one of the three identified environmental concerns for developmental activities such as ports, harbours, fishing jetties and embankment. The changing position of shoreline over time is of fundamental concern to coastal scientists, engineers, and managers for coastal management and development. Precise information of shoreline position is necessary for the design of coastal protective measures, calibration/verification of numerical models, assessment of sea-level rise, preparation of hazard zones, formulation of policies, the regulation of coastal developmental activities, etc. A systematic long-term shoreline change study can provide information on shoreline re-orientation due to structures, changes in beach width, land loss, land gain and historical rate of changes.

1.1 Major causes for shoreline change

Shoreline is subject to change due to natural and manmade activities (P. Bruun and B. U. Nayak, 1980). Some of the changes are summarized below:

a) Natural Causes

i. Action of Waves: Waves are generated by offshore and nearshore winds, which blow over the sea surface and transfer their energy to the water surface. As waves move towards the shore, waves break, and the turbulent energy is released to the water column. This energy stirs up and moves the sediments deposited on the seabed.

ii. Tides: Tides are rise and fall in water elevation due to the attraction of water masses by the moon and the sun. During high tides, the energy of the breaking waves is released higher on the foreshore.

iii. Winds: Wind act not just as a generator of waves, but also aids in the landward movement of dunes (Aeolian erosion).

iv. Nearshore currents: Sediments scoured from the seabed are transported away from their original location by currents. The transport of (coarse) sediments defines the boundary of coastal sediment cells, i.e. relatively self-contained system within which (coarse) sediments stay. Currents are generated by winds, tides (ebb and flood currents), wave breaking at an oblique angle with the shore (longshore currents), and the backwash of waves on the foreshore (rip currents). All these currents contribute for shoreline changes.

v. Storms (Episodic events): Storms generate storm surges and high energy waves. Combined with high tides, storms may result in catastrophic damages. Besides damages to coastal infrastructure, storms cause beaches and dunes to retreat tens of meters in a few hours.

vi. Sea Level Rise: Sea level has risen about 40 cm in the past century and is projected to rise another 60 cm in the next century. Sea level has risen nearly 110 meters since the last ice age. Due to global warming, average rise of sea level is of the order of 1.5 to 10 mm per year. It has been observed that

sea level rise of 1 mm per year could cause an inundation of the order of about 0.5 m per year (IPCC report, 2012).

b) Anthropogenic Causes

Human intervention, particularly urbanization and economic activities, in the coastal zone has turned coastal erosion into a problem of growing intensity. Anthropological effects that trigger shoreline changes are construction of coastal structures, mining of beach sand, offshore dredging and damming of rivers. Human intervention can alter the natural processes through the following actions:

- Dredging of tidal entrances and navigational channels
- Construction of harbours and coastal structures such as groins and jetties
- River water regulation works such as damming
- Hardening of shorelines with seawalls
- Beach nourishment
- Destruction of mangroves and other natural buffers
- Beach sand mining

1.2 Shoreline and its definitions

Coastal researchers and other coastal agencies have been quantifying the shoreline change rates for several decades. There are various definition of shoreline demarcation of which and some of them are summarized as follows;

The line of contact between land and water is defined as shoreline. In other term, shoreline is defined as the intersection of a specified plane of water with the shore or beach (e.g., the high water shoreline would be the intersection of the plane of mean high water with the shore or beach). However, the shoreline approximates the mean high-water line on coast and Geodetic Survey nautical charts and surveys. In Coastal surveying usage, the term shoreline is considered synonymous with coastline (Shalowitz, 1962).The line delineating the shoreline on National Ocean Service nautical charts and surveys approximates the mean high water line (CERC, 1984).

Apparent shoreline is the line drawn on a map or chart in lieu of a mean high-water line or the mean water level line in areas where either may be obscured by marsh, mangrove, cypress, or other type of marine vegetation. This line represents the intersection of the appropriate datum on the outer limits of vegetation and appears to the navigator as the shoreline (Ellis, 1978).

High-Water Line Mark: A line or mark left upon tide flats, beach, or alongshore objects indicating the elevation of the intrusion of high water. The mark may be a line of oil or scum along shore objects, or a more or less continuous deposit of fine shell or debris on the foreshore or berm. This mark is physical evidence of the general height reached by wave run-up at recent high waters. It should not be confused with the mean high water line or mean higher high water line (Hicks, 1984).

High water line - Visible in the field and can be identified by the change in grey or colour tone on aerial photographs or satellite imagery (Zhang et al., 2002). This definition makes it more practical when satellite imagery is concerned.

Different proxies are used for shoreline position to analyse the coastal changes. Some of the proxies of shoreline position are High Water Line (HWL), wet-dry line, vegetation line, dune toe or crest, toe of the beach, cliff base or top and Mean High Water Line (MHWL) etc. In earlier days, High Water Line in Topo sheets was also used as one of the shoreline positions.

1.3 Past studies on shoreline mapping in India

Globally, the coastal researcher worldwide implies several shoreline proxies to define shoreline position. In India, ISRO-Space Application Centre (SAC) has prepared shoreline change maps for Central Water Commission (CWC) in the form of Atlas (1: 25000 scale). The major objective of this activity is to prepare a digital shoreline change atlas using remote sensing satellite datasets for the time period (1989-91 and 2004-06). This report gives an overview of erosion/accretion spots by plotting two high water line and the coastal land use classification was obtained from land use /land cover mapping work carried out at SAC earlier for these two different periods of datasets i.e. (1989-91 and 2004-06). However, these maps doesn't depict the temporal behaviour and non-linear changes of shoreline, which is very essential for coastal management. Further, NCSCM has prepared shoreline change maps for few coastal states. The shoreline changes maps were prepared by considering the latest shoreline for year 2010 as a one time exercise in 1:50,000 scale.

The National Centre for Coastal Research (NCCR) has carried out a study on shoreline changes along the mainland of India for the period of 1990-2016 using satellite datasets. This report, summarizes the methods of analysis, interpretation of results, provides an information on shoreline changes for the period of 1990 to 2016. Based on the rate of change results using 9 datasets, 526 maps are prepared for entire Indian coast in 1:25000 scale. The state-wise maps, 9 states / 2 UT maps and 66 district level maps were prepared to represent detailed information. The Hotspot maps were prepared for identifying the vulnerable coastal areas. In near future, the study can be extended to map the temporal behaviour of shoreline conditions, which is very essential for coastal management.

To improve further, this report is an accompaniment to the summary of Atlas on shoreline change assessment. This study aims to provide a detailed interpretation of shoreline change results for a period of 28 years. The results depict long-term (1990 to 2018) and short-term (1990-2000, 2000-2006, 2006-2012 & 2012-2018) shoreline change rates with different classes. The entire coast is mapped in 1:25000 scale for 9 states/2 UT which is accounted 526 maps. In near future, for reliable and accurate coastal management, beach morphology changes under extreme weather conditions, an active microwave Synthetic Aperture Radar (SAR) remote sensing datasets can be a best complement over optical remote sensing due to persistent cloud cover. Since SAR signal response has been proven to be capable of imaging day/night weather even under extreme climatic conditions with respect to land-sea interactions. This integration of optical and SAR remote sensing provides continuous shoreline monitoring and mapping with different time-steps which could be useful for coastal planners.

1.4 Shoreline proxies adopted for shoreline mapping at NCCR

- In 2013, ICMAM has conducted a R&D study on shoreline changes using different proxies and varying datasets and prepared a report on methodology for shoreline change mapping. In this report,

ICMAM proposed high water line (HWL) mark as shoreline position considering the varying coastal features, other variability and limitations of remote sensing data along Indian coast. In August 2014, a committee of experts from ICMAM (presently NCCR), INCOIS and NCESS evaluated the results and recommended that,

- In sandy shore, "wet/dry line" which is clearly identifiable from all images was considered as shoreline proxy. This wet/dry line is equivalent to high water line (HWL) mark from all satellite images. The identification of the feature "wet/dry line" from the images is as follows: on a rising tide, it is equal to maximum run up line, and on falling tide, it is equal to part of beach which is still wet, but it may be beyond the instantaneous run up limit.

- Vegetative line is considered as shoreline proxy, where there is no sandy beach. The waves directly interact with the vegetation's along the coast. Seashore facing direction of vegetative limits is demarcated as shoreline proxy and it can be clearly interpreted with the satellite images.

- In case of artificial structures (seawalls), the seashore facing direction of seawall is considered as shoreline position.

- In rocky coast, cliff base or seashore edge is considered as shoreline position.

- The bund area are considered for demarcating the shoreline in few locations(Gujarat), based on the local authority report, as these region are tidal flat, dominant with sediment deposition which is well known as intertidal zone. These are our proxy measures taken care to define the shoreline conditions. The ground truth verification is done for typical hotspot locations for validation. The state level coastal management plan gives the conformity for the same.

1.5 Scope of long-term shoreline change mapping

The knowledge on shoreline changes, its behaviour, erosion in historical perspective and related morphological characteristics are primary requirements for coastal development and shore protection projects. Though some attempts are made, systematic information of Indian coast based on widely accepted, standardized method of shoreline change is not available. Therefore, in XII plan (October 2012), MoES, ICMAM-PD (presently NCCR) was entrusted the task of studying shoreline changes along the Indian coast using remote sensing, field investigation, Numerical modelling and GIS. The main objectives of this work are:

- To assess the consistency and generate reliable information of complex systems of the Indian coast using a standard method.
- To prepare shoreline change maps using standard protocol (1:25000 scale) for the entire Indian coast.
- To carry out the temporal shoreline change for entire Indian mainland coast.
- To carry out shoreline change analysis at state and district levels.
- To develop a web based National - Shoreline Assessment System (N-SAS) along the Indian coast.

2. Data Used

Satellite data sets are used as the primary data source. The multi-temporal satellite data such as Landsat TM, ETM+, IRS-P5 (Cartosat-1), IRS-P6 (LISS-III) and (LISS-IV) were used to calculate the shoreline change for different years (Table 1). The Landsat data was downloaded from United State Geological Survey (USGS) maintaining sources. The IRS P6-Resourcesat satellite data is procured from ISRO - National Remote Sensing Centre (NRSC), India.

Table 1: Details of satellite data used

List of Image	Pixel Size(m)	Date	Source
Landsat 5 TM	30.0	1989-1992	USGS
Landsat 7 ETM+	30.0	1999-2001	USGS
IRS P5 (Cartosat-1) PAN	2.5	2005-2006	NRSC
IRS P6 (Resourcesat-1) - (LISS-III)	23.5	2008	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2012	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2013	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2014	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2015	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2016	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2017	NRSC
Resourcesat 2 - (LISS-IV)	5.8	2018	NRSC

3. Methodology

Shoreline evolution is one of the most significant factors in analysing the change rate. There are several approaches to calculate the rates of shoreline change, such as numerical models and remote sensing technique. Remote sensing technique and GIS technology are considered as dominant tools for quantifying the shoreline change on temporal scale (Nayak. S., 2002). By integrating the modern techniques of remote sensing and GIS, rates of shoreline change would be easily and quickly determined for any given area. The methodology adopted for shoreline change calculation is shown in the flow chart (Figure 1).

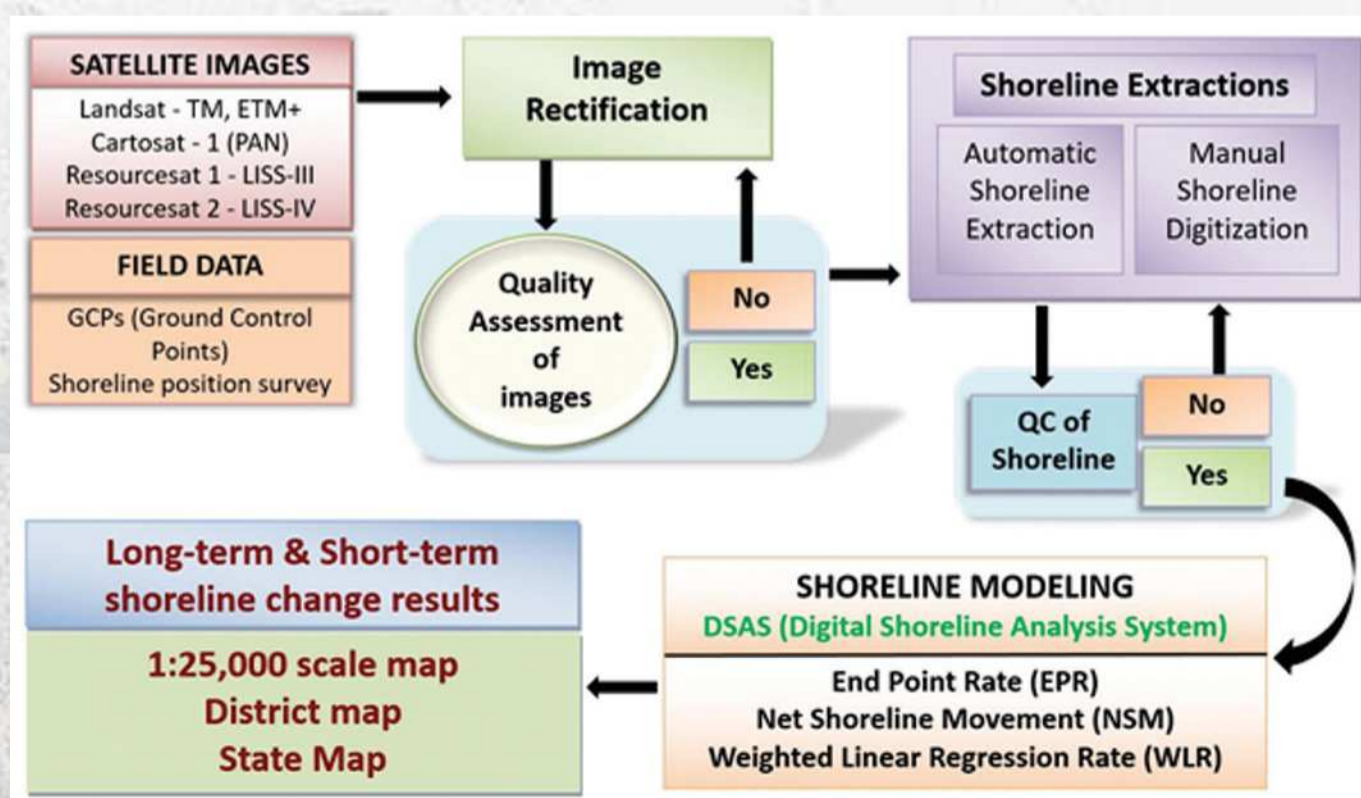


Figure 1: Flowchart of Methodology

3.1 Determination of shoreline from Remote Sensing and field data

Determination of shoreline position from satellite data is very subjective due to limiting factors such as, different ranges of tide induced variability, variations in meteorological conditions, inequalities in data resolution, seasonal setup and scaling of remote sensing data during different periods of data acquisition. In the past, the researchers had used various proxies such as high tide line (HTL) (Fisher and Overton, 1994; Stockdon et al., 2002), high water line (HWL) (Fenster and Dolan, 1999), wet-dry line (Overton et al., 1999), vegetation line (Hoeke et al., 2001), dune toe or crest (Stafford and Langfelder, 1971), toe or Berm of the beach (Norcross et al., 2002), cliff base or top (Moore et al., 1998) and mean high water (MHW) line (Galgano and Leatherman, 1991). However, it becomes subjective to extract these proxies in practical sense due to varying geomorphology of coastal environment. Some of the shoreline proxies which are commonly used in shoreline extraction are shown in Figure 2.



Figure 2: Shoreline proxies used for shoreline extraction. A-Sand dunes with vegetative cover. B- Vegetative line. C-Riprap Seawall structures in case there is no sandy shore.

3.2 Shoreline change calculation

There are many statistical methods used by DSAS version 4.0 (Thieler et al., 2009) to calculate the shoreline change rate. These methods are End Point Rate (EPR), Linear Regression Rate (LRR) and Weighted Linear Regression (WLR). Of these methods, EPR and WLR are used for the analysis. Net Shoreline Movement (NSM) method was also adopted on shoreline position to determine the short-term temporal change. DSAS is purely a statistical approach, which gives output based on input parameters such as date and year.

3.3 Cumulative changes

3.3.1 Weighted Linear Regression Rate (WLR)

The cumulative shoreline changes are computed considering the nine series of data sets. These rates are calculated by determining a linear regression rate-of-change (fitting a least-square regression lines) for point/transect along the coast. Further, a weightage was attached to shoreline data considering the measurement and positional uncertainties involved in obtaining the data. Fine resolution/quality data sets are given greater emphasis or weightage towards determining a best-fit line in comparison with unreliable or poor data sets, i.e. the regression line can be placed in such a way that the sum of the squared residuals is minimized. The weight (w) is defined as a function of the

variance in the uncertainty of the measurement (e): $w = 1/ (e^2)$, where, e = shoreline uncertainty value. The uncertainty and shoreline position at these transects are used to calculate the rate-of-change statistics. Figure 3 shows the shoreline positions of a particular transect plotted with respect to time. The error bar in shoreline measurement point is obtained after adding the weighted values to each shoreline position.

3.3.2 Periodic Changes

End Point Rate (EPR)

The minimum requirement is 2 data sets of shoreline over a time to compute shoreline movement. This is a simple and popular approach adopted to calculate the shoreline change rates by dividing the distance of shoreline movement by time elapsed as given in Figure 3.

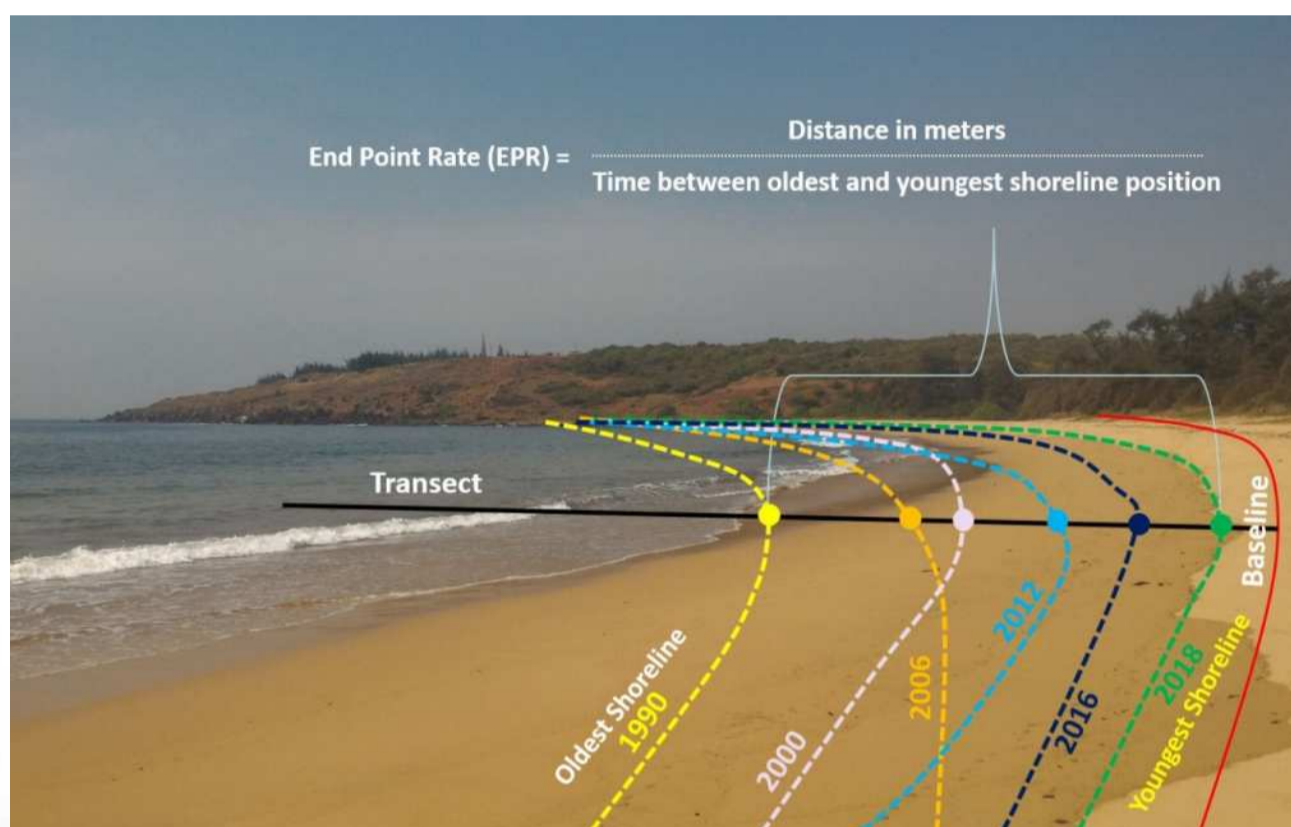


Figure 3: Shoreline change: End point rate method (distance between the 1990 and 2018 shorelines divided by the span of time elapsed between the two shoreline positions; all other shoreline data are ignored in this computation).

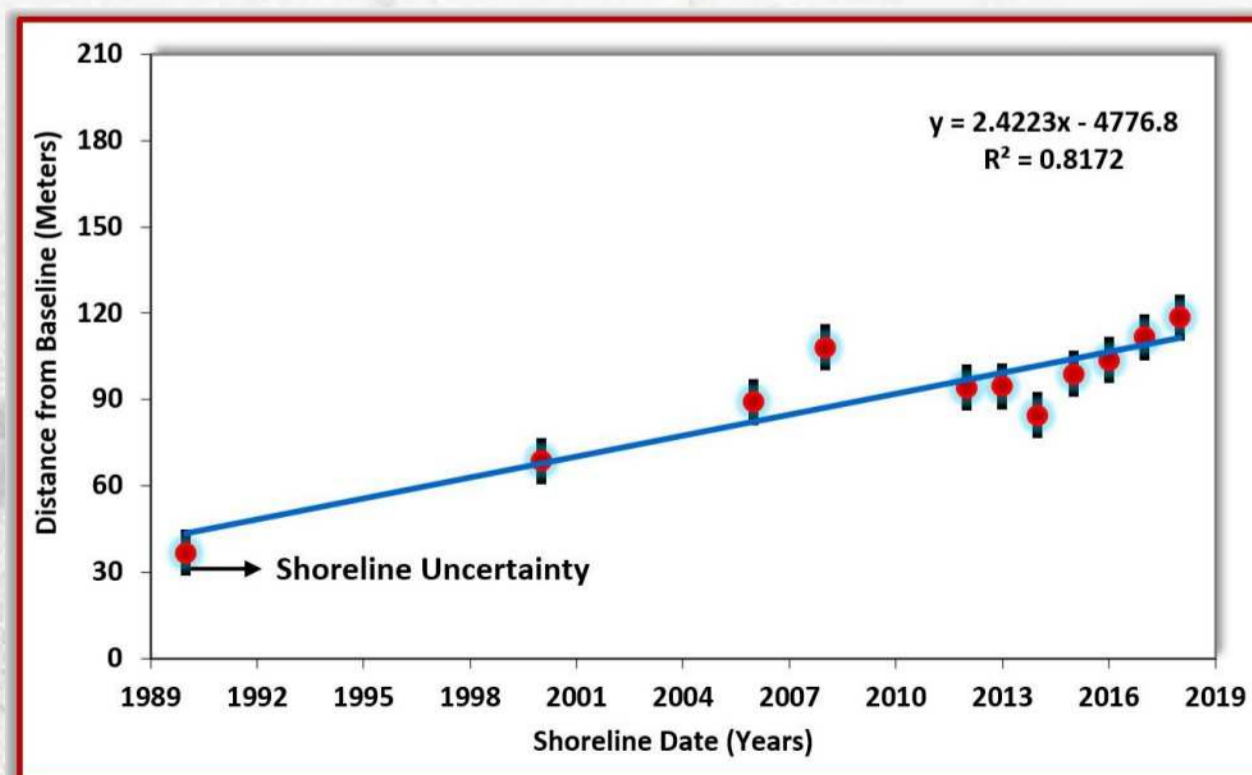


Figure 4: Shoreline change by the weighted linear regression rate method (determined by plotting the shoreline positions with respect to time and calculating the linear regression equation of y . The slope of the regression line is the rate).

3.3.3 Uncertainty in shoreline measurement

Further, the accuracy of shoreline positions extracted from remote sensing data is influenced by several factors such as positional uncertainties (Seasonal error, & Tidal fluctuation) and measurement uncertainties (Digitizing, Pixel, & Rectification).

There are issues in shoreline mapping in wider intertidal zones. The extraction of “HWL” or “wet/dry line” from various images has potential uncertainties and errors with reference to tide and resolution. Therefore, the same may be accounted while considering these positional and measurement uncertainties, which may be within in the limitations of the data itself.

Positional Uncertainties: related to the features and phenomena that reduce the precision and accuracy of defining a shoreline position from a given data set such as Seasonal error (E_s), and Tidal fluctuation (E_{td}).

Measurement Uncertainties: related to the skill and approach such as Digitizing error (E_d), Rectification error (E_r) and Pixel error (E_p).

Finally, overall total uncertainty value has been estimated for each shoreline by accounting for both positional and measurement uncertainties as:

$$E_t = \pm \sqrt{E_s^2 + E_{td}^2 + E_d^2 + E_p^2 + E_r^2}.$$

This approach considers varying rate of changes between each dataset by fitting a least-square regression line for all datasets. In this approach, high-resolution data sets are given greater emphasis or weightage towards determining a best-fit line in comparison with unreliable or poor data sets.

The total uncertainties considered in the analysis are given in Table 2.








Table 2: List of uncertainties used in the analysis

Errors	Consideration	Uncertainty Value
Tidal error	Tidal values are taken from the tide table and tidal stations along the coast. The tidal value differs from place to place based on the station.	Tide range from the nearest station.
Seasonal error	Seasonal error is the horizontal distance along the coast. This error mainly depends on the coastal slope. The coasts are either steep or gentle. Taking this factor in to account the seasonal error to be considered.	based on the slope. (availability of slope data is a question; or 5 -10 m based on the regions).
Digitizing error	Digitizing the shoreline is a difficult task. Digitizing the shoreline position by the same analyst may change when he does it again. After considering all the factors, the error is fixed.	Half of the pixel size is considered.
Rectification error	Rectification error is the error obtained from the ortho-rectification process. The RMSE error thus obtained during rectification is considered as error value.	RMSE value (the rectification accuracy should be maintained with in a pixel).

3.4 Mapping of Shoreline Change

The results obtained from the analysis of shoreline changes are in the form of numbers i.e., \pm m/yr, where +ve is for accretion, and -ve is for erosion.

Table 3: Shoreline classification schemes used in the analysis

Classification	Rate (m/year)	Colour Schemes
High Erosion	>-5.0	
Moderate Erosion	-5.0 to -3	
Low Erosion	-3.0 to -0.5	
Stable Coast	-0.5 to 0.5	
Low Accretion	0.5 to 3.0	
Moderate Accretion	3.0 to 5.0	
High Accretion	> 5.0	

These quantitative results are plotted in GIS environment using standard mapping format in 1:25000 scale. However, mapping requires classifications of accretion/erosion rates in sub-classes considering the magnitude of changes. The classification of shoreline changes is further a subjective aspect. We have classified the shoreline change rates into seven classes (Table 3) (Kankara et al., 2014; Kankara et al., 2015 and Selvan et al., 2020). The marginal change of ± 0.5 m/yr is considered as no change or stable coast, in view of uncertainties in the data.

The shoreline towards seaward are referred as “accretion” and shoreline towards landward are referred as “erosion”. These classification is categorised based on the rate of change results considering the shift in shoreline position. This phenomenal changes defines the shoreline classification from high to low based on rate (m/yr). The rate of change whichever less than 1 m is considered as stable coast, other than rocky coast, cliff are define the same stable condition, The intermitted distance between 1 to 3m difference are considered as low accretion / erosion which means which means the coast is mere effect on coastal erosion. Subsequently, the area between 3 to 5m is considered as moderate accretion / erosion which means the coastal areas need more attention to take precautious measures. All along the rate of change in results greater than 5m is considered as coastal hotspot regions required immediate action plan for coastal protection. This regions needs a periodical monitoring to ascertain the coastal landforms. The above classification schemes are formalised based on previous studies (Kankara et al., 2014). The seasonal field observations were carried out for ground truth verifications and validations. Overall, the significant changes all along the entire Indian coast is mapped with 1:25,000 scale which are depicted in the following sections.

3.4.1 Field Database

Field work was undertaken for entire coastal region of India, mainly focusing to collection of GCPs, shoreline tracking during satellite pass time, sediment data collection, validation/verification of landuse/landcover and geomorphology.

Collection of Ground Control Points (GCP's)

GCP's were collected to rectify the satellite imagery which is used for shoreline extraction. 15km width from the coast is considered as the boundary for GCP collection. All the GCP's were evenly collected all along the image for minimising the error while extracting the shoreline positions. All the satellite images should be brought into a common projection system (WGS 84) so that the error or shift in the images can be reduced. GCP collection at various coastal hotspots are depicted in the following Figure 5.



Figure 5.a) shows the GCPs point collected rail/road intersection, Andhra Pradesh. and b) shows the shoreline tracking near paradip sea beach, Odisha.

3.5 Quality Check

There are several geospatial standards, viz. Natural Resources Information System (NRIS), National Natural Resources Management System (NNRMS), National Spatial Data Infrastructure (NSDI) and National Urban Information System (NUIS), are being used in India. These standards were used for quality check at NCCR in integrated manner to suite our requirement. The broad points are given below:

- NCCR has prepared a Standard Operating Protocol (SOP) to generate shoreline change map at 1:25000 scale.
- Image rectification, shoreline digitization, and map accuracy were followed as per NNRMS standard. The rectification accuracy is maintained within a pixel using 2nd order polynomial method.
- The planimetric shoreline map accuracy was maintained within 1mm in scale at 90% confidence interval and classification accuracy of 90% at 90% confidence interval.
- Considering the uncertainties, shoreline change rate was analysed using weighted linear regression rate method along with 85% confidence interval (DSAS manual).

4. Status of Coastal Erosion along the Indian Mainland

In the previous Atlas published in August 2018 “National Assessment of Shoreline changes along Indian Coast - A status report for 26 years 1990-2016”, about 6031 km of coast was mapped and analysed. However, in this report, about 6907.18 km coastal length was analysed.

About 6907.18 km long shoreline (in 1:25000 scale) distributed among nine coastal states and two union territories was analysed for the period 1990-2018 to estimate the shoreline change i.e., erosion, accretion and stable. Coastal erosion has become one of the most alarming threats in varying pockets along the Indian coast. Shoreline length used in the analysis is the shore face length (excluding the interior parts of river / creeks) obtained from Resourcesat-2, LISS-IV satellite data (by zooming in 1:15000 scales). The shoreline analysis suggests that 33.6% of coast is eroding, 26.9% is accreting and 38% is in stable state (Table 4).

Table 4: Summary of shoreline changes along the Indian coast

SI No	State		Coast Length (in km) *	Coast length (in Km)					
				Erosion		Stable		Accretion	
				Km	%	Km	%	Km	%
1	West Coast	Gujarat	1945.6	537.5	27.6	1030.9	53.0	377.2	19.4
2		Daman & Diu	31.83	11.02	34.6	17.09	53.7	3.72	11.7
3		Maharashtra	739.57	188.26	25.5	477.69	64.6	73.62	10.0
4		Goa	139.64	26.82	19.2	93.72	67.1	19.1	13.7
5		Karnataka	313.02	74.34	23.7	156.78	50.1	81.9	26.2
6		Kerala	592.96	275.33	46.4	182.64	30.8	134.99	22.8
7	East Coast	Tamil Nadu	991.47	422.94	42.7	332.69	33.6	235.85	23.8
8		Puducherry	41.66	23.42	56.2	13.82	33.2	4.42	10.6
9		Andhra Pradesh	1027.58	294.89	28.7	223.36	21.7	509.33	49.6
10		Odisha	549.5	140.72	25.6	128.77	23.4	280.02	51.0
11		West Bengal	534.35	323.07	60.5	76.4	14.3	134.88	25.2
Total			6907.18	2318.31		2733.86		1855.03	
			%	33.6		39.6		26.9	

* Length of shoreline estimated from imageries (1:25000 scale) excluding river /creek mouths etc.

The state-wise analysis suggests that in the West Bengal (60.5%) and Pondicherry (56.2%) coasts, erosion exceeds more than 50%, followed by Kerala (46.4%) and Tamil Nadu (42.7%). Odisha (51%) is the only coastal state, which is having more than 50% of accretion, followed by Andhra Pradesh with 49.6%. Apart from Kerala coast, the remaining west coast of India fall in stable condition. The state-wise details of shoreline change status are given in Tables 4.

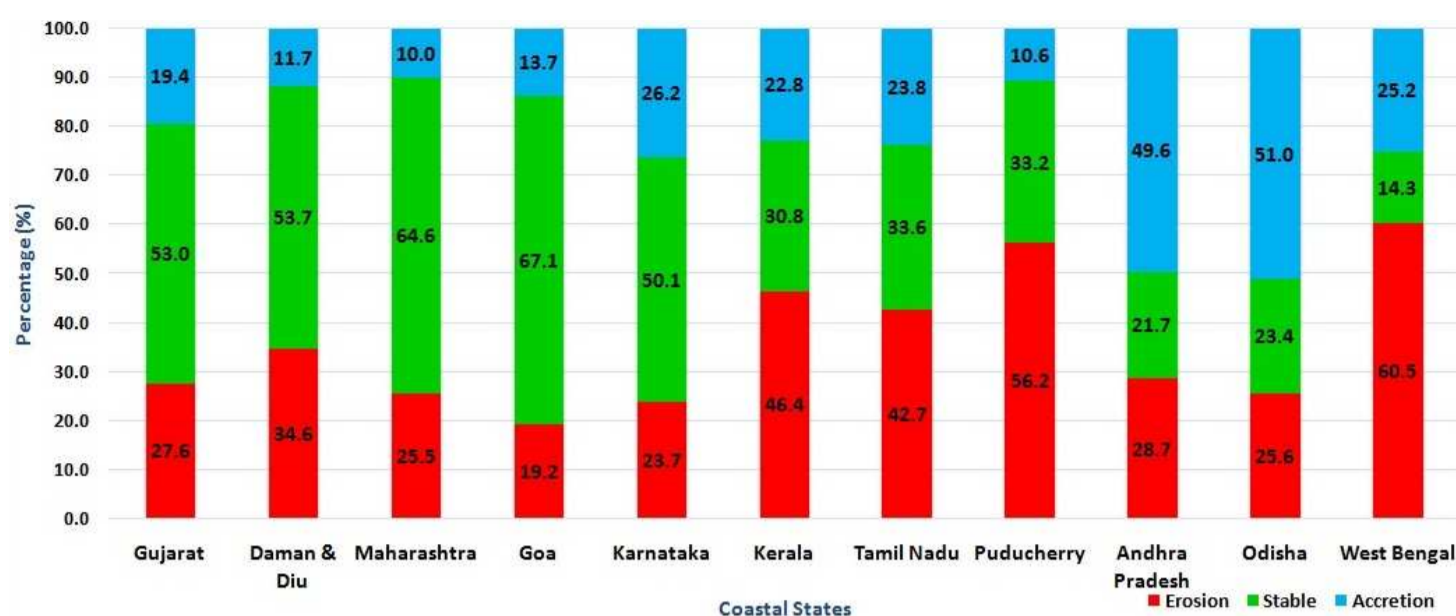


Figure 6: Shoreline change status of Indian coastal states in percentage

This report is an accompaniment to the summary of Atlas on shoreline change (1990-2016). In the present report, the long-term shoreline change analysis was carried out for 1990-2018. Figure.6 shows the overall status of erosion (red color), accretion (blue color) and stable (green color) percentage for past 28 years (1990-2018). It can be inferred that the accretion percentage of east coast (Tamil Nadu, Puducherry, Andhra Pradesh, Odisha and West Bengal) shows increasing trend when compared to shoreline change study of 1990-2016 period. The erosion percentage of Tamil Nadu and Andhra Pradesh shows an increasing trend. Whereas, the remaining east coast of India shows decreasing trend. Similarly, the erosion percentage of west coast (Kerala, Karnataka, Goa, Maharashtra and Gujarat) shows increasing trend when compared to shoreline change study of 1990-2016 period. This change in shoreline trend indicates the importance of cumulative analysis of shoreline change for subsequent years.

List of shoreline change maps in 1:25000 scale

The shoreline change maps for both long and short-term were prepared in 1:25,000 scale and the same will be hosted on NCCR N-SAS web portal. These maps are being updated every subsequent year. The detailed 1:25,000 scale maps of each state-wise are listed in Table with Topo number and NCCR Grid number as shown in Annexure.

Table 5: Total number of 1:25,000 scale maps along the Indian coast

West Coast of India		
Sl.No	State	Number of Maps (1:25,000)
1	Gujarat & Diu-Daman	150
2	Maharashtra	45
3	Goa & Karnataka	32
4	Kerala	55
East Coast of India		
Sl.No	State	Number of Maps (1:25,000)
1	Tamil Nadu & Puducherry	80
2	Andhra Pradesh	88
3	Odisha	47
4	West Bengal	29
Total No. of. Maps		526

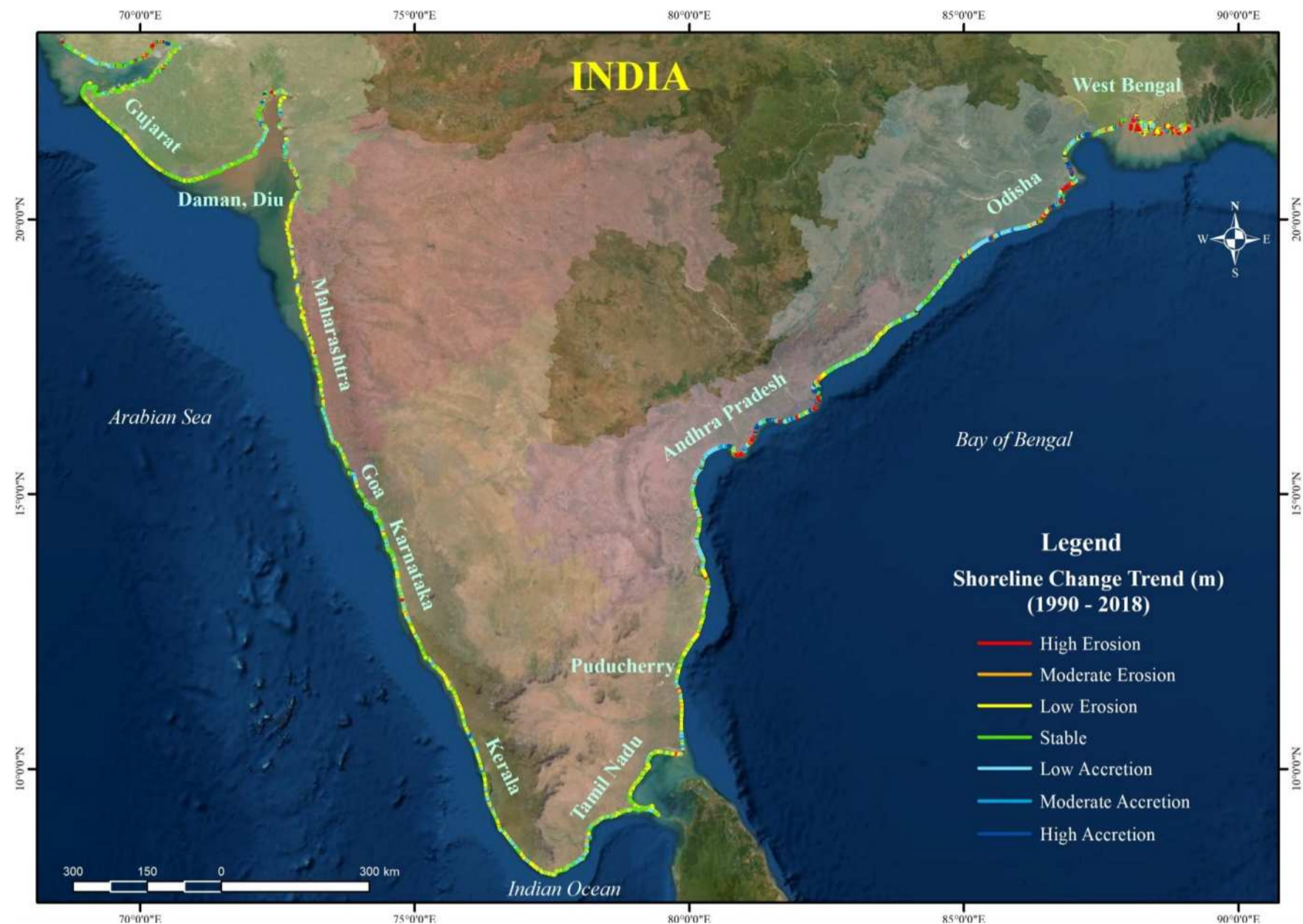


Figure 7: Shoreline change map along Indian coast (1990-2018)

Considering the maximum and minimum values of the shoreline change rate, the shoreline is divided into seven categories as low erosion, moderate erosion, high erosion, stable, low accretion, moderate accretion and high accretion (Table.5). The status of the shoreline change maps along with shoreline change rate (erosion/accretion) and other information such as ports, industries, and other anthropogenic activities are mapped. The map will be updated every year. The overall distribution of shoreline change rate along the Indian coast for 1990-2018 is shown in Figure 7.

5. Data Products

The shoreline change analysis was carried out using different satellite datasets. Different data products (1:25,000 scale, state-wise maps, district maps and hotspot maps) were prepared for entire Indian mainland coasts. These maps will be updated for every subsequent year. The derived cumulative shoreline change results are shown below;

a) Shoreline Change Assessment (1990-2018) in 1:25,000 scale Atlas

The Indian mainland surrounded by coastal landforms are divided as per Survey of India (SOI) topo grids which accounted about 526 numbers are mapped in 1:25,000 scale for the entire Indian coast. This map composed of detailed information about cumulative shoreline change results. The results are classified into 7 classes namely High Erosion, Moderate Erosion, Low Erosion, Stable, High Accretion, Moderate Accretion and Low Accretion. In addition, the baseline information such as satellite data acquisition, grid details, geographical coordinate system datum details, administrative

boundaries with annotation and other infrastructure details namingly major ports, major fishing harbours and industries are represented in the map.

b) Hotspot Regions

The Hotspot locations are identified based on the cumulative shoreline change results for the time period of (1990-2018) all along the coast. The results are achieved by considering past historical records and its natural and anthropogenic causes. The shoreline change rate above 3 m/yr (east coast) and 2.5 m/yr (west coast) are considered as vulnerable area, and the corresponding regions are mapped in 1:25000 scale. The map depicts with coastal stretches with hotspot locations. These results may varies with respect to time, hence these hotspot locations are limited with satellite date and its time-domain. The hotspots maps reports the coastal impact on shoreline condition and its importance for coastal protection and management.

The East coast of India are exposed to high erosion hotspot comparatively to west coast of India. The states such West Bengal and Odisha are exposed to high impact on coastal erosion. Indian Sundarban Islands in West Bengal region with swamps and marshes are declared as Bio-diversity hotspot locations. The Gahirmata marine sanctuary extends from Dhamra river to Brahmani river considered as ecological significance with diverse floral and faunal resources. The West coast of India covering rocky cliff are considered as stable coast expect the states Kerala and Gujarat which are exposed to coastal erosion due to coastal morphological changes and seasonal monsoon impacts.

c) In-House Web Based Shoreline Information System

The systematic shoreline mapping was prepared for different time-frames (1990-2018) using remote sensing techniques. The coastal protection measures require the spatial visualization on the status of shoreline undergoing erosion and accretion spots in timely manner. To expedite the shoreline status in a digital platform, the in-house developed open source web based shoreline information system was developed by NCCR named “National-Shoreline Assessment System (N-SAS)”. This system is capable to view, estimate, manage and to evaluate different years of shoreline condition, long-term and short-term shoreline change rates. It provides seamless coastal information as shoreline status with different scales. The systematic generated shoreline status maps will be updated every subsequent year. This web-portal allows the users to visualize the shoreline status in a geographical framework. This associated processes involves with shoreline mapping, can gives the effectiveness of coastal monitoring and management program, which can helps to disseminate the coastal issues to the user departments at national and state level for periodical monitoring the coastal condition along the entire Indian coasts.

This real-time web based tool can provide the overall status of shoreline positions, accretion and erosion pattern all along the Indian coast, which is useful for coastal managers, administrators, decision-makers, NGOs, fishermen and the coastal communities for the better preparedness on coastal protection measures.

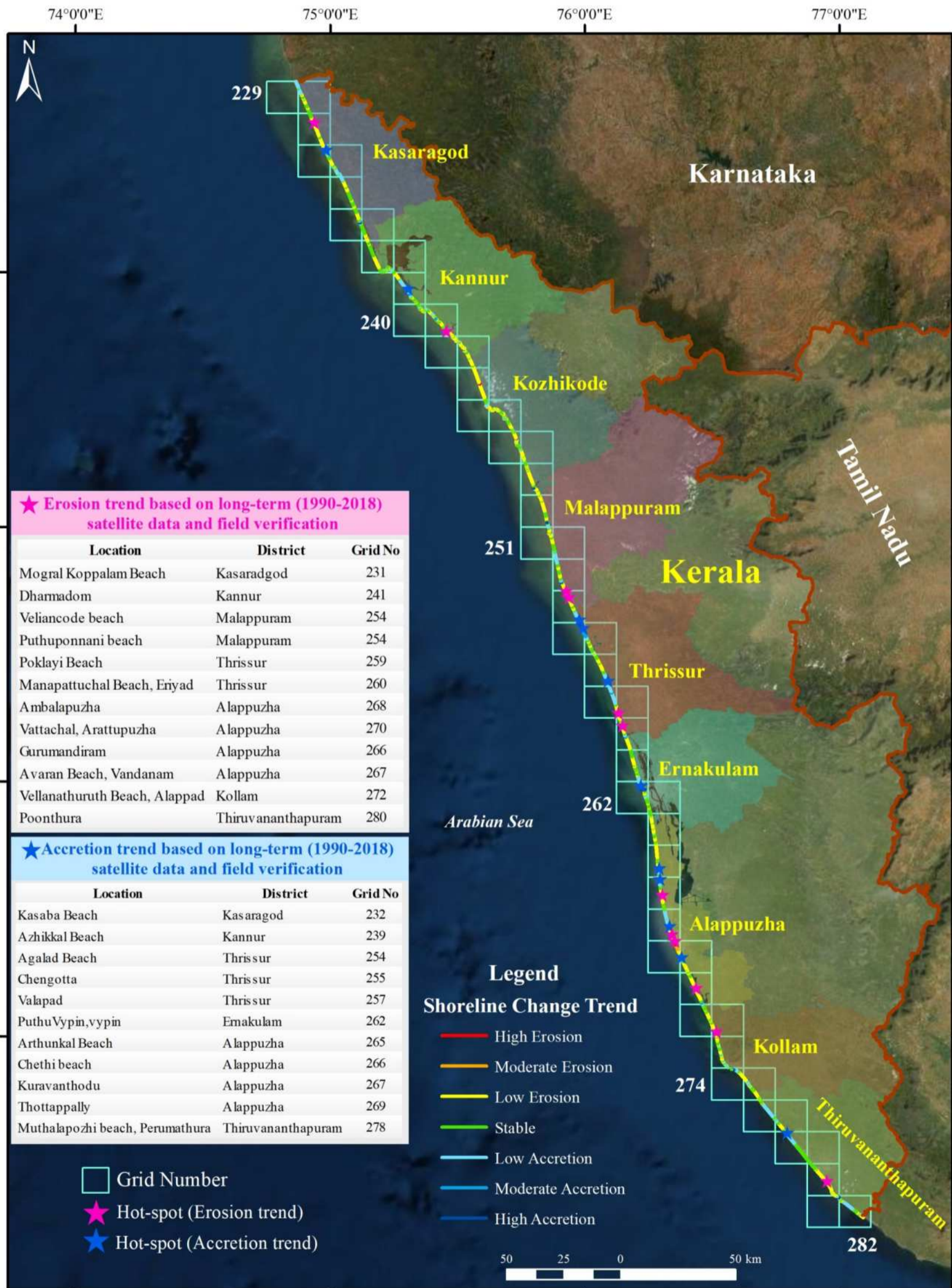


National-Shoreline Assessment System (N-SAS)

An in-house developed open source web based shoreline information system
launched by NCCR

HOTSPOTS REGIONS IN WEST COAST

Kerala



Field Photographs: Erosion hotspot regions along Kerala Coast



Poothura



Vellanathuruth Beach, Alappad



Ambalapuzha



Avaran Beach, Vandanam



Gurumandiram



Manapattuchal Beach, Eriyad

Field Photographs: Accretion hotspot regions along Kerala Coast



Thottappally beach

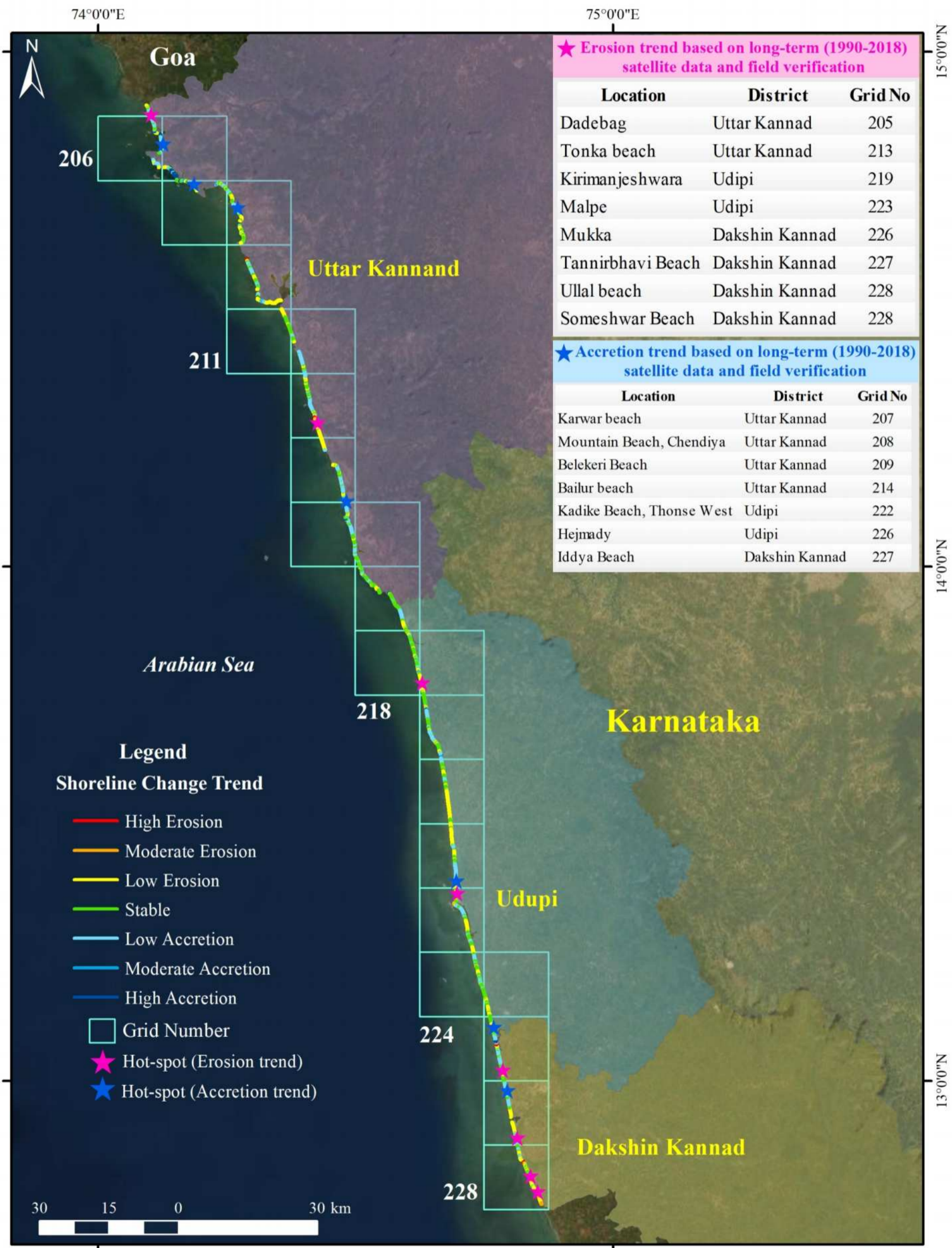


Kuravanthodu



Chengotta beach

Karnataka



Field Photographs: Erosion hotspot regions along Karnataka Coast



Ullal beach



Kirimanjeshwara



Tonka beach

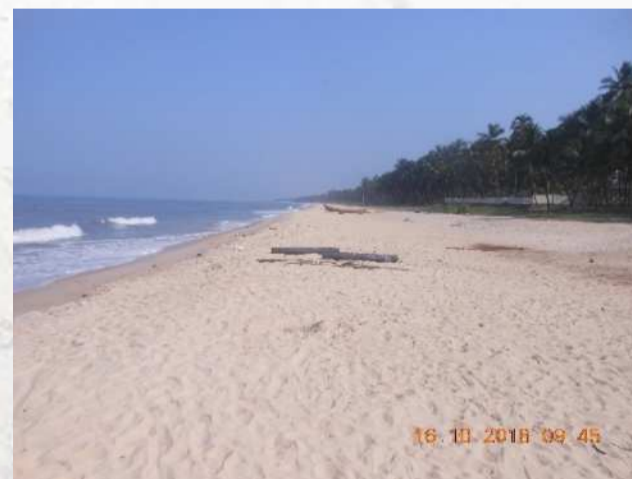


Dadebag

Field Photographs: Accretion hotspot regions along Karnataka Coast



Hejmady

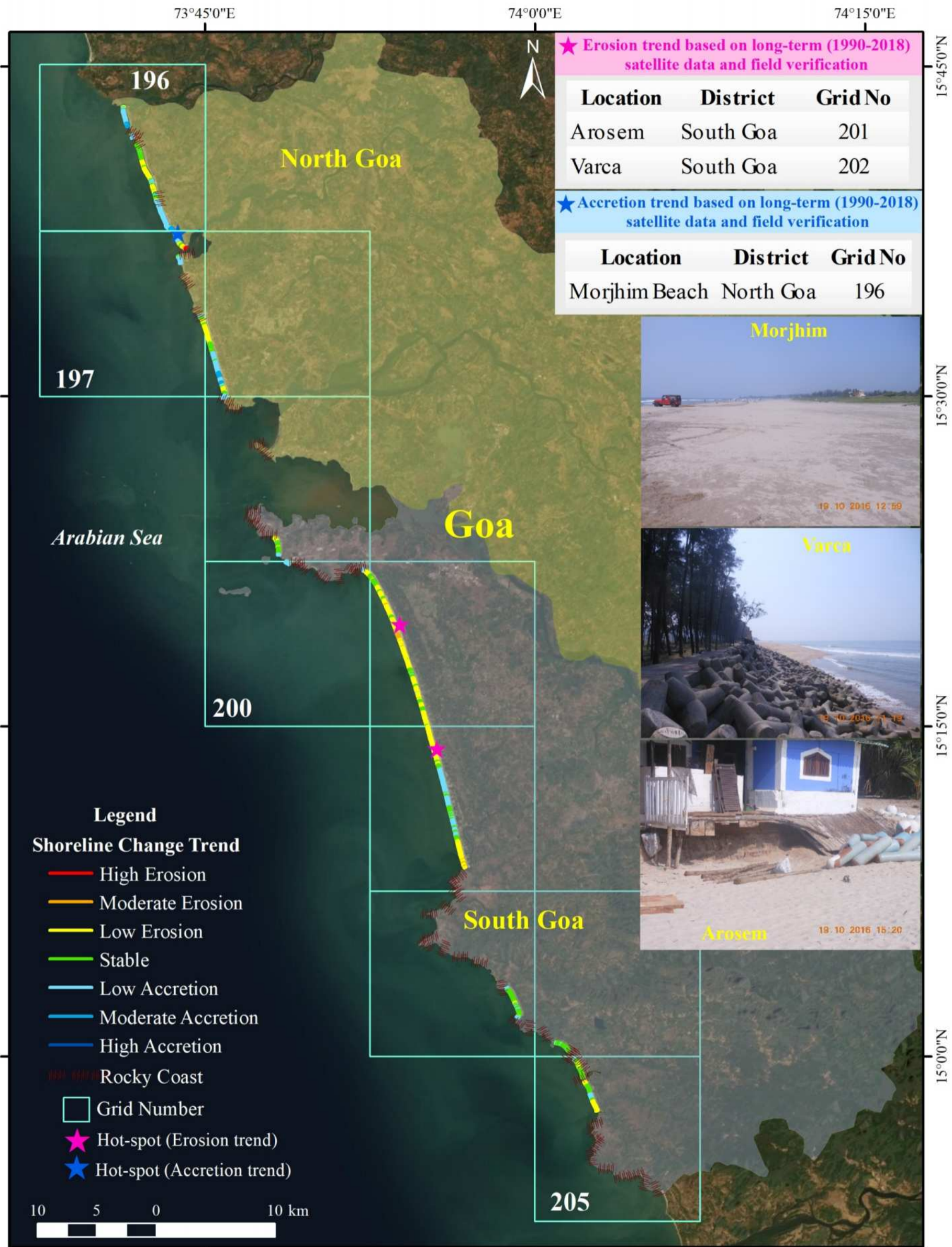


Kadike Beach, Thonse West

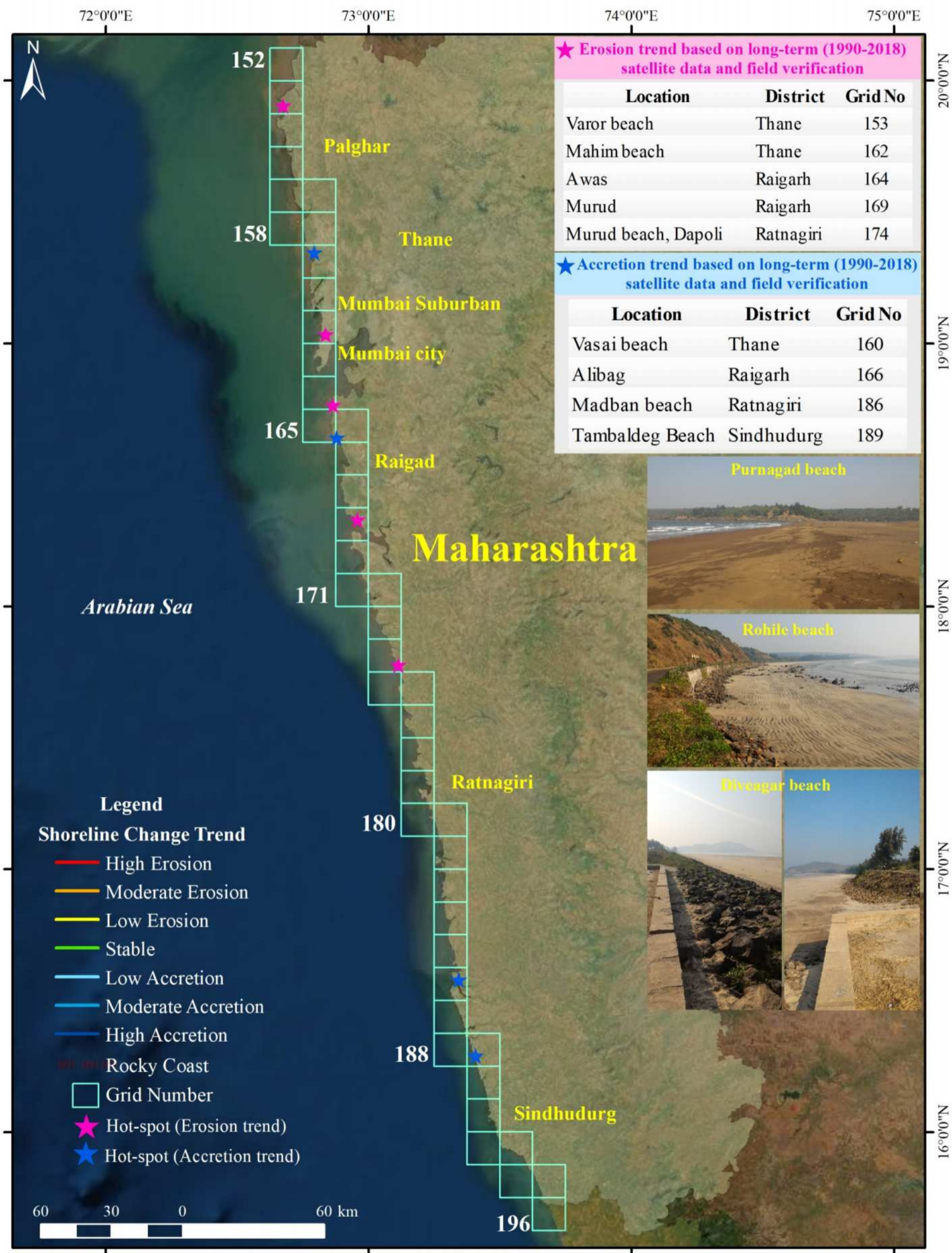


Karwar

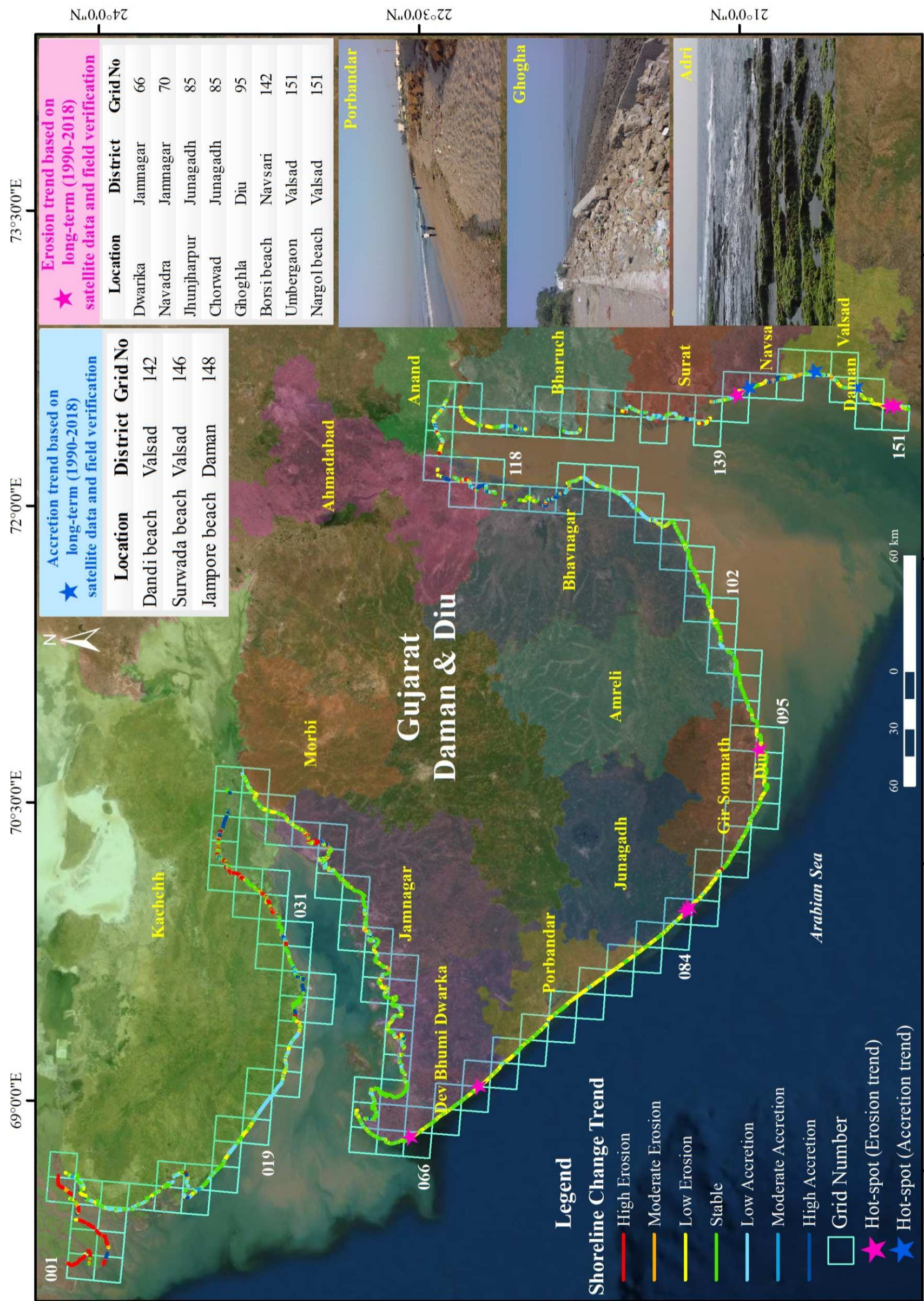
Goa



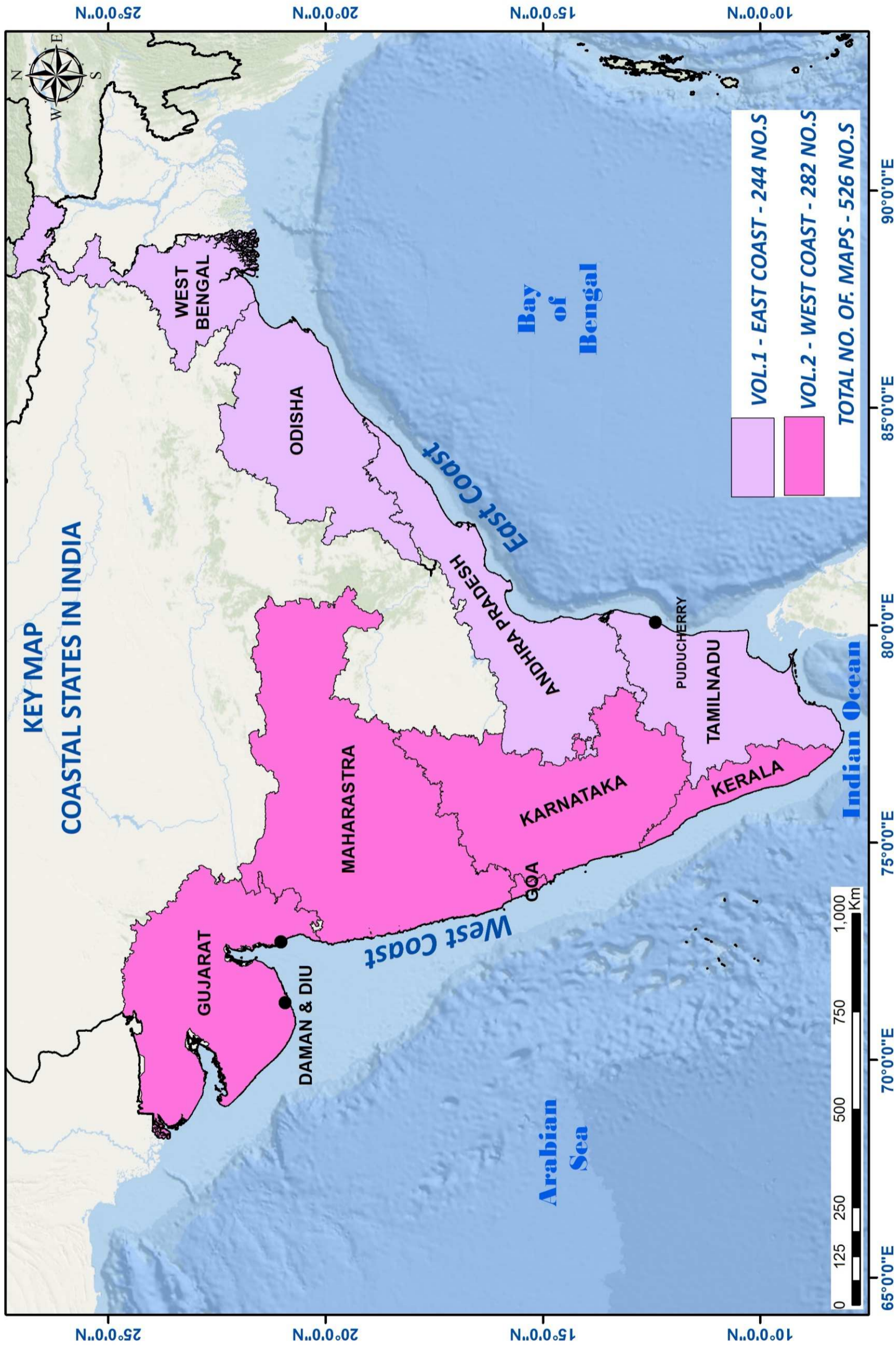
Maharashtra



Gujarat



Key Map





List of Maps West Coast of India

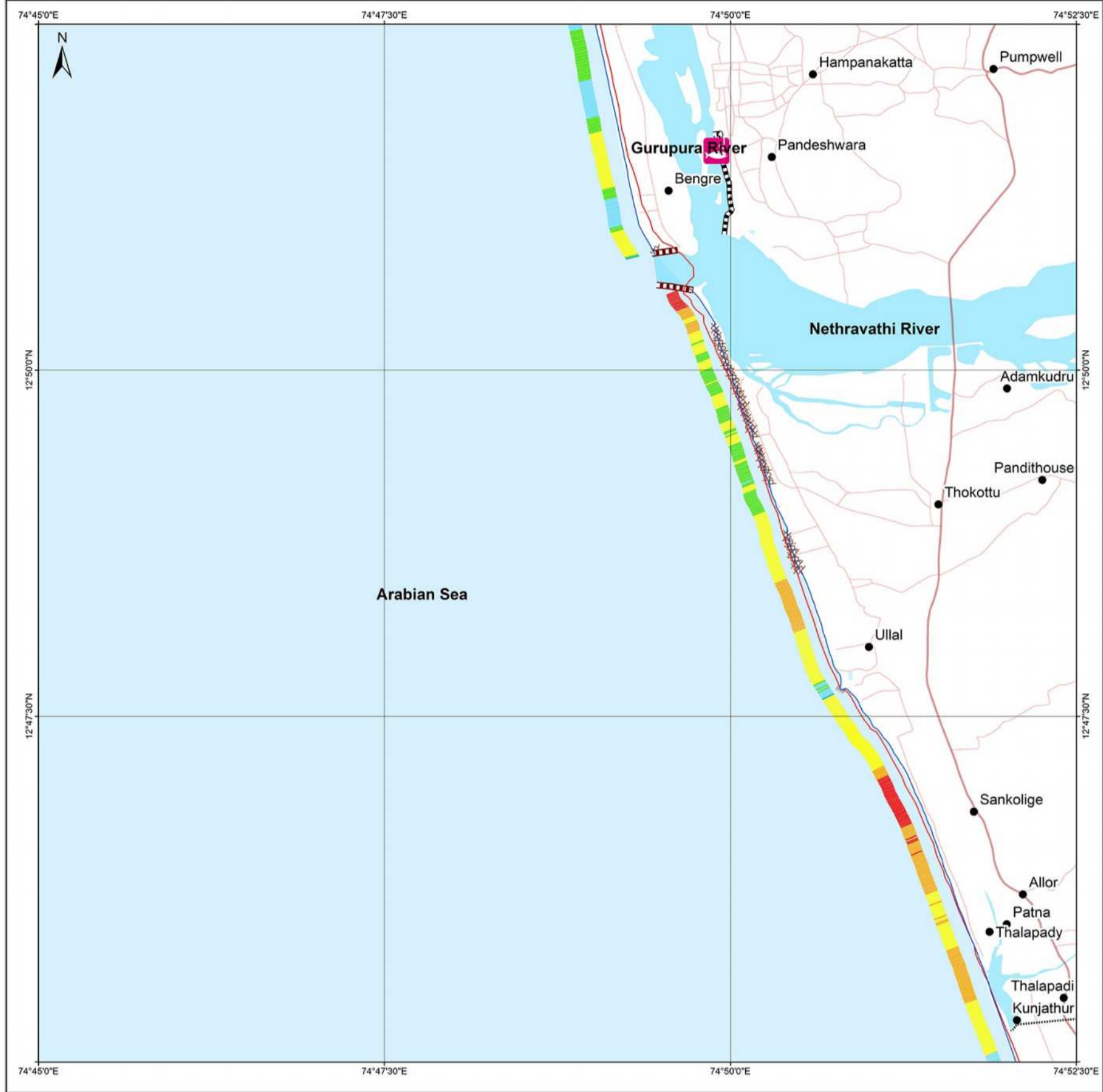


Kerala

1990 - 2018
**DAKSHINA KANNADA
 & KASARAGOD**

SHORELINE CHANGE MAP KARNATAKA & KERALA

Restricted Use
48 L / 13 / SW
 Map No. : NCCR/SCM/228



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990 & 03/04/1990
- █ 02/02/2018

Index to sheets

48 L/19/NE	48 L/13/NW	48 L/13/NE
48 L/9/SE	48 L/13/SW	48 L/13/SE
48 L/10/NE	48 L/14/NW	48 L/14/NE

Incidence on 1:50,000 Sheets

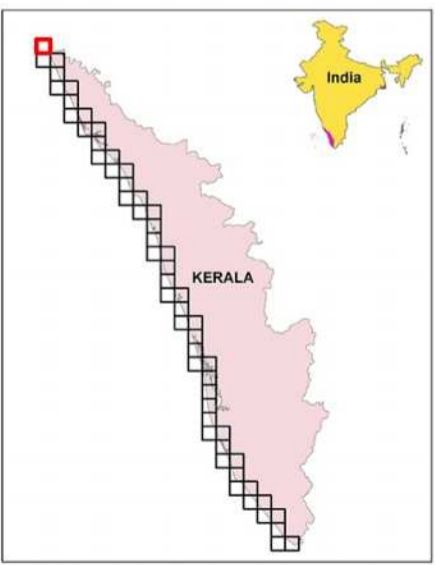
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UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/15/2017 & 02/24/2017
LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	01/18/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000 & 12/20/2000
TM	02/23/1990 & 03/04/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

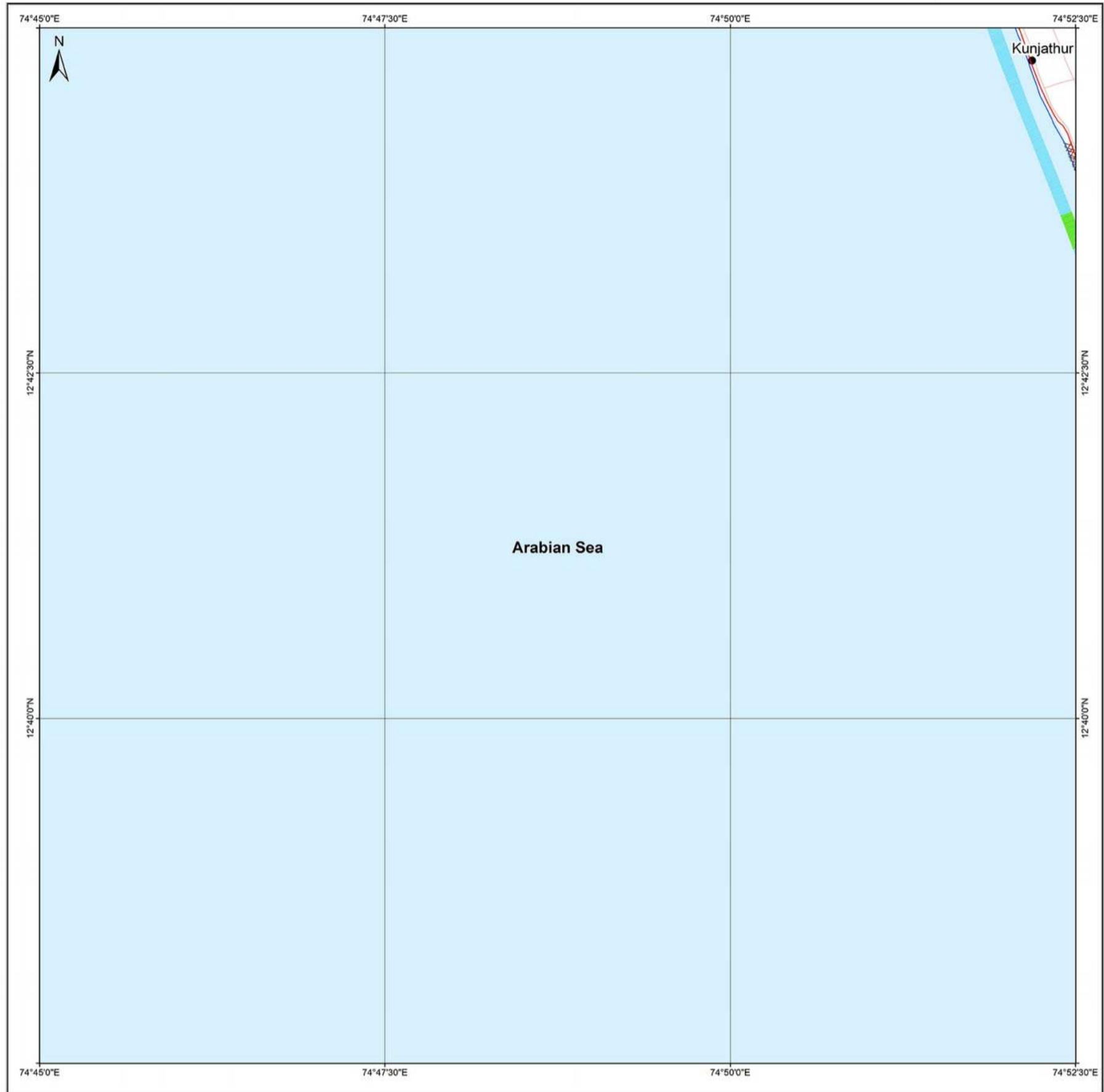
Prepared by
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 L / 14 / NW
Map No. : NCCR/SCM/229



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/04/1990
- 02/02/2018

Index to sheets

48 L/9/SE	48 L/10/SW	48 L/11/SE
48 L/10/NE	48 L/14/NW	48 L/14/NE
48 L/10/SE	48 L/11/SW	48 L/11/SE

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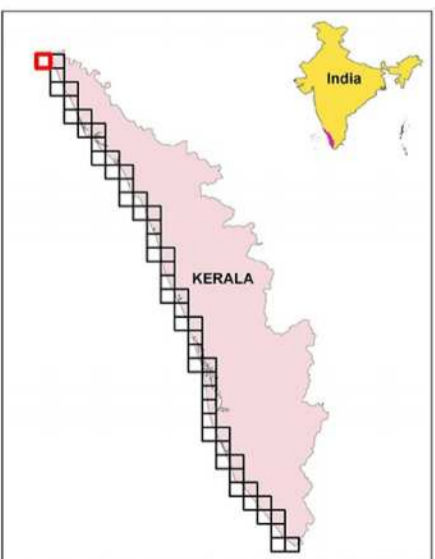
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- Settlements
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- Administrative Boundary
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- State Highways
- Other Roads
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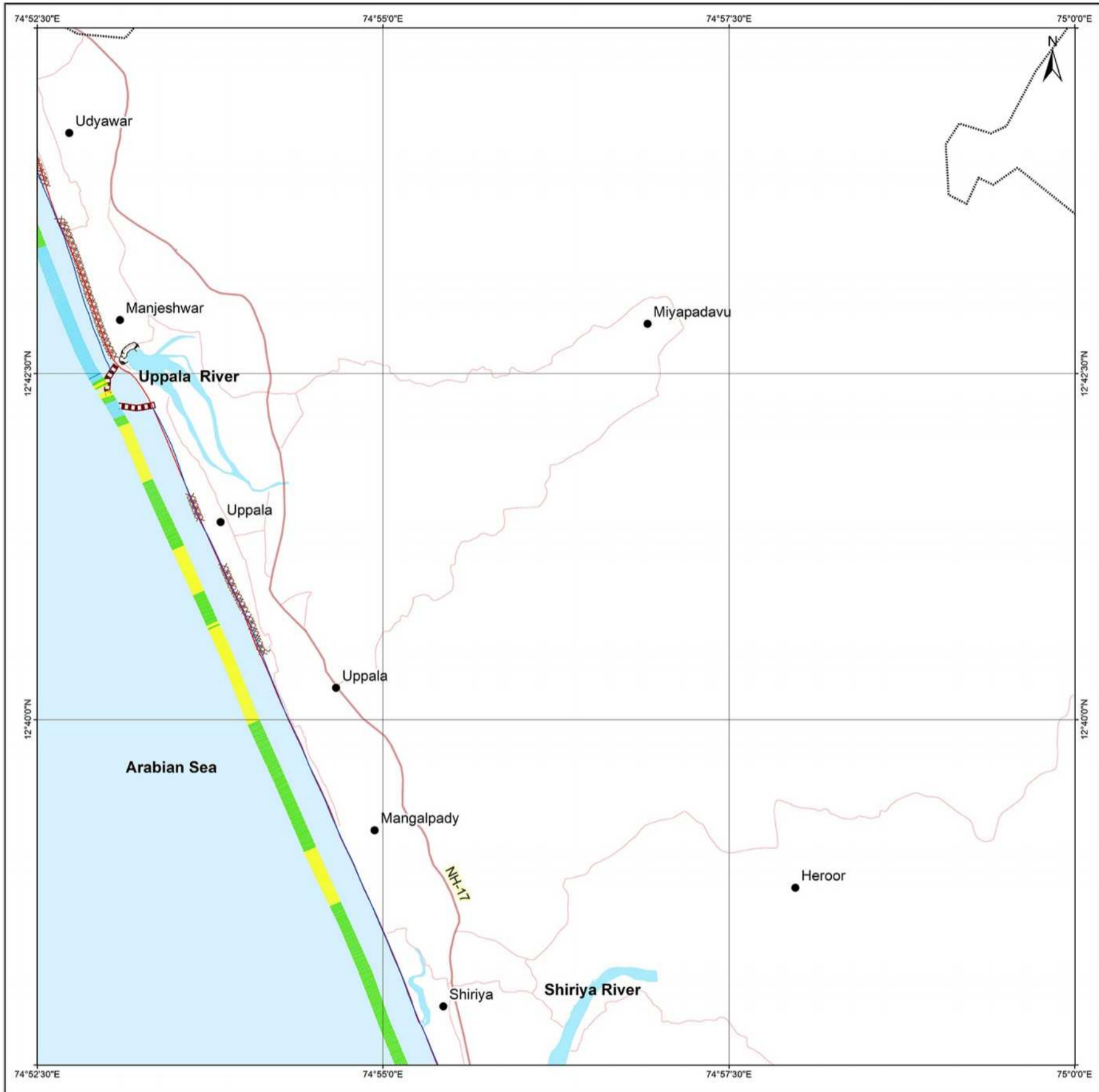
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

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48 L / 14 / NE
Map No. : NCCR/SCM/230



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/04/1990
- 02/02/2018

Index to sheets

48 L / 13 / SW	48 L / 13 / SE	48 P / 1 / SW
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48 L / 14 / SW	48 L / 14 / SE	48 P / 2 / SW

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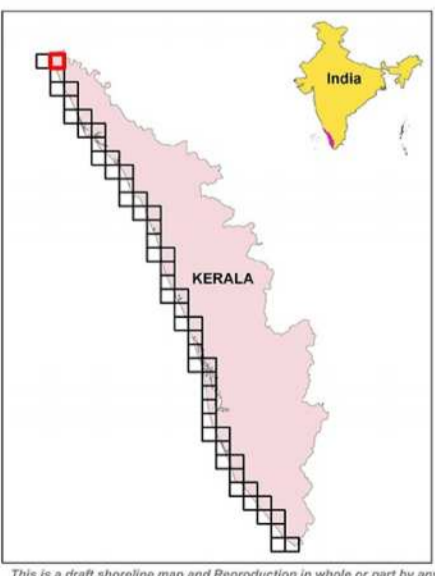
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- Settlements
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- Rocky Coast
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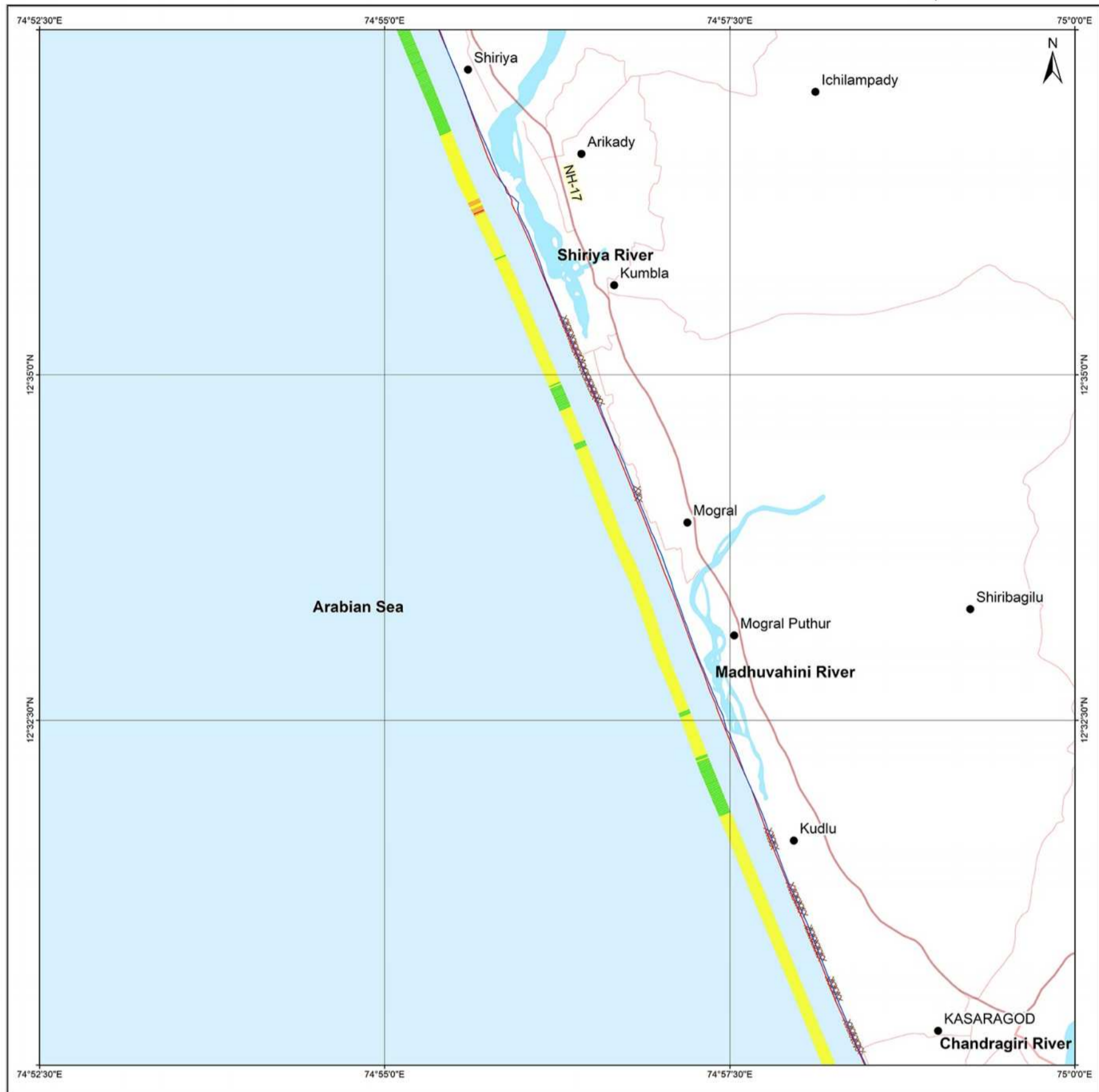
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

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48 L / 14 / SE
Map No. : NCCR/SCM/231



Shoreline Change Trend for Period 1990 - 2018

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- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/04/1990
- 01/26/2018 & 02/02/2018

Index to sheets

48 L / 14 / NW	48 L / 14 / NE	48 P / 2 / NW
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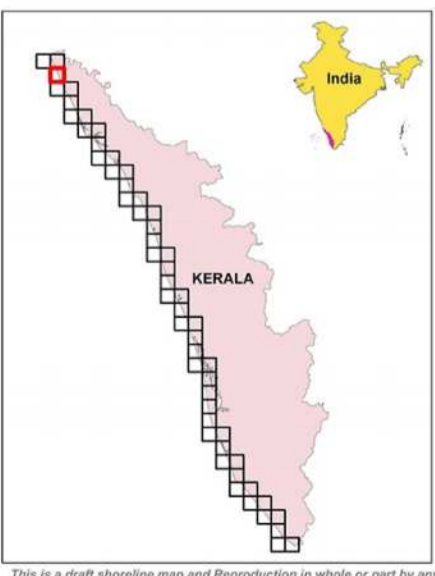
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LISS-IV	02/24/2017
LISS-IV	04/28/2016 & 01/08/2016
LISS-IV	03/07/2015 & 02/06/2015
LISS-IV	01/25/2014 & 01/18/2014
LISS-IV	05/23/2013 & 01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	12/14/2006
ETM+	12/20/2000
TM	03/04/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

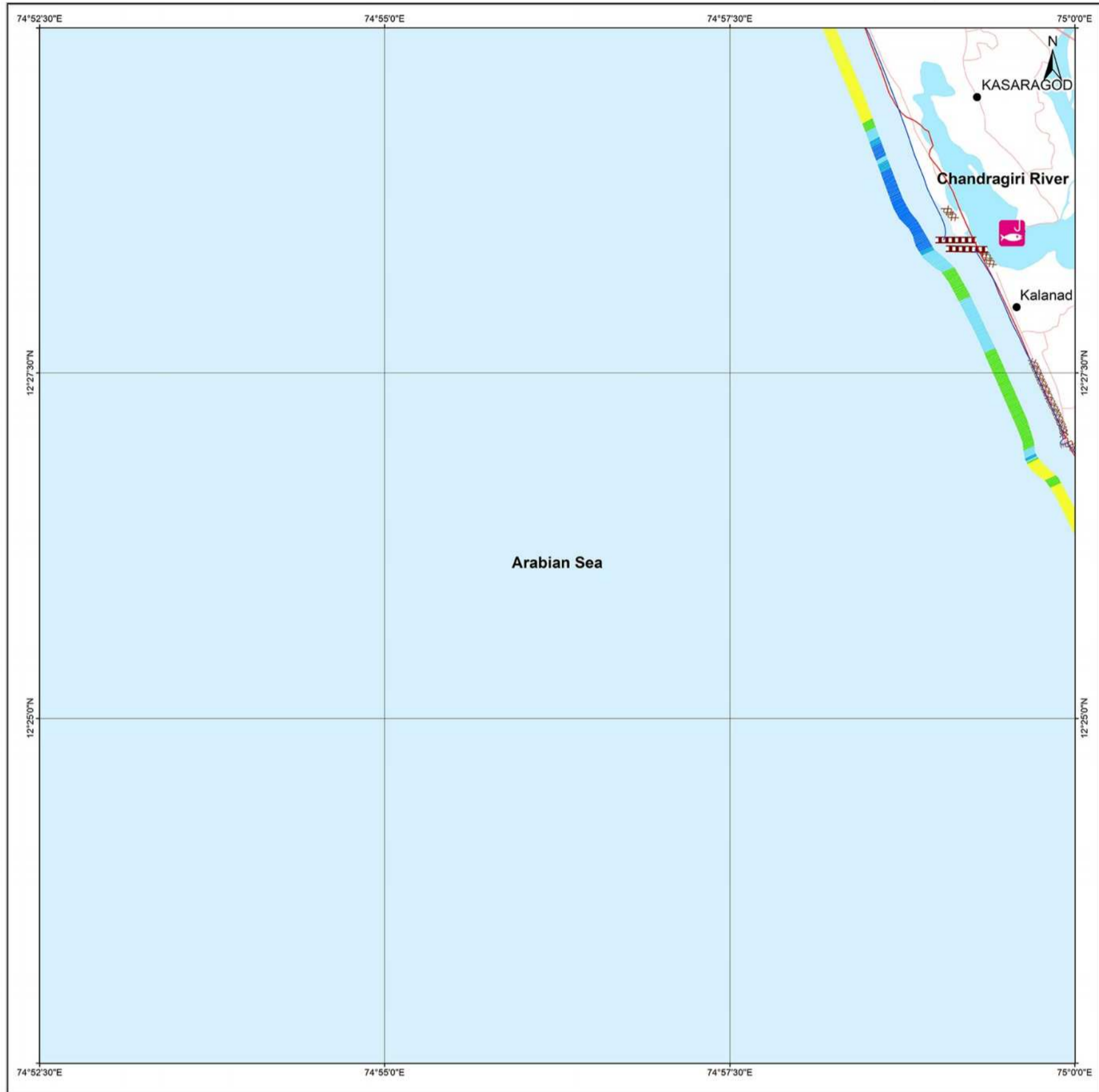
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 L / 15 / NE
Map No. : NCCR/SCM/232



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/04/1990
- 01/26/2018

Index to sheets

48 L / 14 / SW	48 L / 14 / SE	48 P / 2 / SW
48 L / 15 / NW	48 L / 15 / NE	48 P / 3 / NW
48 L / 15 / SW	48 L / 15 / SE	48 P / 3 / SW

Incidence on 1:50,000 Sheets

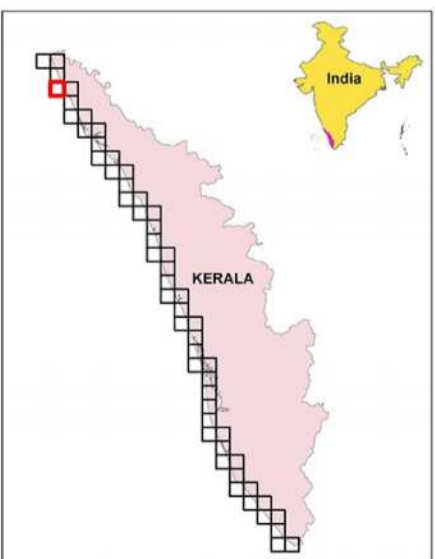
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48 L / 12	48 L / 15	48 P / 4

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	01/25/2014
LISS-IV	01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	12/14/2006
ETM+	12/20/2000
TM	03/04/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

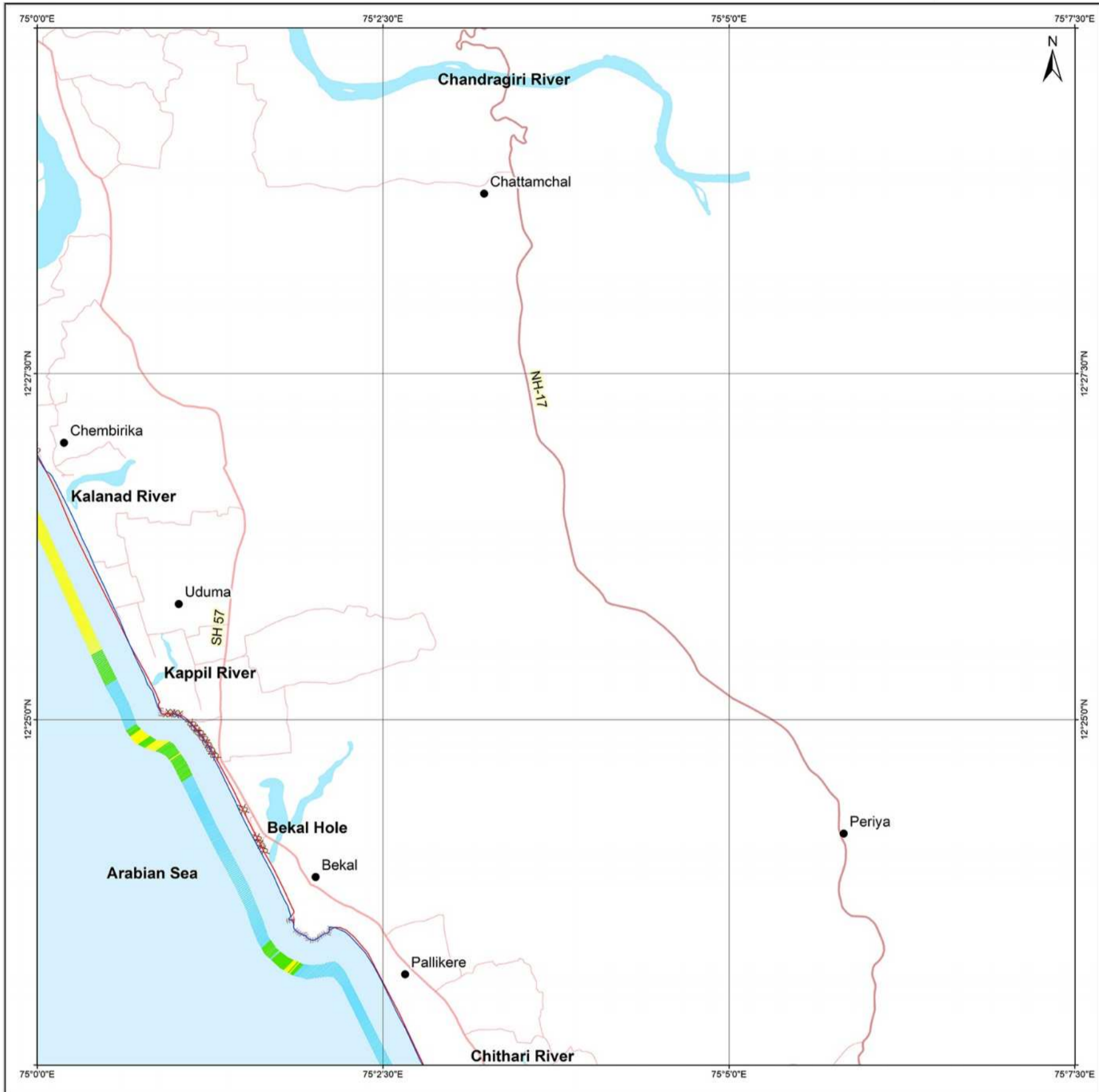
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 3 / NW
Map No. : NCCR/SCM/233



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/04/1990 & 01/15/1990
- 01/26/2018

Index to sheets

48 L / 14 / SE	48 P / 2 / SW	48 P / 2 / SE
48 L / 15 / NE	48 P / 3 / NW	48 P / 3 / NE
48 L / 16 / SE	48 P / 3 / SW	48 P / 3 / SE

Incidence on 1:50,000 Sheets

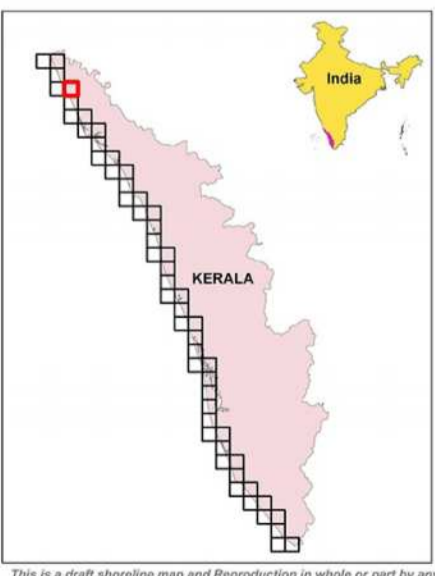
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48 L / 16	48 P / 4	48 P / 8

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	01/25/2014
LISS-IV	01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/26/2006
ETM+	12/20/2000
TM	03/04/1990 & 01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

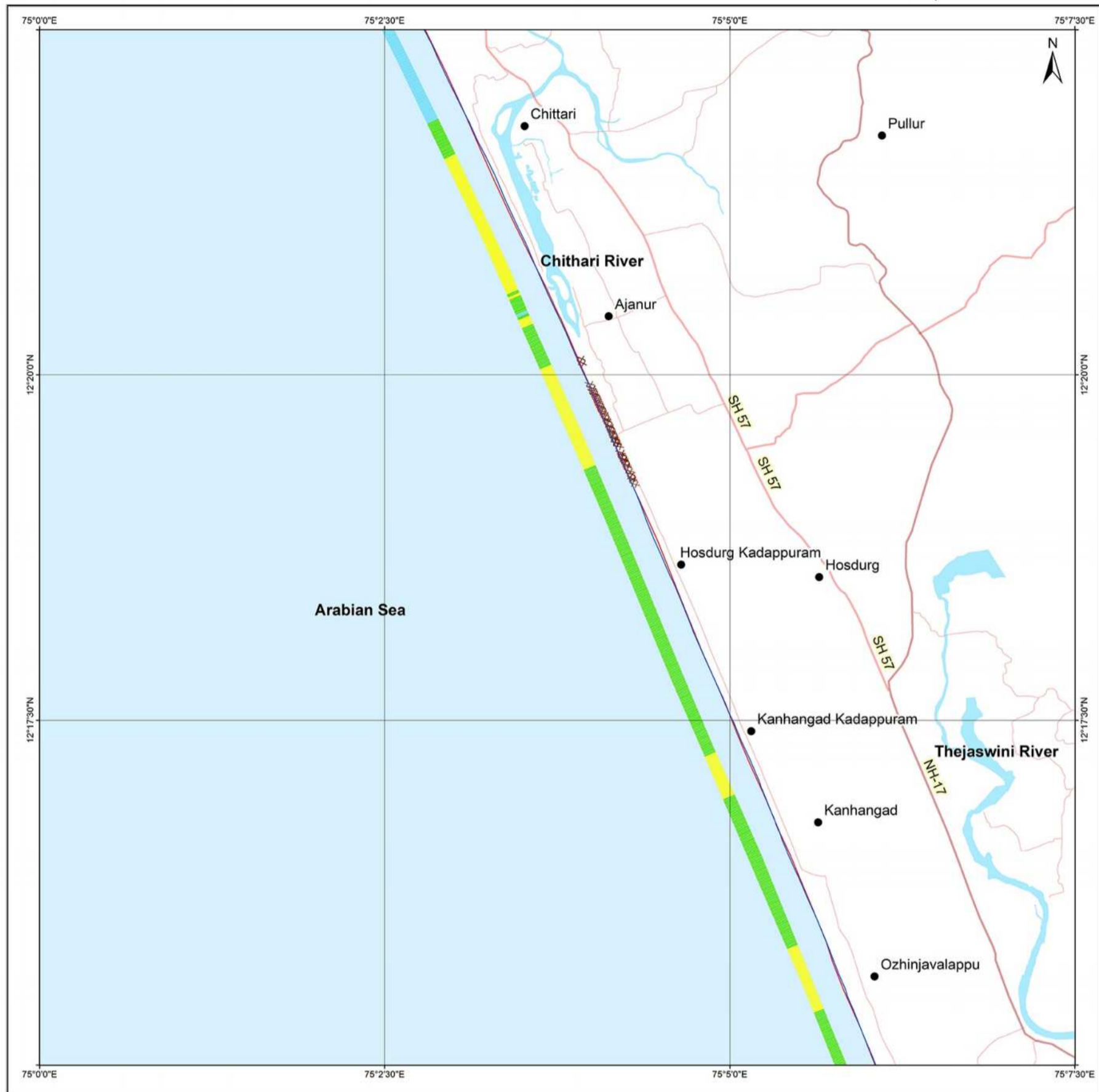
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1990 - 2018
KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 3 / SW
Map No. : NCCR/SCM/234



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/15/1990
- 01/26/2018

Index to sheets

48 L / 15 / NE	48 P / 3 / NW	48 P / 3 / NE
48 L / 15 / SE	48 P / 3 / SW	48 P / 3 / SE
48 L / 16 / NE	48 P / 4 / NW	48 P / 4 / NE

Incidence on 1:50,000 Sheets

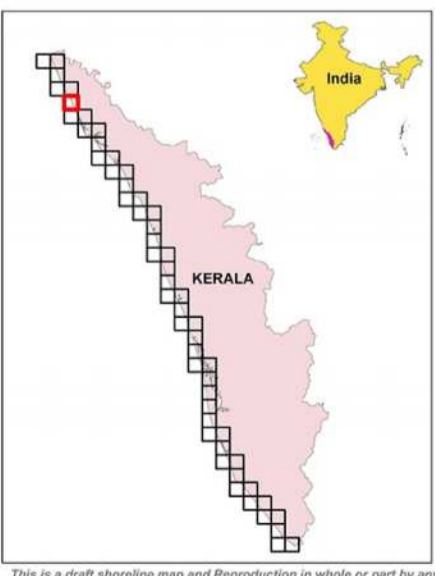
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48 L / 15	48 P / 3	48 P / 7
48 L / 16	48 P / 4	48 P / 8

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	01/25/2014 & 01/02/2014
LISS-IV	01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/26/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 4 / NW
Map No. : NCCR/SCM/235



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 01/26/2018

Index to sheets

48 L / 15 / SE	48 P / 3 / SW	48 P / 3 / SE
48 L / 16 / NE	48 P / 4 / NW	48 P / 4 / NE
48 L / 16 / SE	48 P / 4 / SW	48 P / 4 / SE

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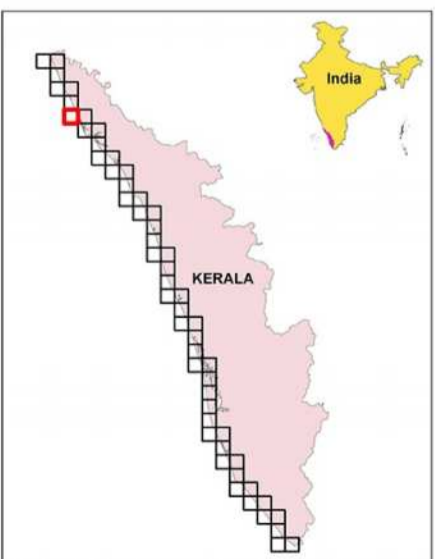
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48 L / 16	48 P / 4	48 P / 8
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Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	01/02/2014
LISS-IV	01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/26/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
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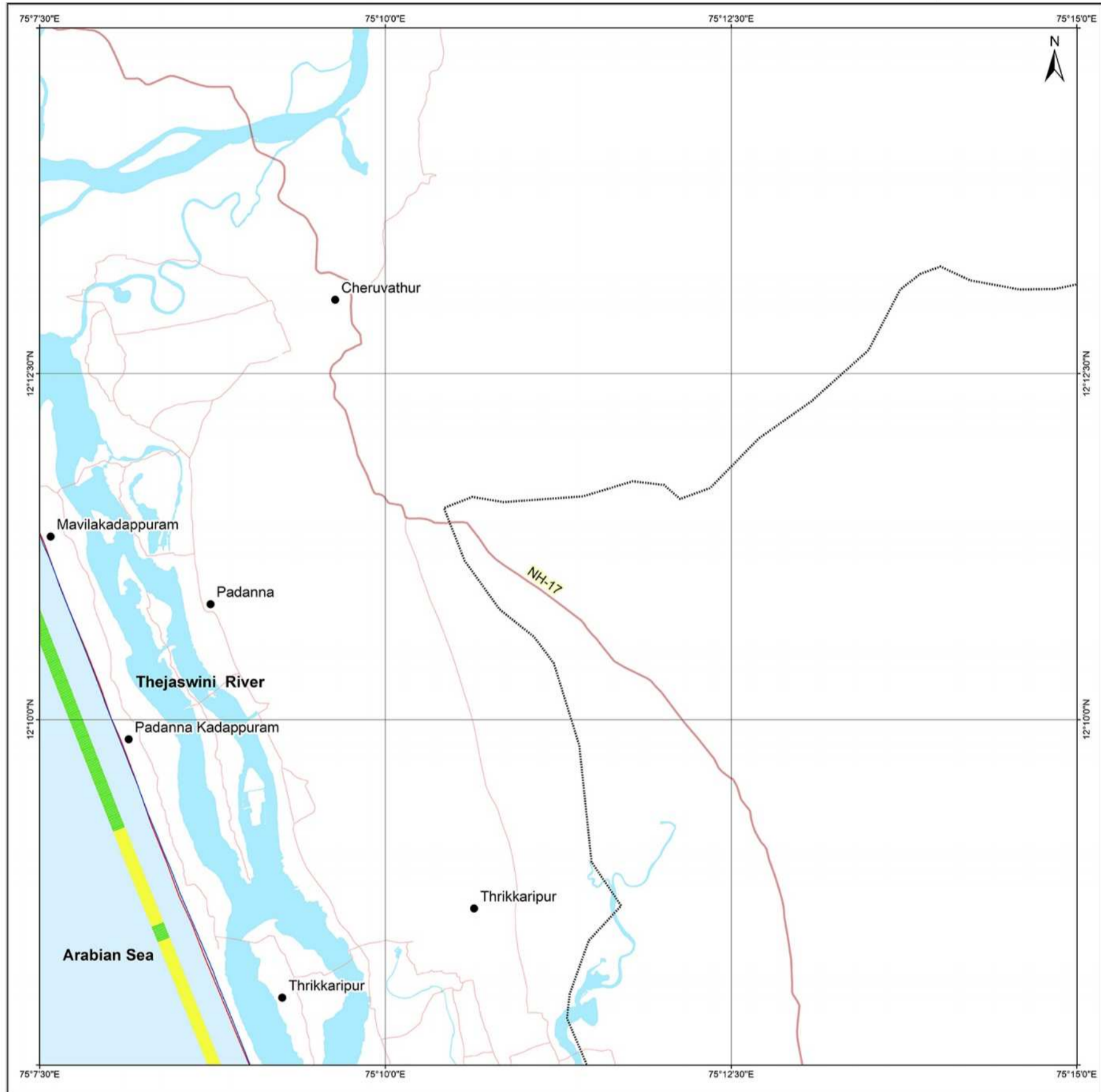
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SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 4 / NE
Map No. : NCCR/SCM/236



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 01/26/2018

Index to sheets

48 P / 3 / SW	48 P / 3 / SE	48 P / 7 / SW
48 P / 4 / NW	48 P / 4 / NE	48 P / 8 / NW
48 P / 4 / SW	48 P / 4 / SE	48 P / 8 / SW

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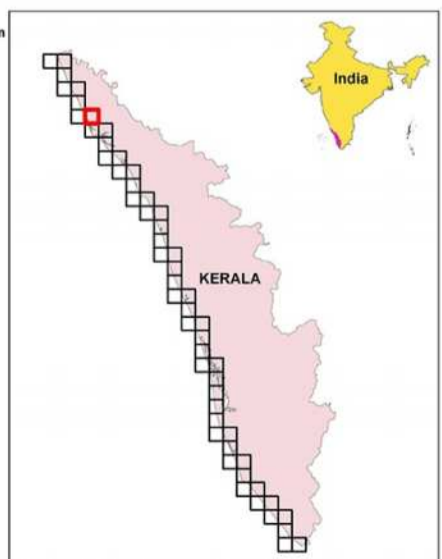
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48 L / 16	48 M / 4	48 M / 8
48 L / 13	48 M / 1	48 M / 5

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	01/02/2014
LISS-IV	01/28/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/26/2006
ETM+	12/20/2000
TM	01/15/1990



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- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

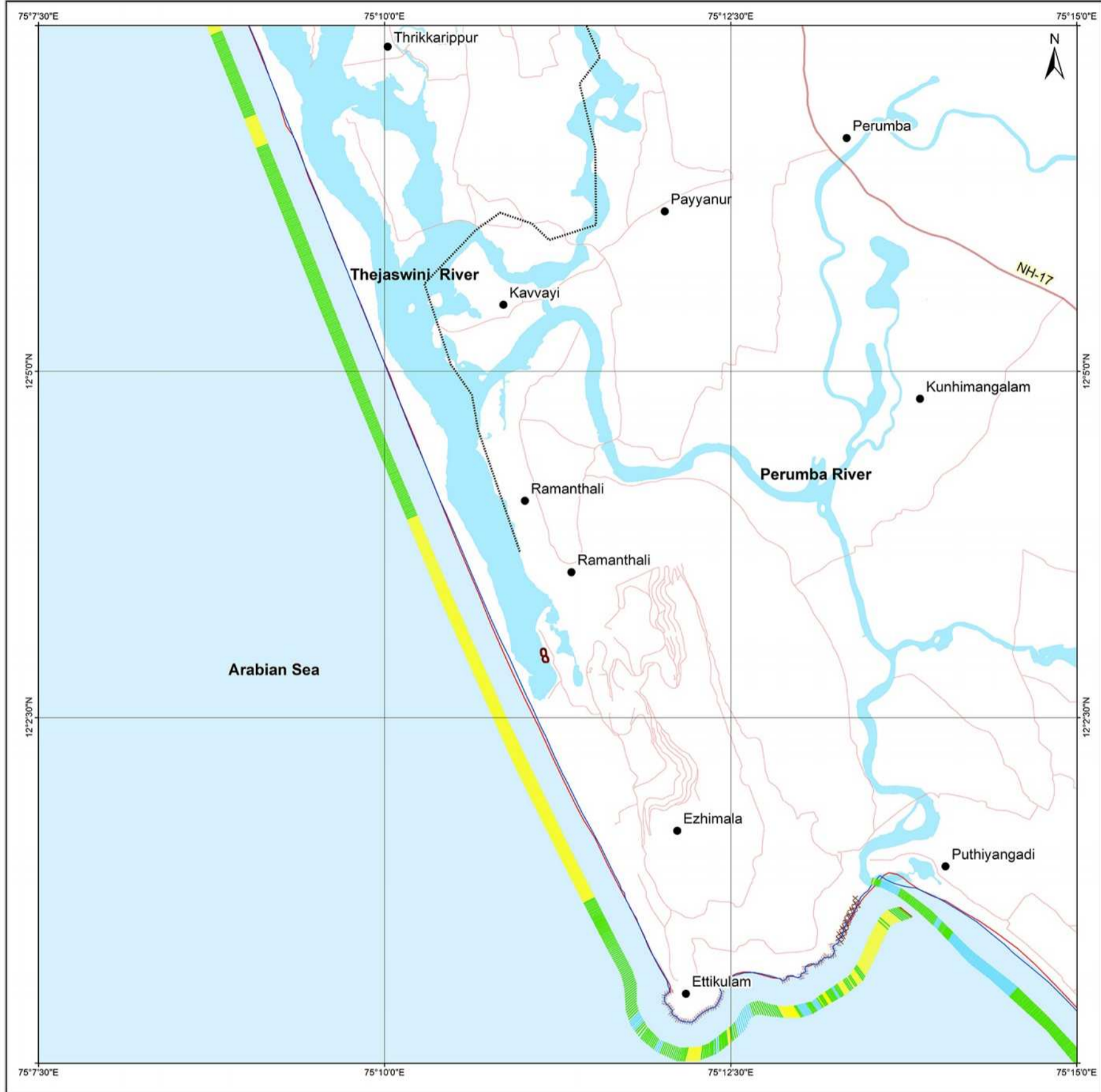
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& KASARAGOD

SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 4 / SE
Map No. : NCCR/SCM/237



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 01/26/2018

Index to sheets

48 P / 4 / NW	48 P / 4 / NE	48 P / 8 / NW
48 P / 4 / SW	48 P / 4 / SE	48 P / 8 / SW
49 M / 1 / NW	49 M / 1 / NE	49 M / 5 / NW

Incidence on 1:50,000 Sheets

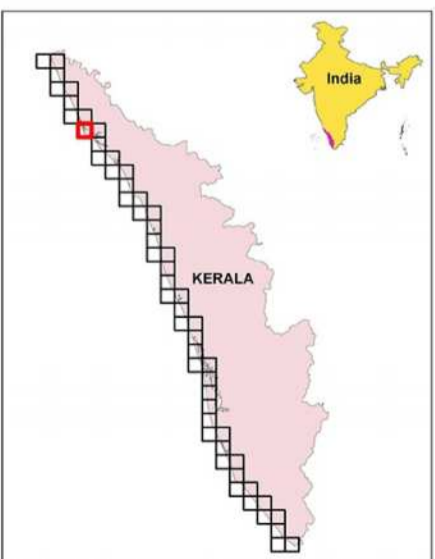
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48 L / 15	48 P / 3	48 P / 8
49 / 15	48 M / 1	49 M / 5

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	12/06/2014 & 01/02/2014
LISS-IV	02/21/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/26/2006 & 03/15/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

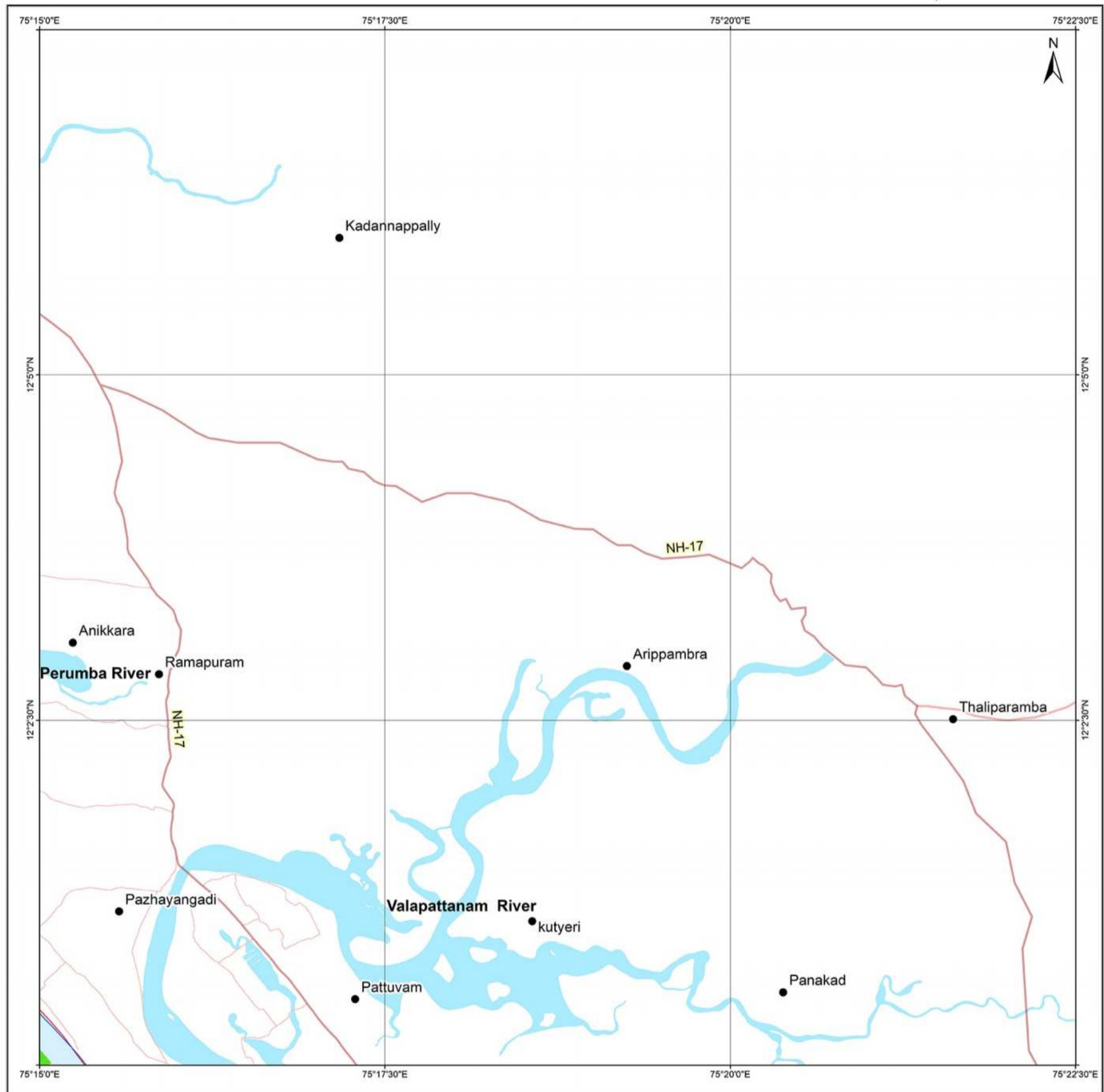
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1990 - 2018
KANNUR

SHORELINE CHANGE MAP KERALA

Restricted Use
48 P / 8 / SW
Map No. : NCCR/SCM/238



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 01/26/2018

Index to sheets

48 P / 4 / NE	48 P / 5 / NW	48 P / 5 / NE
48 P / 4 / SE	48 P / 5 / SW	48 P / 5 / SE
48 M / 1 / NE	48 M / 5 / NW	48 M / 5 / NE

Incidence on 1:50,000 Sheets

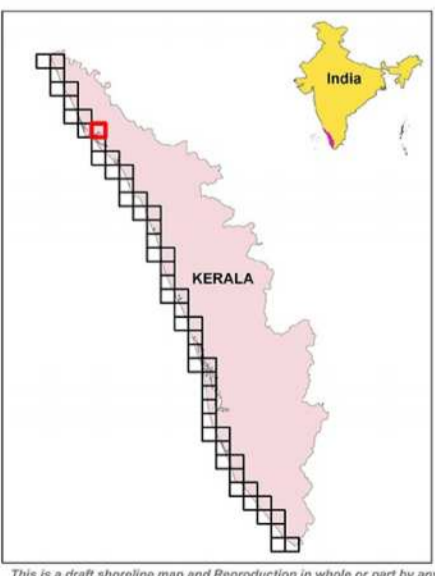
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48 P / 4	48 P / 8	48 P / 12
48 M / 1	48 M / 5	48 M / 9

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	12/06/2014
LISS-IV	02/21/2013
LISS-IV	01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/15/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

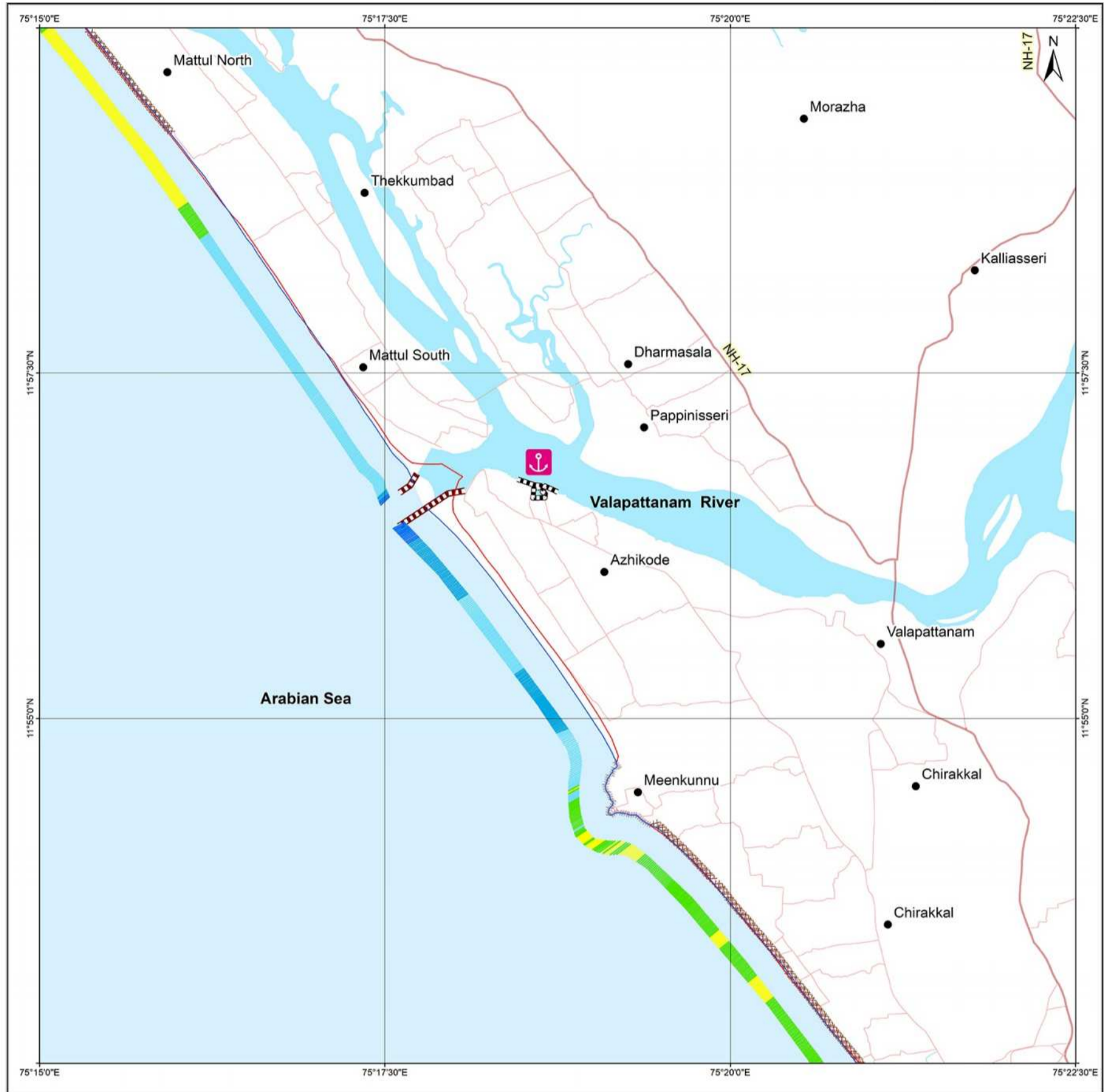
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1990 - 2018
KANNUR

SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 5 / NW
Map No. : NCCR/SCM/239



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/15/1990
- 01/26/2018

Index to sheets

48 P / 4 / SE	48 P / 5 / SW	48 P / 6 / SE
49 M / 1 / NE	49 M / 2 / NW	49 M / 3 / NE
49 M / 4 / SE	49 M / 5 / SW	49 M / 6 / SE

Incidence on 1:50,000 Sheets

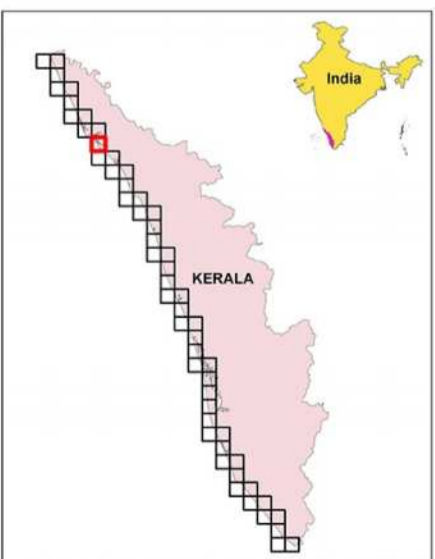
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Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	12/06/2014
LISS-IV	02/21/2013
LISS-IV	02/21/2012 & 01/10/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/15/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 5 / SW
Map No. : NCCR/SCM/240



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 01/26/2018

Index to sheets

49 M / 1 / NE	49 M / 5 / NW	49 M / 5 / NE
49 M / 1 / SE	49 M / 5 / SW	49 M / 5 / SE
49 M / 2 / NE	49 M / 6 / NW	49 M / 6 / NE

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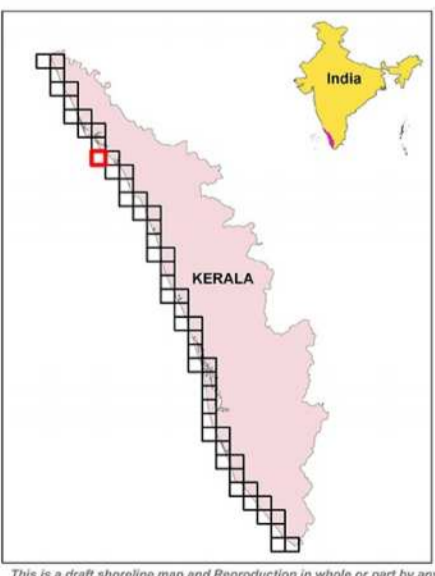
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49 M / 1	49 M / 5	49 M / 6
49 M / 2	49 M / 6	49 M / 10

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/26/2018
LISS-IV	02/24/2017
LISS-IV	03/25/2016
LISS-IV	03/07/2015
LISS-IV	12/06/2014
LISS-IV	02/21/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	03/08/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

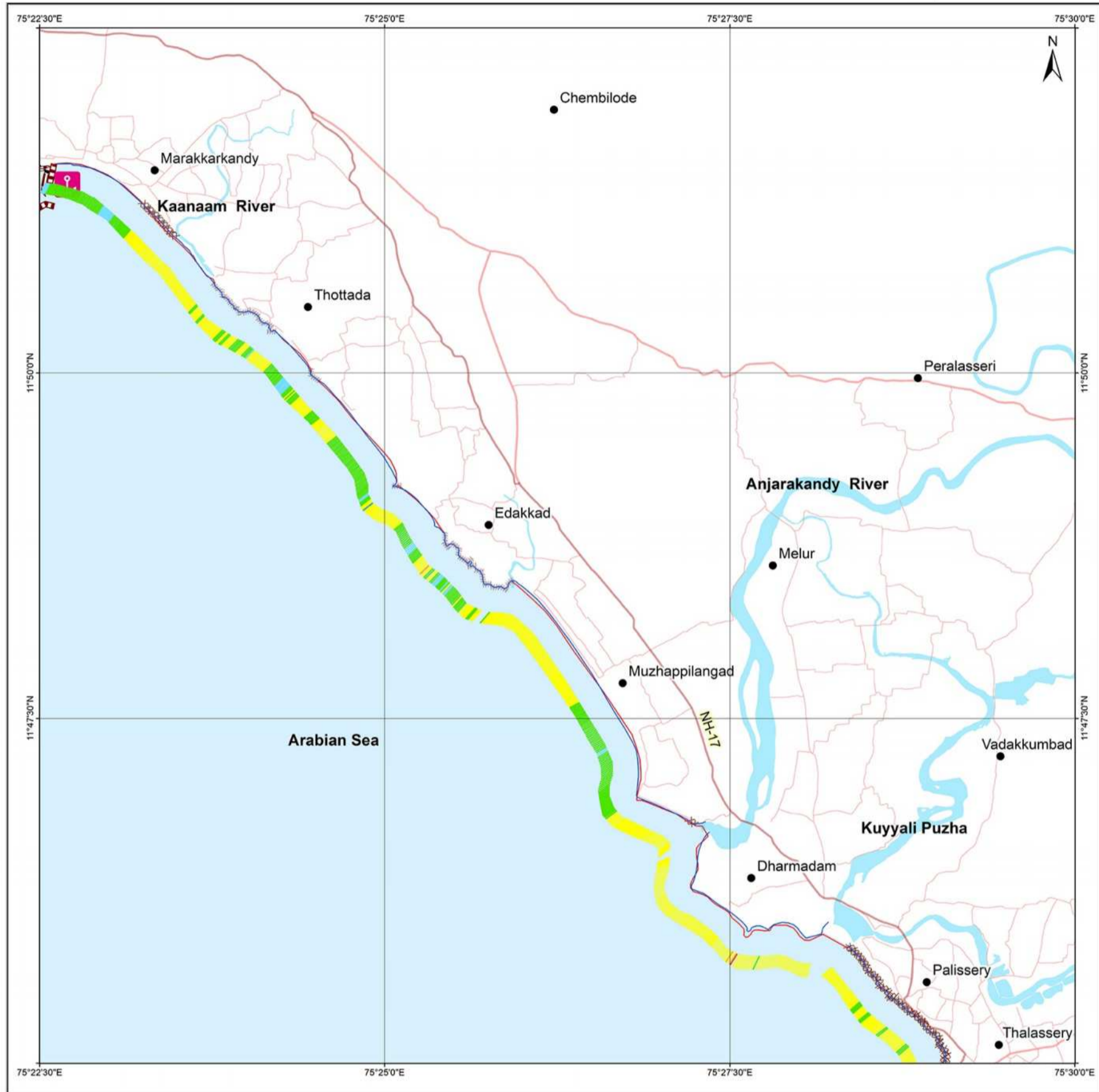
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1990 - 2018
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 5 / SE
Map No. : NCCR/SCM/241



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 01/26/2018 & 02/19/2018

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49 M / 5 / NW	49 M / 5 / NE	49 M / 5 / SE
49 M / 5 / SW	49 M / 5 / SE	49 M / 5 / SW
49 M / 6 / NW	49 M / 6 / NE	49 M / 6 / SE

Incidence on 1:50,000 Sheets

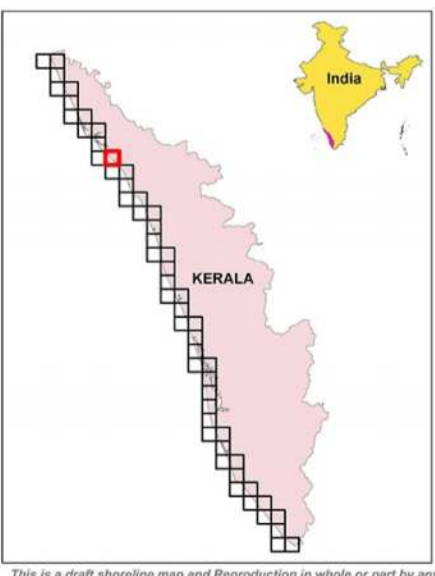
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49 M / 2	49 M / 6	49 M / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/15/2015
LISS-IV	02/21/2013 & 01/29/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	02/12/2007 & 03/08/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

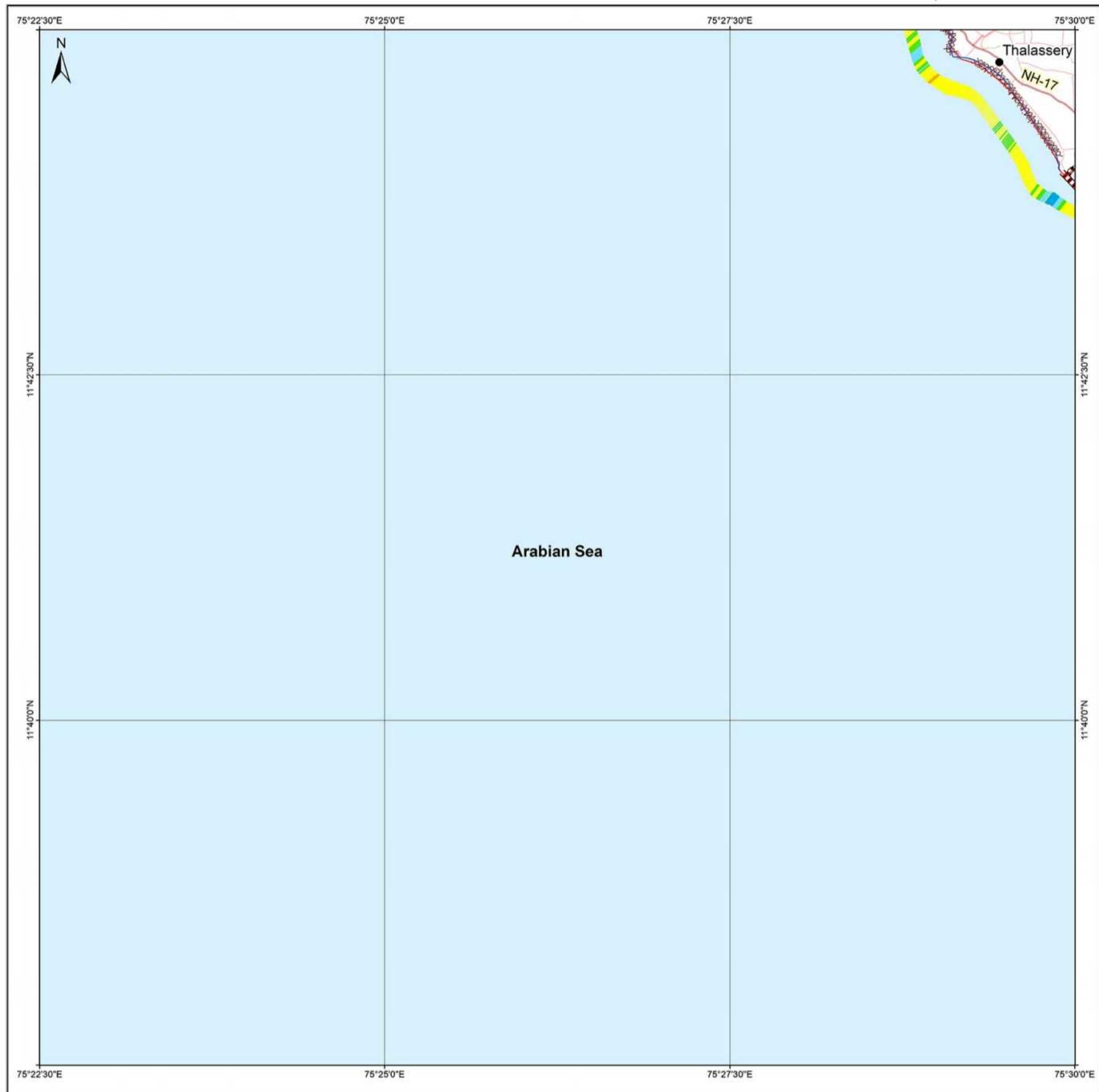
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1990 - 2018
KANNUR

SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 6 / NE
Map No. : NCCR/SCM/242



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 02/19/2018

Index to sheets

49 M / 5 / SW	49 M / 5 / SE	49 M / 9 / SW
49 M / 6 / NW	49 M / 6 / NE	49 M / 10 / NW
49 M / 6 / SW	49 M / 6 / SE	49 M / 10 / SW

Incidence on 1:50,000 Sheets

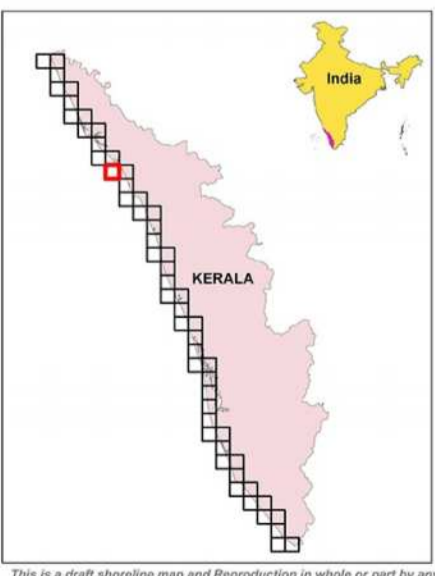
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Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	09/09/2016
LISS-IV	09/09/2015
LISS-IV	01/15/2015
LISS-IV	01/29/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	02/12/2007
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

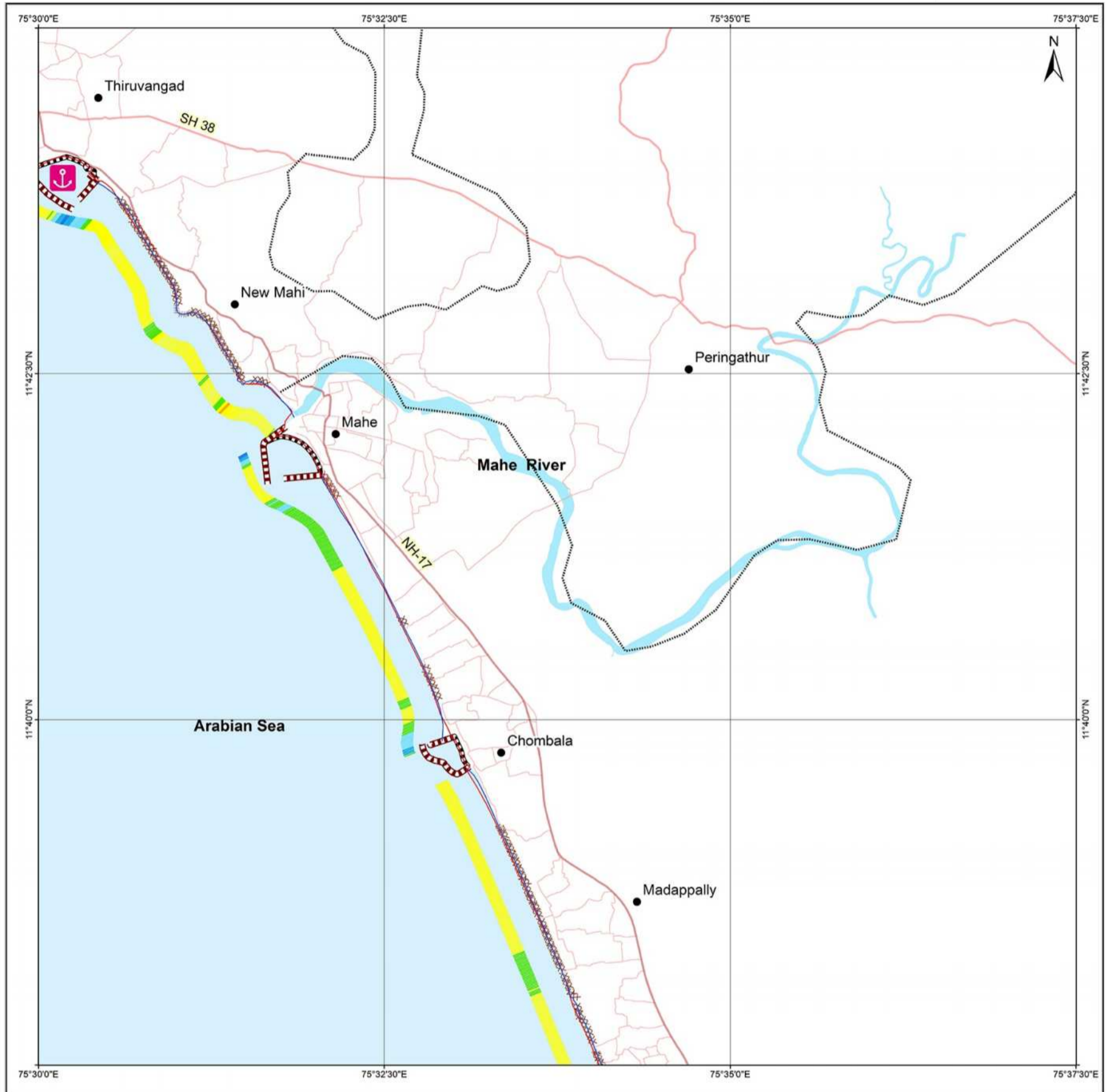
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 & KOZHIKODE & MAHE**

SHORELINE CHANGE MAP KERALA & PUDUCHERRY(UT)

Restricted Use
49 M / 10 / NW
 Map No. : NCCR/SCM/243



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 02/19/2018

Index to sheets

49 M / 5 / SE	49 M / 9 / SW	49 M / 9 / SE
49 M / 6 / NE	49 M / 10 / SW	49 M / 10 / NE
49 M / 6 / SE	49 M / 10 / SW	49 M / 10 / SE

Incidence on 1:50,000 Sheets

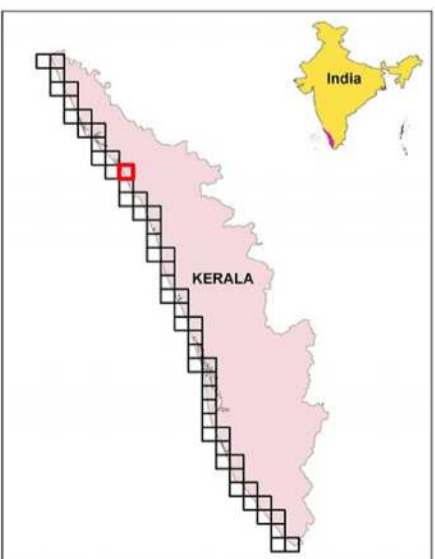
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49 M / 7	49 M / 11	49 M / 15

Scale
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UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	09/09/2016
LISS-IV	09/09/2015
LISS-IV	02/10/2014
LISS-IV	12/10/2013 & 01/29/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	02/12/2007 & 02/21/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

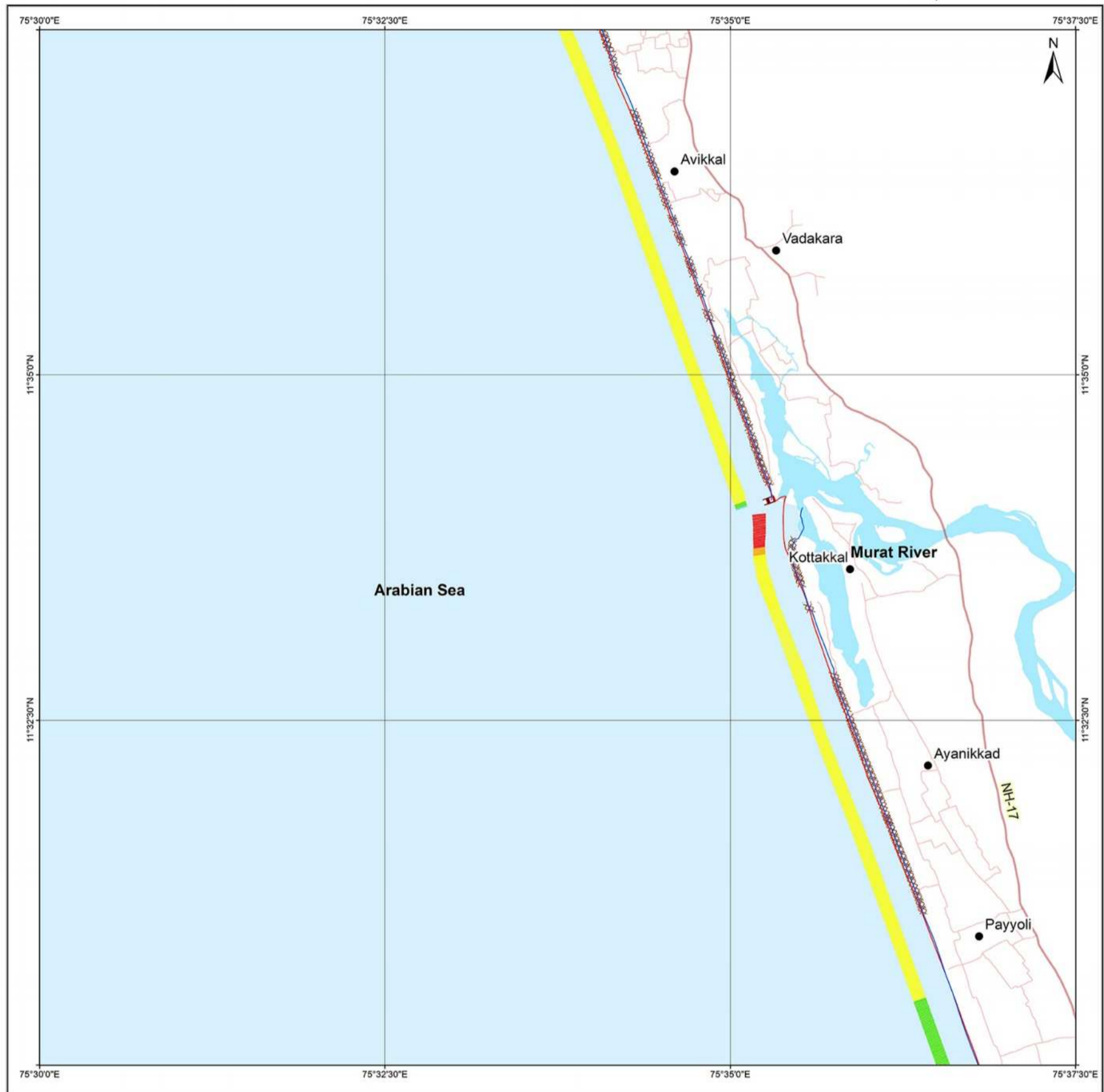
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1990 - 2018
KOZHIKODE

SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 10 / SW
Map No. : NCCR/SCM/244



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 02/19/2018

Index to sheets

49 M / 6 / NE	49 M / 10 / NW	49 M / 10 / NE
49 M / 6 / SE	49 M / 10 / SW	49 M / 10 / SE
49 M / 7 / NE	49 M / 11 / NW	49 M / 11 / NE

Incidence on 1:50,000 Sheets

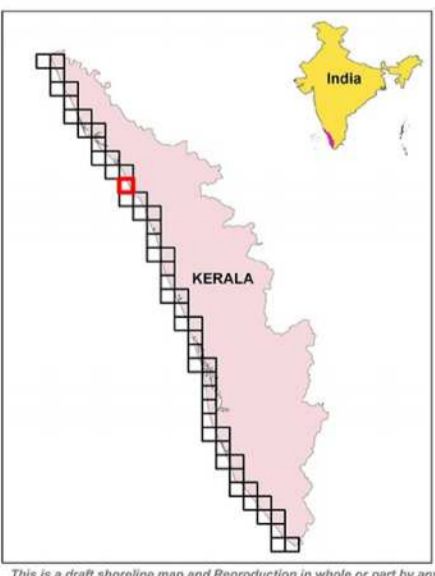
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49 M / 7	49 M / 11	49 M / 15

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	09/09/2016
LISS-IV	09/09/2015
LISS-IV	02/11/2014 & 02/11/2014
LISS-IV	12/10/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	02/21/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

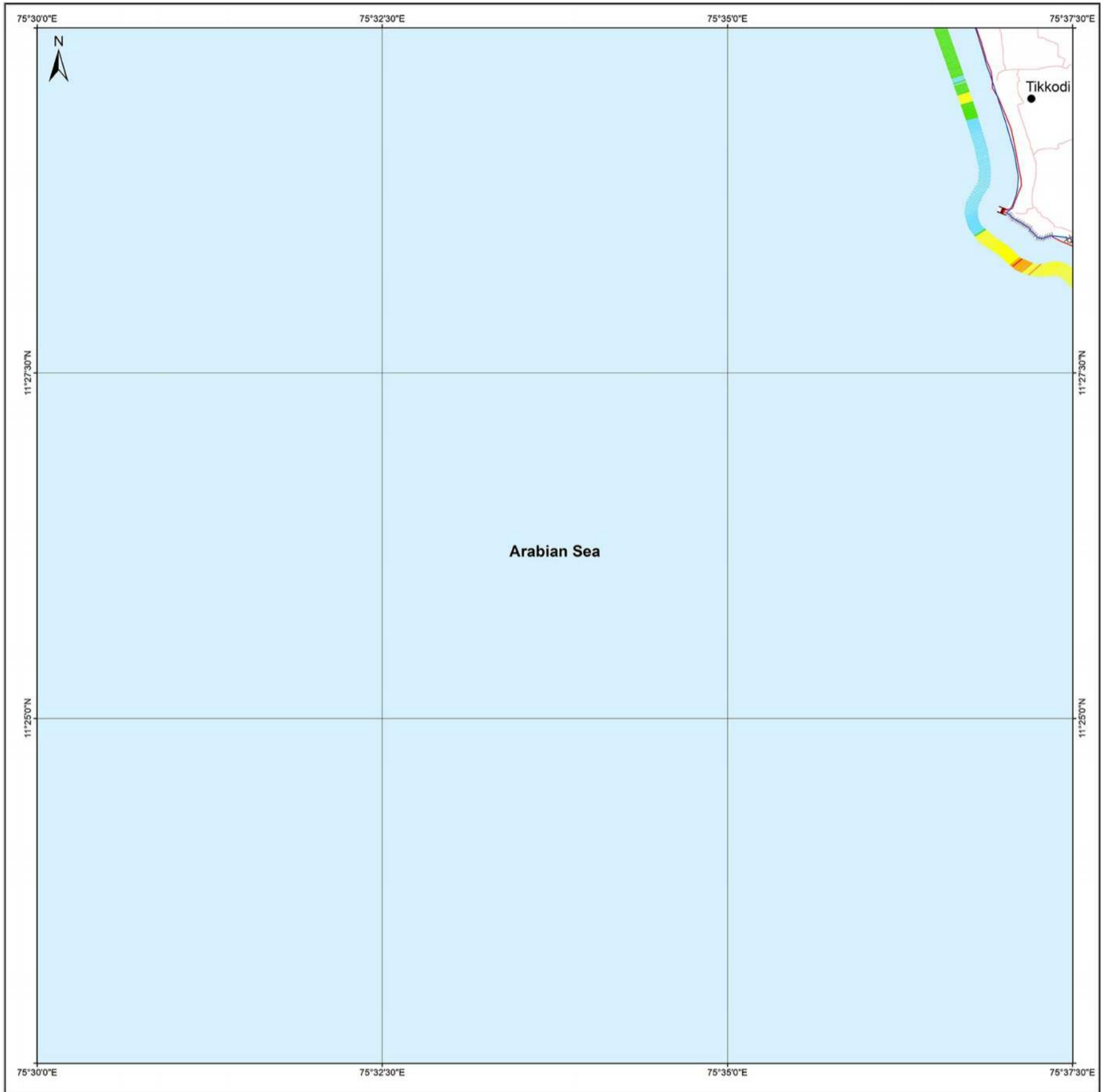
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 11 / NW
Map No. : NCCR/SCM/245



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 02/19/2018

Index to sheets

49 M / 6 / SE	49 M / 10 / SW	49 M / 10 / SE
49 M / 7 / NE	49 M / 11 / NW	49 M / 11 / NE
49 M / 7 / SE	49 M / 11 / SW	49 M / 11 / SE

Incidence on 1:50,000 Sheets

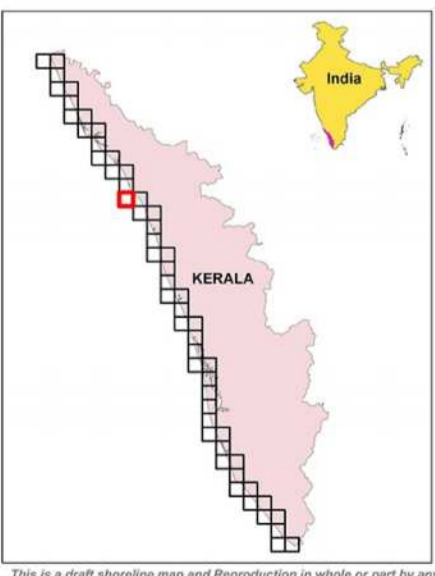
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Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	09/09/2016
LISS-IV	09/09/2015
LISS-IV	02/11/2014
LISS-IV	12/10/2013
LISS-IV	02/21/2012
LISS-III	01/19/2008
PAN (Cartosat-1)	02/21/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

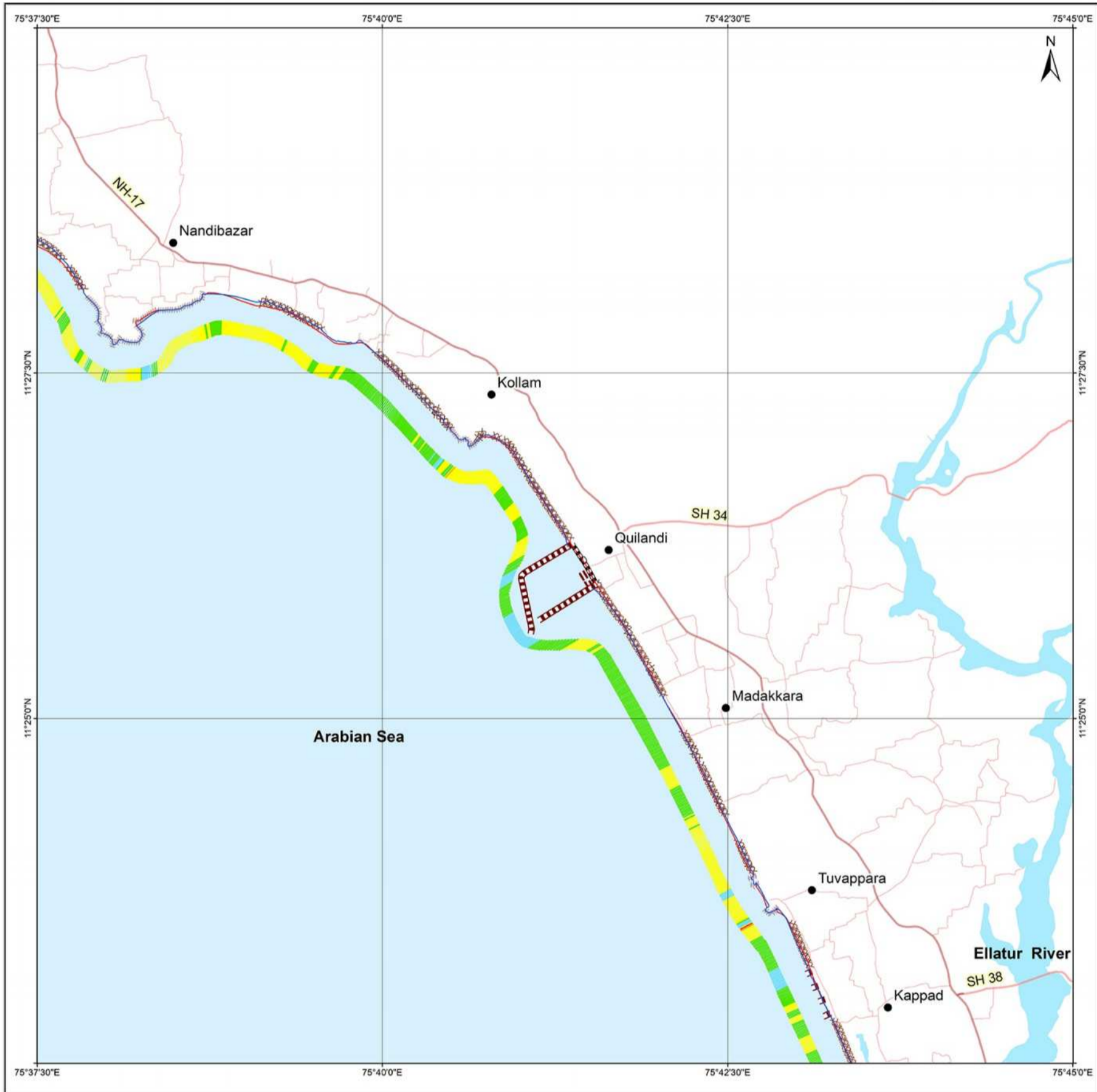
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SHORELINE CHANGE MAP KERALA

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49 M / 11 / NE
Map No. : NCCR/SCM/246



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/15/1990
- 02/19/2018

Index to sheets

49 M / 10 / SW	49 M / 10 / SE	49 M / 14 / SW
49 M / 11 / NW	49 M / 11 / NE	49 M / 15 / NW
49 M / 11 / SW	49 M / 11 / SE	49 M / 15 / SW

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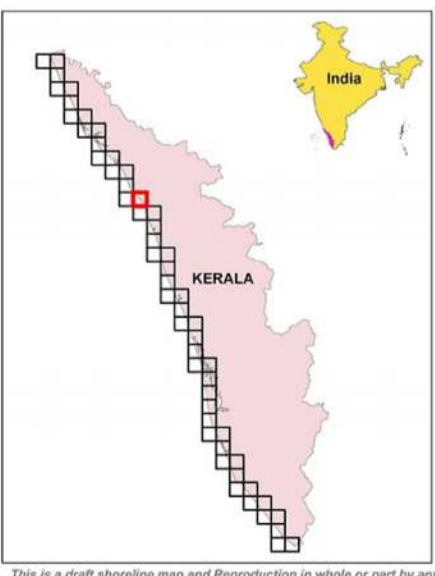
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49 M / 7	49 M / 11	49 M / 15
49 M / 8	49 M / 12	49 M / 10

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	09/09/2016
LISS-IV	09/09/2015
LISS-IV	02/11/2014
LISS-IV	12/10/2013
LISS-IV	02/21/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	02/21/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

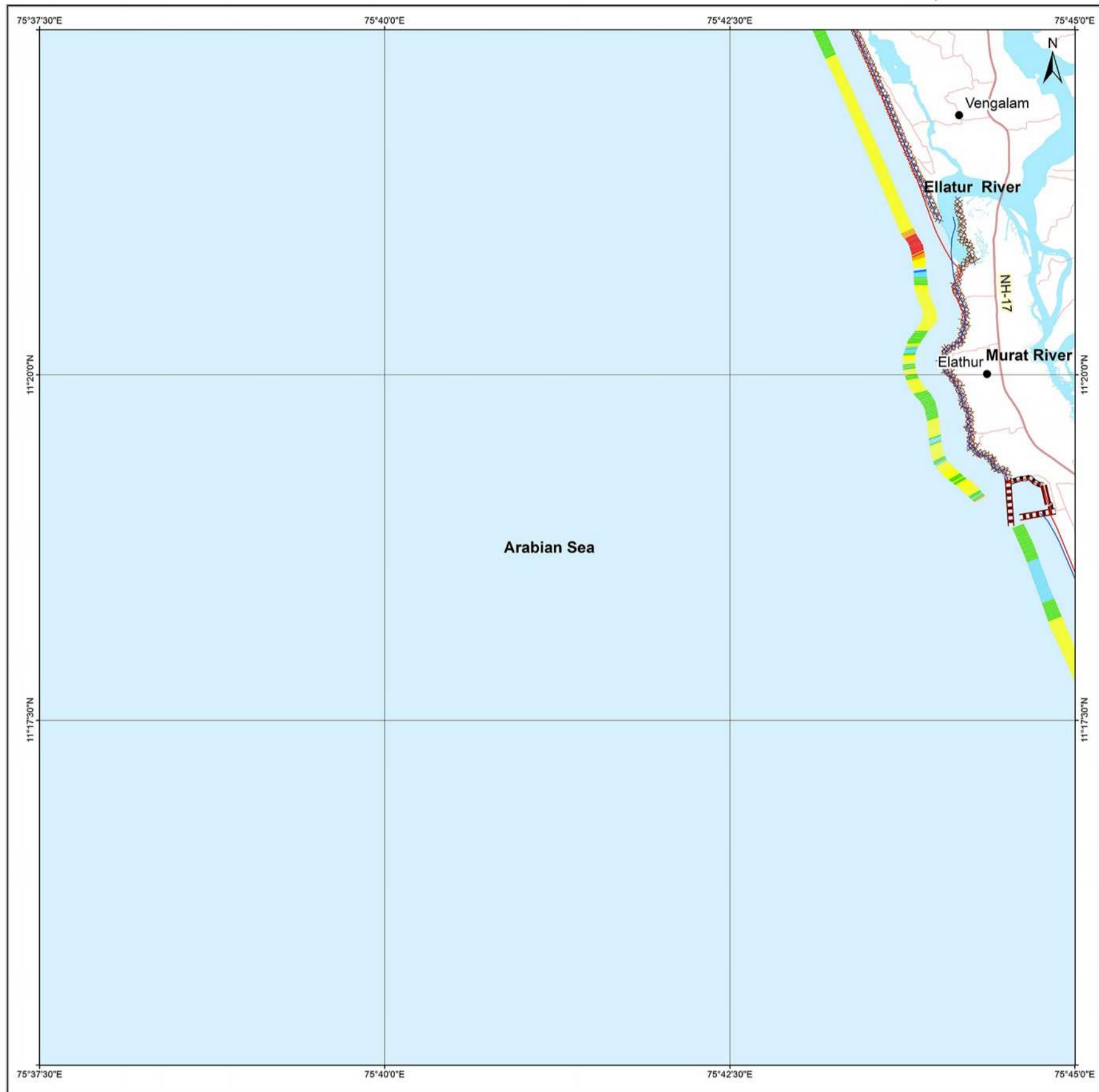
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 11 / SE
Map No. : NCCR/SCM/247



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/15/1990
- 02/19/2018

Index to sheets

49 M / 11 / NW	49 M / 11 / NE	49 M / 15 / NW
49 M / 11 / SW	49 M / 11 / SE	49 M / 15 / SW
49 M / 12 / NW	49 M / 12 / NE	49 M / 16 / NW

Incidence on 1:50,000 Sheets

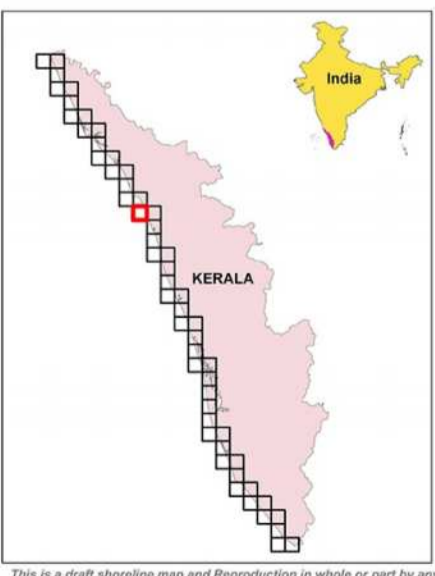
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49 M / 7	49 M / 11	49 M / 15
49 M / 8	49 M / 12	49 M / 16

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	01/29/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/08/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

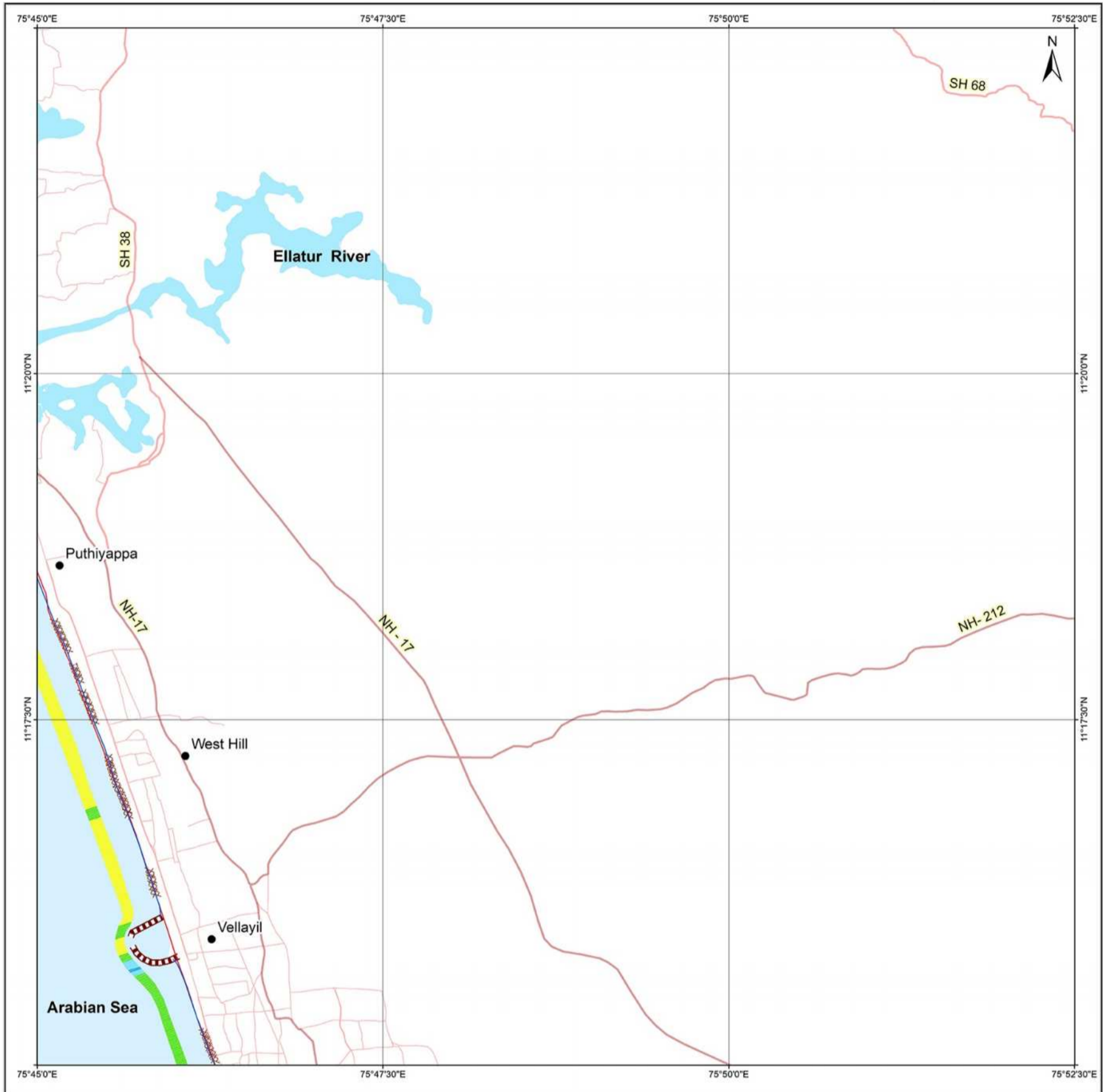
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 15 / SW
Map No. : NCCR/SCM/248



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 02/19/2018

Index to sheets

49 M / 11 / NE	49 M / 15 / NW	49 M / 15 / NE
49 M / 11 / SE	49 M / 15 / SW	49 M / 15 / SE
49 M / 12 / NE	49 M / 16 / NW	49 M / 16 / NE

Incidence on 1:50,000 Sheets

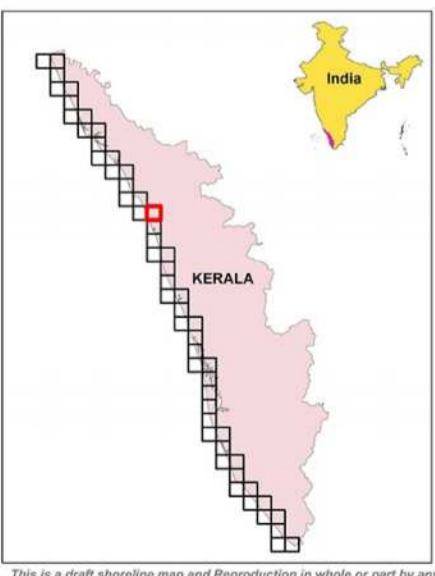
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49 M / 11	49 M / 15	58 A / 3
49 M / 12	49 M / 16	58 A / 4

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/19/2018
LISS-IV	01/31/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	01/29/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/30/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

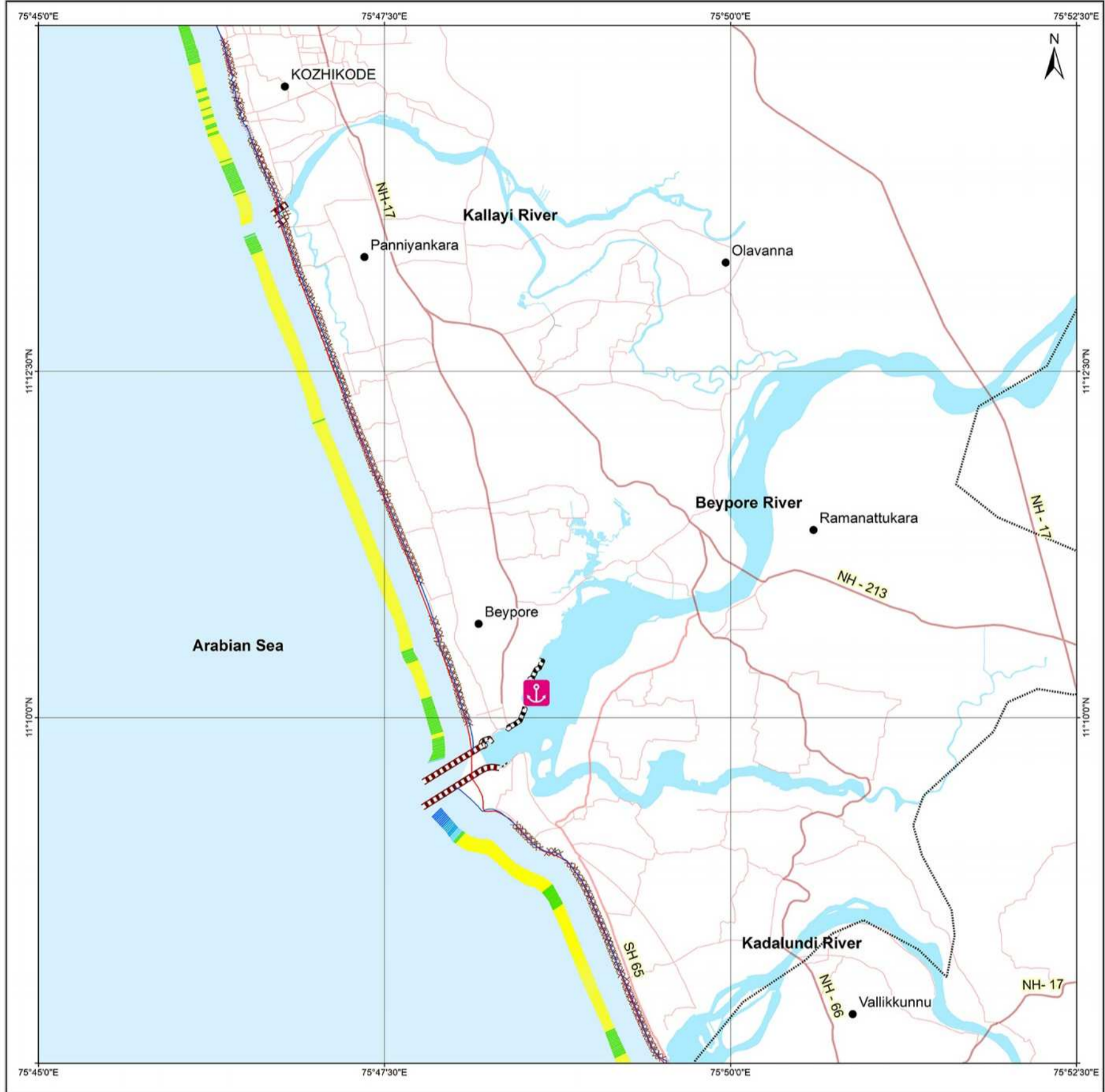
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& KOZHIKODE

SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 16 / NW
Map No. : NCCR/SCM/249



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990
- █ 03/20/2018 & 02/19/2018

Index to sheets

49 M / 11 / SE	49 M / 15 / SW	49 M / 15 / SE
49 M / 12 / NE	49 M / 16 / NW	49 M / 16 / NE
49 M / 12 / SE	49 M / 16 / SW	49 M / 16 / SE

Incidence on 1:50,000 Sheets

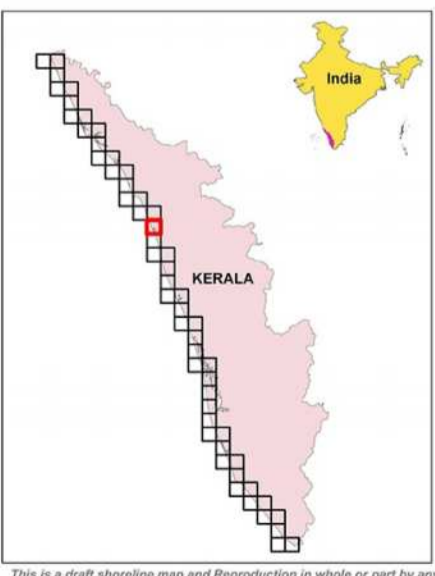
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49 M / 12	49 M / 16	58 A / 4
49 N / 8	49 N / 13	58 B / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018 & 02/19/2018
LISS-IV	05/01/2017 & 01/31/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	01/29/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/30/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

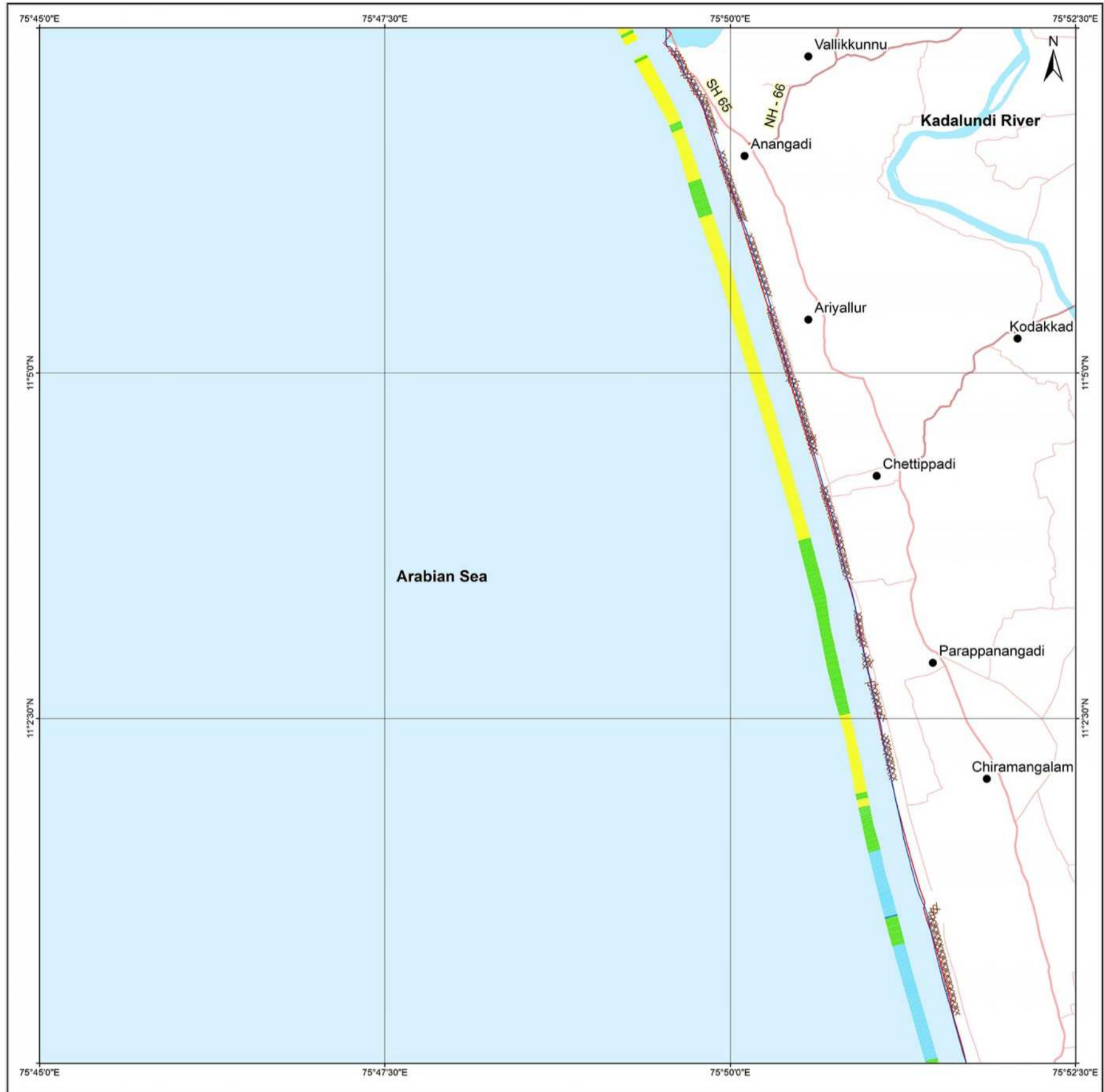
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 M / 16 / SW
Map No. : NCCR/SCM/250



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/15/1990
- 03/20/2018

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49 M / 12 / NE	49 M / 16 / NW	49 M / 16 / NE
49 M / 12 / SE	49 M / 16 / SW	49 M / 16 / SE
49 N / 9 / NE	49 N / 13 / NW	49 N / 13 / NE

Incidence on 1:50,000 Sheets

49 M / 11	49 M / 15	58 A / 3
49 M / 12	49 M / 16	58 A / 4
49 N / 9	49 N / 13	58 B / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/01/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/30/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

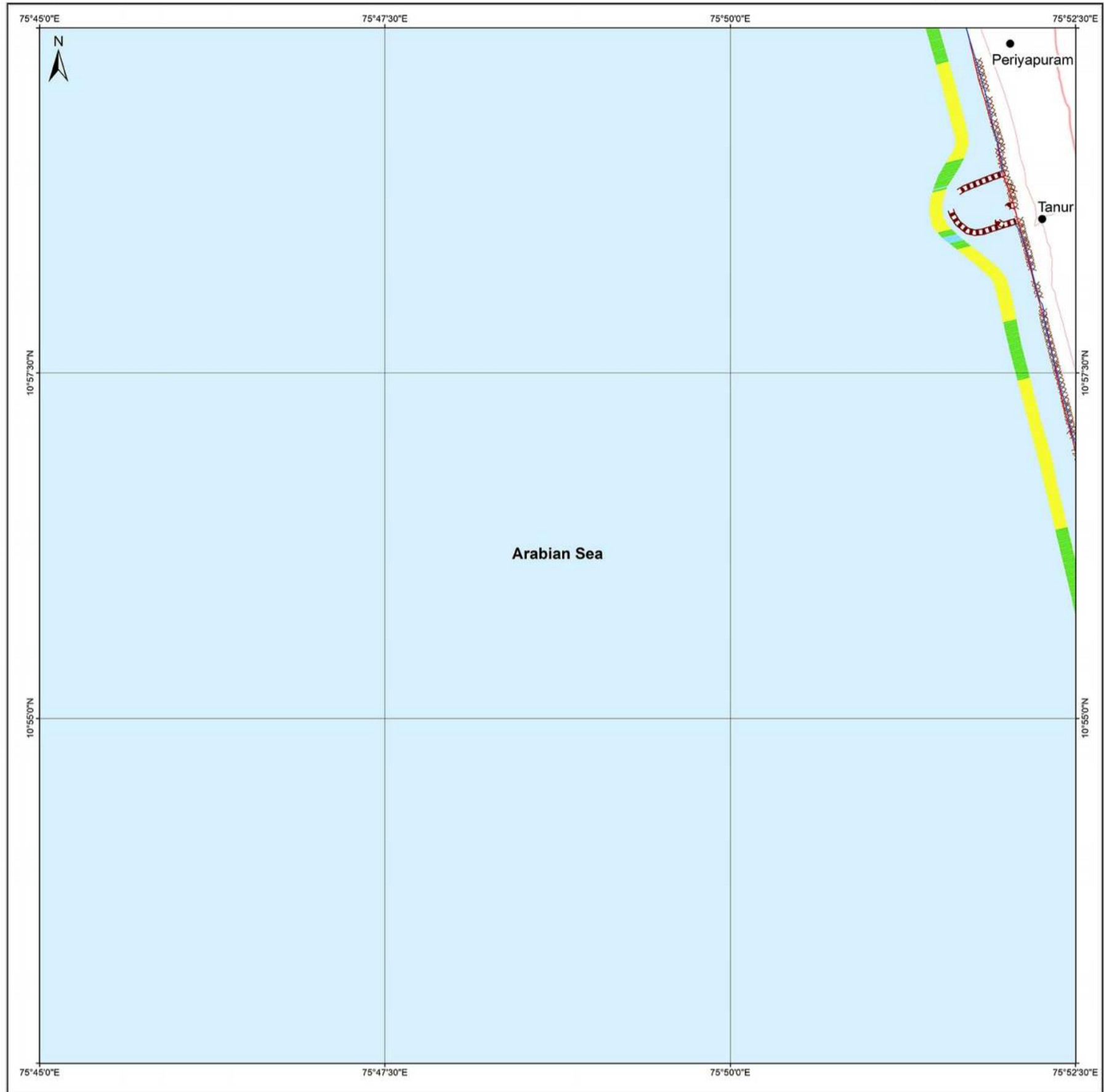
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 N / 13 / NW
Map No. : NCCR/SCM/251



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 03/20/2018

Index to sheets

49 M / 12 / SE	49 M / 16 / SW	49 M / 16 / SE
49 N / 9 / NE	49 N / 13 / NW	49 N / 13 / NE
49 N / 9 / SE	49 N / 13 / SW	49 N / 13 / SE

Incidence on 1:50,000 Sheets

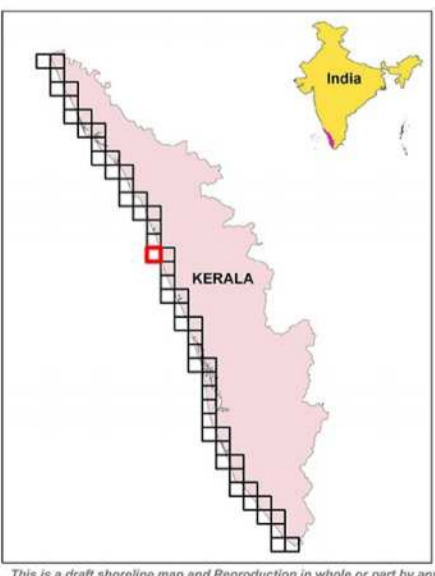
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49 N / 10	49 N / 14	58 B / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/01/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/30/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

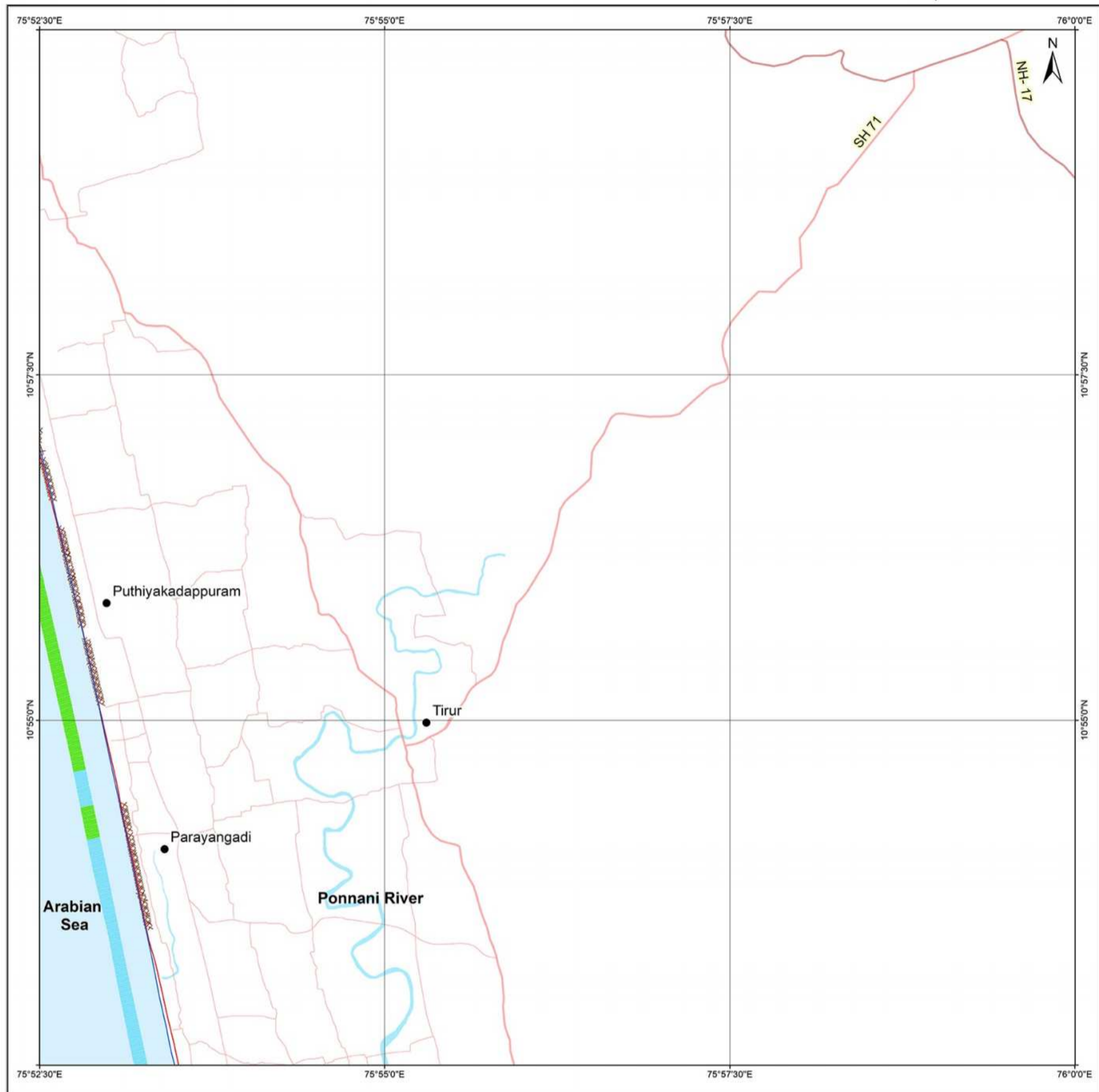
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1990 - 2018
MALAPPURAM

SHORELINE CHANGE MAP KERALA

Restricted Use
49 N / 13 / NE
Map No. : NCCR/SCM/252



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/15/1990
- 03/20/2018

Index to sheets

49 M / 16 / SW	49 M / 16 / SE	58 A / 4 / SW
49 N / 13 / NW	49 N / 13 / NE	58 B / 1 / NW
49 N / 13 / SW	49 N / 13 / SE	58 B / 1 / SW

Incidence on 1:50,000 Sheets

49 M / 12	49 M / 16	58 A / 4
49 N / 9	49 N / 13	58 B / 1
49 N / 10	49 N / 14	58 B / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/01/2017 & 05/24/2017
LISS-IV	11/25/2016
LISS-IV	01/23/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/19/2006
ETM+	12/20/2000
TM	01/15/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

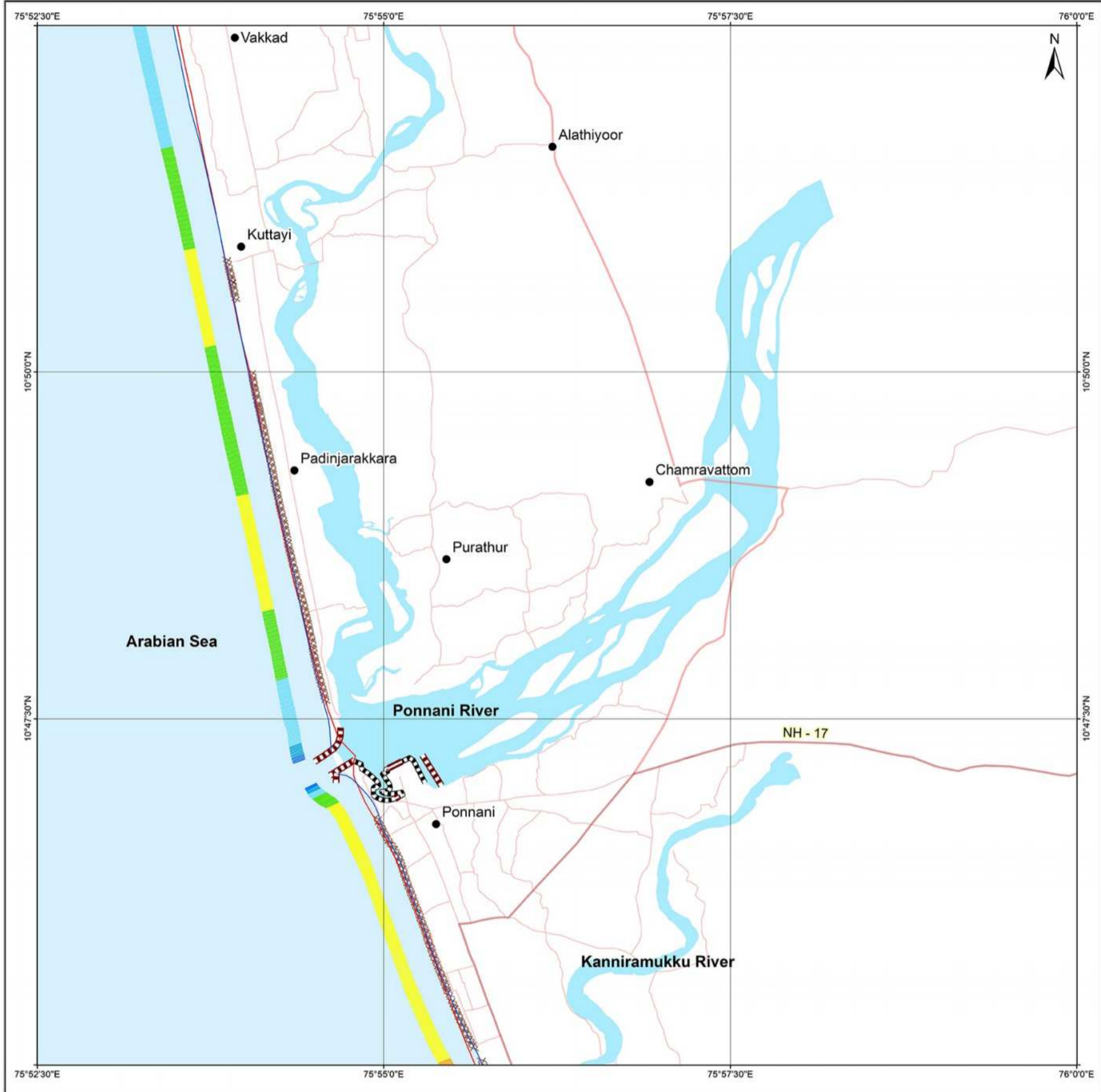
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MALAPPURAM

SHORELINE CHANGE MAP KERALA

Restricted Use
49 N / 13 / SE
Map No. : NCCR/SCM/253



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/15/1990 & 01/24/1990
- █ 03/20/2018

Index to sheets

49 N / 13 / NW	49 N / 13 / NE	50 B / 1 / NW
49 N / 13 / SW	49 N / 13 / SE	50 B / 1 / SW
49 N / 14 / NW	49 N / 14 / NE	50 B / 2 / NW

Incidence on 1:50,000 Sheets

49 N / 12	49 N / 16	50 A / 4
49 N / 9	49 N / 10	50 B / 1
49 N / 10	49 N / 14	50 B / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/24/2017
LISS-IV	11/25/2016
LISS-IV	03/12/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/19/2006
ETM+	12/20/2000 & 01/28/2000
TM	01/15/1990 & 01/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

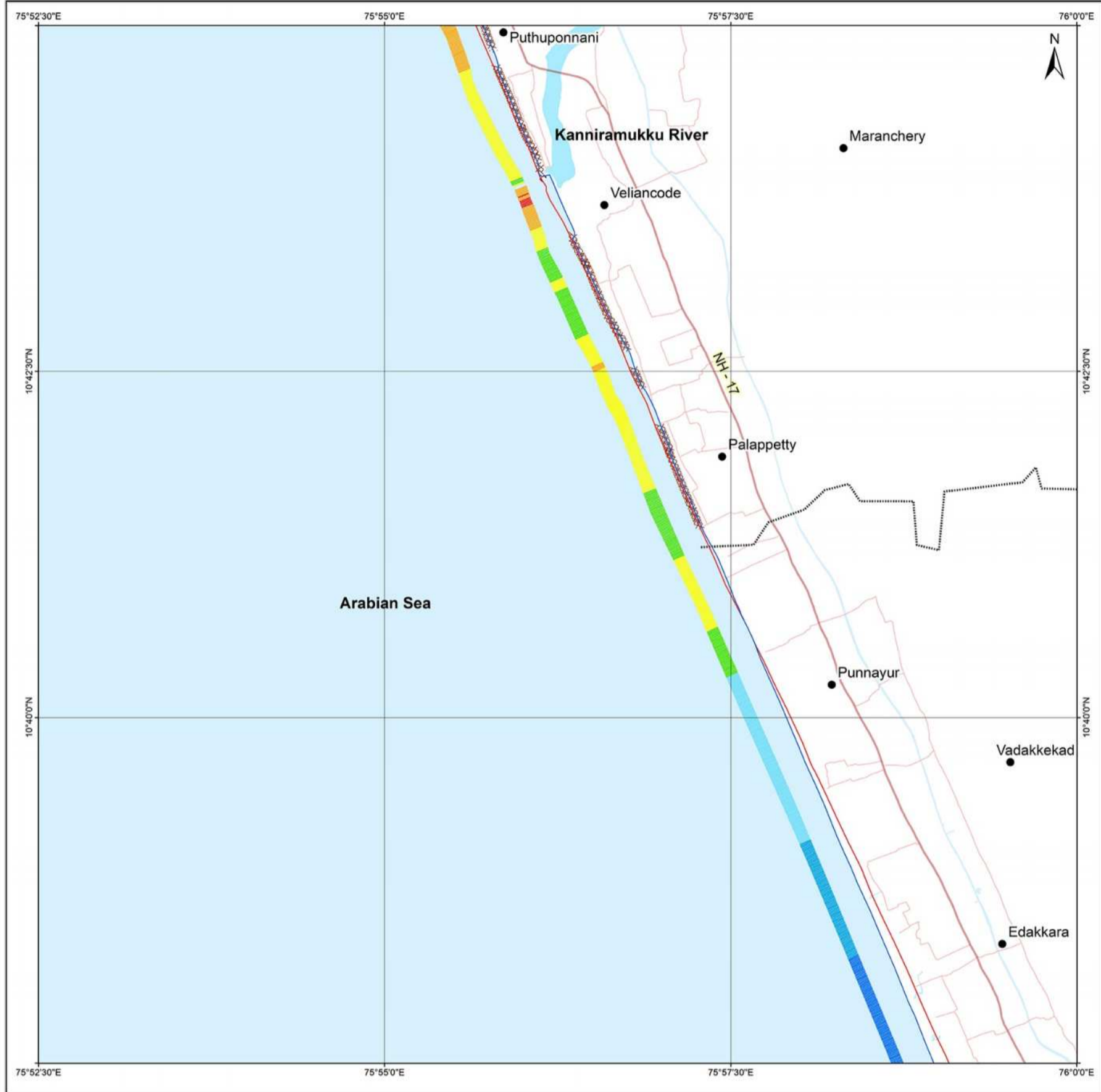
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 N / 14 / NE
Map No. : NCCR/SCM/254



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 03/20/2018

Index to sheets

49 N / 13 / SW	49 N / 13 / SE	58 B / 1 / SW
49 N / 14 / NW	49 N / 14 / NE	58 B / 2 / NW
49 N / 14 / SW	49 N / 14 / SE	58 B / 2 / SW

Incidence on 1:50,000 Sheets

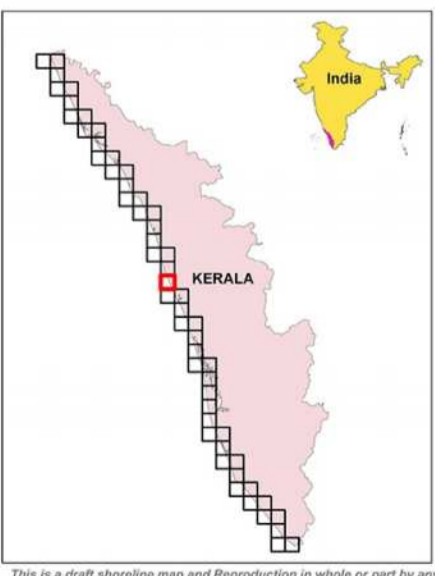
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49 N / 13	49 N / 14	58 B / 2
49 N / 11	49 N / 15	58 B / 3

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/24/2017
LISS-IV	11/25/2016
LISS-IV	03/12/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/19/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

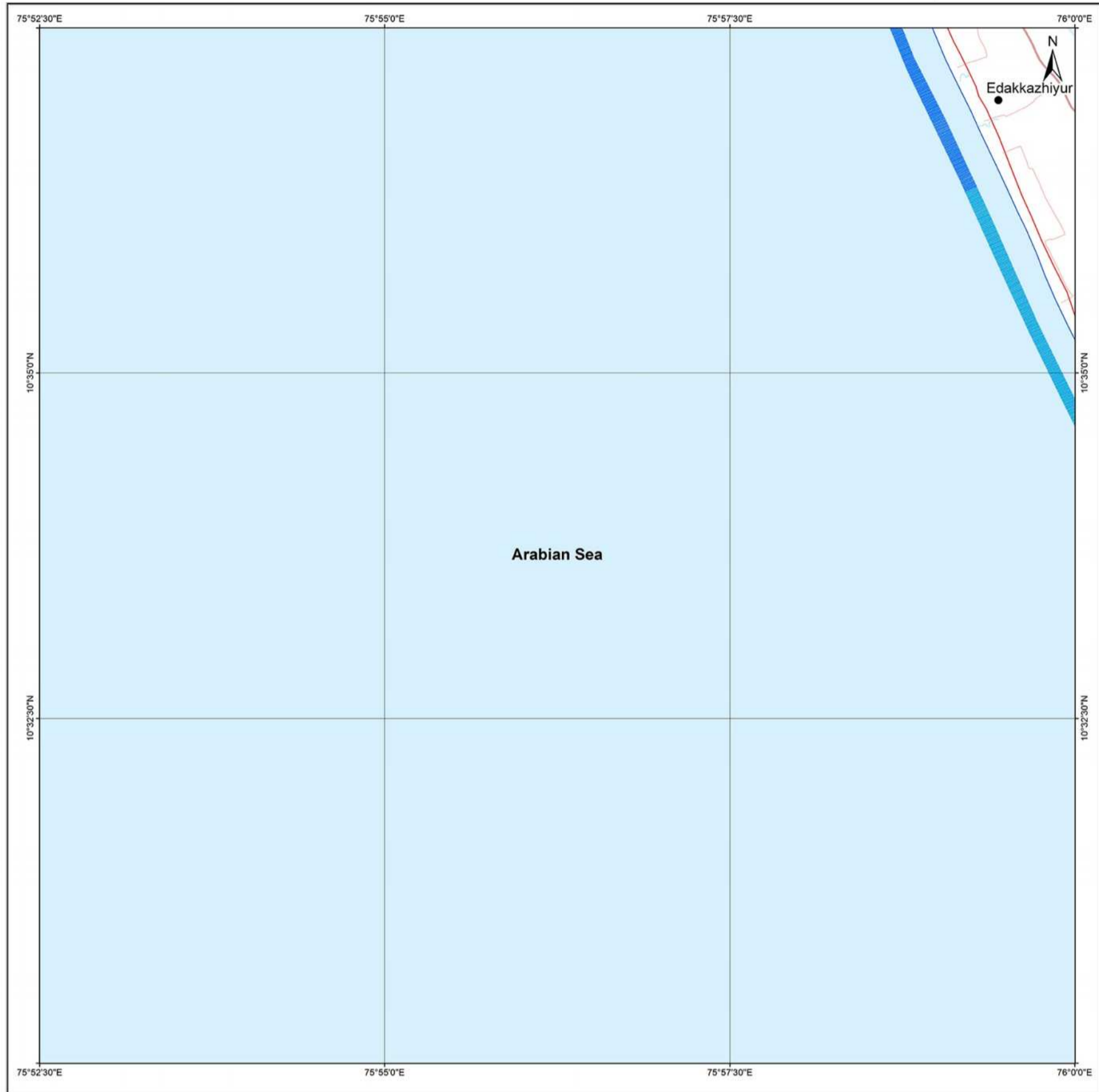
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SHORELINE CHANGE MAP KERALA

Restricted Use
49 N / 14 / SE
Map No. : NCCR/SCM/255



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/24/1990
- 03/20/2018

Index to sheets

49 N / 14 / NW	49 N / 14 / NE	50 B / 2 / NW
49 N / 14 / SW	49 N / 14 / SE	50 B / 2 / SW
49 N / 15 / NW	49 N / 15 / NE	50 B / 3 / NW

Incidence on 1:50,000 Sheets

49 N / 9	49 N / 13	50 B / 1
49 N / 10	49 N / 14	50 B / 2
49 N / 11	49 N / 15	50 B / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/24/2017
LISS-IV	11/25/2016
LISS-IV	03/12/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/19/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

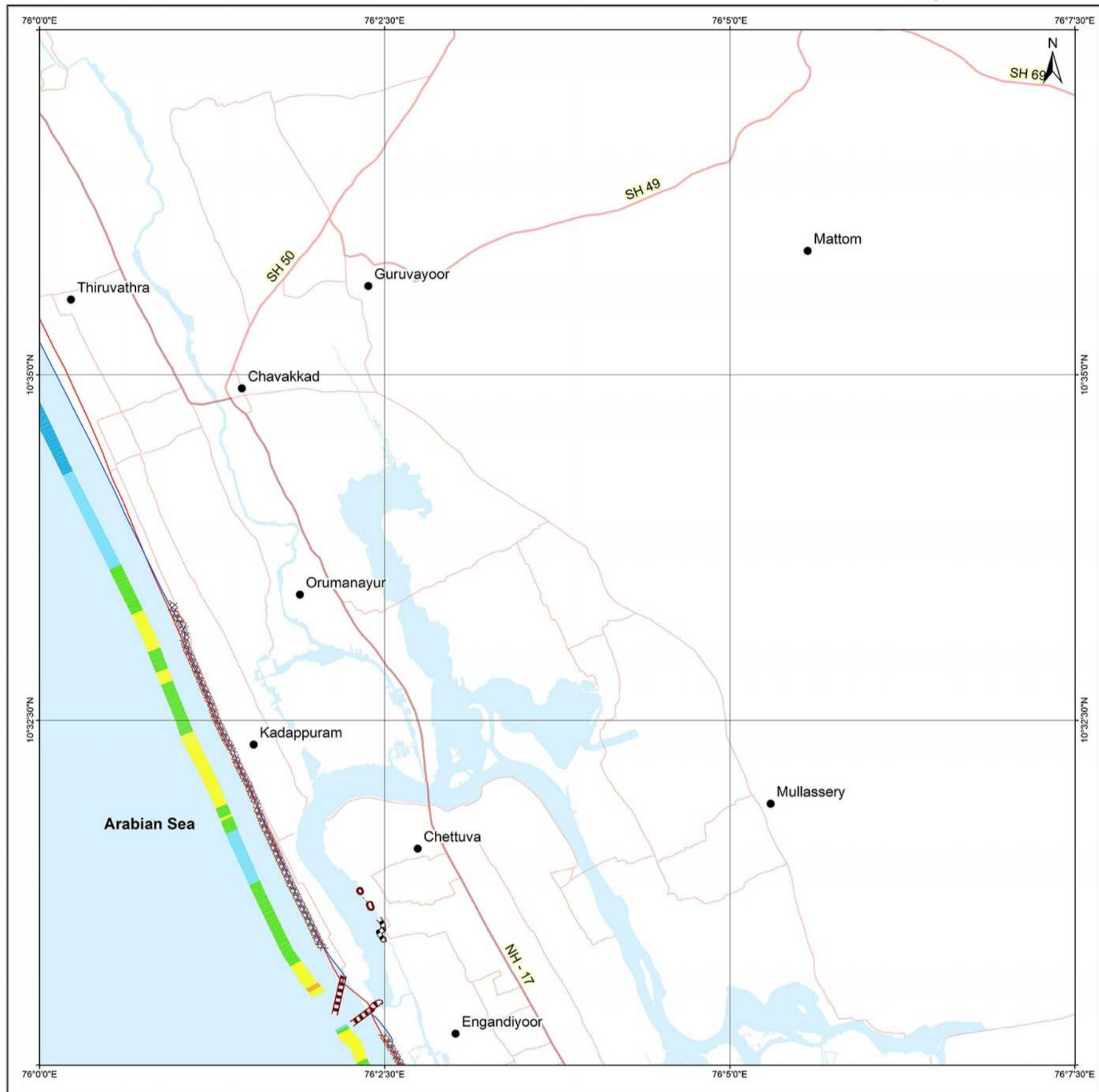
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SHORELINE CHANGE MAP KERALA

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58 B / 2 / SW
Map No. : NCCR/SCM/256



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 03/20/2018

Index to sheets

49 N / 14 / NE	58 B / 2 / NW	58 B / 2 / NE
49 N / 14 / SE	58 B / 2 / SW	58 B / 2 / SE
49 N / 15 / NE	58 B / 3 / NW	58 B / 3 / NE

Incidence on 1:50,000 Sheets

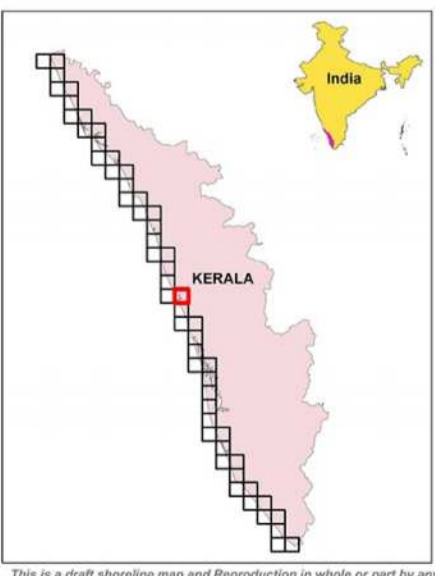
49 N / 13	58 B / 1	58 B / 5
49 N / 14	58 B / 2	58 B / 6
49 N / 15	58 B / 3	58 B / 7

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/24/2017
LISS-IV	11/25/2016
LISS-IV	03/12/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/19/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

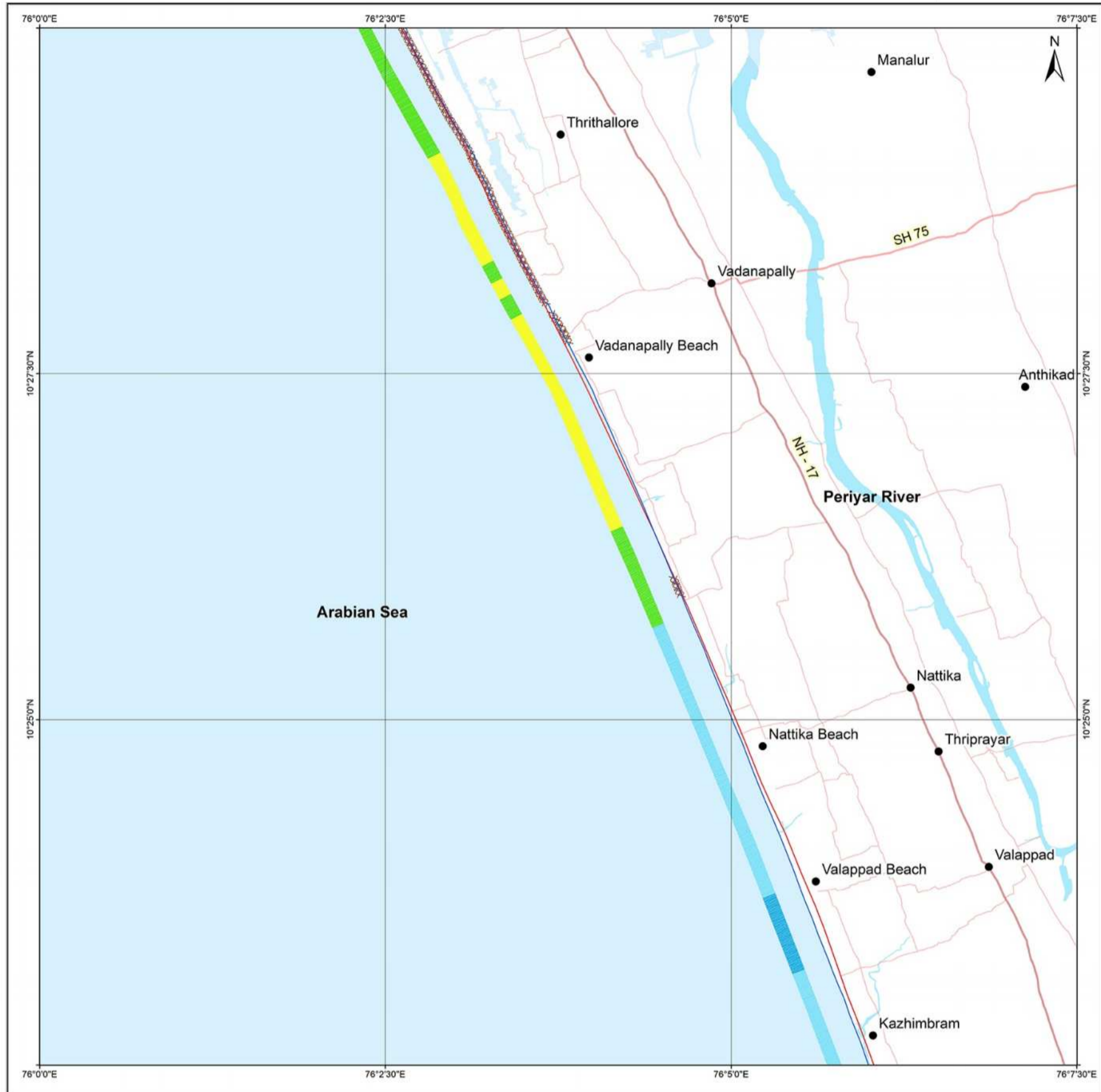
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SHORELINE CHANGE MAP KERALA

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58 B / 3 / NW
Map No. : NCCR/SCM/257



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/24/1990
- 03/20/2018

Index to sheets

49 N / 14 / SE	58 B / 2 / SW	58 B / 2 / SE
49 N / 15 / NE	58 B / 3 / NW	58 B / 3 / NE
49 N / 15 / SE	58 B / 3 / SW	58 B / 3 / SE

Incidence on 1:50,000 Sheets

49 N / 14	58 B / 2	58 B / 6
49 N / 15	58 B / 3	58 B / 7
49 N / 16	58 B / 4	58 B / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	05/24/2017 & 02/05/2017
LISS-IV	03/06/2016 & 11/25/2016
LISS-IV	03/12/2015
LISS-IV	02/21/2014
LISS-IV	02/02/2013
LISS-IV	01/15/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/21/2007
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

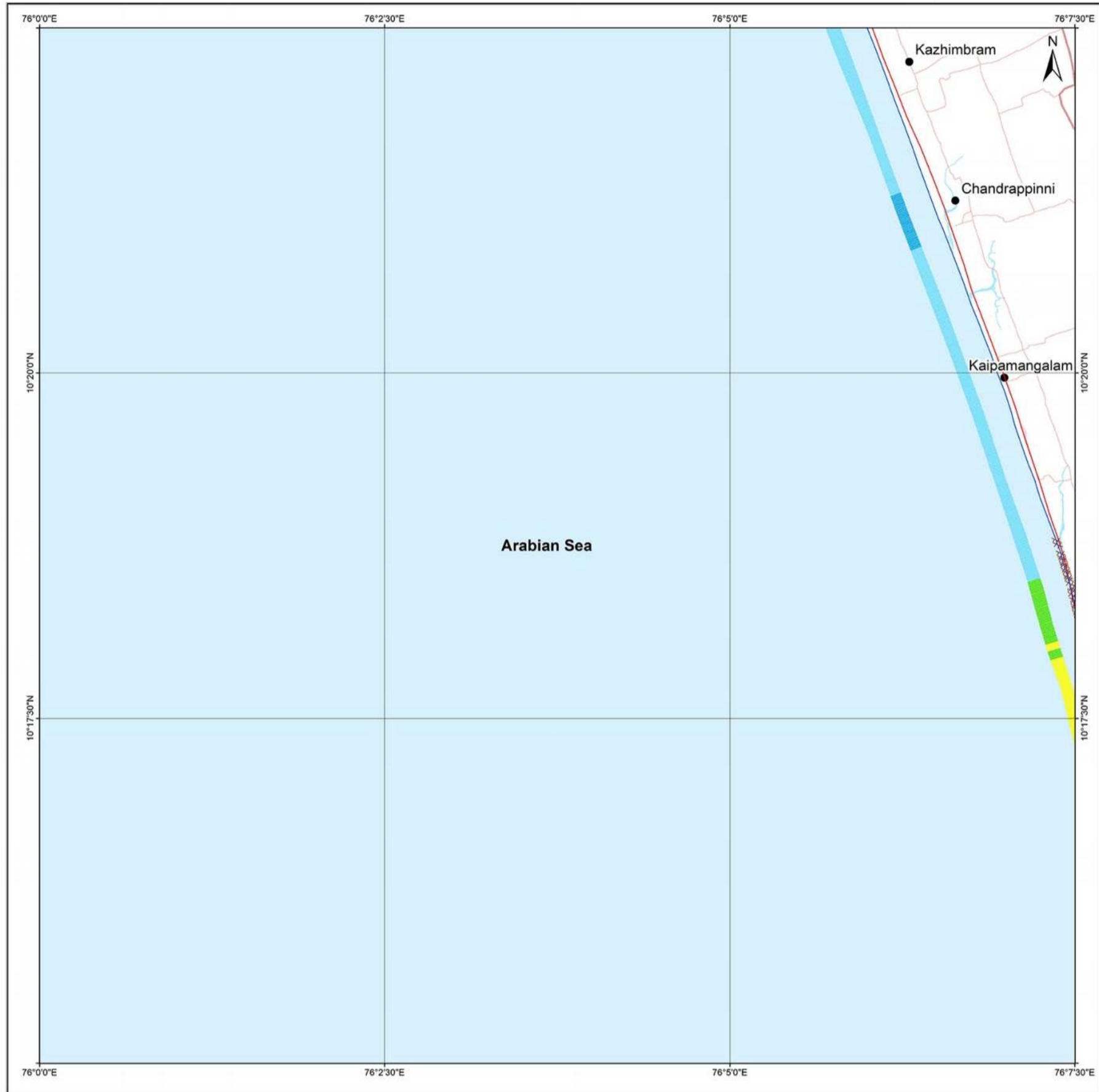
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SHORELINE CHANGE MAP KERALA

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58 B / 3 / SW
Map No. : NCCR/SCM/258



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/24/1990
- 03/20/2018

Index to sheets

49 N / 15 / NE	58 B / 3 / NW	58 B / 3 / NE
49 N / 15 / SE	58 B / 3 / SW	58 B / 3 / SE
49 N / 16 / NE	58 B / 4 / NW	58 B / 4 / NE

Incidence on 1:50,000 Sheets

49 N / 14	58 B / 2	58 B / 6
49 N / 15	58 B / 3	58 B / 7
49 N / 16	58 B / 4	58 B / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	02/21/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/21/2007
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

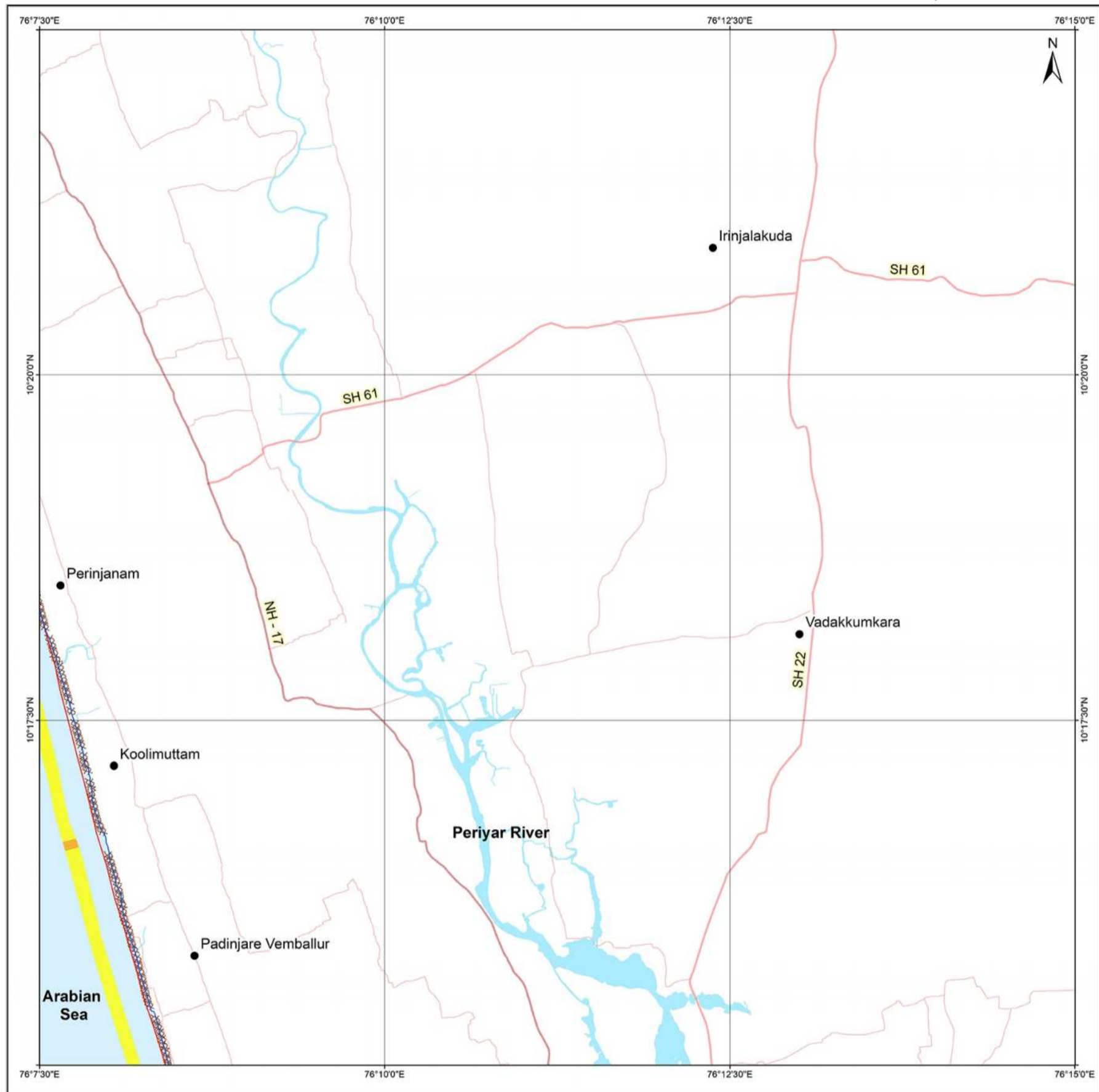
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 B / 3 / SE
Map No. : NCCR/SCM/259



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/24/1990
- 03/20/2018

Index to sheets

SB B/3/NW	SB B/3/NE	SB B/7/NE
SB B/3/SW	SB B/3/SE	SB B/7/SE
SB B/4/NW	SB B/4/NE	SB B/8/NE

Incidence on 1:50,000 Sheets

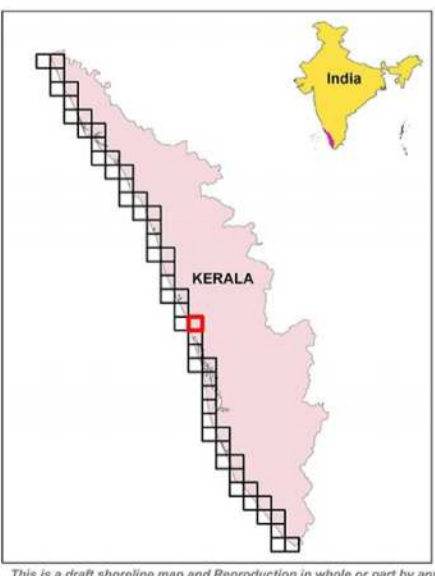
49 N/14	58 B/2	58 B/6
49 N/15	58 B/3	58 B/7
49 N/16	58 B/4	58 B/8

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/20/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/21/2007 & 12/28/2005
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

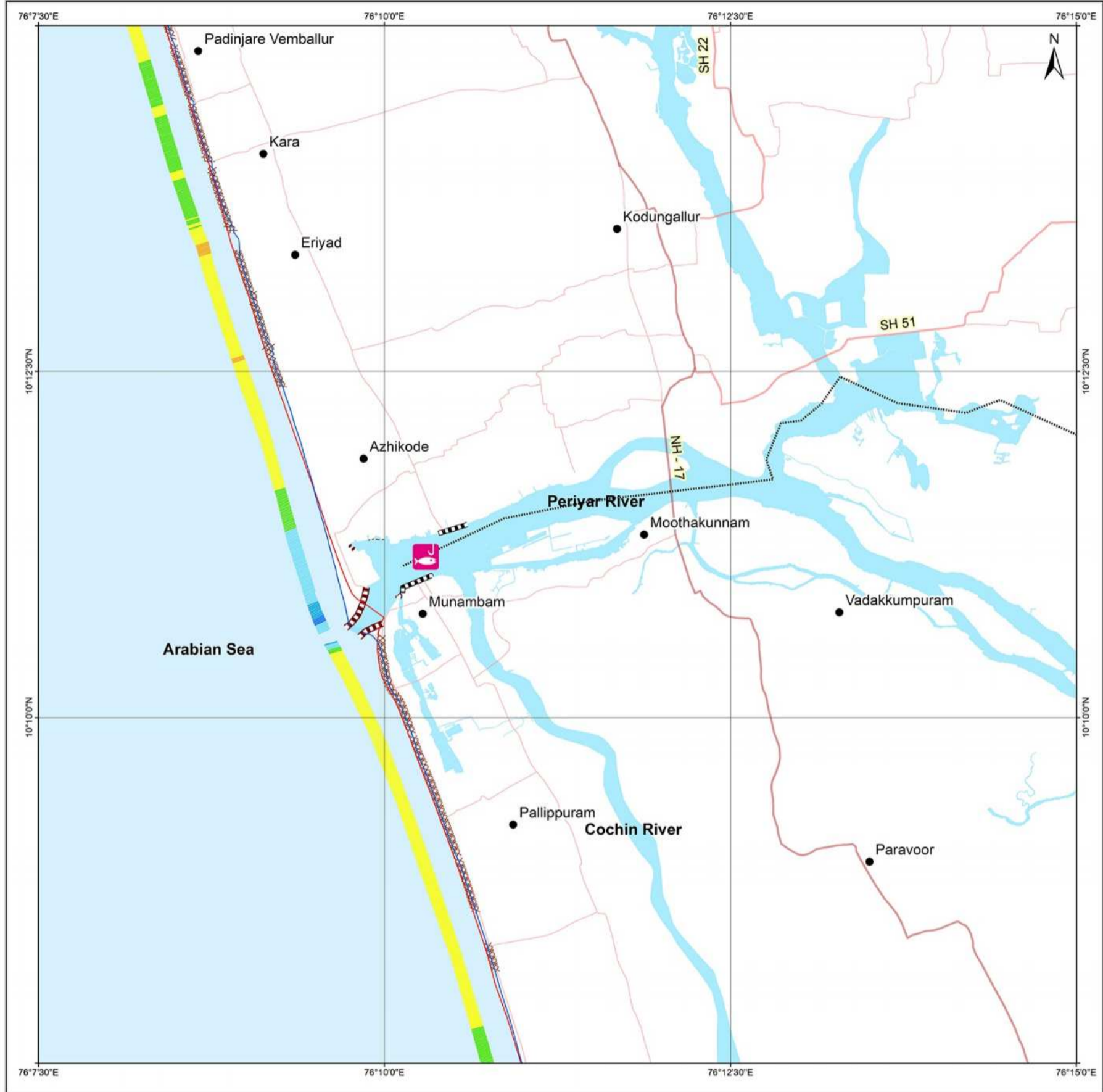
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SHORELINE CHANGE MAP KERALA

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58 B / 4 / NE
 Map No. : NCCR/SCM/260



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 02/24/2018 & 03/20/2018

Index to sheets

58 B / 3 / SW	58 B / 3 / SE	58 B / 7 / SW
58 B / 4 / NW	58 B / 4 / NE	58 B / 8 / NW
58 B / 4 / SW	58 B / 4 / SE	58 B / 8 / SW

Incidence on 1:50,000 Sheets

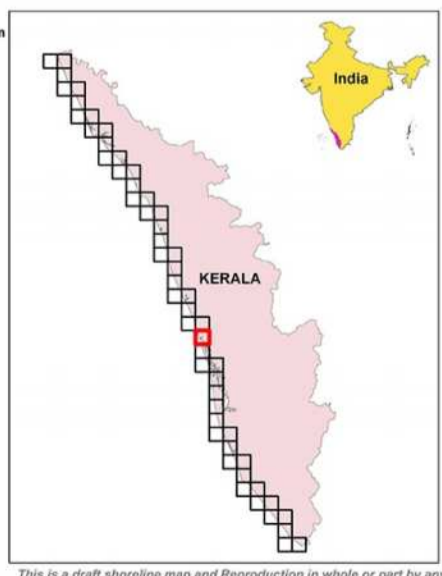
48 N / 15	58 B / 3	58 B / 7
48 N / 16	58 B / 4	58 B / 8
48 O / 13	58 C / 1	58 C / 5

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018 & 03/20/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/28/2005
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

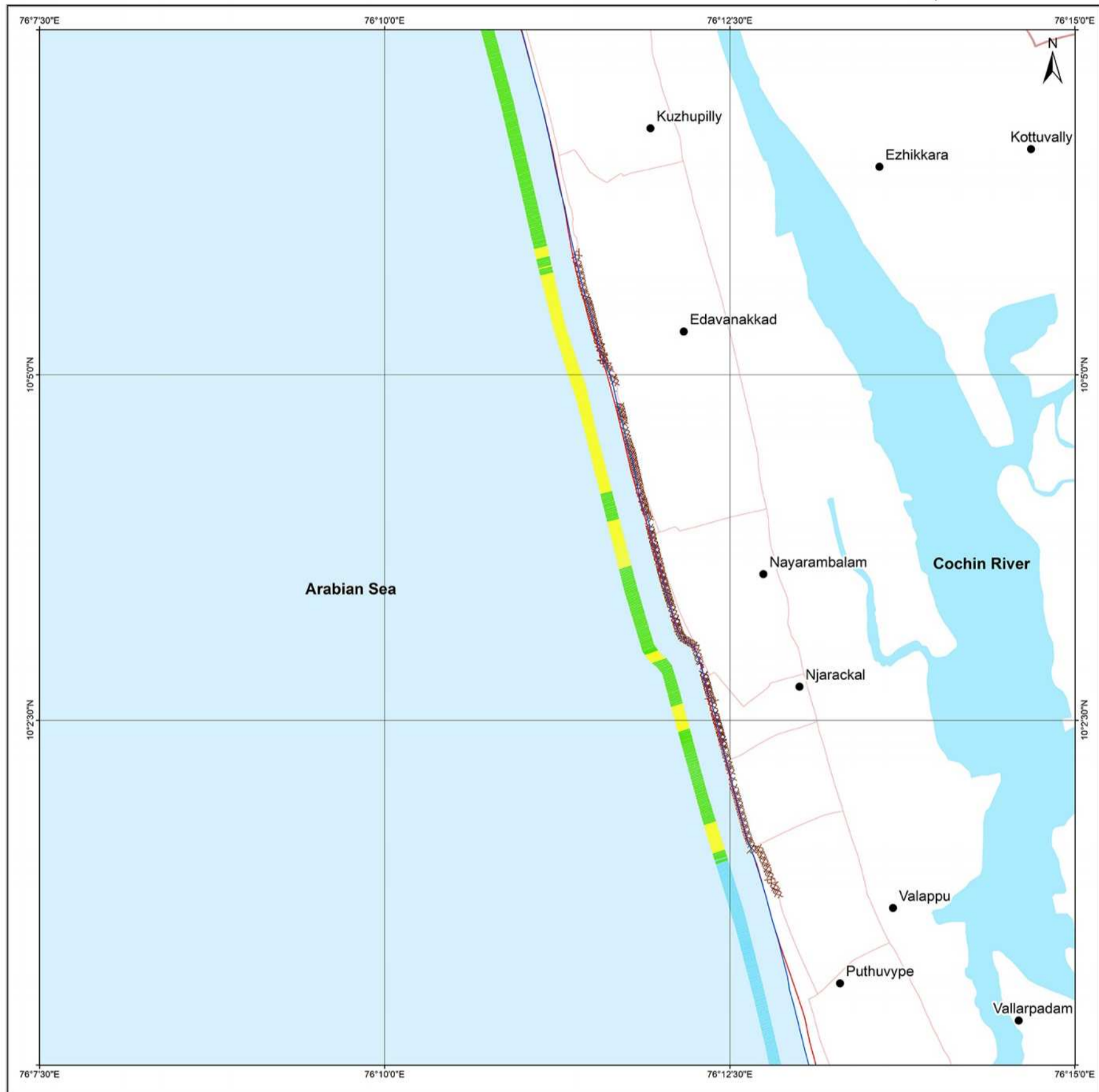
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SHORELINE CHANGE MAP KERALA

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58 B / 4 / SE
Map No. : NCCR/SCM/261



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 02/24/2018

Index to sheets

58 B / 4 / NW	58 B / 4 / NE	58 B / 5 / NW
58 B / 4 / SW	58 B / 4 / SE	58 B / 5 / SW
58 C / 1 / NW	58 C / 1 / NE	58 C / 1 / SE

Incidence on 1:50,000 Sheets

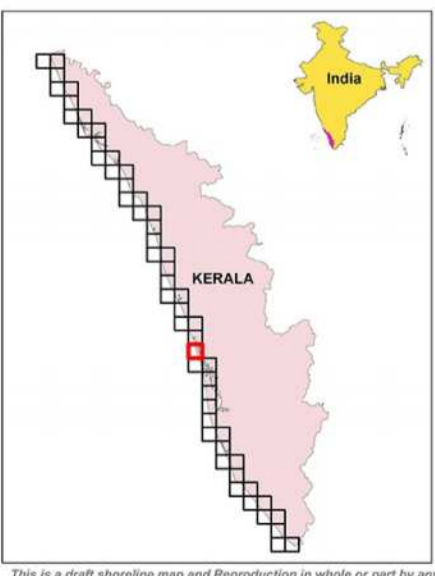
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49 N / 16	58 B / 4	58 B / 8
49 O / 13	58 C / 1	58 C / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/28/2005 & 05/03/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

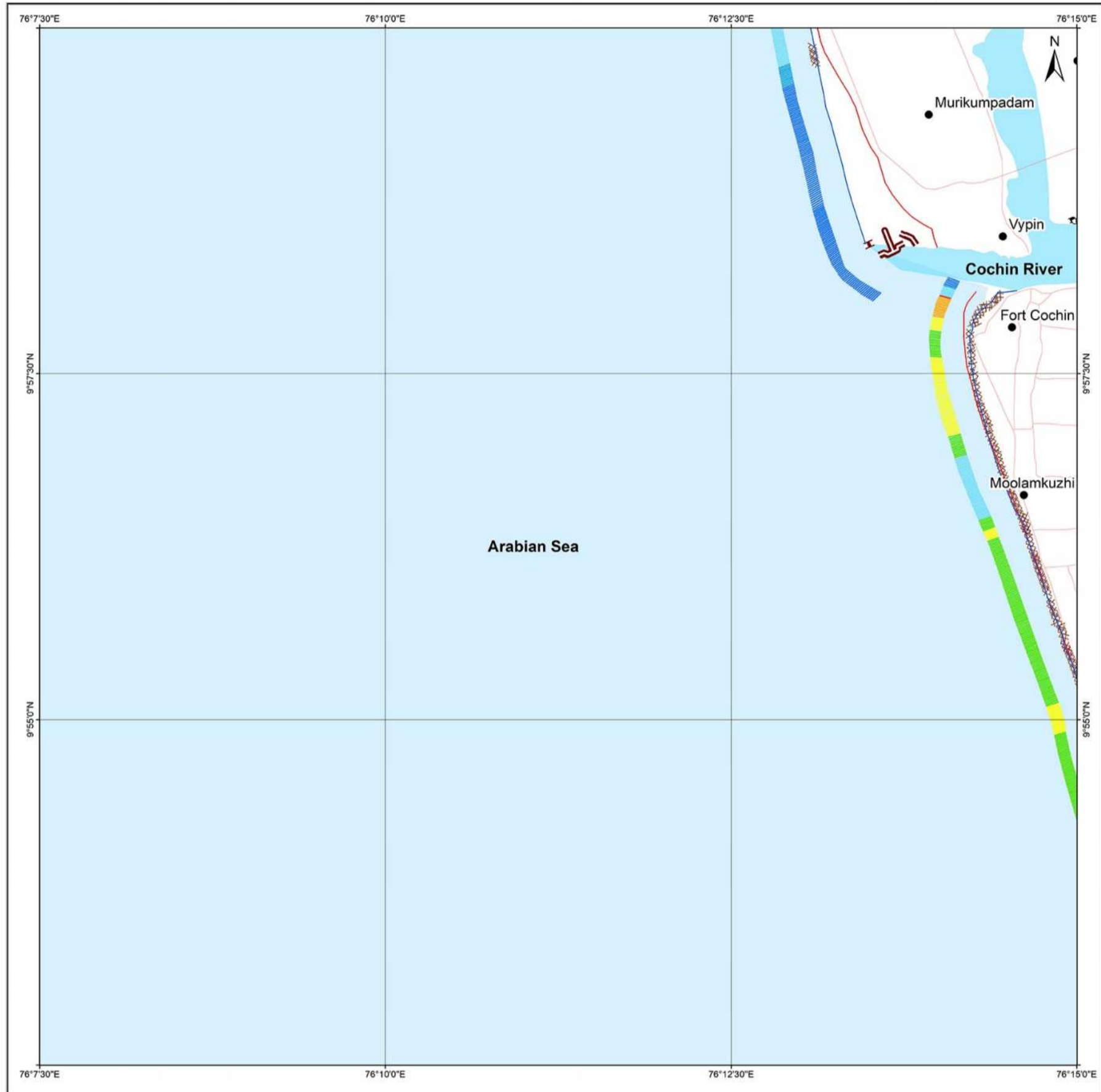
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 1 / NE
Map No. : NCCR/SCM/262



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 02/24/2018

Index to sheets

SB B / 4 / SW	SB B / 4 / SE	SB B / 8 / SW
SB C / 1 / NW	SB C / 1 / NE	SB C / 5 / NW
SB C / 1 / SW	SB C / 1 / SE	SB C / 5 / SW

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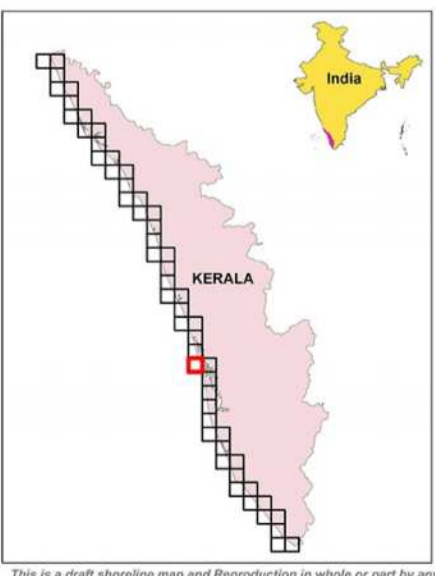
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	05/03/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

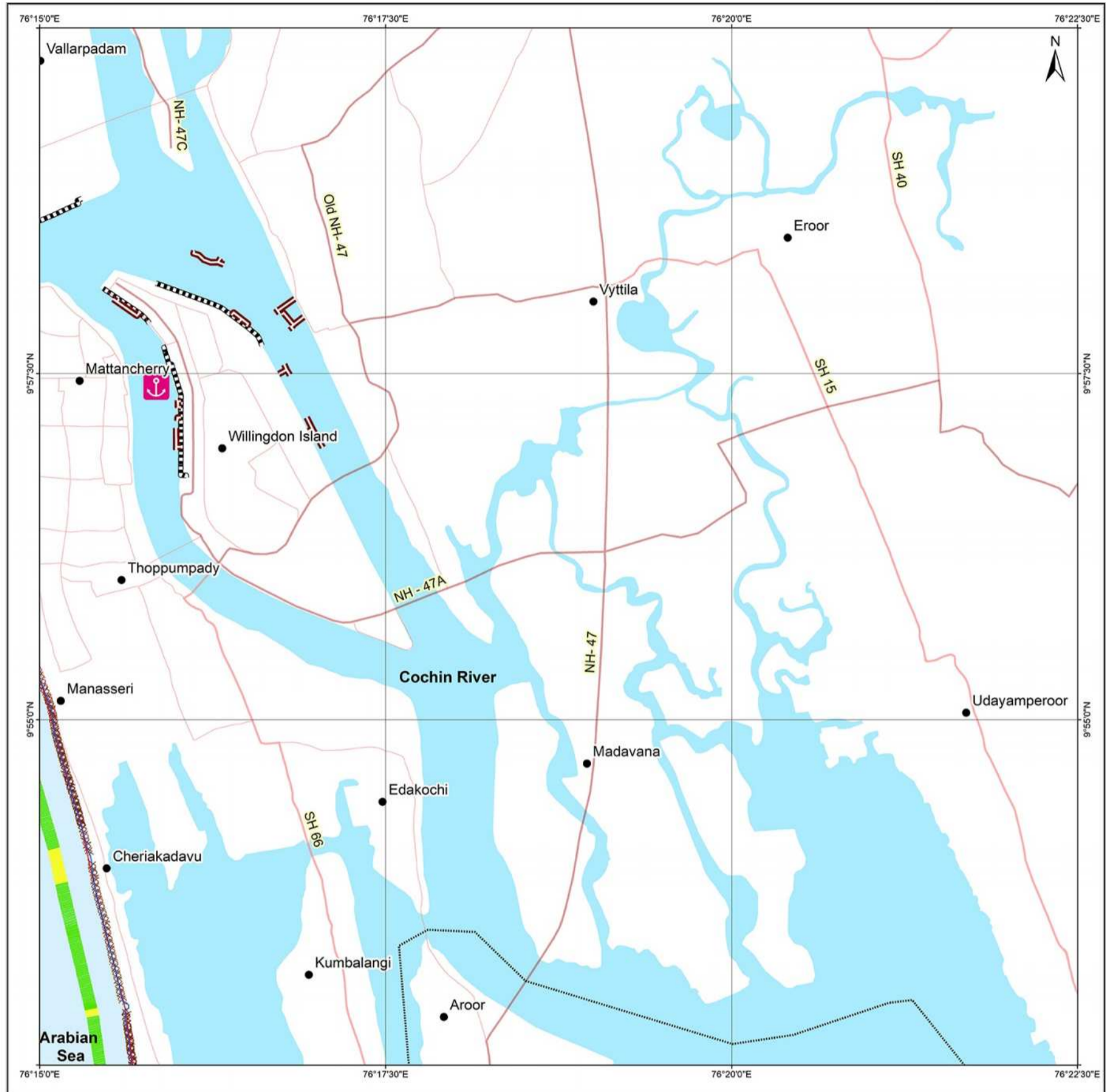
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1990 - 2018
**ERNAKULAM
 & ALAPPUZHA**

SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 5 / NW
 Map No. : NCCR/SCM/263



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 01/24/1990
- 02/24/2018

Index to sheets

SB B / 4 / SE	SB B / 5 / SW	SB B / 6 / SE
SB C / 1 / NE	SB C / 2 / NW	SB C / 3 / NE
SB C / 1 / SE	SB C / 2 / SW	SB C / 3 / SE

Incidence on 1:50,000 Sheets

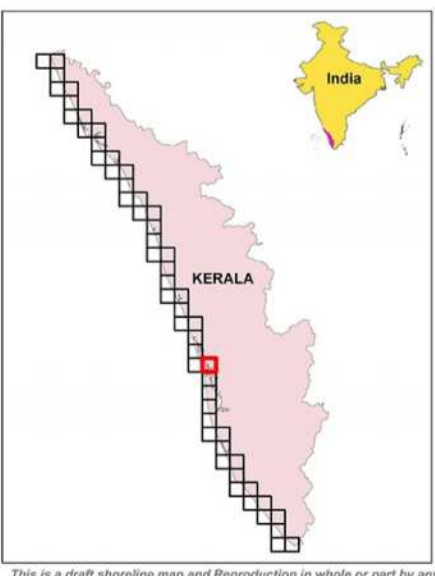
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SB C / 1	SB C / 2	SB C / 3
SB C / 2	SB C / 3	SB C / 4

Scale
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UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	05/03/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 5 / SW
 Map No. : NCCR/SCM/264



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/24/1990
- 02/24/2018

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SB C/1/NE	SB C/5/NW	SB C/5/NE
SB C/1/SE	SB C/5/SW	SB C/5/SE
SB C/2/NE	SB C/6/NW	SB C/6/NE

Incidence on 1:50,000 Sheets

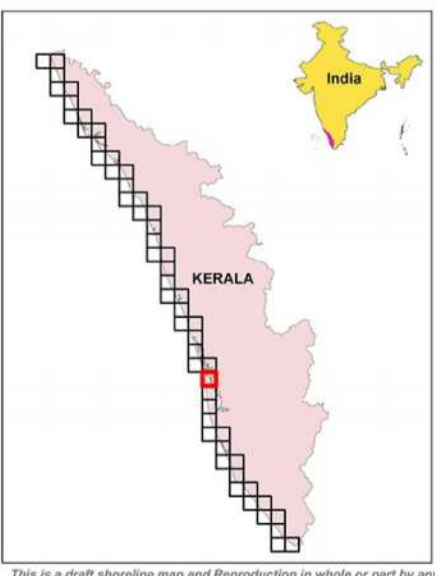
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SB C/1	SB C/5	SB C/9
SB C/2	SB C/6	SB C/10

Scale
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UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	05/03/2006 & 12/30/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

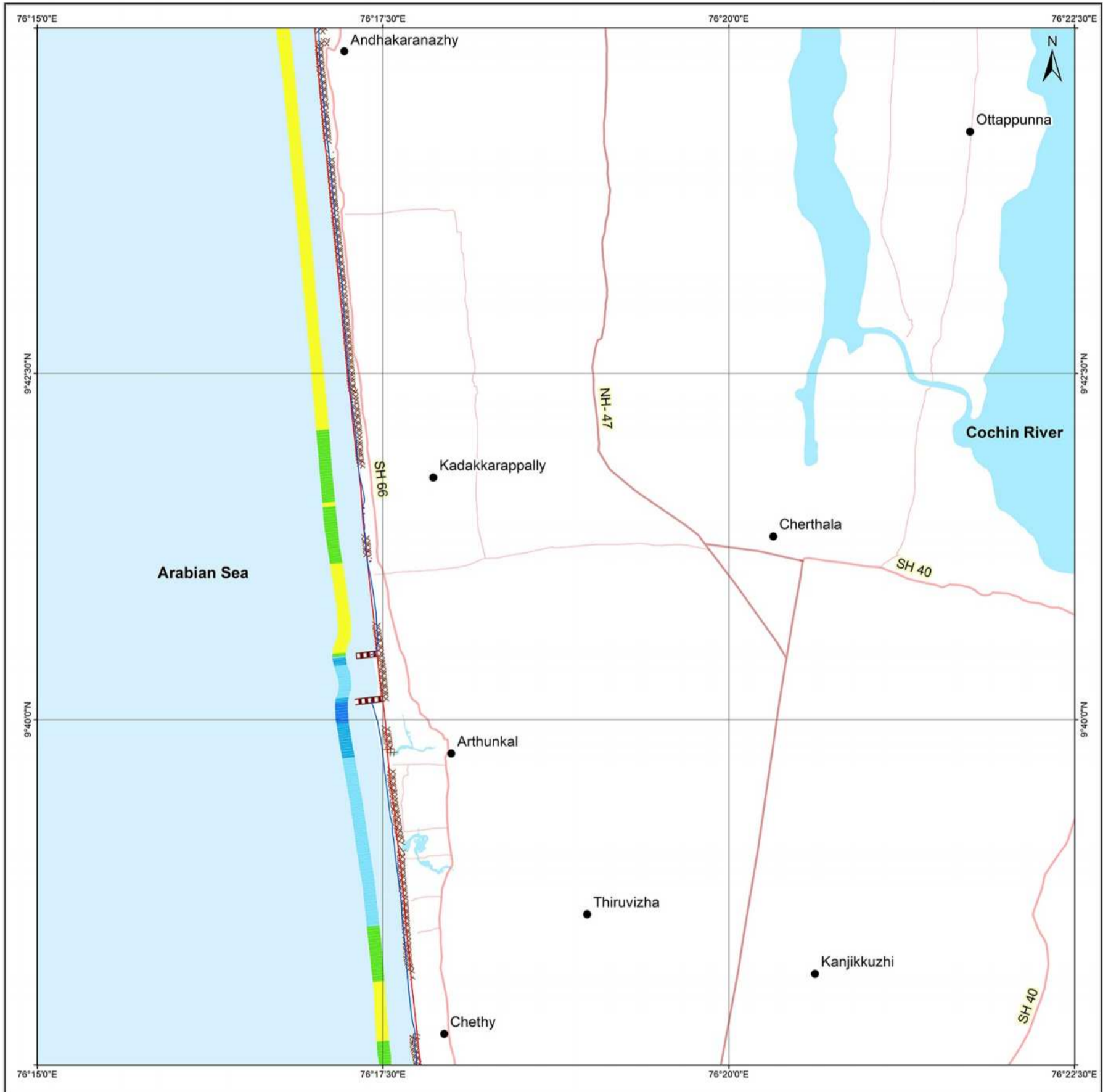
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1990 - 2018
ALAPPUZHA

SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 6 / NW
Map No. : NCCR/SCM/265



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/24/1990
- 02/24/2018

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58 C / 1 / EE	58 C / 5 / SW	58 C / 9 / SE
58 C / 2 / NE	58 C / 6 / NW	58 C / 8 / NE
58 C / 2 / SE	58 C / 6 / SW	58 C / 8 / SE

Incidence on 1:50,000 Sheets

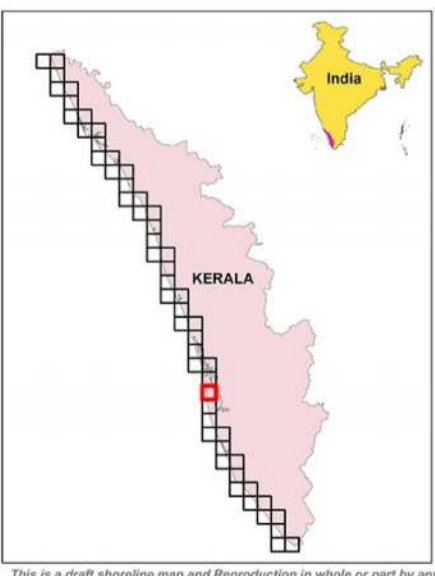
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58 C / 3	58 C / 7	58 C / 11

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/30/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

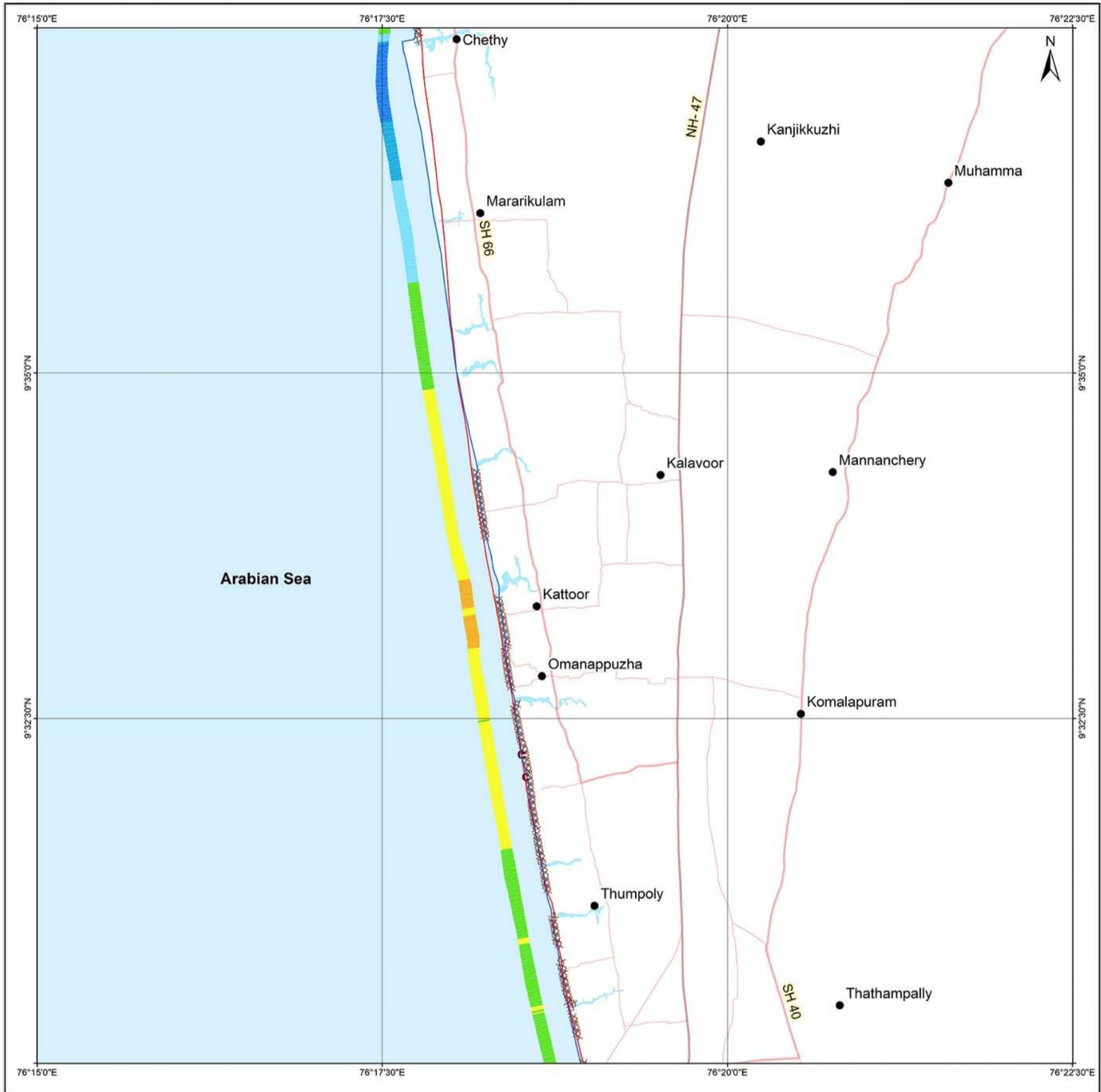
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 6 / SW
Map No. : NCCR/SCM/266



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 01/24/1990
- 02/24/2018

Index to sheets

SB C/2/NE	SB C/6/NW	SB C/8/NE
SB C/2/SE	SB C/6/SW	SB C/8/SE
SB C/2/NE	SB C/7/NW	SB C/7/NE

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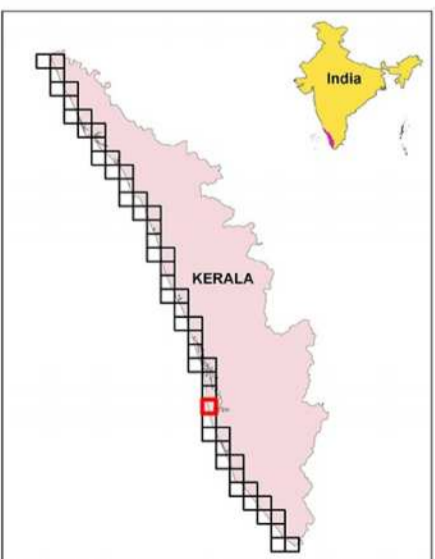
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SB C/2	SB C/6	SB C/10
SB C/3	SB C/7	SB C/11

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
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LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	11/07/2014 & 03/17/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/30/2006
ETM+	01/28/2000
TM	01/24/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

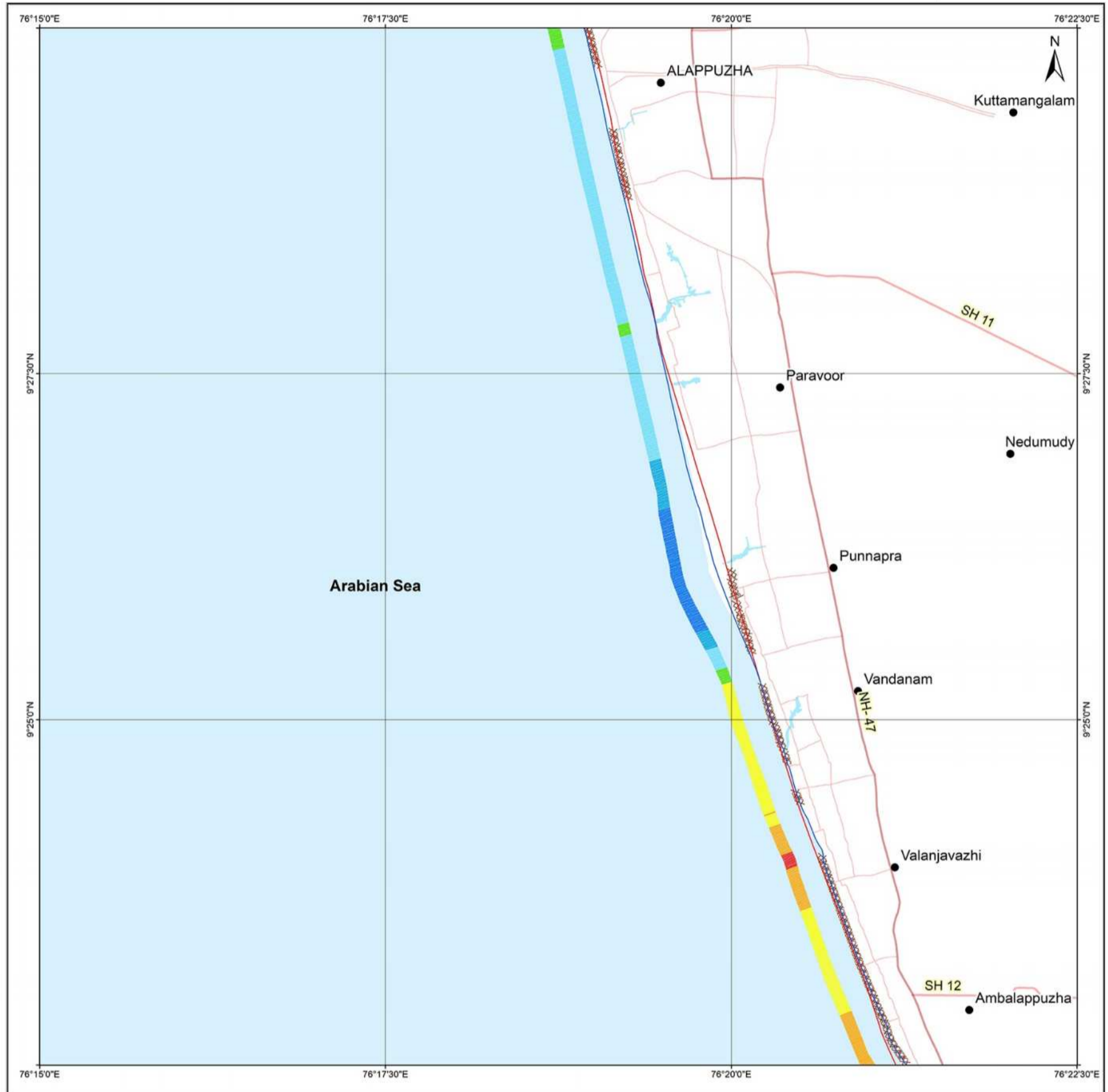
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SHORELINE CHANGE MAP KERALA

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58 C / 7 / NW
Map No. : NCCR/SCM/267



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990
- █ 02/24/2018

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58 C / 2 / SE	58 C / 6 / SW	58 C / 8 / SE
58 C / 2 / NE	58 C / 7 / NW	58 C / 7 / NE
58 C / 3 / SE	58 C / 7 / SW	58 C / 7 / SE

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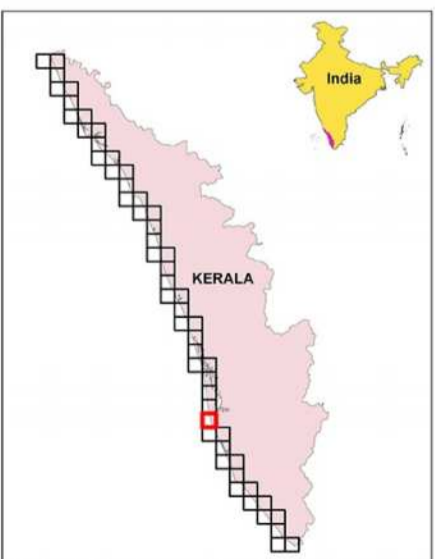
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58 C / 3	58 C / 7	58 C / 11
58 C / 4	58 C / 8	58 C / 12

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	11/07/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/30/2006 & 12/06/2005
ETM+	01/28/2000
TM	01/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

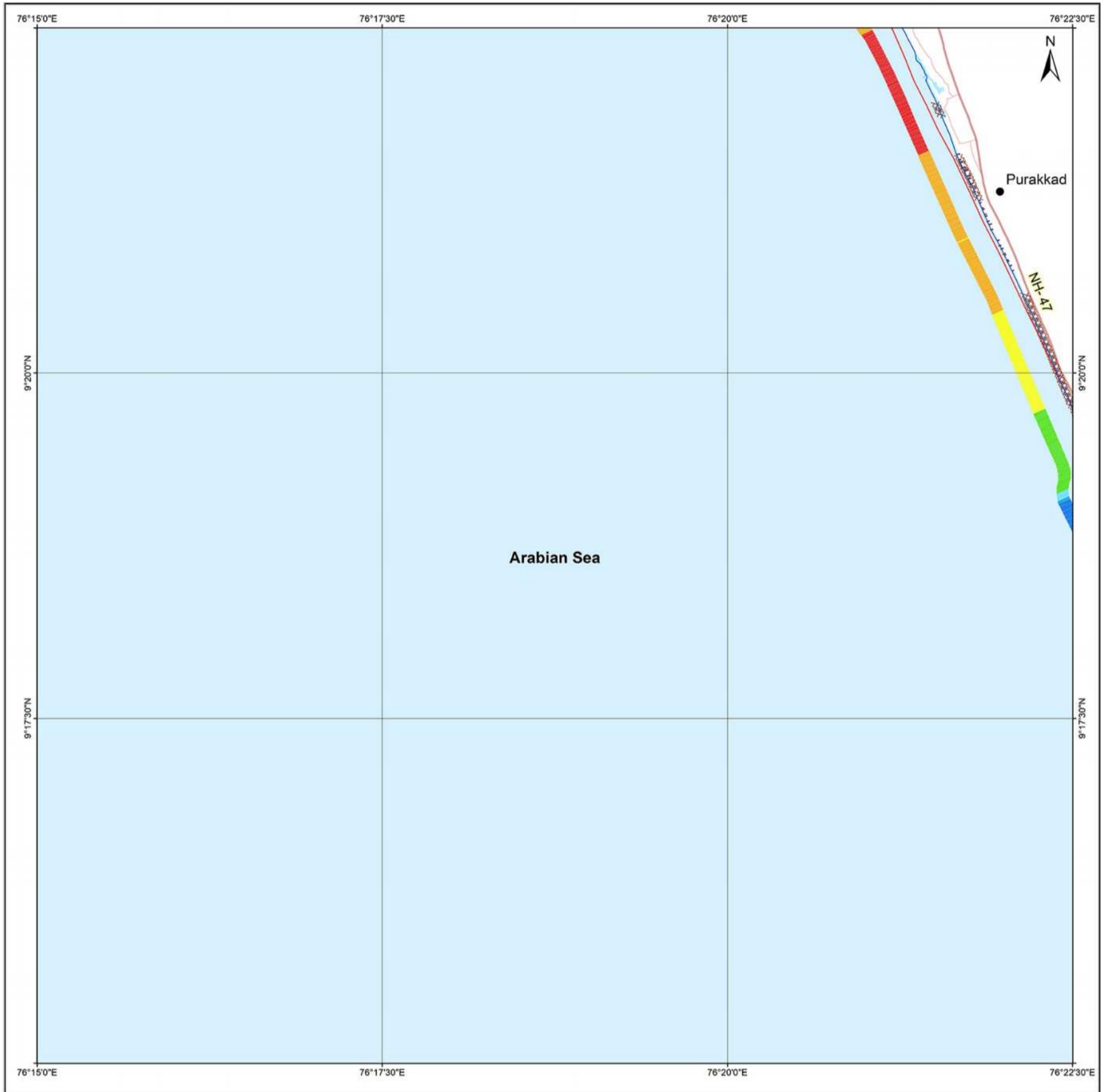
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 7 / SW
Map No. : NCCR/SCM/268



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 01/24/1990 & 02/25/1990
- █ 02/24/2018

Index to sheets

SB C / 3 / NE	SB C / 7 / NW	SB C / 7 / NE
SB C / 3 / SE	SB C / 7 / SW	SB C / 7 / SE
SB C / 4 / NE	SB C / 8 / NW	SB C / 8 / NE

Incidence on 1:50,000 Sheets

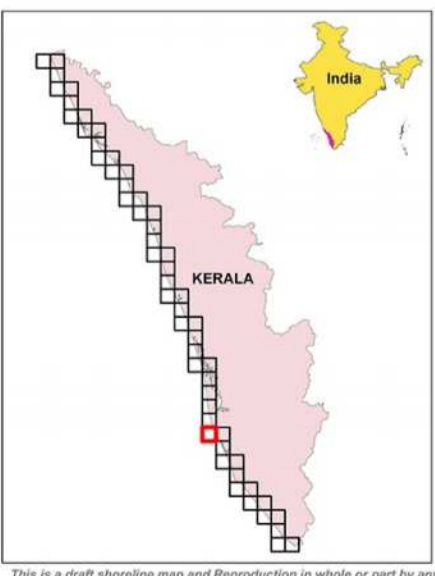
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SB C / 3	SB C / 7	SB C / 11
SB C / 4	SB C / 8	SB C / 12

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	11/07/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/06/2005
ETM+	01/28/2000
TM	01/24/1990 & 02/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

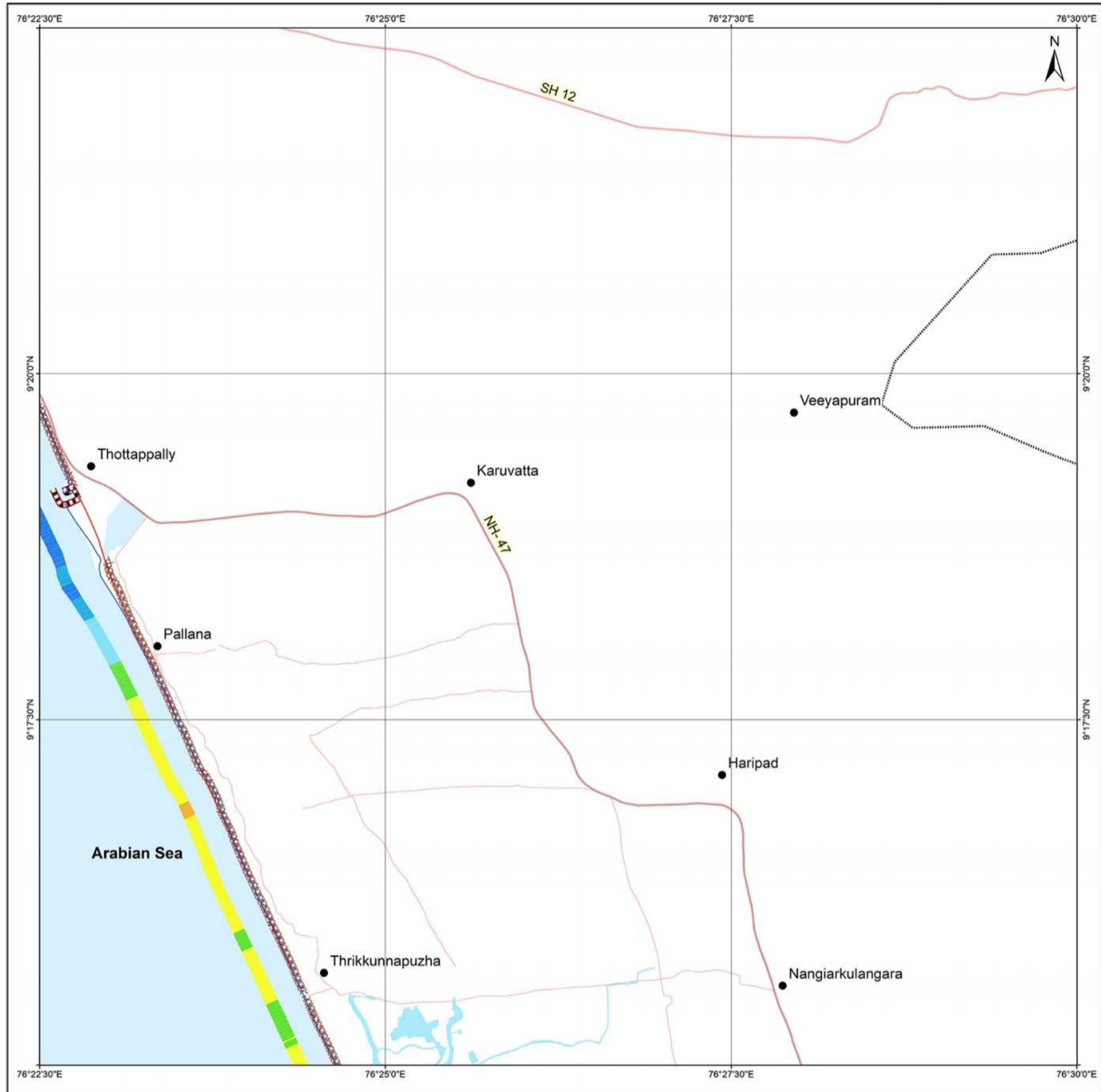
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& PATHANAMTHITTA

SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 7 / SE
Map No. : NCCR/SCM/269



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/25/1990
- 02/24/2018

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58 C / 7 / NW	58 C / 7 / NE	58 C / 11 / NW
58 C / 7 / SW	58 C / 7 / SE	58 C / 11 / SW
58 C / 8 / NW	58 C / 8 / NE	58 C / 12 / NW

Incidence on 1:50,000 Sheets

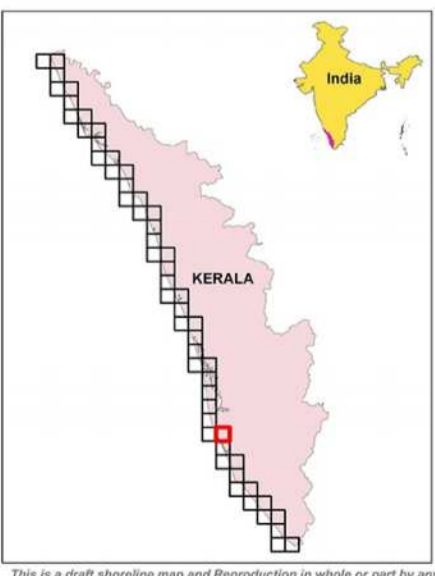
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58 C / 4	58 C / 8	58 C / 12

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/24/2018
LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	01/13/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/06/2005
ETM+	01/28/2000
TM	02/25/1990



- Settlements
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- Breakwater
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- State Highways
- Other Roads
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- Lakes
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SHORELINE CHANGE MAP KERALA

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58 C / 8 / NE
Map No. : NCCR/SCM/270



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/24/2018

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SB C / 7 / SW	SB C / 7 / SE	SB C / 11 / SW
SB C / 8 / NW	SB C / 8 / NE	SB C / 12 / NW
SB C / 8 / SW	SB C / 8 / SE	SB C / 12 / SW

Incidence on 1:50,000 Sheets

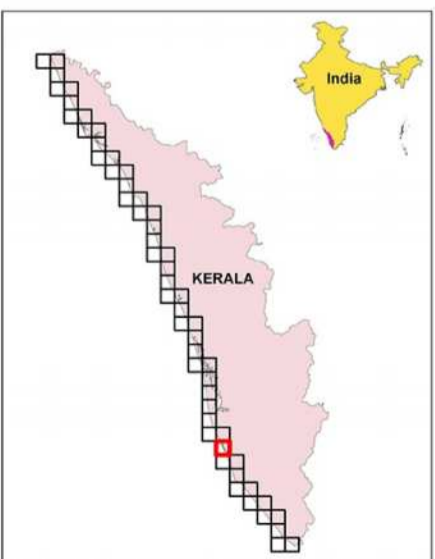
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SB D / 1	SB D / 5	SB D / 9

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/05/2017
LISS-IV	03/06/2016
LISS-IV	02/16/2015
LISS-IV	01/13/2014
LISS-IV	02/26/2013
LISS-IV	02/08/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/06/2005 & 12/08/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

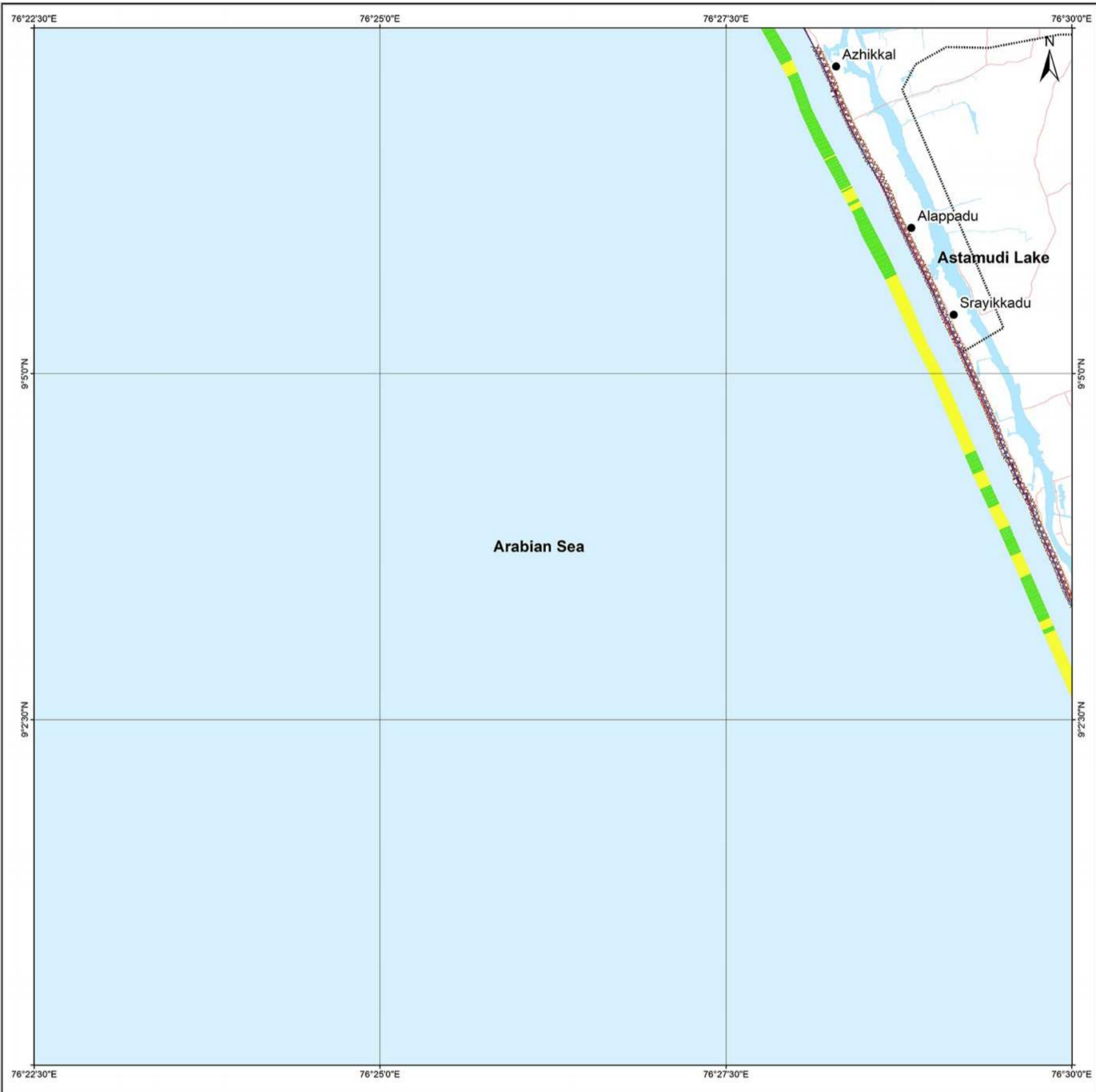
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SHORELINE CHANGE MAP KERALA

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58 C / 8 / SE
Map No. : NCCR/SCM/271



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018 & 02/24/2018

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58 C / 8 / NW	58 C / 8 / NE	58 C / 12 / NW
58 C / 8 / SW	58 C / 8 / SE	58 C / 12 / SW
58 D / 15 / NW	58 D / 15 / NE	58 D / 9 / NW

Incidence on 1:50,000 Sheets

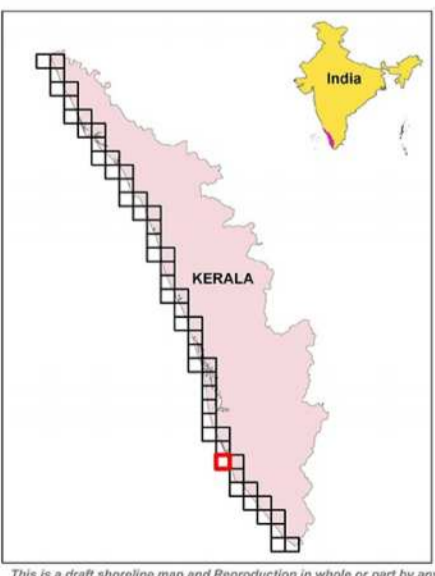
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58 D / 1	58 D / 5	58 D / 9

Scale
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1:25,000

UTM Coordinates Zone 43
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Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/17/2017 & 02/05/2017
LISS-IV	03/06/2016 & 02/16/2016
LISS-IV	02/16/2015 & 01/28/2015
LISS-IV	02/26/2014
LISS-IV	03/04/2013
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/08/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
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- Other Roads
- Railways
- Lakes
- Rivers

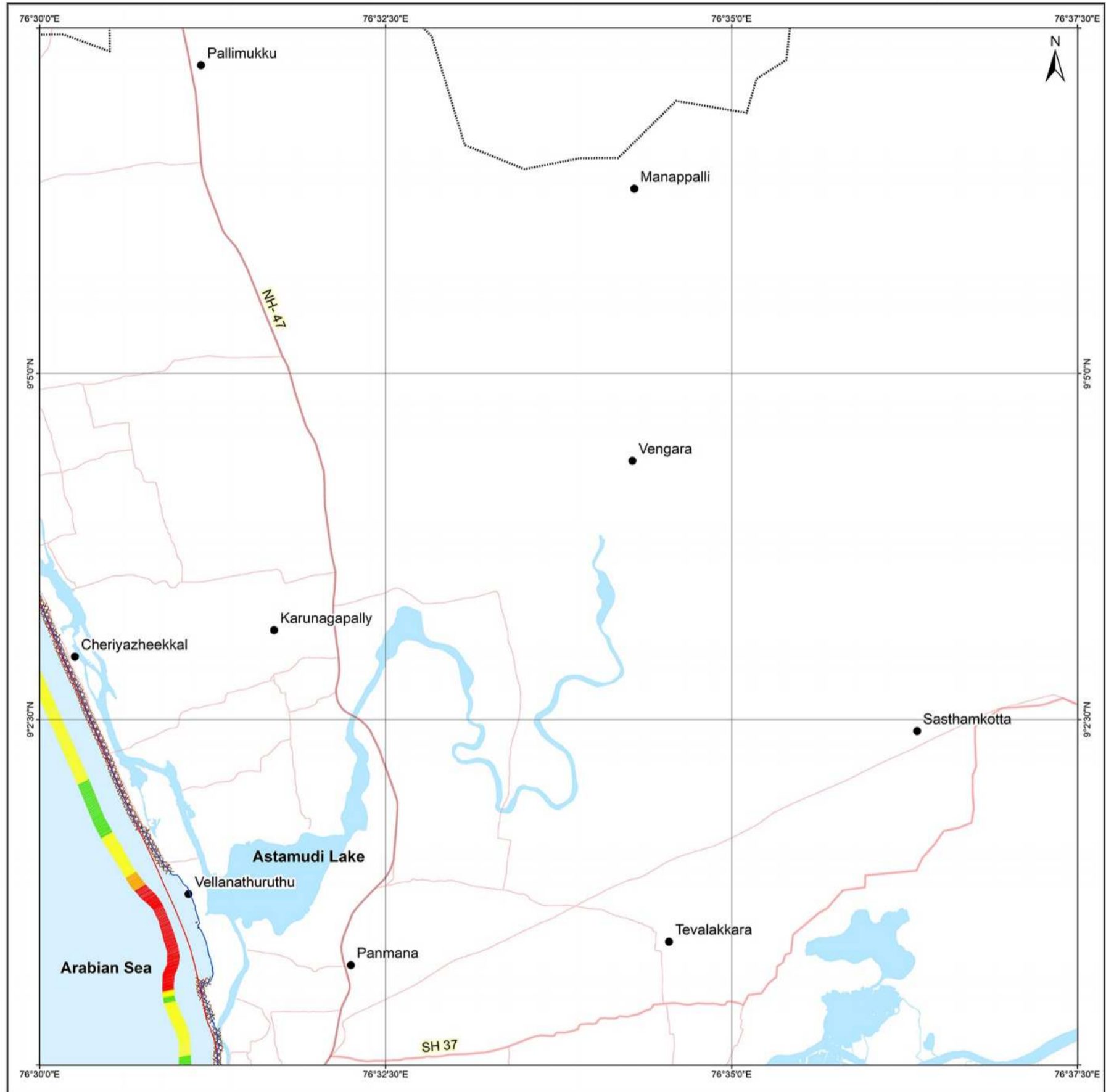
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& KOLLAM

SHORELINE CHANGE MAP KERALA

Restricted Use
58 C / 12 / SW
Map No. : NCCR/SCM/272



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018

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SB C/8/NE	SB C/12/NW	SB C/12/NE
SB C/8/SE	SB C/12/SW	SB C/12/SE
SB D/5/NE	SB D/9/NW	SB D/9/NE

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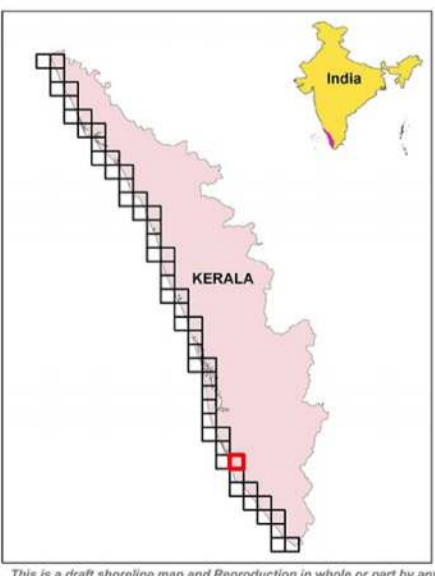
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SB C/8	SB C/12	SB C/16
SB D/5	SB D/9	SB D/13

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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/17/2017
LISS-IV	02/16/2016
LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	03/04/2013
LISS-IV	03/01/2012
LISS-III	02/22/2008 & 01/24/2008
PAN (Cartosat-1)	12/08/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

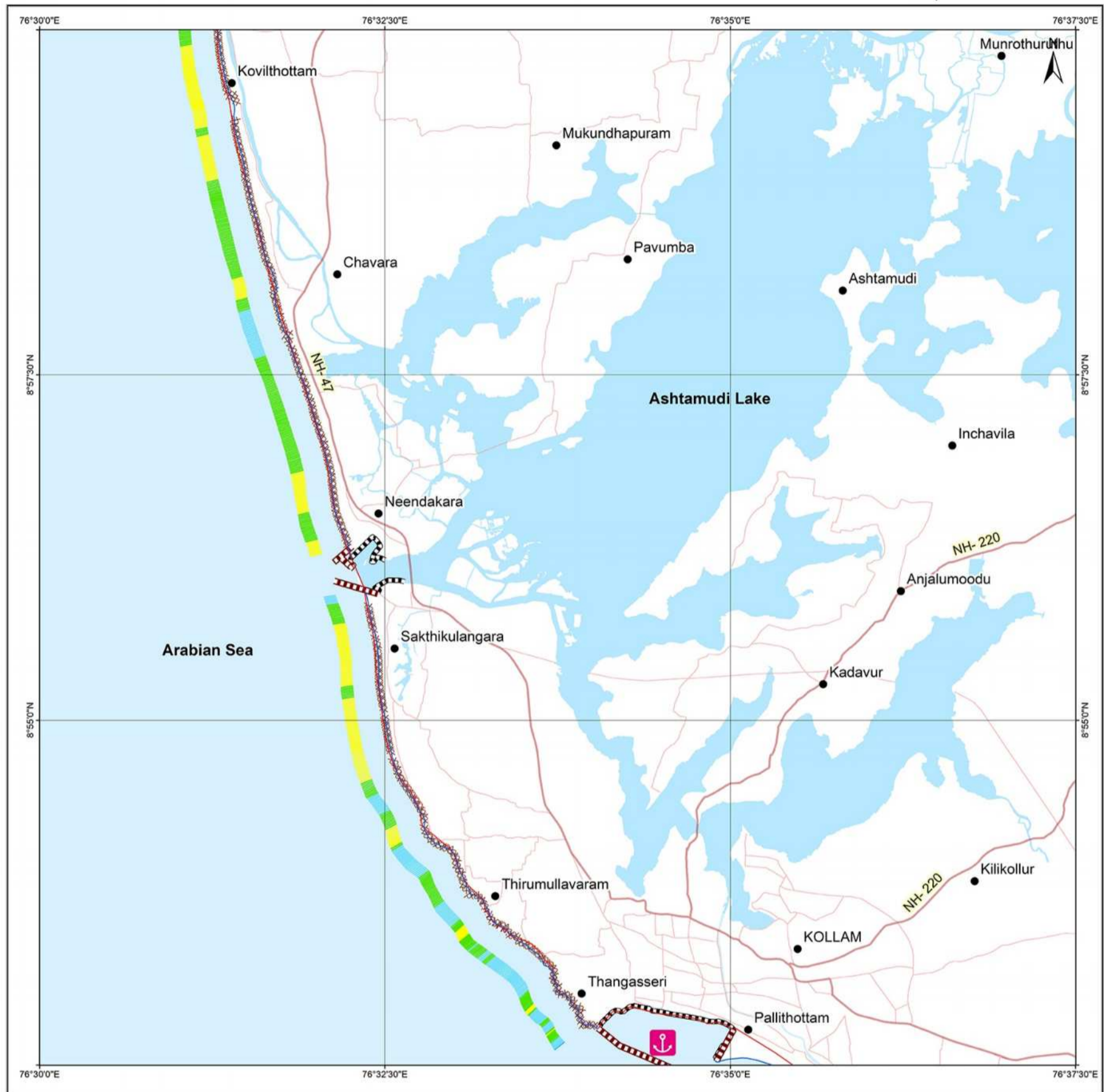
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1990 - 2018
KOLLAM

SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 9 / NW
Map No. : NCCR/SCM/273



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018

Index to sheets

SB C/8/EE	SB C/12/SW	SB C/12/EE
SB D/5/NE	SB D/9/NW	SB D/9/NE
SB D/5/EE	SB D/9/SW	SB D/9/SE

Incidence on 1:50,000 Sheets

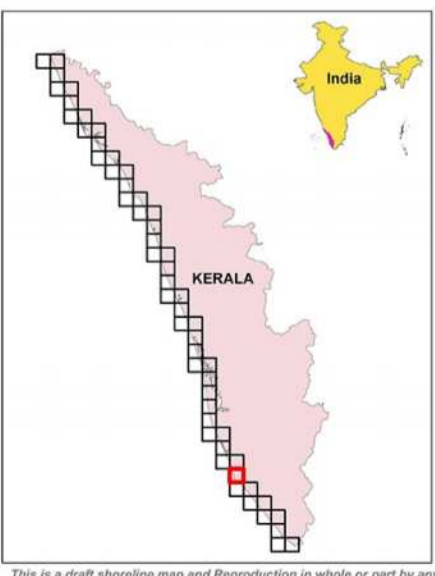
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SB D/6	SB D/10	SB D/14

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/05/2018
LISS-IV	01/17/2017
LISS-IV	02/16/2016
LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	03/04/2013 & 01/15/2013
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/08/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

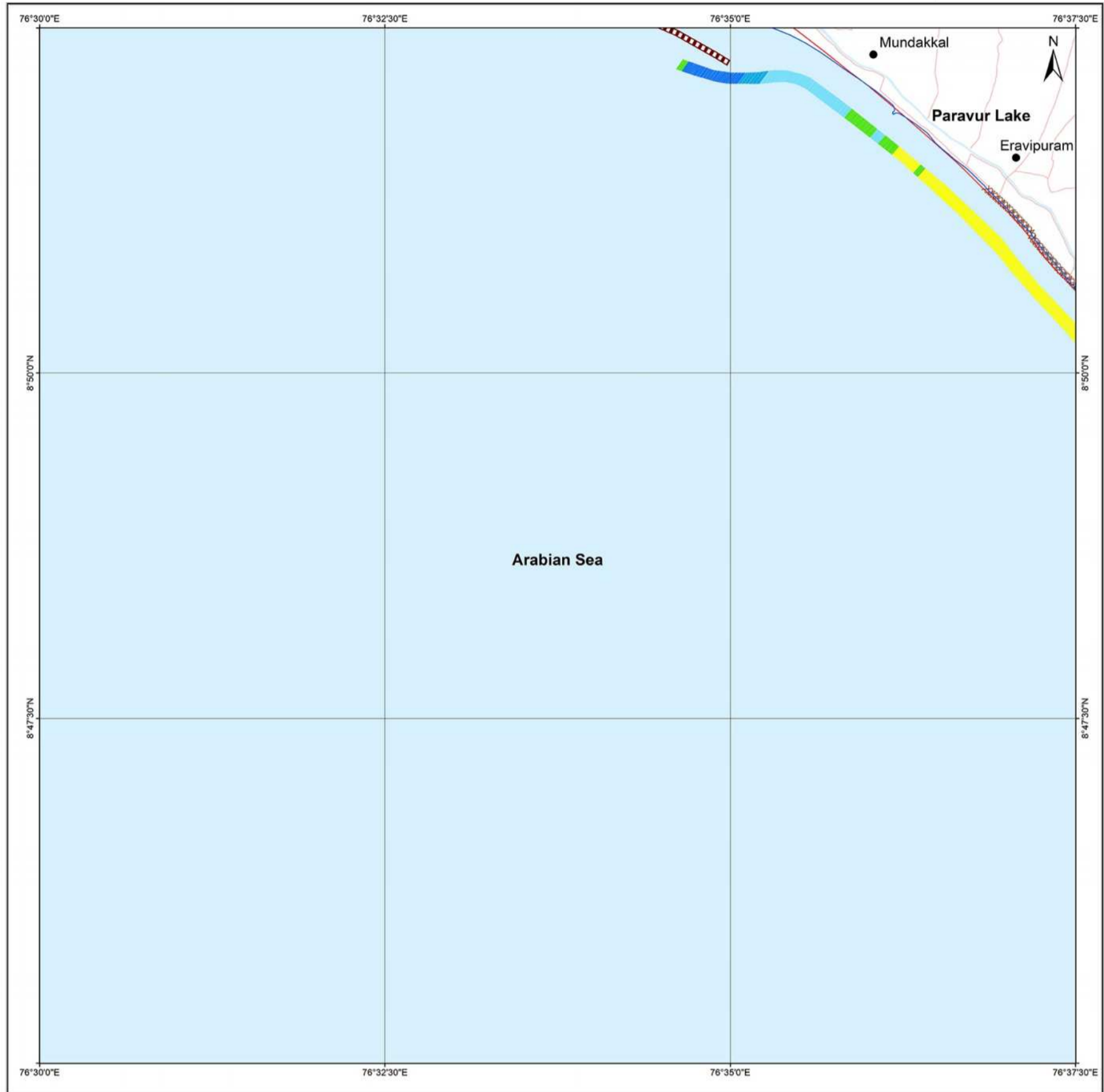
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 9 / SW
Map No. : NCCR/SCM/274



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018

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58 D / 15 / SE	58 D / 9 / SW	58 D / 9 / SE
58 D / 6 / NE	58 D / 10 / NW	58 D / 10 / NE

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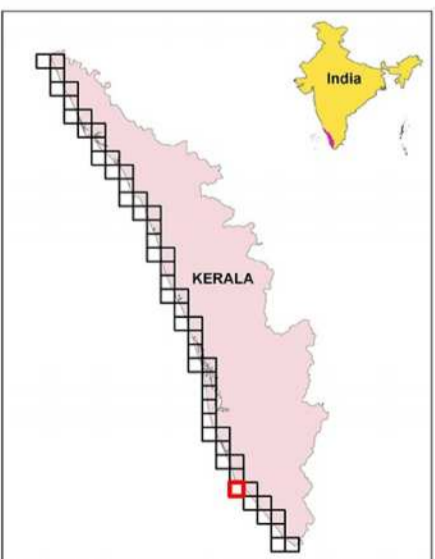
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58 D / 15	58 D / 9	58 D / 13
58 D / 6	58 D / 10	58 D / 14

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	01/15/2013
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	12/08/2006 & 03/20/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

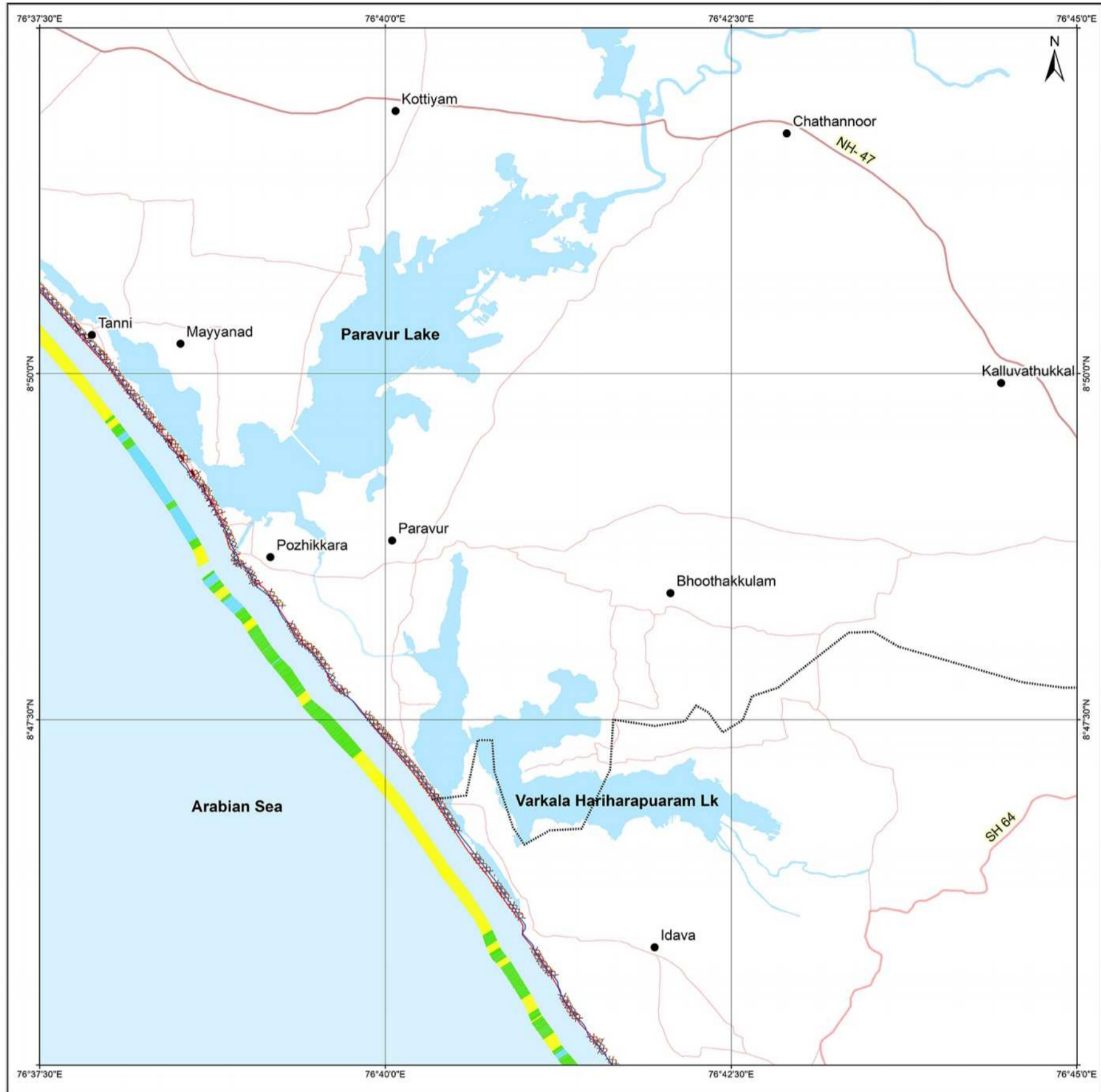
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 9 / SE
 Map No. : NCCR/SCM/275



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/25/1990
- 02/05/2018

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SB D / 9 / SW	SB D / 9 / SE	SB D / 13 / SW
SB D / 10 / NW	SB D / 10 / NE	SB D / 14 / NW

Incidence on 1:50,000 Sheets

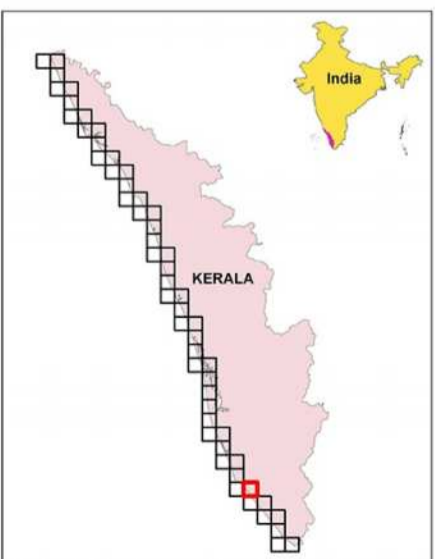
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SB D / 3	SB D / 9	SB D / 13
SB D / 6	SB D / 10	SB D / 14

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UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/17/2017
LISS-IV	02/16/2016
LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	01/15/2013
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/20/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

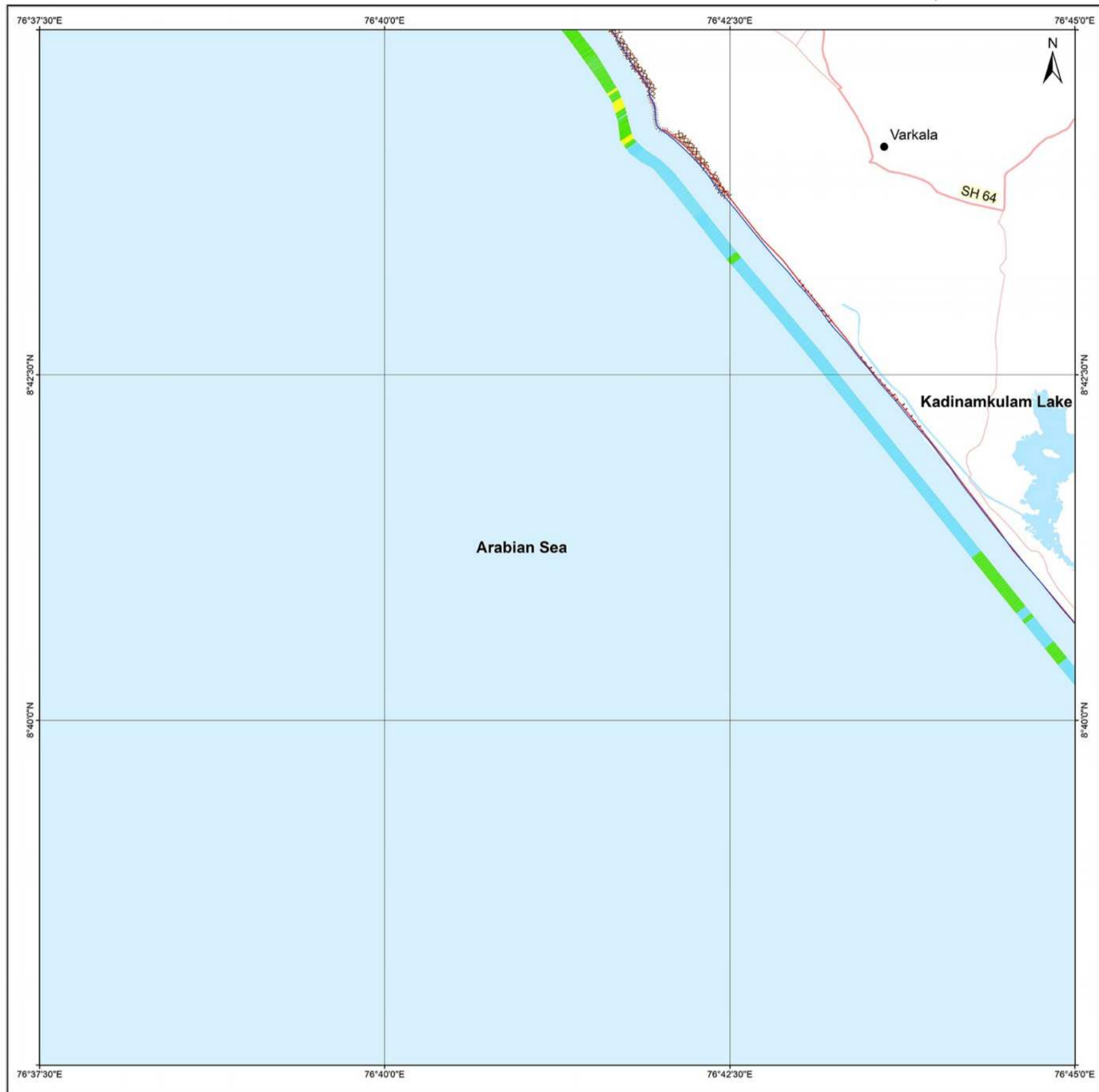
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SHORELINE CHANGE MAP KERALA

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58 D / 10 / NE
Map No. : NCCR/SCM/276



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018

Index to sheets

SB D/9/SW	SB D/9/SE	SB D/13/SW
SB D/10/NW	SB D/10/NE	SB D/14/NW
SB D/10/SW	SB D/10/SE	SB D/14/SW

Incidence on 1:50,000 Sheets

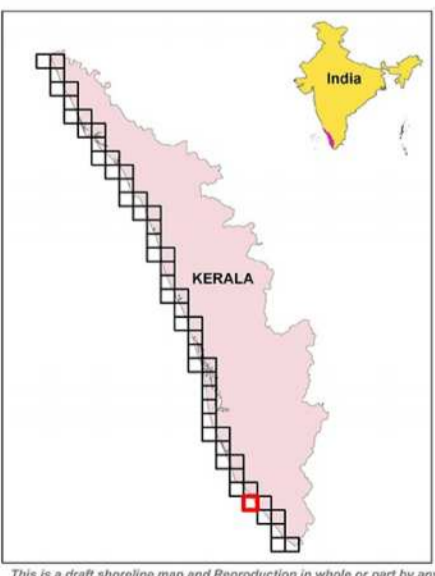
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SB D/7	SB D/11	SB D/15

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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/16/2016
LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	01/15/2013
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/20/2006 & 03/09/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

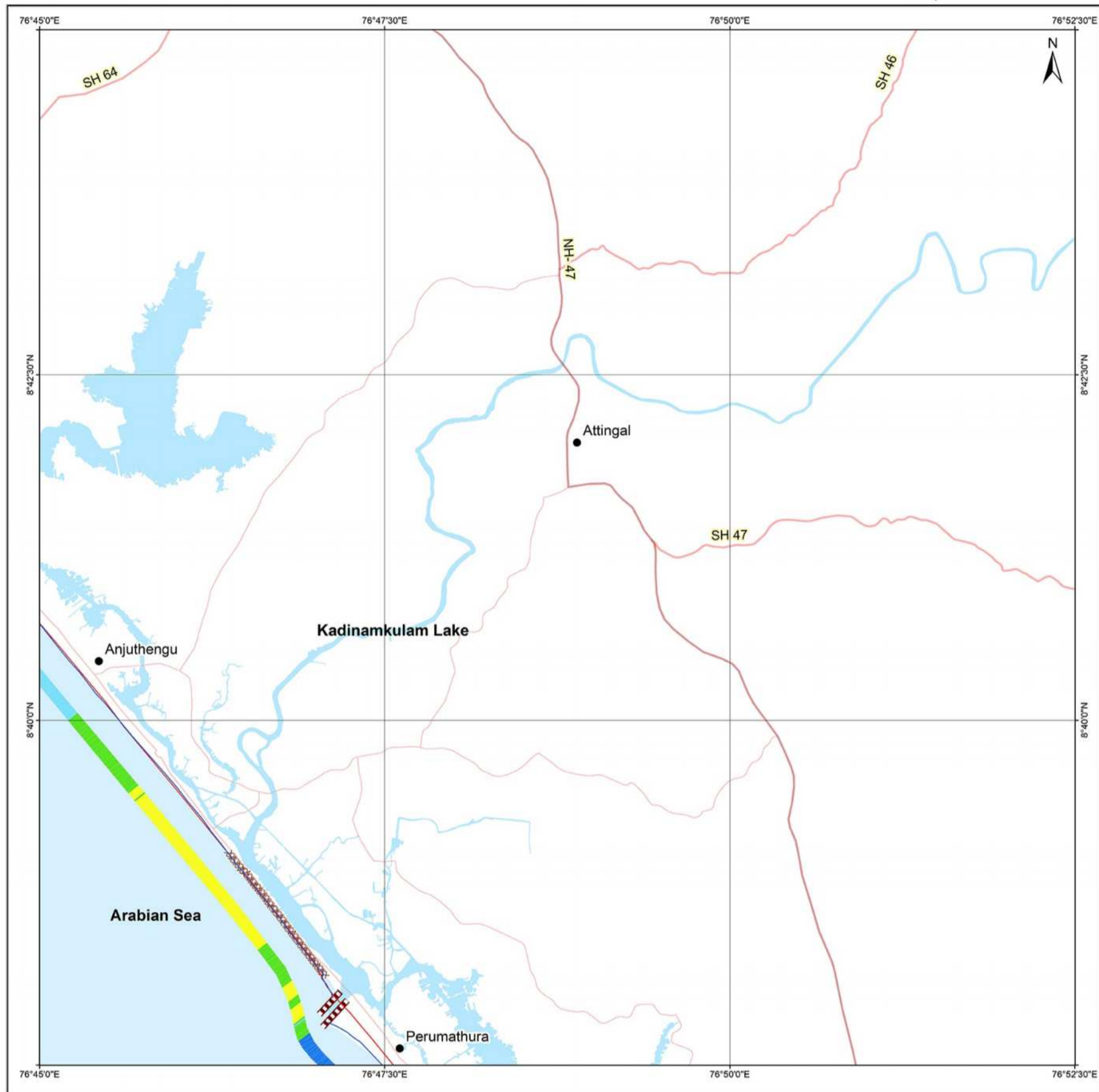
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SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 14 / NW
Map No. : NCCR/SCM/277



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990
- █ 02/05/2018

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58 D / 10 / NE	58 D / 14 / NW	58 D / 14 / NE
58 D / 10 / SE	58 D / 14 / SW	58 D / 14 / SE

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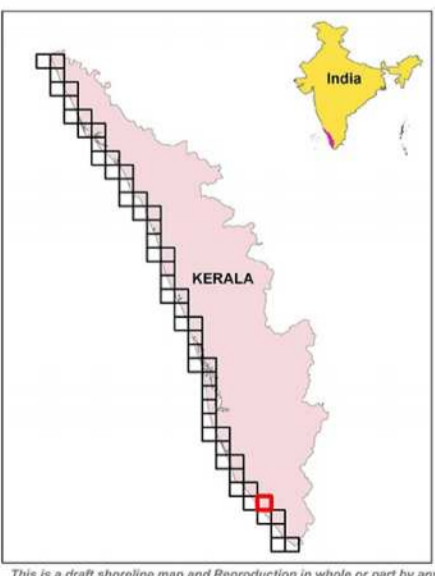
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58 D / 10	58 D / 14	58 H / 2
58 D / 11	58 D / 15	58 H / 3

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/17/2017 & 02/10/2017
LISS-IV	04/28/2016 & 02/16/2016
LISS-IV	01/28/2015
LISS-IV	02/26/2014
LISS-IV	12/08/2012
LISS-IV	03/01/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/09/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 14 / SW
Map No. : NCCR/SCM/278



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/25/1990
- 02/22/2018 & 02/05/2018

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SD/10/NE	SD/14/NW	SD/14/NE
SD/10/SE	SD/14/SW	SD/14/SE
SD/11/NE	SD/15/NW	SD/15/NE

Incidence on 1:50,000 Sheets

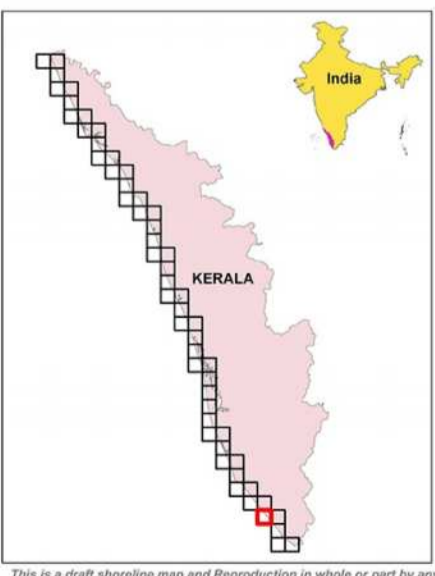
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SD/10	SD/14	SD/2
SD/11	SD/15	SD/3

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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/28/2016
LISS-IV	02/21/2015
LISS-IV	02/02/2014
LISS-IV	01/14/2013
LISS-IV	02/13/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/09/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

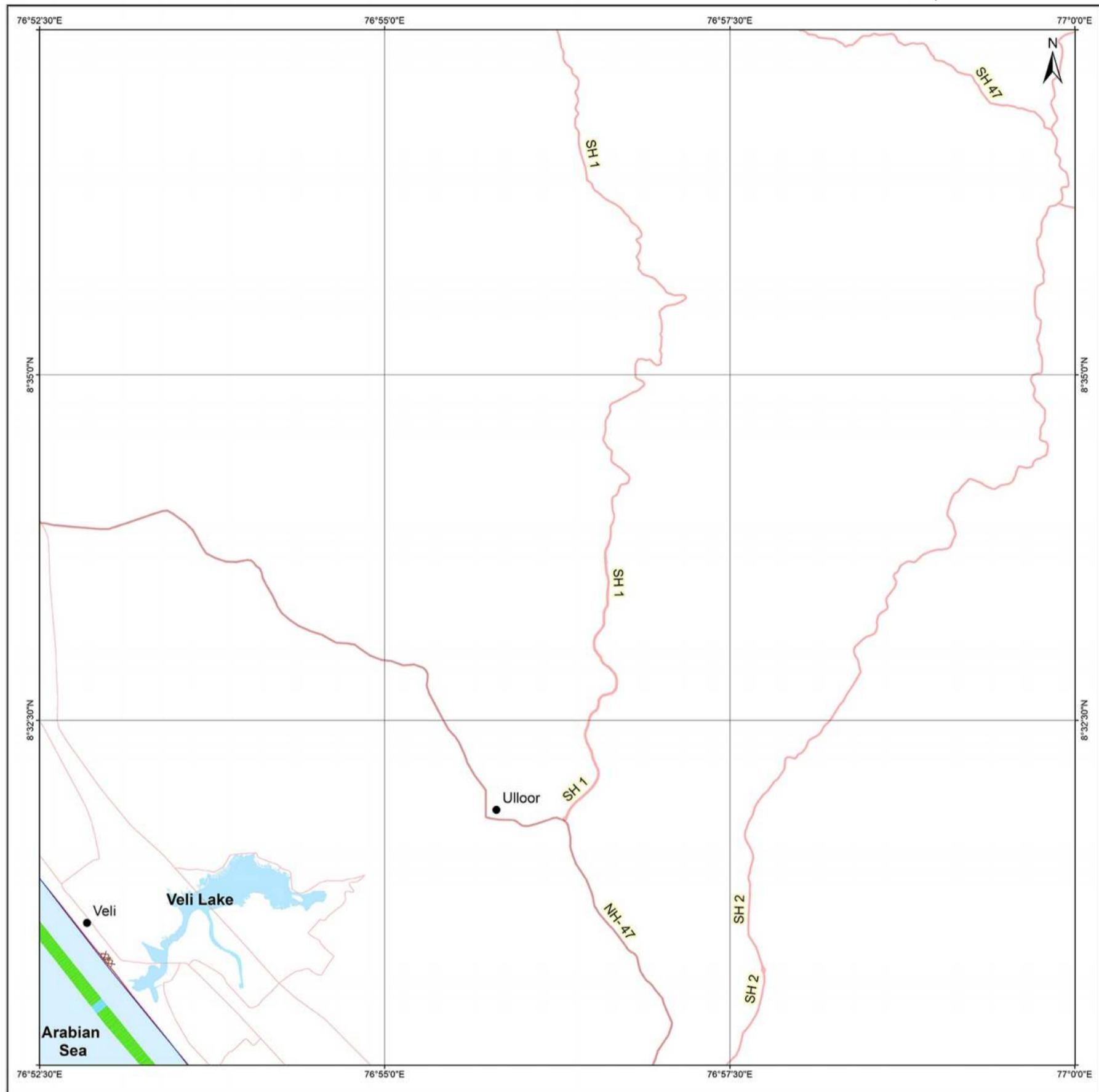
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SHORELINE CHANGE MAP KERALA

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58 D / 14 / SE
Map No. : NCCR/SCM/279



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/25/1990
- 02/22/2018

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58 D / 14 / SW	58 D / 14 / SE	58 H / 2 / SW
58 D / 15 / NW	58 D / 15 / NE	58 H / 3 / NW

Incidence on 1:50,000 Sheets

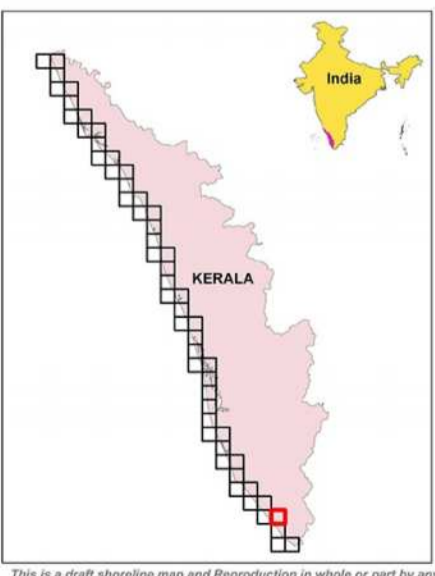
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58 D / 10	58 D / 14	58 H / 2
58 D / 11	58 D / 15	58 H / 3

Scale
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/10/2017
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LISS-IV	02/21/2015
LISS-IV	02/02/2014
LISS-IV	01/14/2013
LISS-IV	02/13/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/09/2006
ETM+	01/28/2000
TM	02/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP KERALA

Restricted Use
58 D / 15 / NE
Map No. : NCCR/SCM/280



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/25/1990 & 03/11/1992
- █ 02/22/2018

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SB D / 14 / SW	SB D / 14 / SE	SB H / 2 / SW
SB D / 15 / NW	SB D / 15 / NE	SB H / 3 / NW
SB D / 16 / SW	SB D / 16 / SE	SB H / 3 / SW

Incidence on 1:50,000 Sheets

SB D / 10	SB D / 14	SB H / 2
SB D / 11	SB D / 15	SB H / 3
SB D / 12	SB D / 16	SB H / 4

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

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LISS-IV	02/10/2017
LISS-IV	04/28/2016
LISS-IV	02/21/2015
LISS-IV	02/02/2014
LISS-IV	01/14/2013
LISS-IV	02/13/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	03/09/2006 & 01/21/2006
ETM+	01/28/2000
TM	02/25/1990 & 03/11/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

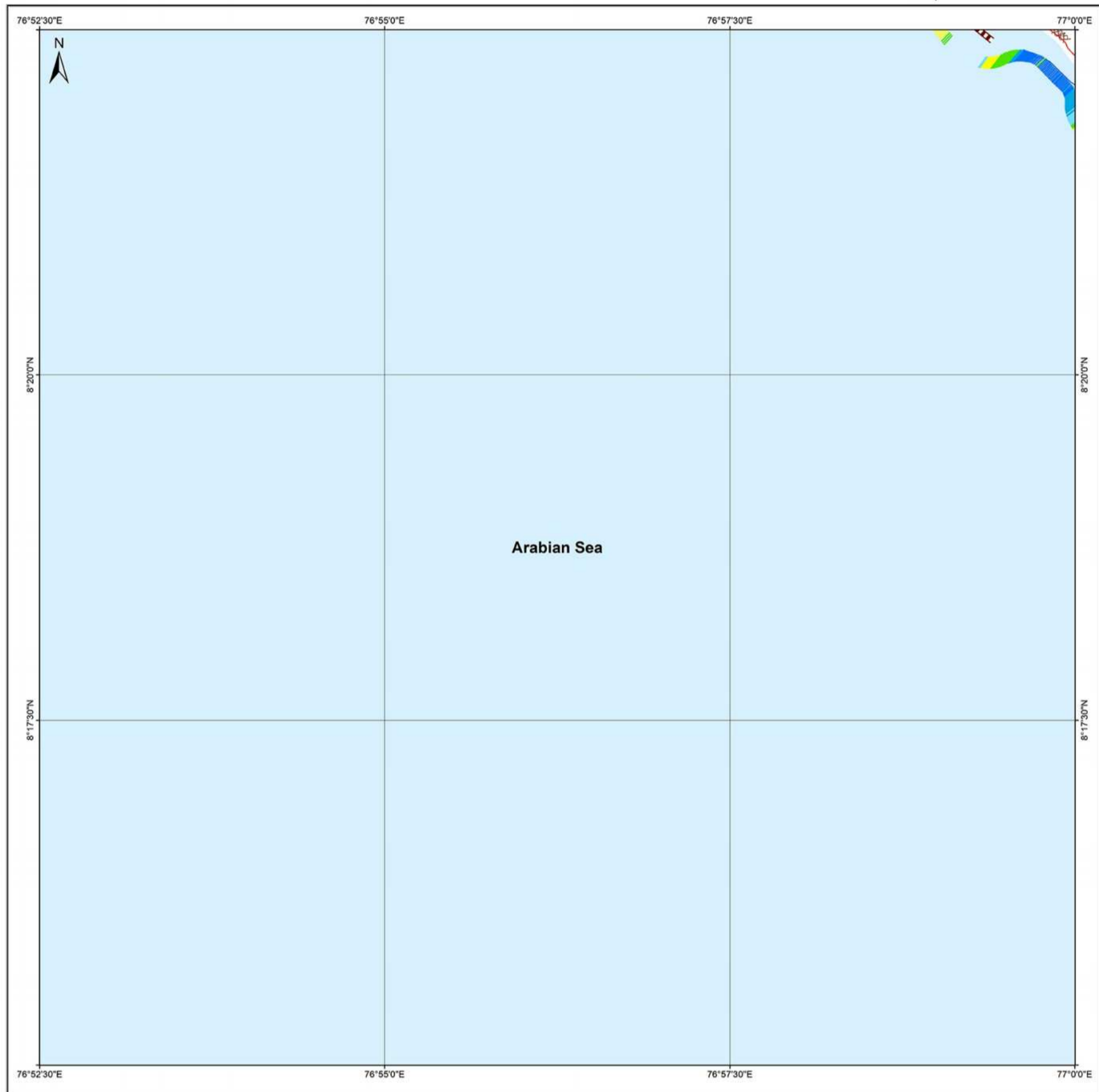
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SHORELINE CHANGE MAP KERALA

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58 D / 15 / SE
Map No. : NCCR/SCM/281



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/11/1992
- █ 03/03/2018

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58 D / 15 / SW	58 D / 15 / SE	58 H / 3 / SW
58 D / 16 / NW	58 D / 16 / NE	58 H / 4 / NW

Incidence on 1:50,000 Sheets

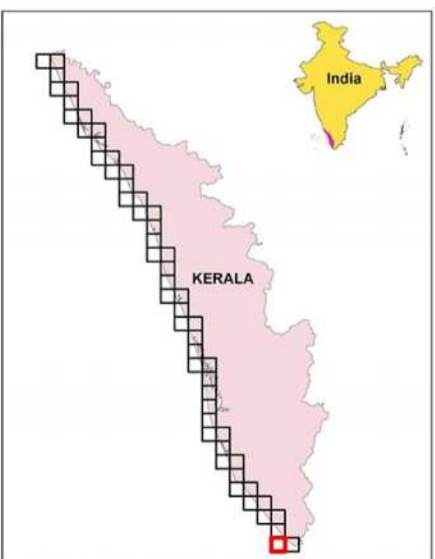
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58 D / 12	58 D / 16	58 H / 4

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/02/2014
LISS-IV	01/14/2013
LISS-IV	02/13/2012
LISS-III	01/24/2008
PAN (Cartosat-1)	01/21/2006
ETM+	01/28/2000
TM	03/11/1992



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

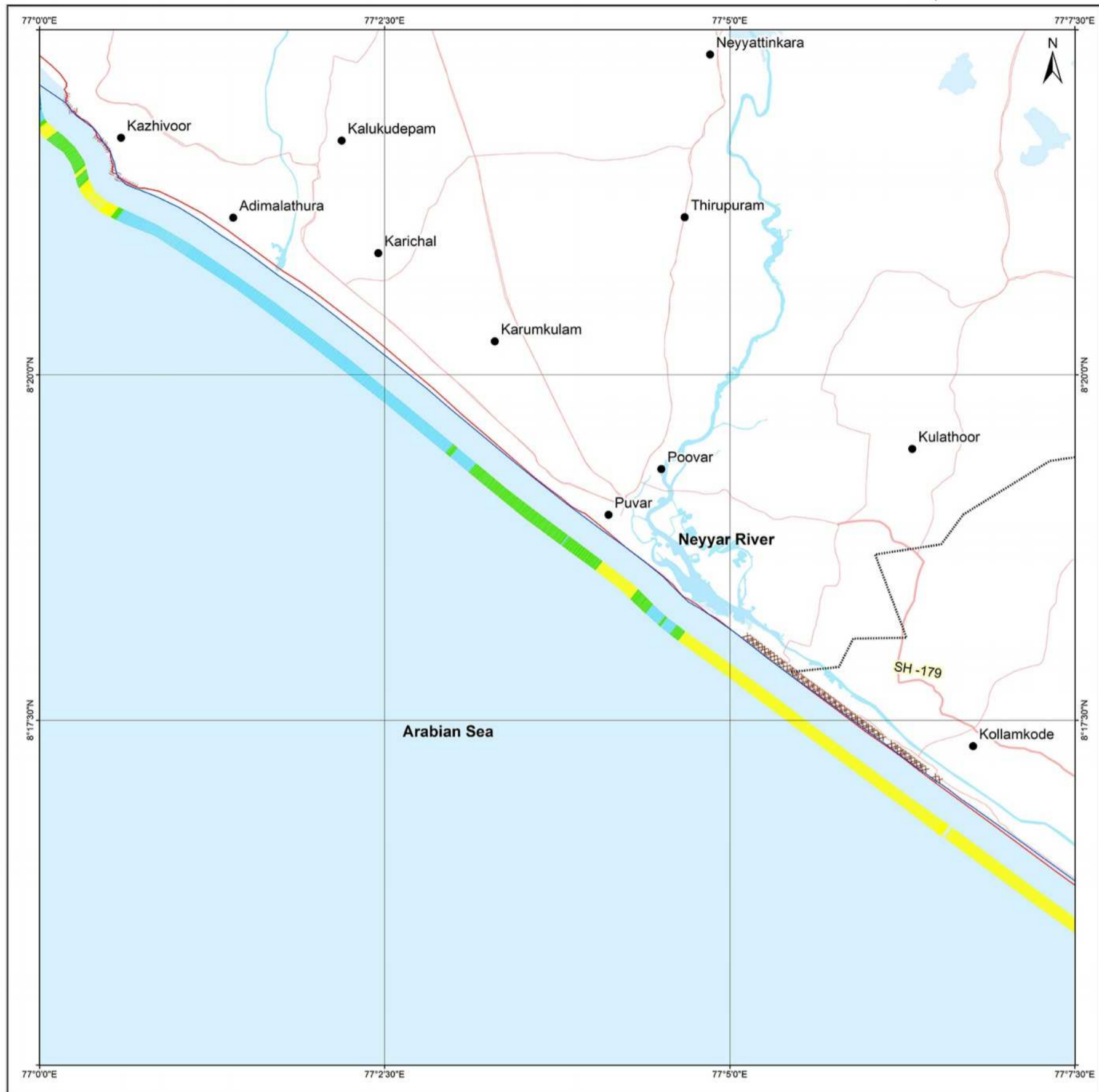
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SHORELINE CHANGE MAP KERALA & TAMIL NADU

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58 H / 3 / SW
Map No. : NCCR/SCM/282



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/11/1992
- 03/03/2018

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SD D/15/NE	SH H/3/NW	SH H/3/NE
SD D/15/SE	SH H/3/SW	SH H/3/SE
SD D/16/NE	SH H/4/NW	SH H/4/NE

Incidence on 1:50,000 Sheets

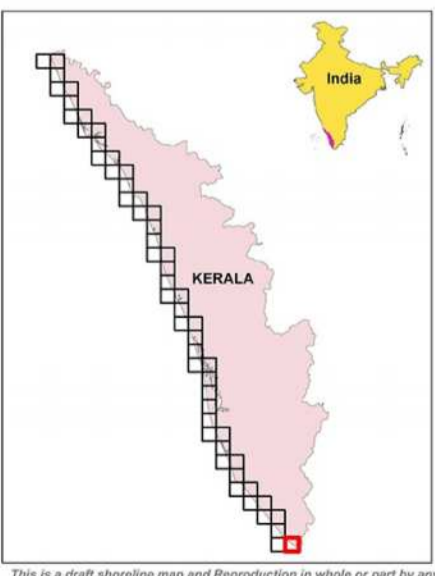
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SD D/15	SH H/3	SH H/7
SD D/16	SH H/4	SH H/8

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/03/2018
LISS-IV	02/10/2017
LISS-IV	04/28/2016 & 03/05/2016
LISS-IV	02/21/2015
LISS-IV	02/02/2014
LISS-IV	01/14/2013
LISS-IV	02/13/2012 & 01/25/2012
LISS-III	02/22/2008 & 01/10/2008
PAN (Cartosat-1)	01/21/2006 & 07/01/2006
ETM+	01/28/2000 & 12/15/2000
TM	03/11/1992



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

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Karnataka

1990-2018
UTTARA KANNADA

SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 1 / SW
Map No. : NCCR/SCM/206



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 16/01/2018

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48 F / 13 / NE	48 J / 1 / NW	48 J / 1 / NE
48 F / 13 / SE	48 J / 1 / SW	48 J / 1 / SE
48 F / 14 / NE	48 J / 2 / NW	48 J / 2 / NE

Incidence on 1:50,000 Sheets

48 E / 16	48 I / 4	48 I / 8
48 F / 13	48 J / 1	48 J / 5
48 F / 14	48 J / 2	48 J / 6

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	16/01/2018
LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

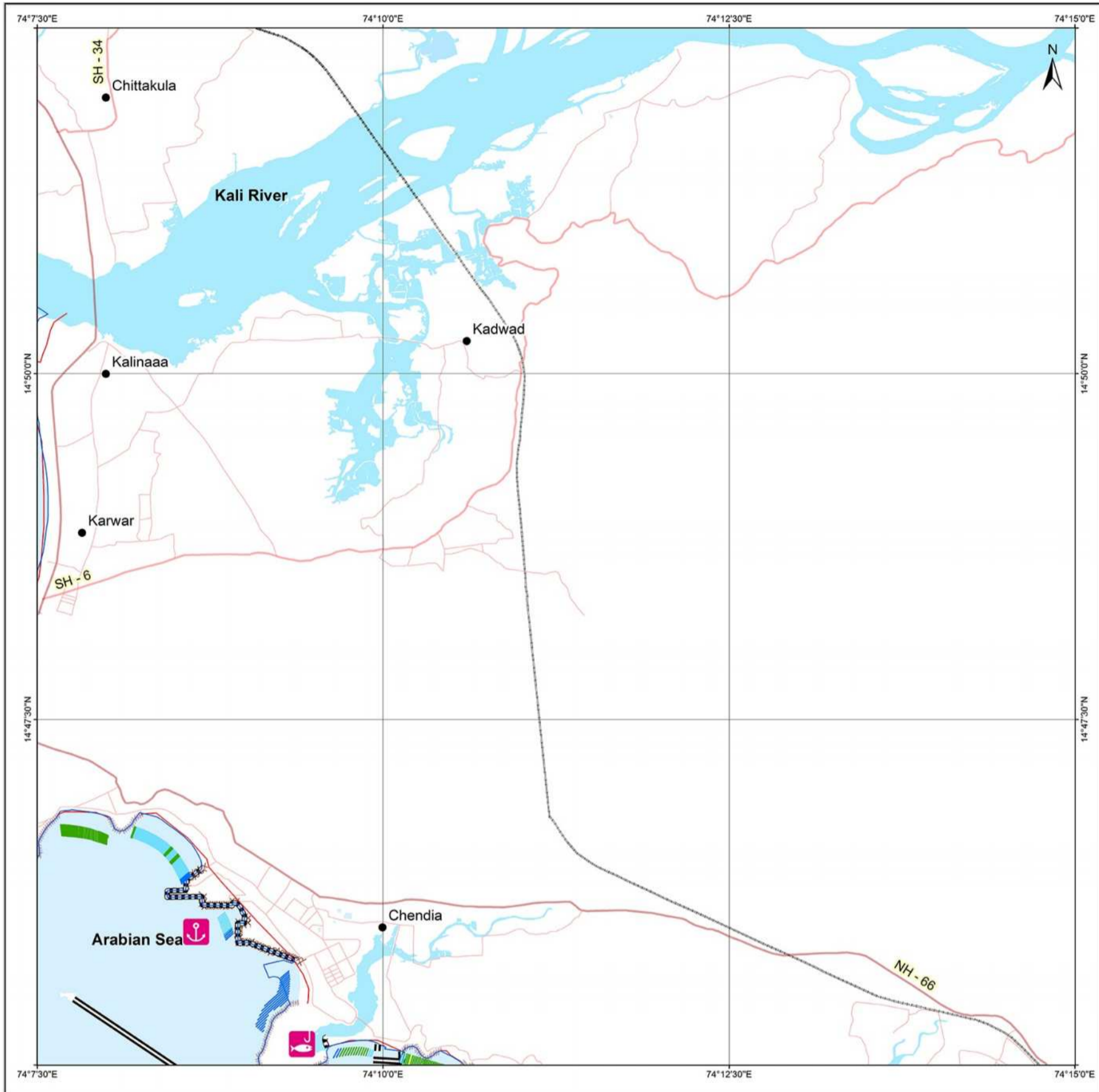
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1990-2018
UTTARA KANNADA

SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 1 / SE
Map No. : NCCR/SCM/207



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 16/01/2018

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48 J 1 / NW	48 J 1 / NE	48 J 1 / NW
48 J 1 / SW	48 J 1 / SE	48 J 1 / SW
48 J 2 / NW	48 J 2 / NE	48 J 1 / NW

Incidence on 1:50,000 Sheets

48 E / 16	48 I / 4	48 I / 8
48 F / 13	48 J / 1	48 J / 5
48 F / 14	48 J / 2	48 J / 6

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	16/01/2018
LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

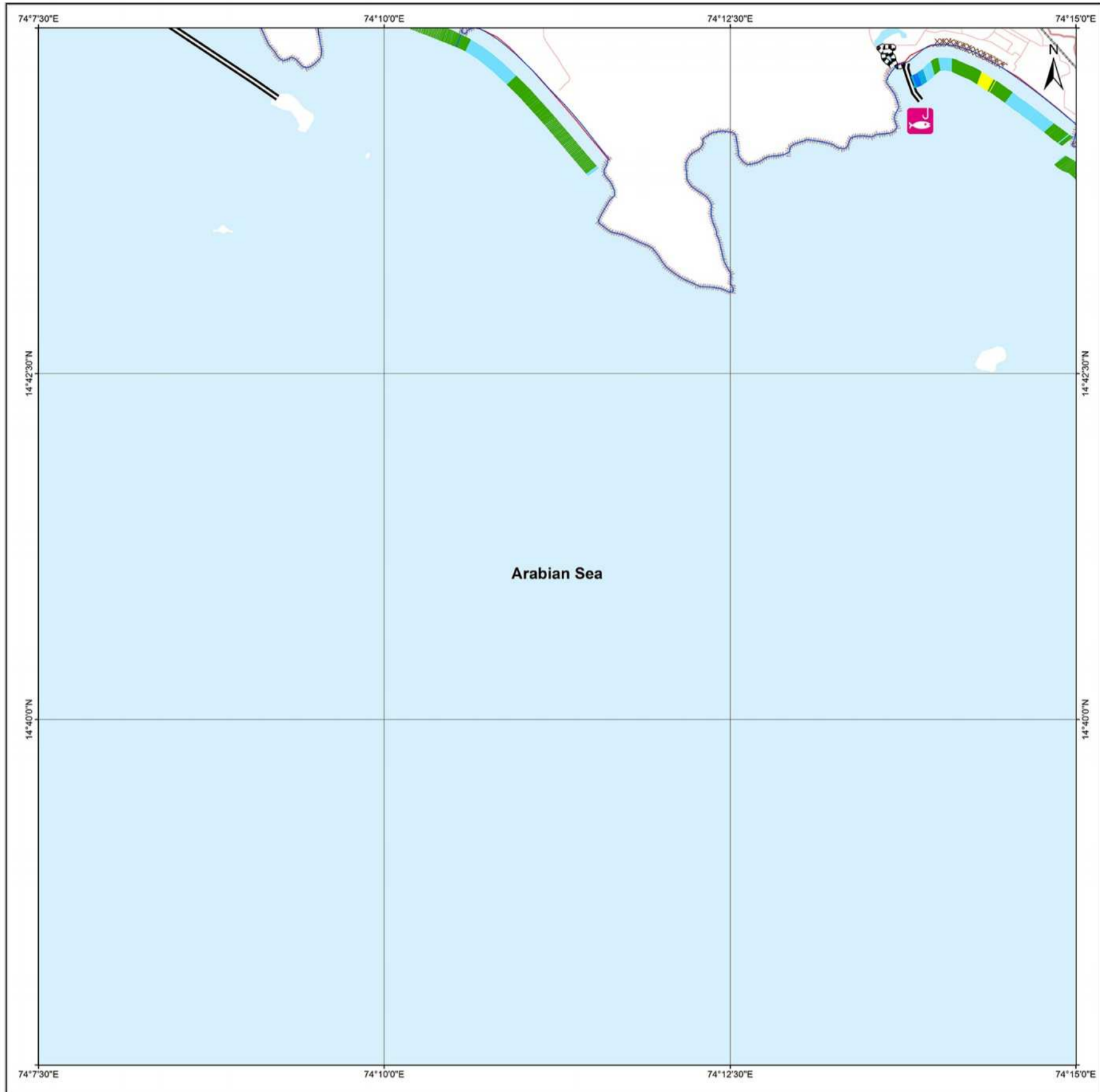
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1990-2018
UTTARA KANNADA

SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 2 / NE
Map No. : NCCR/SCM/208



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 16/01/2018

Index to sheets

48 J / 1 / SW	48 J / 1 / SE	48 J / 5 / SW
48 J / 2 / NW	48 J / 2 / NE	48 J / 5 / NW
48 J / 2 / SW	48 J / 2 / SE	48 J / 5 / SW

Incidence on 1:50,000 Sheets

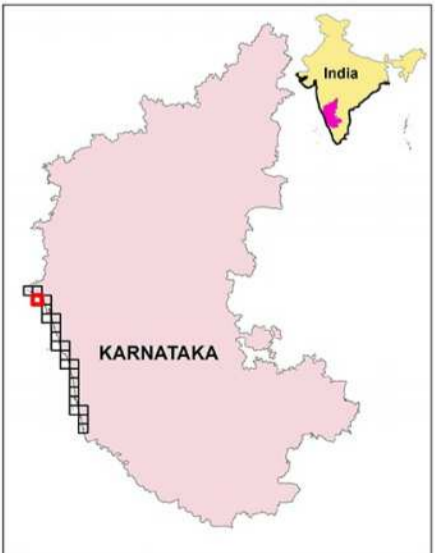
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48 F / 15	48 J / 3	48 J / 7

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	16/01/2018
LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

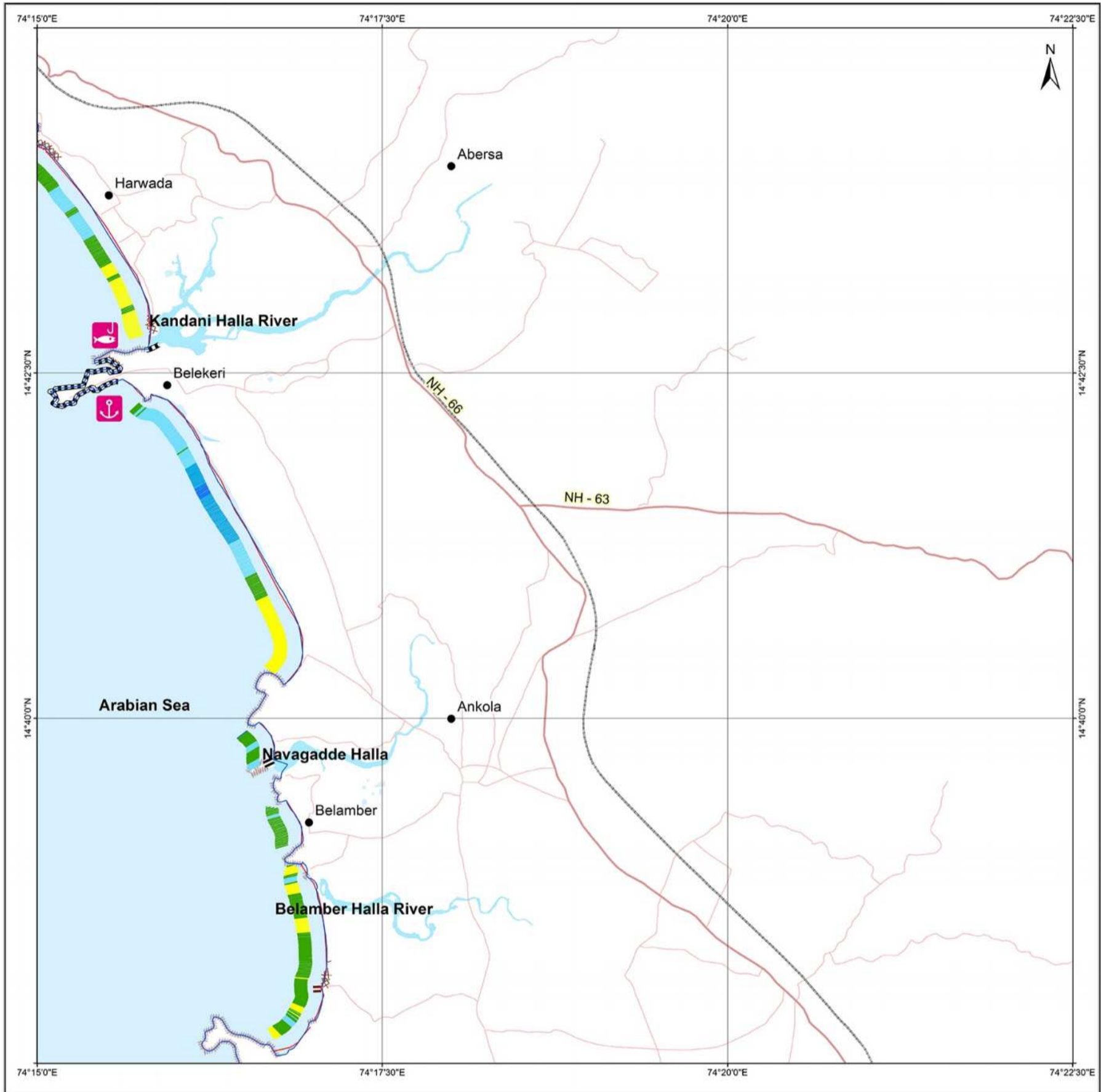
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1990-2018
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 6 / NW
Map No. : NCCR/SCM/209



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 16/01/2018

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48 J / 1 / SE	48 J / 5 / SW	48 J / 5 / SE
48 J / 2 / NE	48 J / 6 / NW	48 J / 6 / NE
48 J / 2 / SE	48 J / 6 / SW	48 J / 6 / SE

Incidence on 1:50,000 Sheets

48 J / 1	48 J / 5	48 J / 9
48 J / 2	48 J / 6	48 J / 10
48 J / 3	48 J / 7	48 J / 11

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

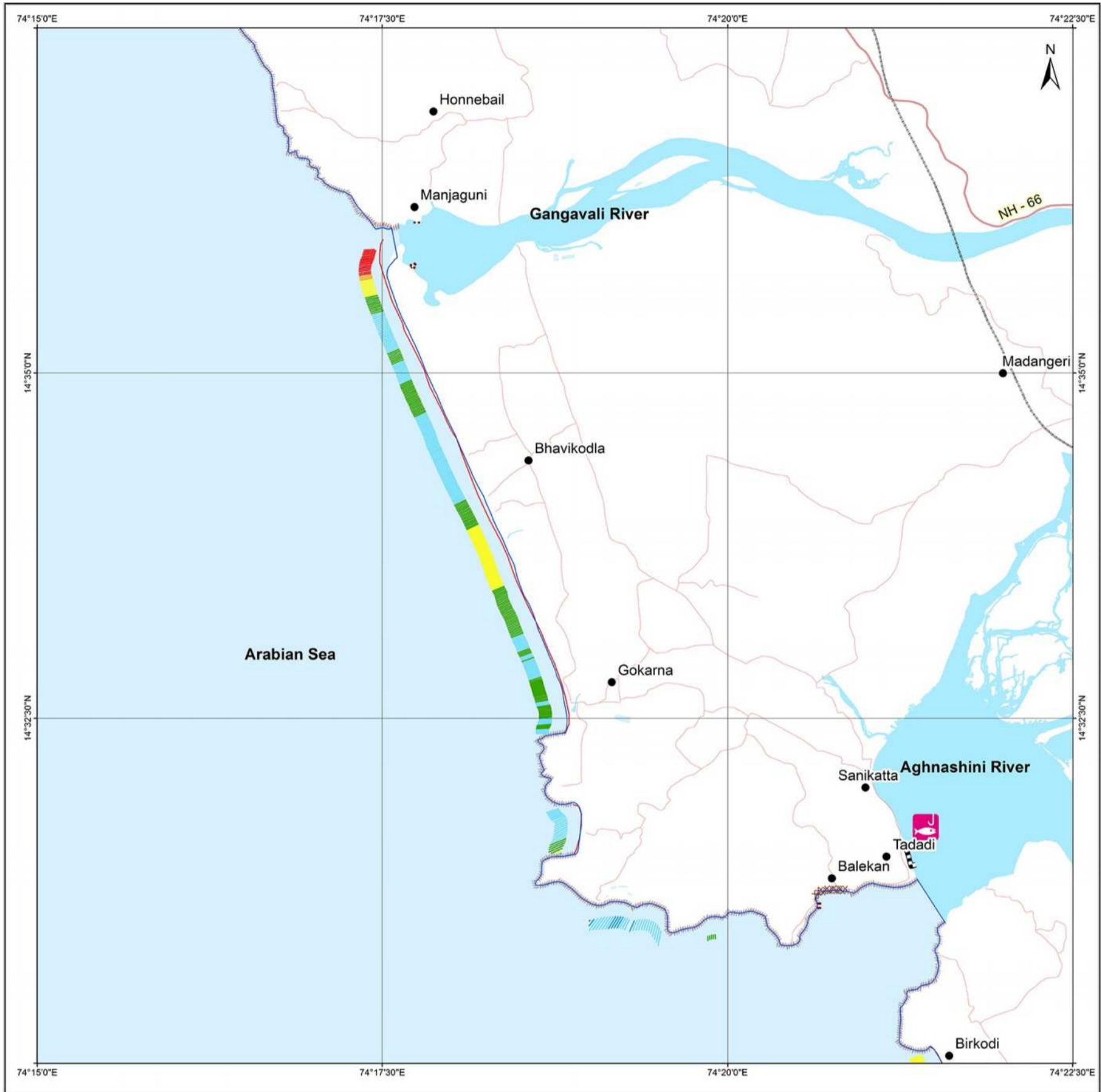
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SHORELINE CHANGE MAP KARNATAKA

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48 J / 6 / SW
Map No. : NCCR/SCM/210



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 16/01/2018

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48 J/2/NE	48 J/6/NW	48 J/6/NE
48 J/2/SE	48 J/6/SW	48 J/6/SE
48 J/3/NE	48 J/7/NW	48 J/7/NE

Incidence on 1:50,000 Sheets

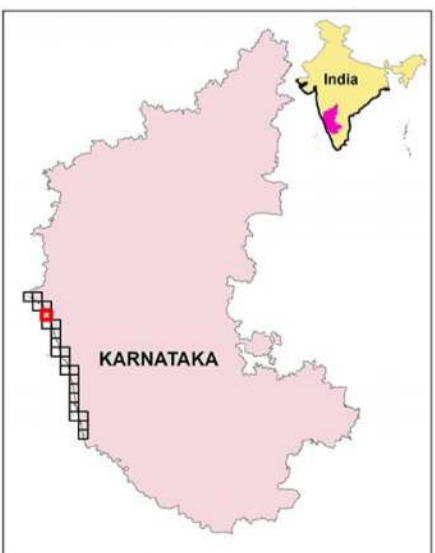
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48 J/2	48 J/6	48 J/10
48 J/3	48 J/7	48 J/11

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

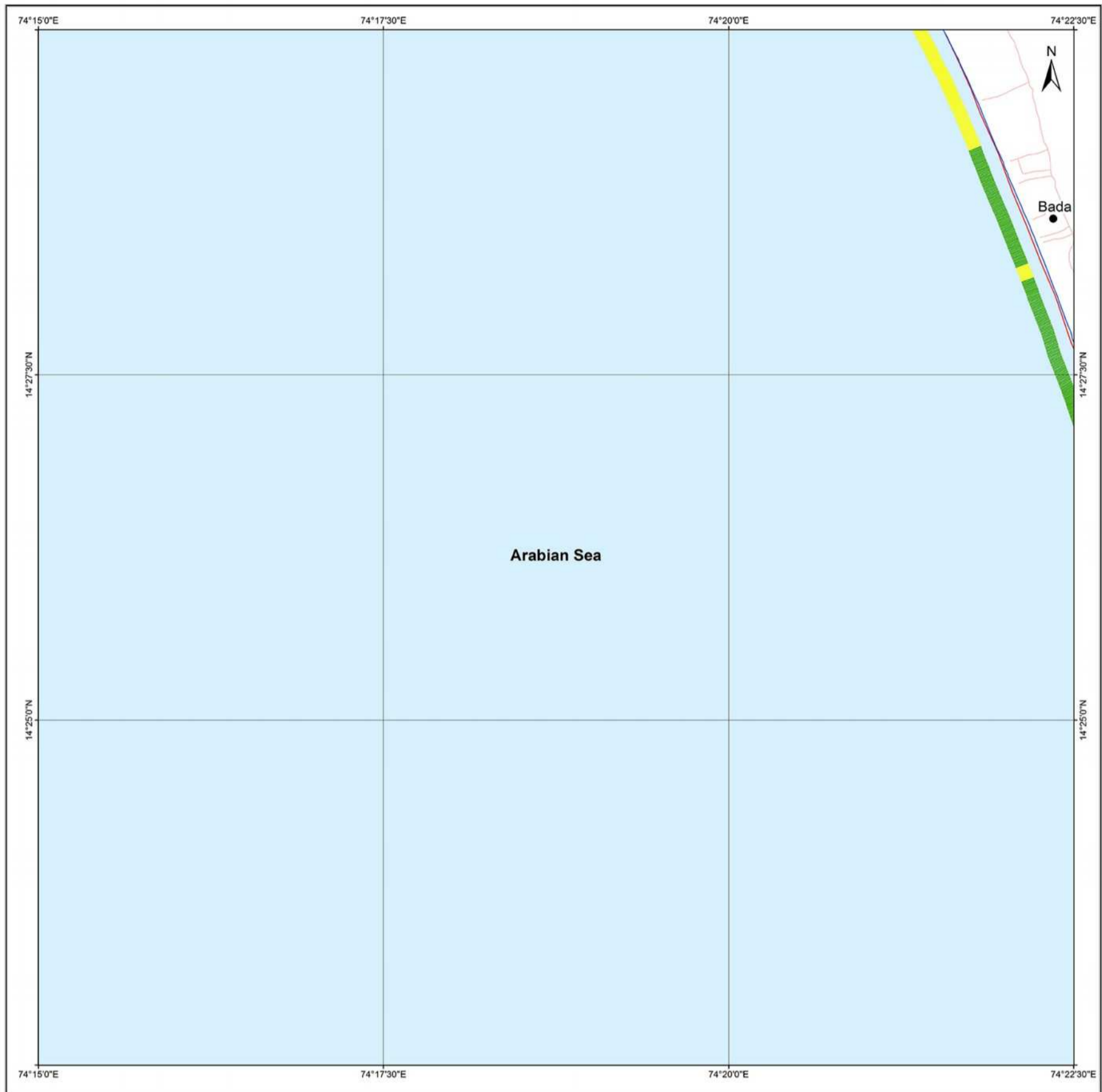
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 7 / NW
Map No. : NCCR/SCM/211



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 16/01/2018

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48 J / 2 / SE	48 J / 6 / SW	48 J / 6 / SE
48 J / 3 / NE	48 J / 7 / NW	48 J / 7 / NE
48 J / 3 / SE	48 J / 7 / SW	48 J / 7 / SE

Incidence on 1:50,000 Sheets

48 J / 2	48 J / 6	48 J / 10
48 J / 3	48 J / 7	48 J / 11
48 J / 4	48 J / 8	48 J / 12

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

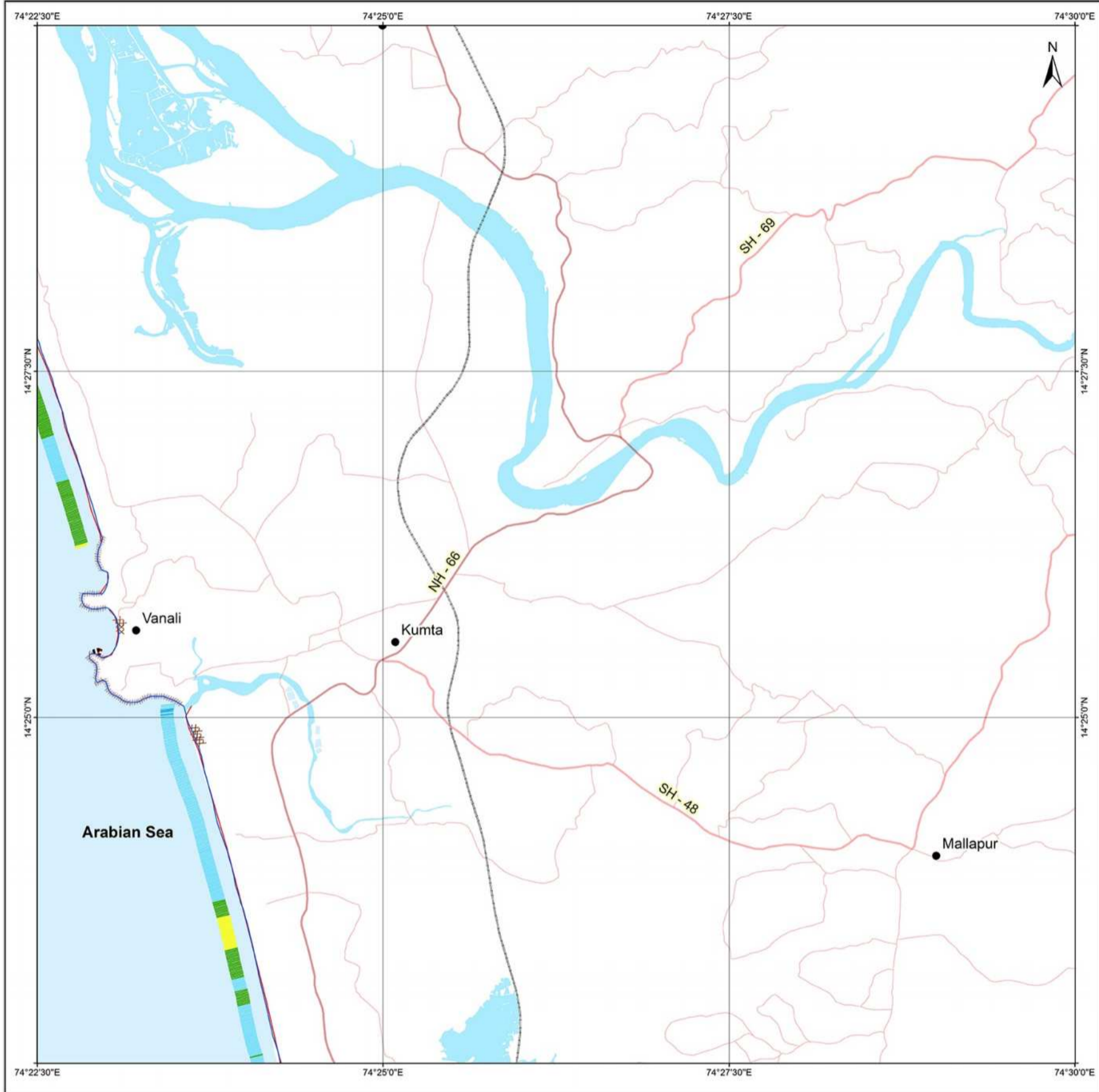
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SHORELINE CHANGE MAP KARNATAKA

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48 J / 7 / NE
Map No. : NCCR/SCM/212



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 16/01/2018 & 21/01/2018

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48 J / 6 / SW	48 J / 6 / SE	48 J / 10 / SW
48 J / 7 / NW	48 J / 7 / NE	48 J / 11 / NW
48 J / 7 / SW	48 J / 7 / SE	48 J / 11 / SW

Incidence on 1:50,000 Sheets

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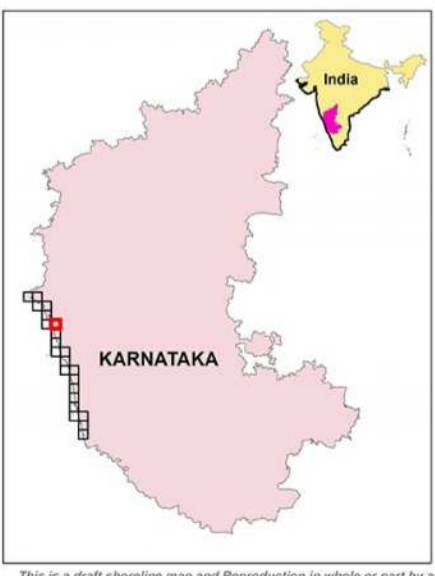
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

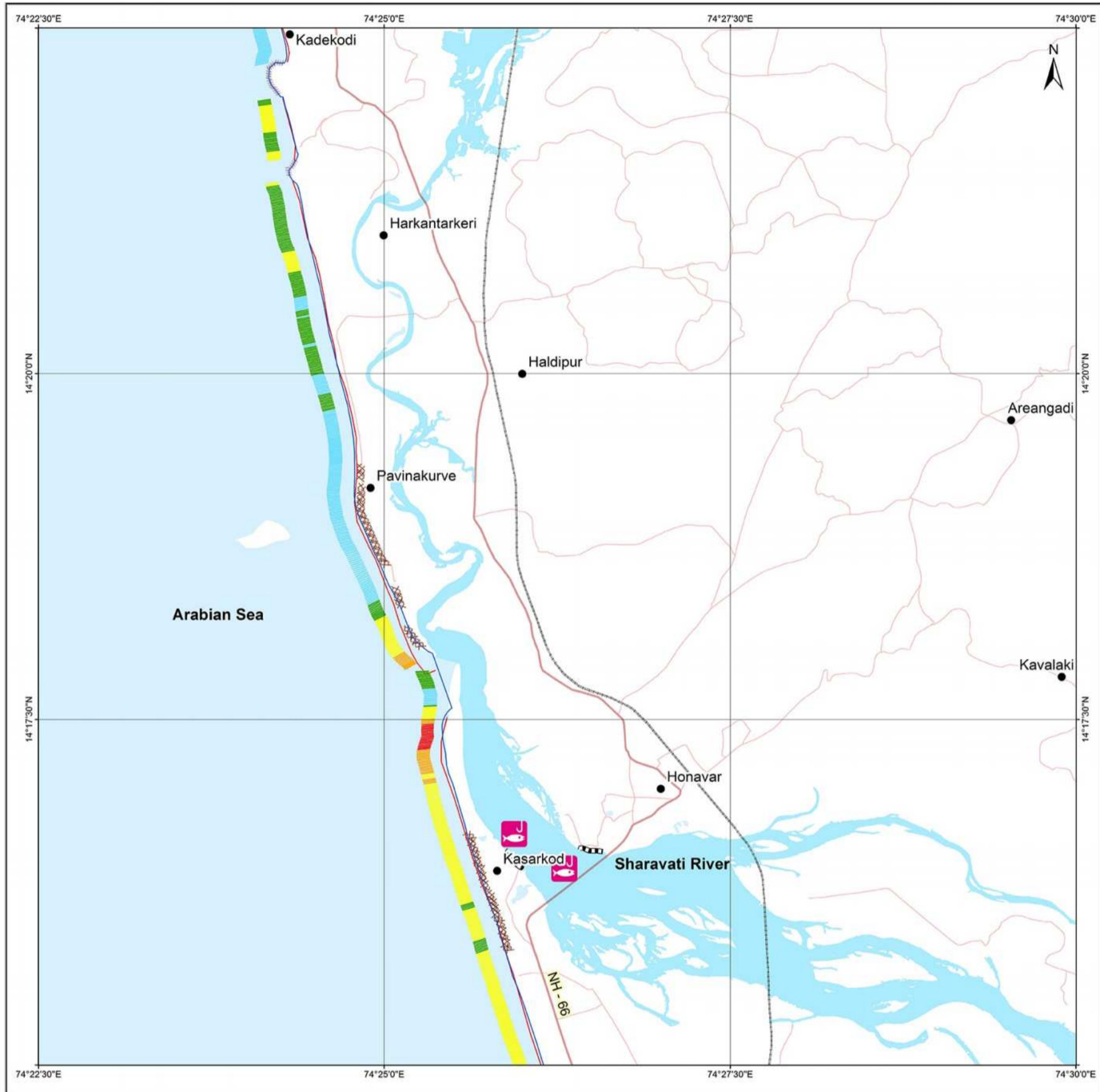
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SHORELINE CHANGE MAP KARNATAKA

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48 J / 7 / SE
Map No. : NCCR/SCM/213



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

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48 J / 7 / NW	48 J / 7 / NE	48 J / 11 / NW
48 J / 7 / SW	48 J / 7 / SE	48 J / 11 / SW
48 J / 8 / NW	48 J / 8 / NE	48 J / 12 / NW

Incidence on 1:50,000 Sheets

48 J / 2	48 J / 6	48 J / 10
48 J / 3	48 J / 7	48 J / 11
48 J / 4	48 J / 8	48 J / 12

Scale
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1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	14/02/2017
LISS-IV	03/15/2016
LISS-IV	02/25/2015
LISS-IV	03/26/2014
LISS-IV	03/07/2013
LISS-IV	02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

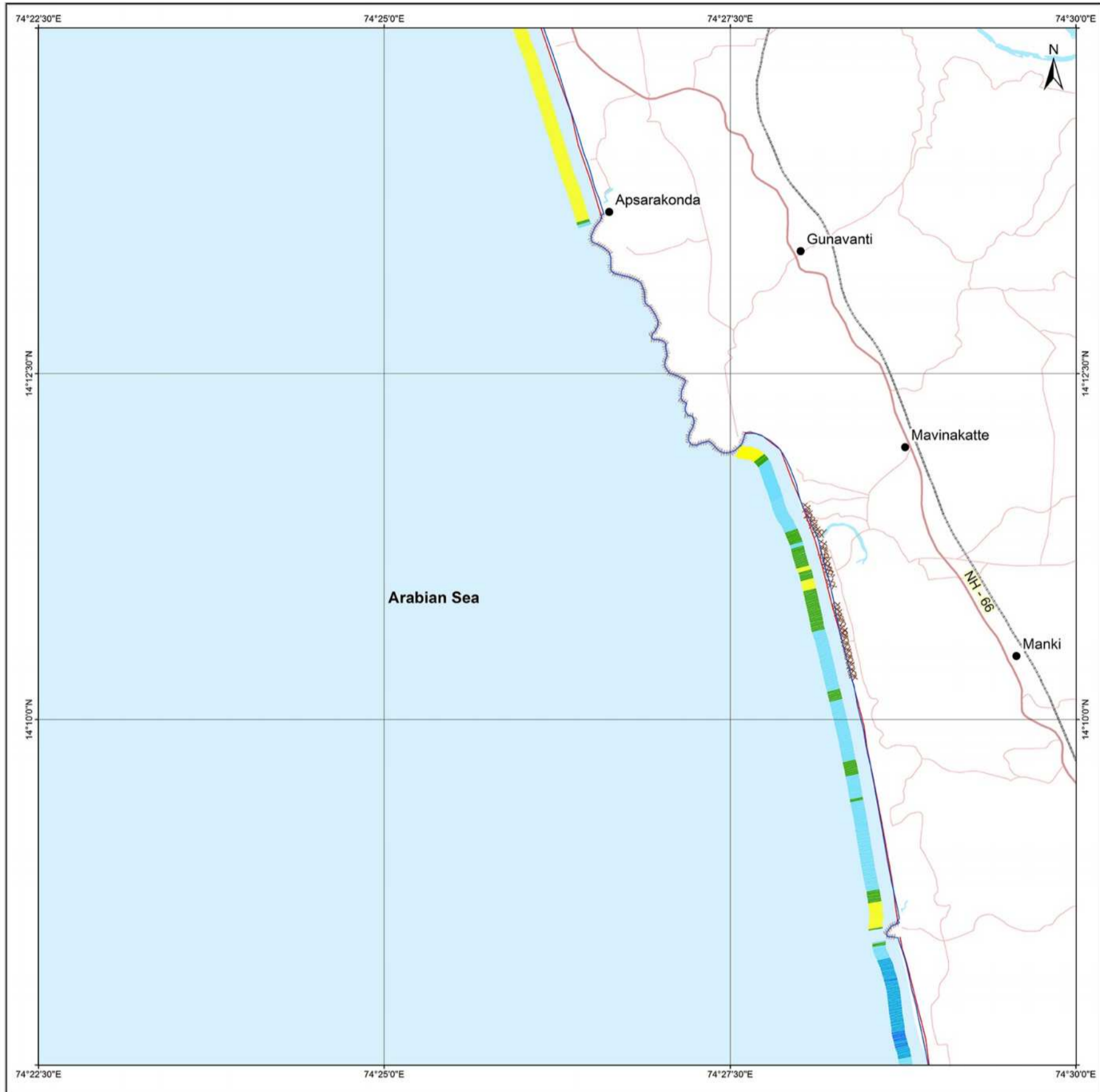
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SHORELINE CHANGE MAP KARNATAKA

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48 J / 8 / NE
Map No. : NCCR/SCM/214



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

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48 J 17 / SW	48 J 17 / SE	48 J 11 / SW
48 J 18 / NW	48 J 8 / NE	48 J 12 / NW
48 J 18 / SW	48 J 9 / SE	48 J 12 / SW

Incidence on 1:50,000 Sheets

48 J 3	48 J 7	48 J 11
48 J 4	48 J 8	48 J 12
48 K 1	48 K 5	48 K 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	14/02/2017 & 19/02/2017
LISS-IV	05/07/2016 & 03/15/2016
LISS-IV	04/19/2015 & 02/25/2015
LISS-IV	02/11/2014 & 03/26/2014
LISS-IV	03/12/2013 & 03/07/2013
LISS-IV	01/05/2012 & 02/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

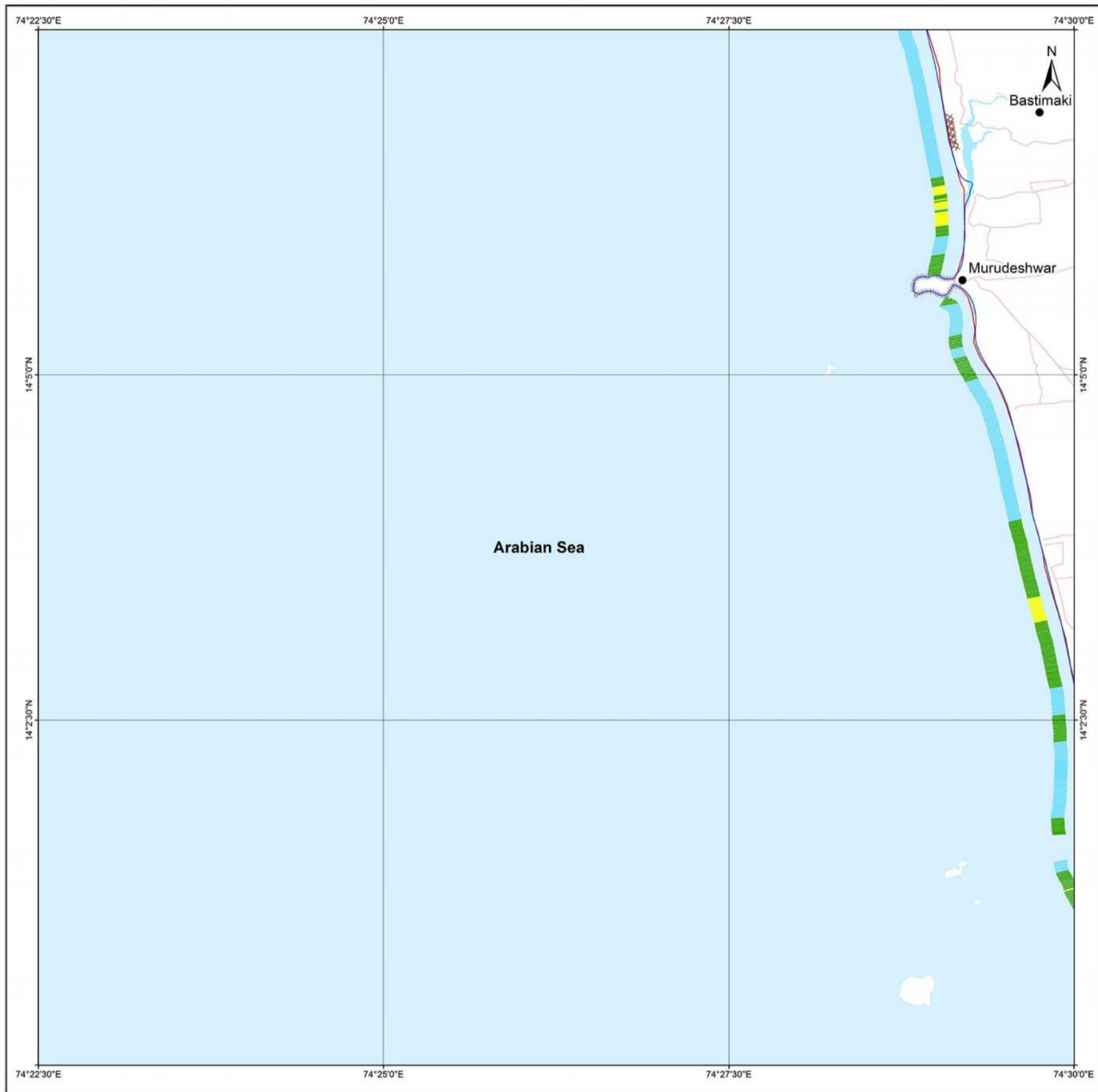
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SHORELINE CHANGE MAP KARNATAKA

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48 J / 8 / SE
Map No. : NCCR/SCM/215



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

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48 J / 8 / NW	48 J / 8 / NE	48 J / 12 / NW
48 J / 8 / SW	48 J / 8 / SE	48 J / 12 / SW
48 K / 5 / NW	48 K / 5 / NE	48 K / 9 / NW

Incidence on 1:50,000 Sheets

48 J / 3	48 J / 7	48 J / 11
48 J / 4	48 J / 8	48 J / 12
48 K / 1	48 K / 5	48 K / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

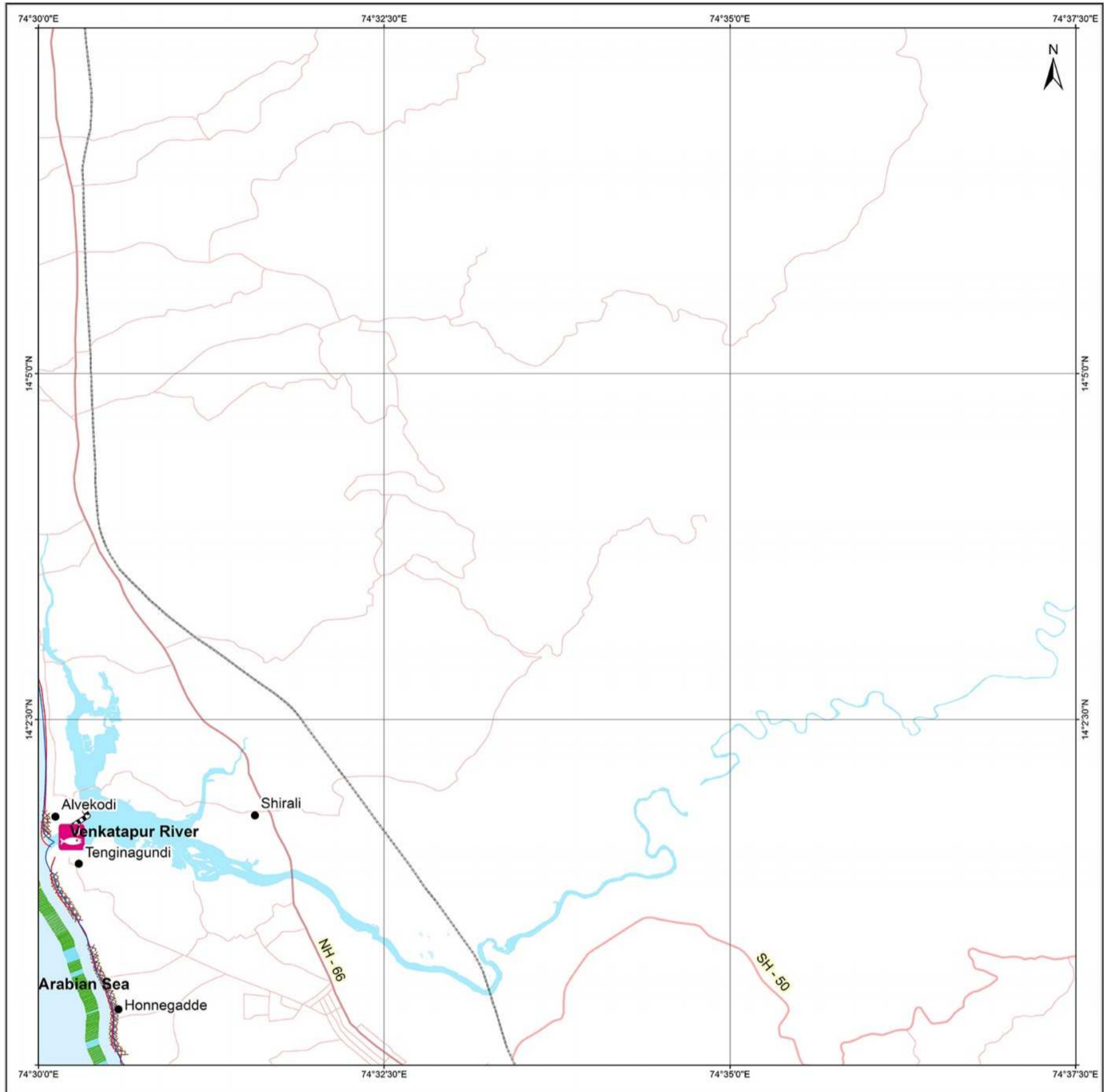
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1990-2018
UTTARA KANNADA

SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 J / 12 / SW
Map No. : NCCR/SCM/216



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 J / 8 / NE	48 J / 12 / NW	48 J / 12 / NE
48 J / 8 / SE	48 J / 12 / SW	48 J / 12 / SE
48 K / 5 / NE	48 K / 9 / NW	48 K / 9 / NE

Incidence on 1:50,000 Sheets

48 J / 7	48 J / 11	48 J / 15
48 J / 8	48 J / 12	48 J / 16
48 K / 5	48 K / 9	48 K / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
LISS-IV	05/07/2016
LISS-IV	04/19/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

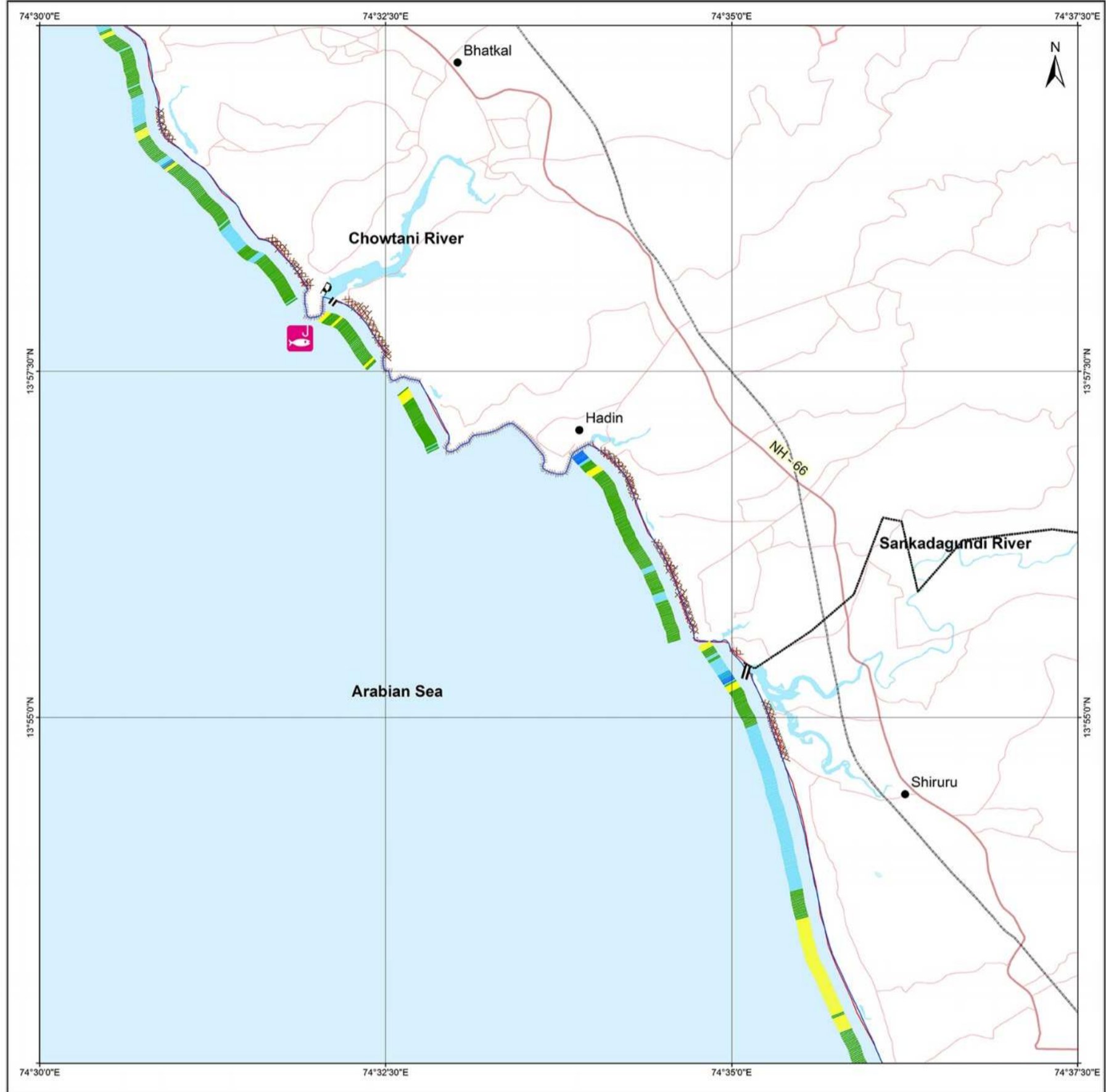
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&UTTARA KANNADA

SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 9 / NW
Map No. : NCCR/SCM/217



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 J / 8 / SE	48 J / 12 / SW	48 J / 12 / SE
48 K / 5 / NE	48 K / 9 / NW	48 K / 9 / NE
48 K / 5 / SE	48 K / 9 / SW	48 K / 9 / SE

Incidence on 1:50,000 Sheets

48 J / 8	48 J / 12	48 J / 16
48 K / 5	48 K / 9	48 K / 13
48 K / 6	48 K / 10	48 K / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
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LISS-IV	04/19/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

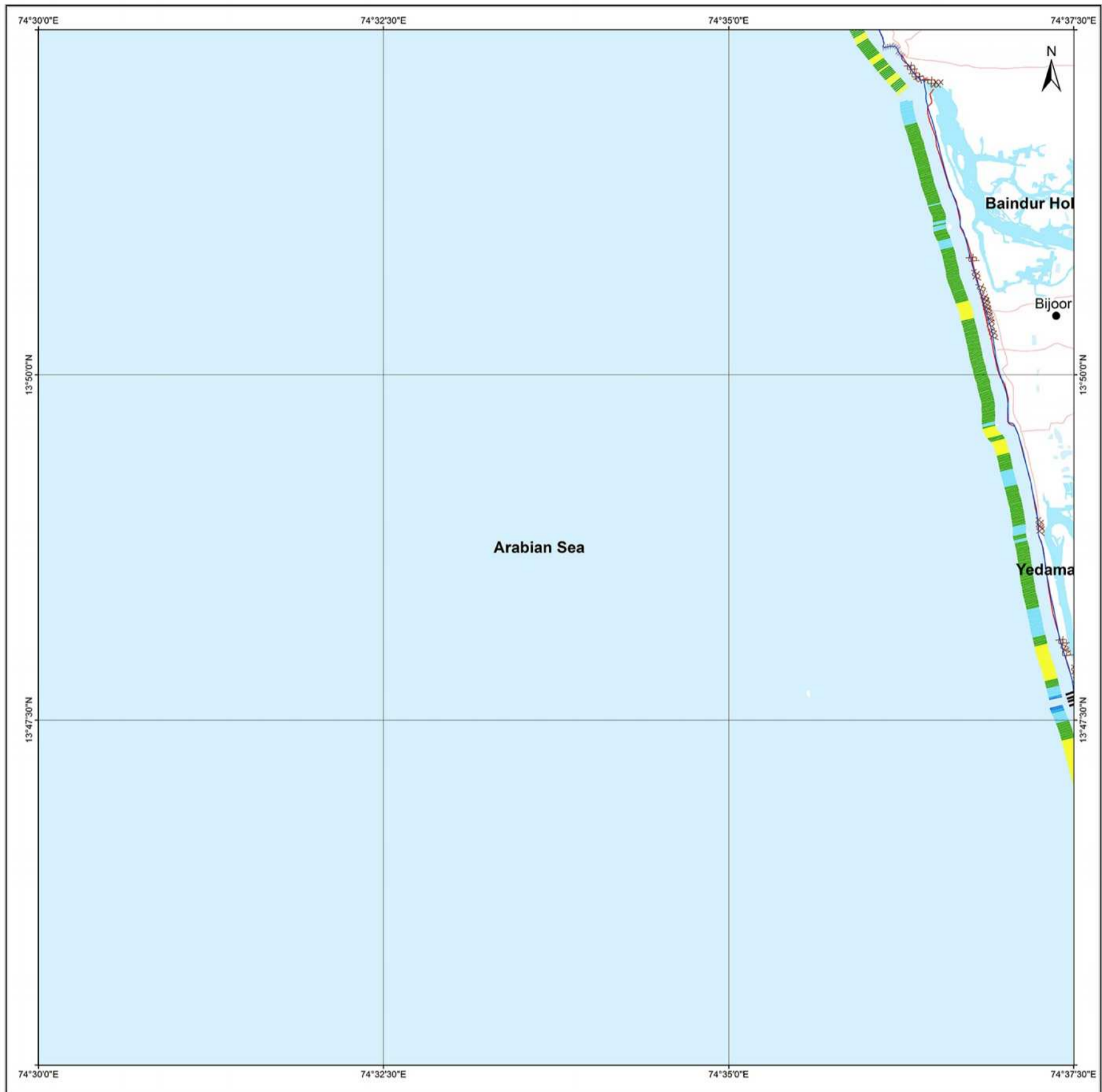
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 9 / SW
Map No. : NCCR/SCM/218



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 K / 5 / NE	48 K / 9 / NW	48 K / 9 / NE
48 K / 5 / SE	48 K / 9 / SW	48 K / 9 / SE
48 K / 6 / NE	48 K / 10 / NW	48 K / 10 / NE

Incidence on 1:50,000 Sheets

48 J / 8	48 J / 12	48 J / 16
48 K / 5	48 K / 9	48 K / 13
48 K / 6	48 K / 10	48 K / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
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LISS-IV	04/19/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

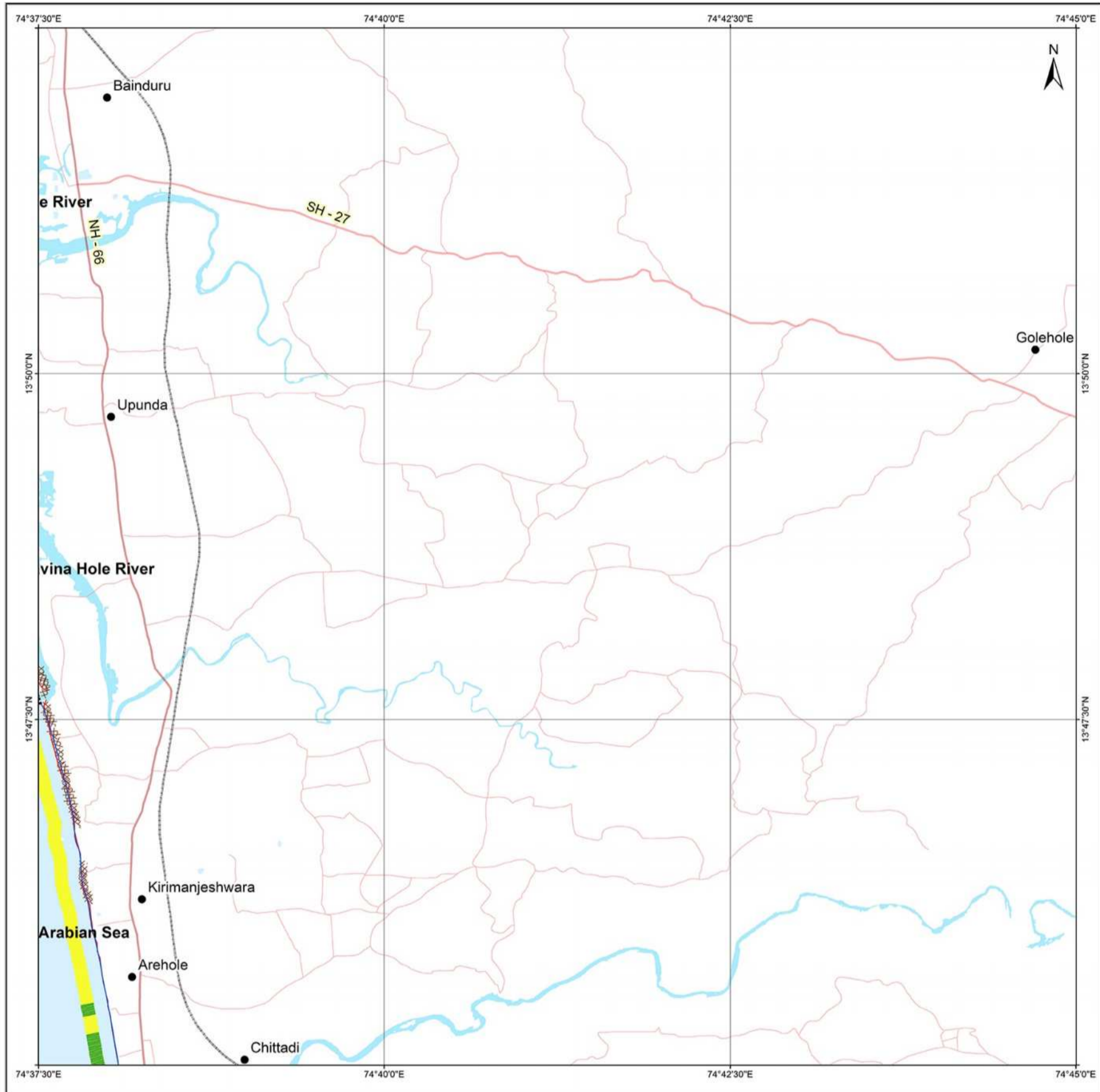
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 9 / SE
Map No. : NCCR/SCM/219



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 K / 9 / NW	48 K / 9 / NE	48 K / 13 / NW
48 K / 9 / SW	48 K / 9 / SE	48 K / 13 / SW
48 K / 10 / NW	48 K / 10 / NE	48 K / 14 / NW

Incidence on 1:50,000 Sheets

48 J / 8	48 J / 12	48 J / 16
48 K / 5	48 K / 9	48 K / 13
48 K / 6	48 K / 10	48 K / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
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LISS-IV	05/07/2016
LISS-IV	04/19/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
- Other Roads
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SHORELINE CHANGE MAP KARNATAKA

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48 K / 10 / NE
Map No. : NCCR/SCM/220



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 K / 9 / SW	48 K / 9 / SE	48 K / 13 / SW
48 K / 10 / NW	48 K / 10 / NE	48 K / 14 / NW
48 K / 10 / SW	48 K / 10 / SE	48 K / 14 / SW

Incidence on 1:50,000 Sheets

48 K / 5	48 K / 9	48 K / 13
48 K / 6	48 K / 10	48 K / 14
48 K / 7	48 K / 11	48 K / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
LISS-IV	02/01/2016 & 05/07/2016
LISS-IV	01/13/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- State Highways
- Other Roads
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- Lakes
- Rivers

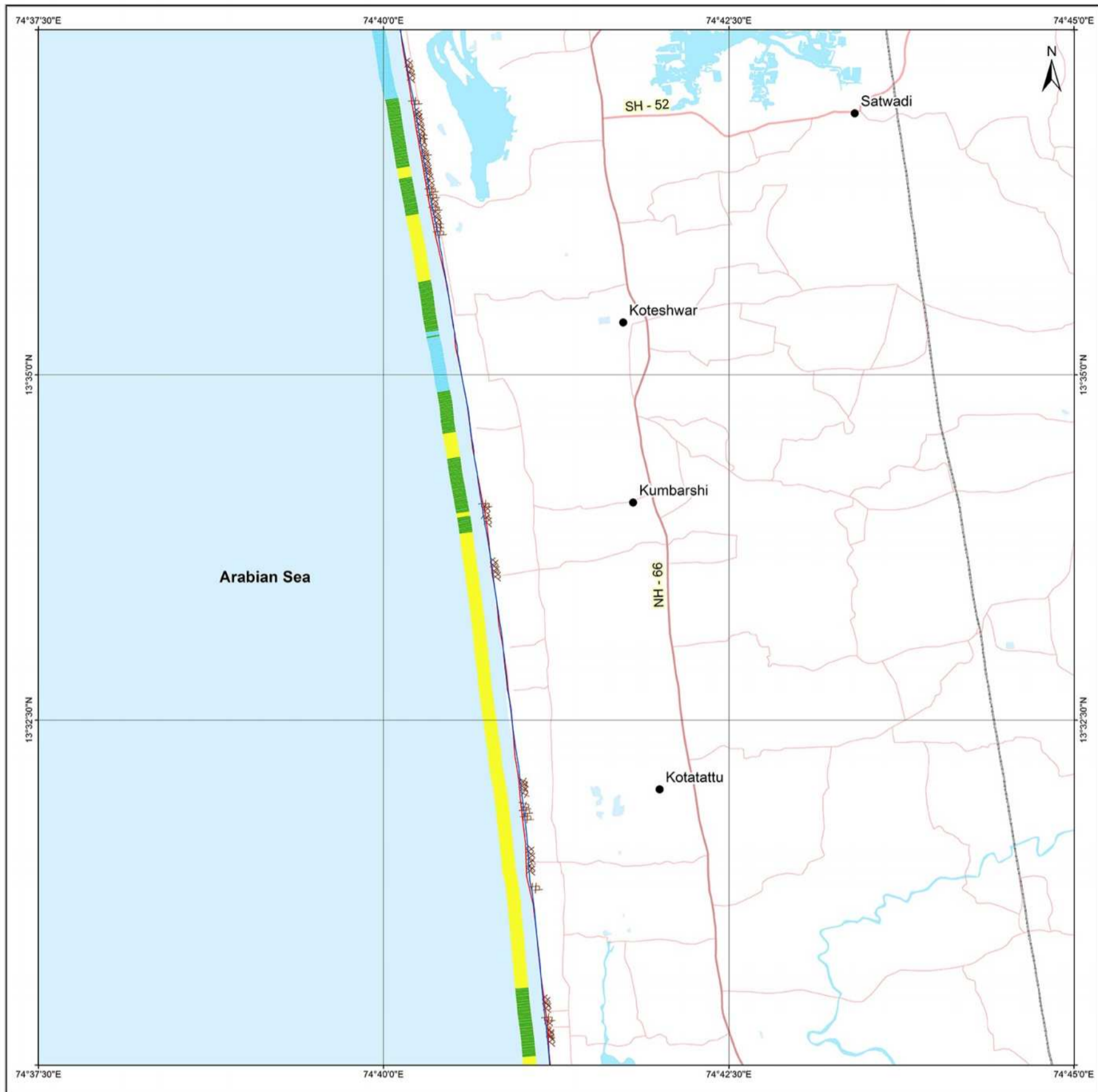
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 10 / SE
Map No. : NCCR/SCM/221



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 K / 10 / NW	48 K / 10 / NE	48 K / 14 / NW
48 K / 10 / SW	48 K / 10 / SE	48 K / 14 / SW
48 K / 11 / NW	48 K / 11 / NE	48 K / 15 / NW

Incidence on 1:50,000 Sheets

48 K / 5	48 K / 9	48 K / 13
48 K / 6	48 K / 10	48 K / 14
48 K / 7	48 K / 11	48 K / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
LISS-IV	02/01/2016
LISS-IV	01/13/2015
LISS-IV	02/11/2014
LISS-IV	03/12/2013
LISS-IV	01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

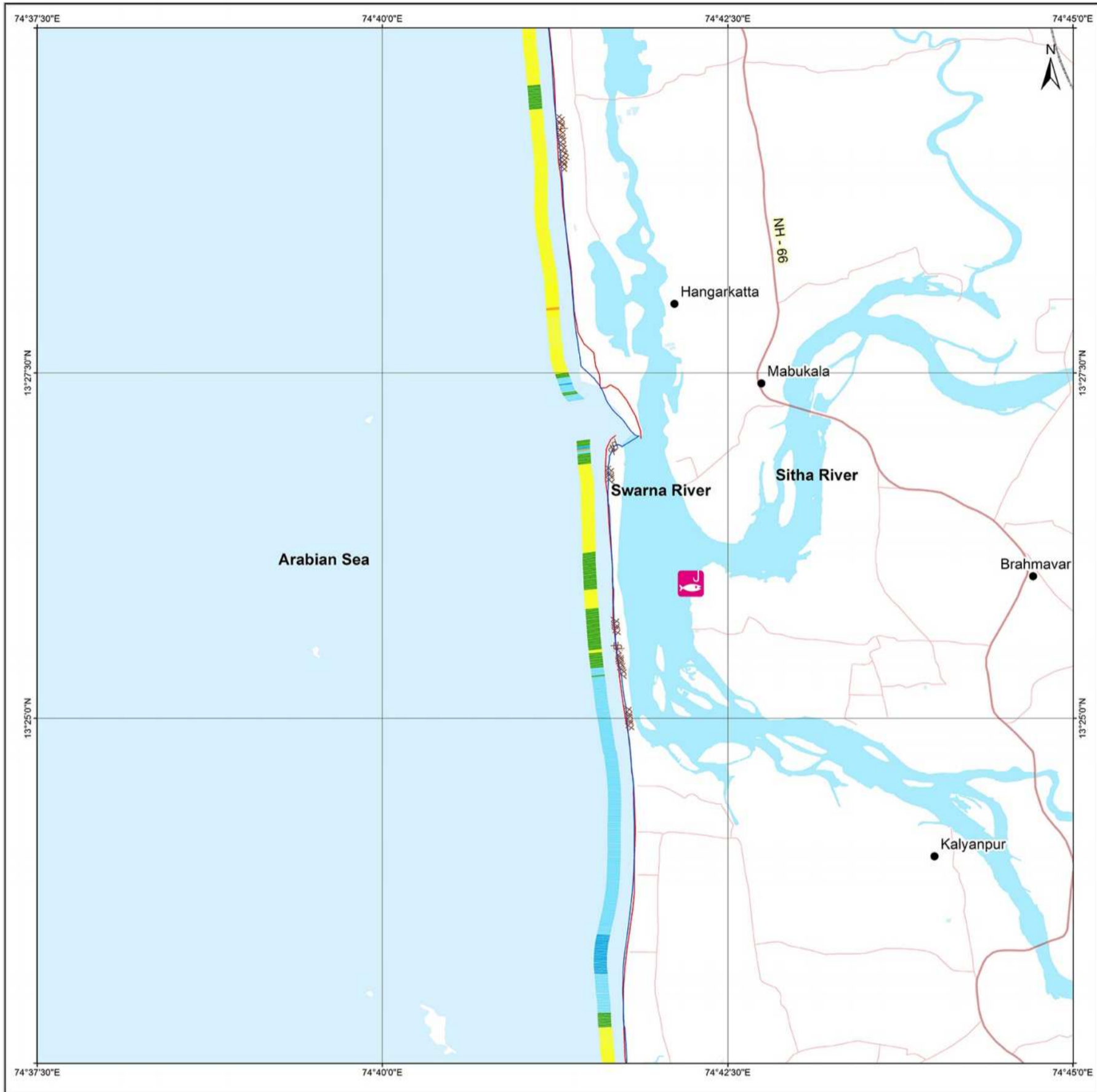
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 11 / NE
Map No. : NCCR/SCM/222



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 21/01/2018

Index to sheets

48 K / 10 / SW	48 K / 10 / SE	48 K / 14 / SW
48 K / 11 / NW	48 K / 11 / NE	48 K / 15 / NW
48 K / 11 / SW	48 K / 11 / SE	48 K / 15 / SW

Incidence on 1:50,000 Sheets

48 K / 6	48 K / 10	48 K / 14
48 K / 7	48 K / 11	48 K / 15
48 K / 8	48 K / 12	48 K / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018
LISS-IV	19/02/2017
LISS-IV	01/08/2016 & 02/01/2016
LISS-IV	02/06/2015 & 01/13/2015
LISS-IV	02/11/2014
LISS-IV	05/23/2013 & 03/12/2013
LISS-IV	03/17/2012 & 01/05/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

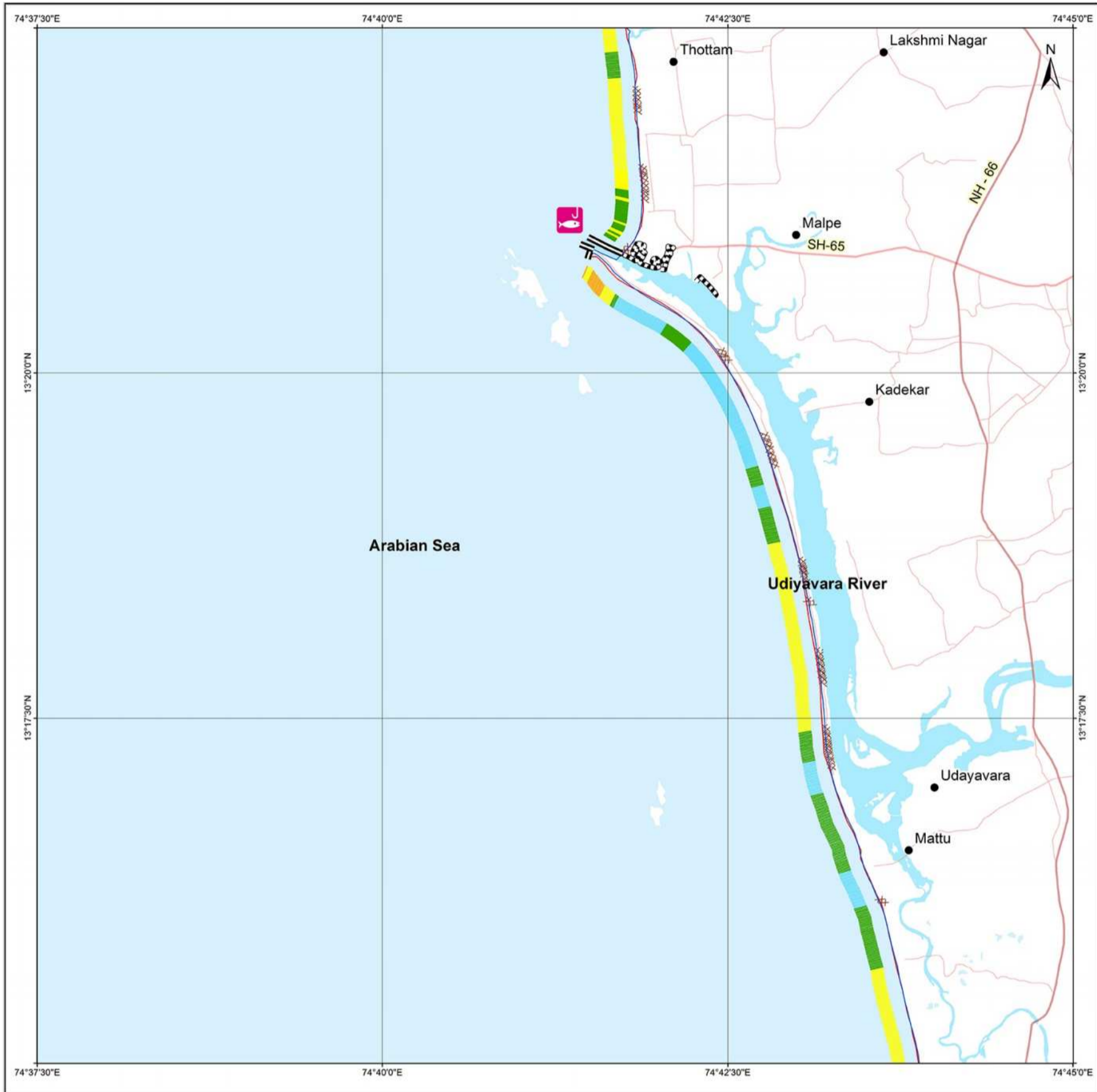
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 11 / SE
Map No. : NCCR/SCM/223



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 21/01/2018 & 02/02/2018

Index to sheets

48 K / 11 / NW	48 K / 11 / NE	48 K / 15 / NW
48 K / 11 / SW	48 K / 11 / SE	48 K / 15 / SW
48 K / 12 / NW	48 K / 12 / NE	48 K / 16 / NW

Incidence on 1:50,000 Sheets

48 K / 6	48 K / 10	48 K / 14
48 K / 7	48 K / 11	48 K / 15
48 K / 8	48 K / 12	48 K / 16



UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	21/01/2018 & 02/02/2018
LISS-IV	19/02/2017 & 15/03/2017
LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	03/07/2014 & 02/11/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
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- Rivers

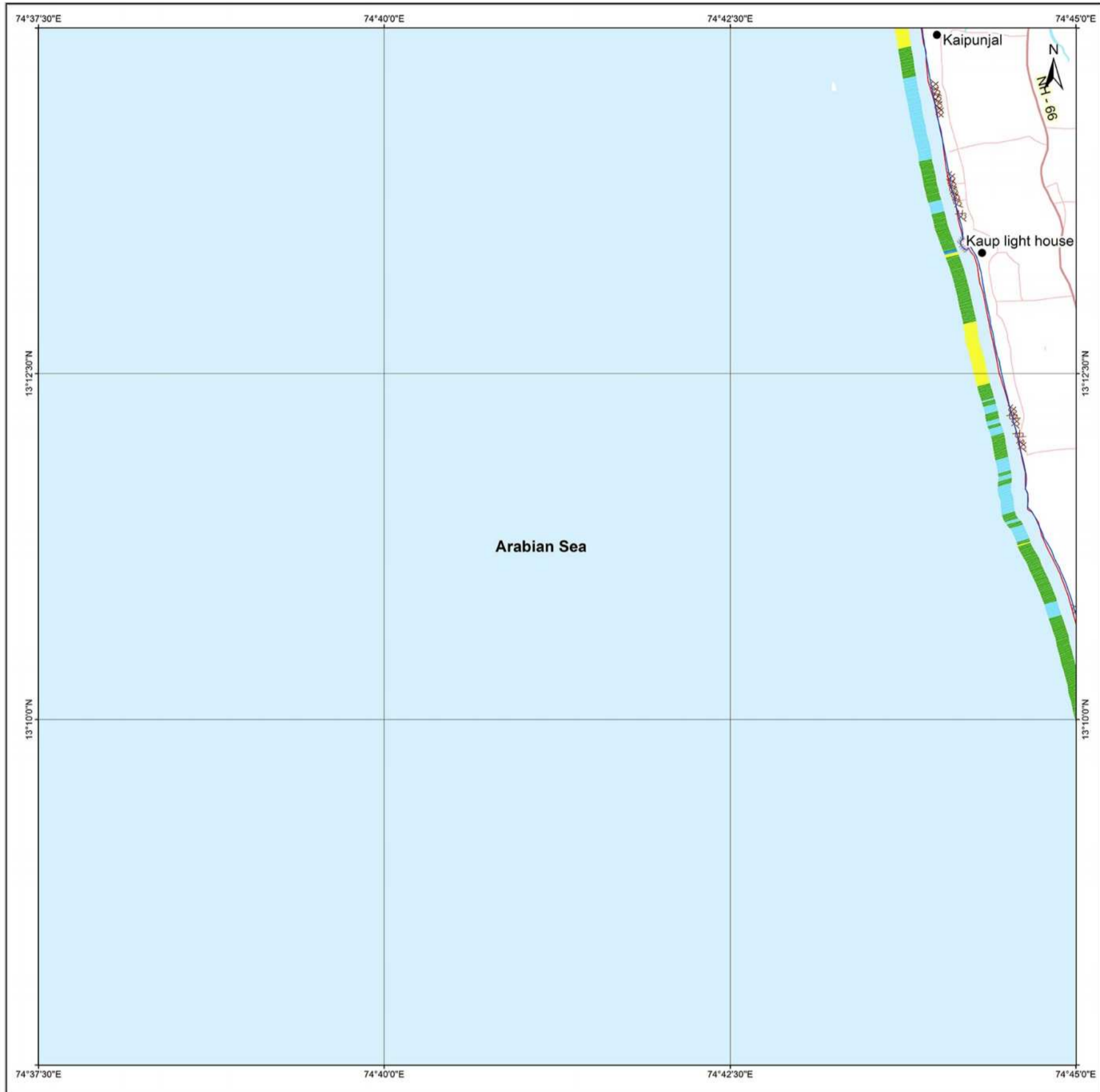
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 12 / NE
Map No. : NCCR/SCM/224



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 02/02/2018

Index to sheets

48 K / 11 / SW	48 K / 11 / SE	48 K / 15 / SW
48 K / 12 / NW	48 K / 12 / NE	48 K / 16 / NW
48 K / 12 / SW	48 K / 12 / SE	48 K / 16 / SW

Incidence on 1:50,000 Sheets

48 K / 7	48 K / 11	48 K / 15
48 K / 8	48 K / 12	48 K / 16
48 L / 5	48 L / 9	48 L / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/02/2018
LISS-IV	15/03/2017
LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	03/07/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

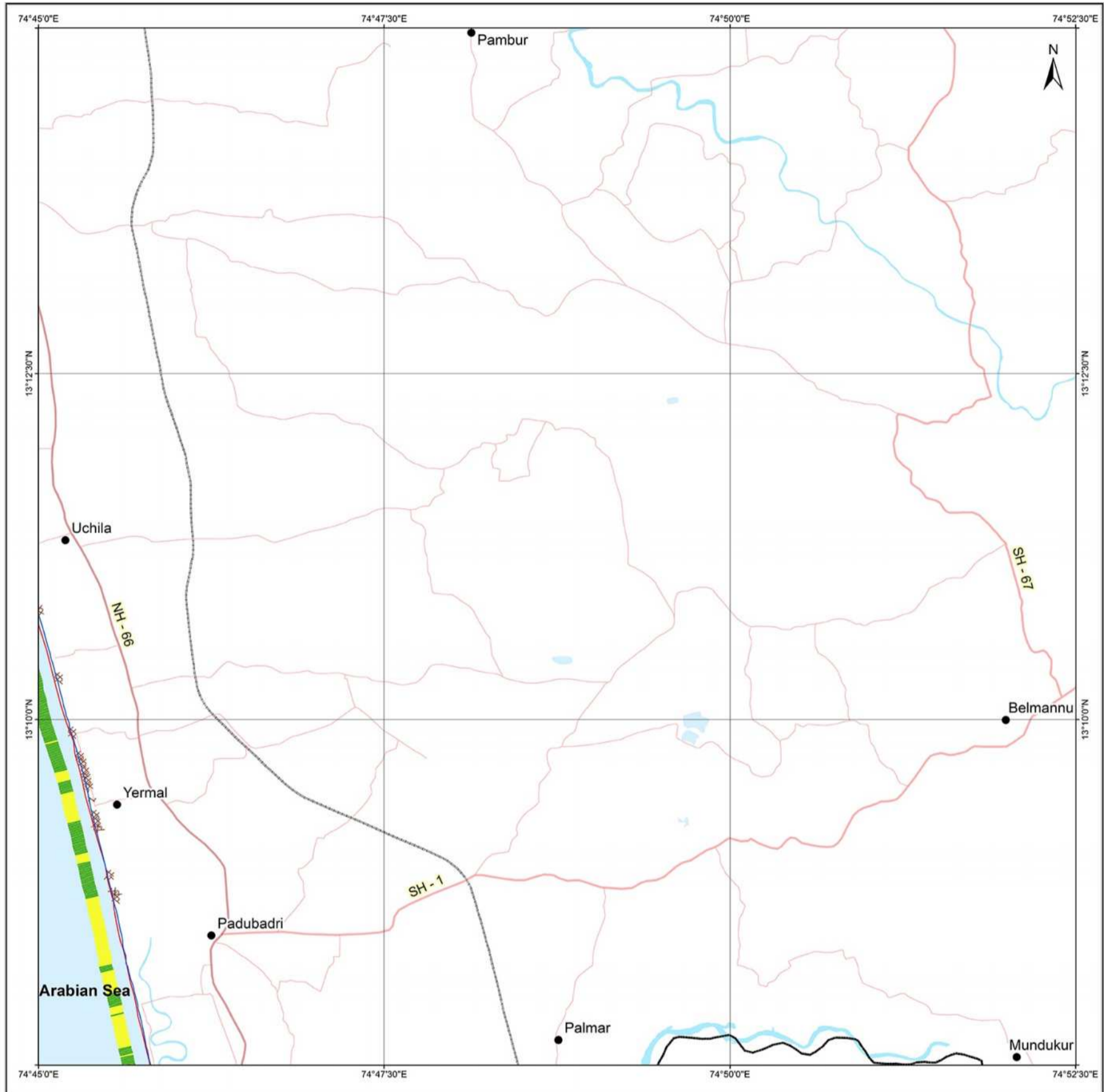
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 16 / NW
Map No. : NCCR/SCM/225



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 02/02/2018

Index to sheets

48 K / 11 / SE	48 K / 15 / SW	48 K / 15 / SE
48 K / 12 / NE	48 K / 16 / NW	48 K / 16 / NE
48 K / 12 / SE	48 K / 16 / SW	48 K / 16 / SE

Incidence on 1:50,000 Sheets

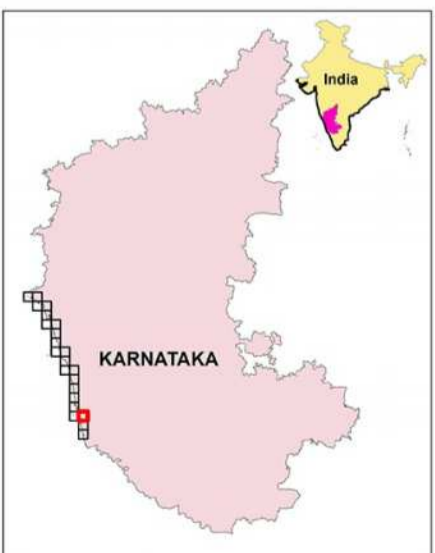
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48 K / 12	48 K / 16	48 O / 4
48 L / 9	48 L / 13	48 P / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/02/2018
LISS-IV	15/03/2017
LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	01/18/2014 & 03/07/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
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- Administrative Boundary
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- Other Roads
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- Lakes
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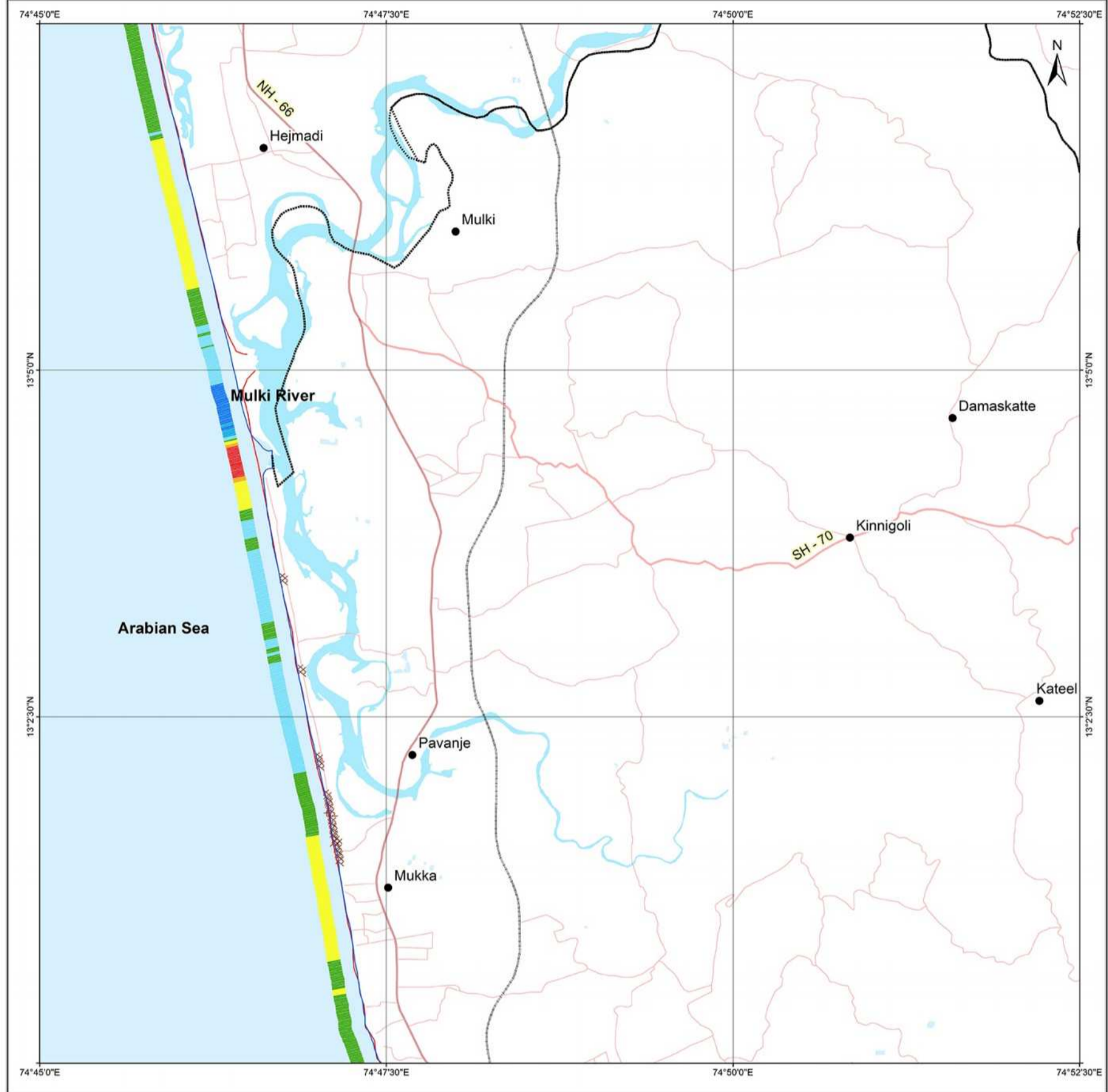
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SHORELINE CHANGE MAP KARNATAKA

Restricted Use
48 K / 16 / SW
 Map No. : NCCR/SCM/226



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 02/02/2018

Index to sheets

48 K / 12 / NE	48 K / 16 / NW	48 K / 16 / NE
48 K / 12 / SE	48 K / 16 / SW	48 K / 16 / SE
48 L / 9 / NE	48 L / 13 / NW	48 L / 13 / NE

Incidence on 1:50,000 Sheets

48 K / 11	48 K / 15	48 O / 3
48 K / 12	48 K / 16	48 O / 4
48 L / 9	48 L / 13	48 P / 1

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	01/18/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
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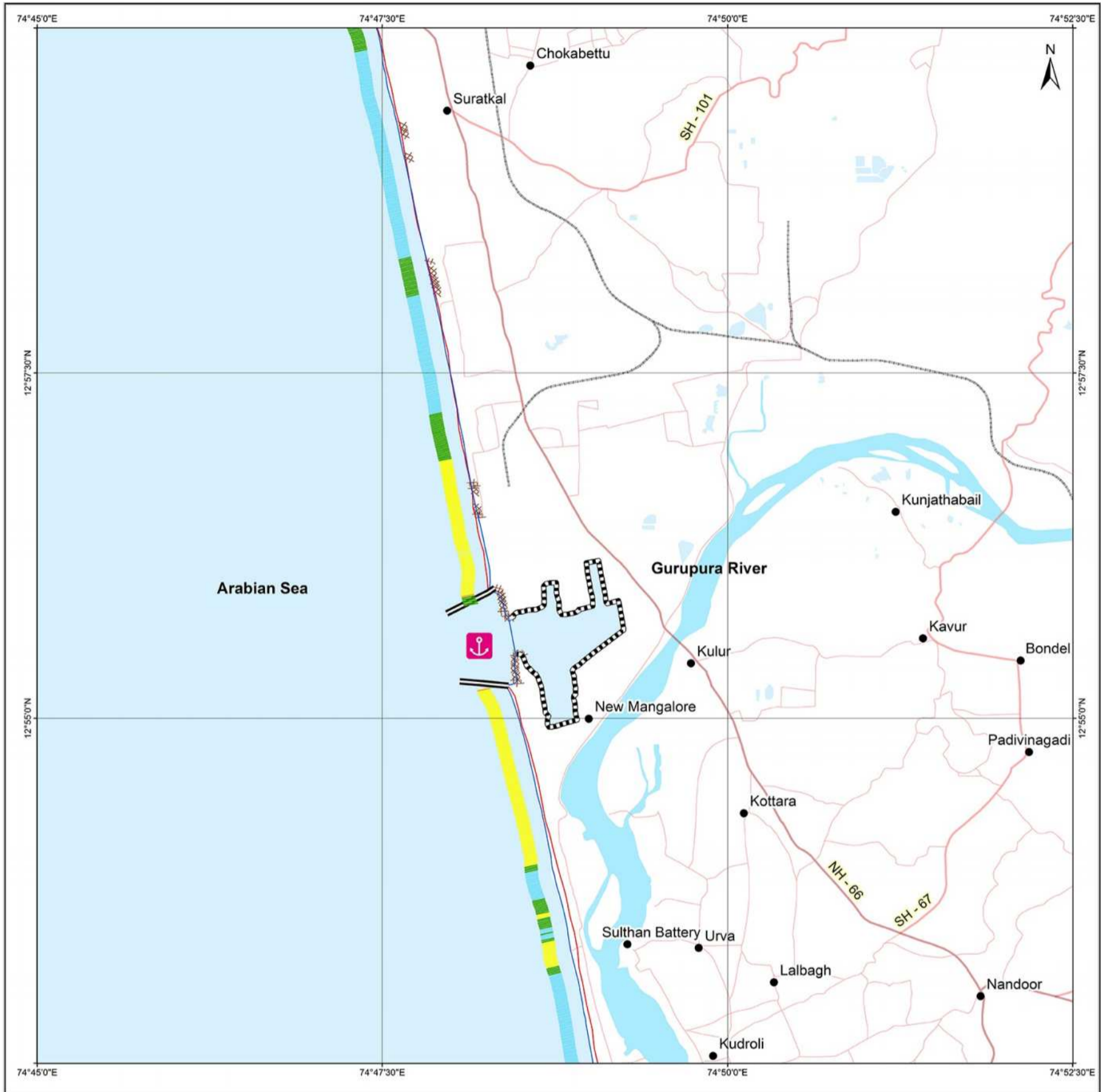
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SHORELINE CHANGE MAP KARNATAKA

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48 L / 13 / NW
Map No. : NCCR/SCM/227



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 02/02/2018

Index to sheets

48 K / 12 / SE	48 K / 16 / SW	48 K / 16 / SE
48 L / 9 / NE	48 L / 13 / NW	48 L / 13 / NE
48 L / 9 / SE	48 L / 13 / SW	48 L / 13 / SE

Incidence on 1:50,000 Sheets

48 K / 12	48 K / 16	48 O / 4
48 L / 9	48 L / 13	48 P / 1
48 L / 10	48 L / 14	48 P / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/02/2018
LISS-IV	15/03/2017
LISS-IV	01/08/2016
LISS-IV	02/06/2015
LISS-IV	01/18/2014
LISS-IV	05/23/2013
LISS-IV	03/17/2012
LISS-III	01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	03/14/2000
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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Pallikaranai, Chennai - 600100

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Goa

1990-2018
SINDHUDURG
& NORTH GOA

SHORELINE CHANGE MAP GOA & MAHARASHTRA

Restricted Use
48 E / 10 / NE
Map No. : NCCR/SCM/196



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990 & 10/25/1989
- 11/01/2018 & 04/01/2018

Index to sheets

48 E / 9 / SW	48 E / 9 / SE	48 E / 13 / SW
48 E / 10 / NW	48 E / 10 / NE	48 E / 14 / NW
48 E / 10 / SW	48 E / 10 / SE	48 E / 14 / SW

Incidence on 1:50,000 Sheets

48 E / 5	48 E / 9	48 E / 13
48 E / 6	48 E / 10	48 E / 14
48 E / 7	48 E / 11	48 E / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	11/01/2018 & 04/01/2018
LISS-IV	09/02/2017 & 21/01/2017
LISS-IV	02/20/2016 & 03/10/2016
LISS-IV	02/20/2015 & 03/21/2015
LISS-IV	03/02/2014 & 02/01/2014
LISS-IV	03/31/2013 & 04/14/2013
LISS-IV	03/12/2012 & 03/31/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990 & 10/25/1989

MAHARASHTRA
GOA
India

- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

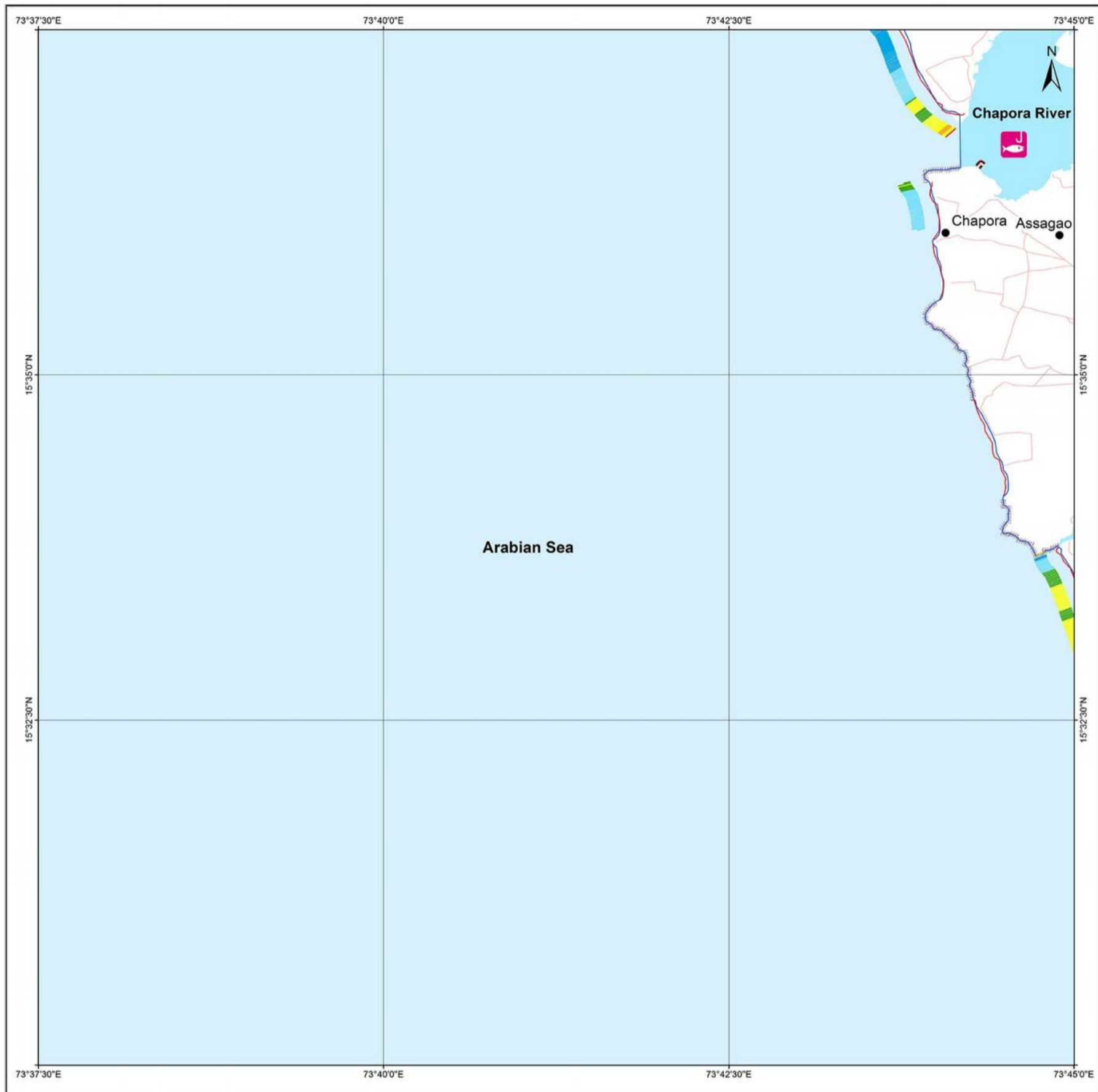
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1990-2018
NORTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 10 / SE
Map No. : NCCR/SCM/197



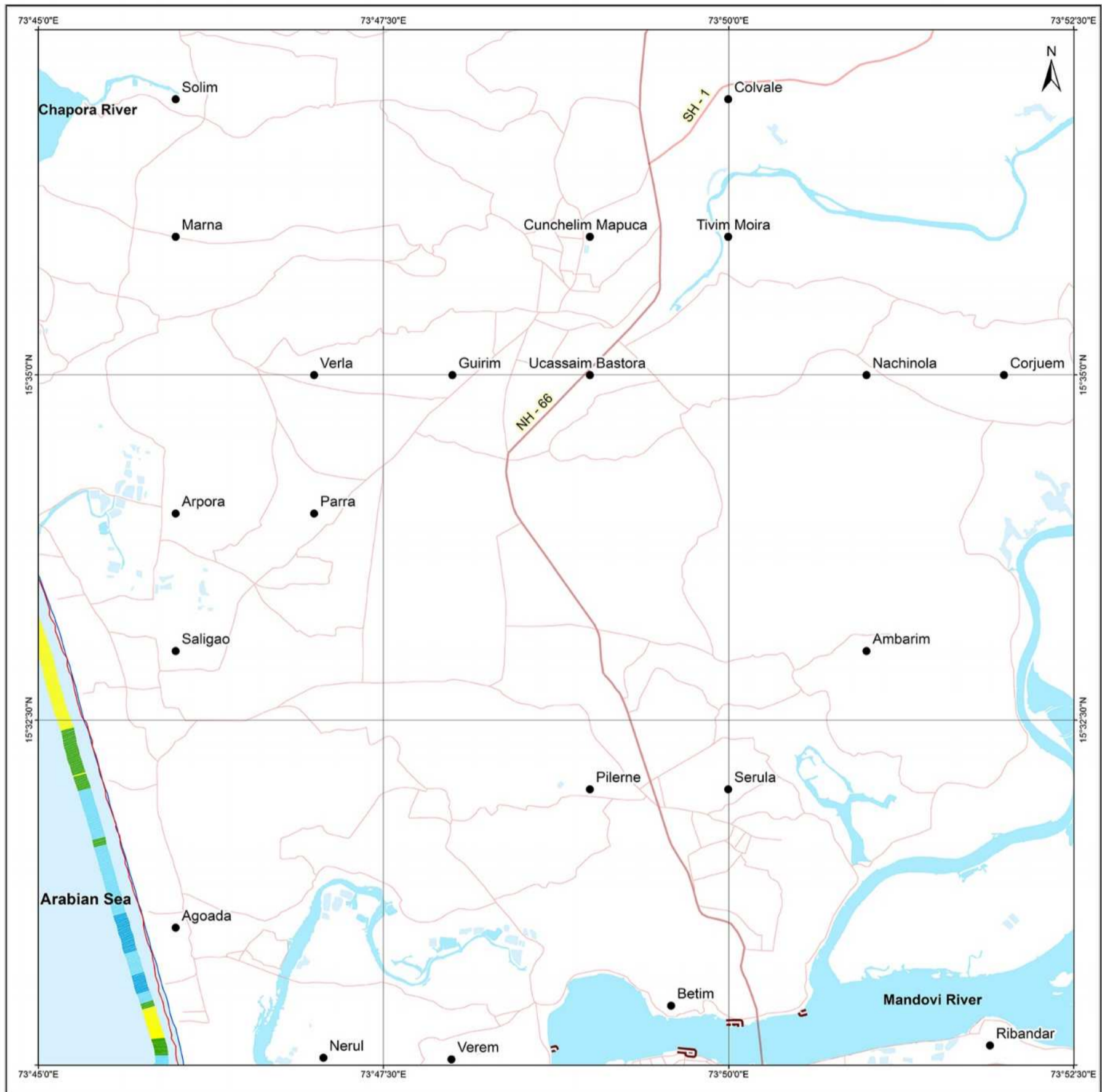
<p>Shoreline Change Trend for Period 1990-2018</p> <ul style="list-style-type: none"> — High Erosion — Moderate Erosion — Low Erosion — Stable Coast — Low Accretion — Moderate Accretion — High Accretion 	<p>Index to sheets</p> <table border="1"> <tr> <td>48 E / 10 / NW</td> <td>48 E / 10 / NE</td> <td>48 E / 14 / NW</td> </tr> <tr> <td>48 E / 10 / SW</td> <td style="background-color: #cccccc;">48 E / 10 / SE</td> <td>48 E / 14 / SW</td> </tr> <tr> <td>48 E / 11 / NW</td> <td>48 E / 11 / NE</td> <td>48 E / 15 / NW</td> </tr> </table>	48 E / 10 / NW	48 E / 10 / NE	48 E / 14 / NW	48 E / 10 / SW	48 E / 10 / SE	48 E / 14 / SW	48 E / 11 / NW	48 E / 11 / NE	48 E / 15 / NW	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 43</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p>		<ul style="list-style-type: none"> ● Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers 																							
	48 E / 10 / NW	48 E / 10 / NE	48 E / 14 / NW																																	
48 E / 10 / SW	48 E / 10 / SE	48 E / 14 / SW																																		
48 E / 11 / NW	48 E / 11 / NE	48 E / 15 / NW																																		
<p>Shoreline date</p> <ul style="list-style-type: none"> — 02/23/1990 — 04/01/2018 	<p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>48 E / 5</td> <td>48 E / 9</td> <td>48 E / 13</td> </tr> <tr> <td>48 E / 6</td> <td style="background-color: #cccccc;">48 E / 10</td> <td>48 E / 14</td> </tr> <tr> <td>48 E / 7</td> <td>48 E / 11</td> <td>48 E / 15</td> </tr> </table>	48 E / 5	48 E / 9	48 E / 13	48 E / 6	48 E / 10	48 E / 14	48 E / 7	48 E / 11	48 E / 15	<p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>04/01/2018</td> </tr> <tr> <td>LISS-IV</td> <td>21/01/2017</td> </tr> <tr> <td>LISS-IV</td> <td>02/20/2016</td> </tr> <tr> <td>LISS-IV</td> <td>03/21/2015</td> </tr> <tr> <td>LISS-IV</td> <td>03/02/2014</td> </tr> <tr> <td>LISS-IV</td> <td>03/31/2013</td> </tr> <tr> <td>LISS-IV</td> <td>03/12/2012</td> </tr> <tr> <td>LISS-III</td> <td>02/02/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>07/01/2006</td> </tr> <tr> <td>ETM+</td> <td>11/14/1999</td> </tr> <tr> <td>TM</td> <td>02/23/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	04/01/2018	LISS-IV	21/01/2017	LISS-IV	02/20/2016	LISS-IV	03/21/2015	LISS-IV	03/02/2014	LISS-IV	03/31/2013	LISS-IV	03/12/2012	LISS-III	02/02/2008	PAN (Cartosat-1)	07/01/2006	ETM+	11/14/1999	TM	02/23/1990	<p>Prepared by</p> <p>Government of India Ministry of Earth Sciences</p> <p>National Centre for Coastal Research (NCCR) Pallikaranai, Chennai - 600100</p>
48 E / 5	48 E / 9	48 E / 13																																		
48 E / 6	48 E / 10	48 E / 14																																		
48 E / 7	48 E / 11	48 E / 15																																		
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TM	02/23/1990																																			

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1990-2018
NORTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 14 / SW
Map No. : NCCR/SCM/198



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

Index to sheets

48 E / 10 / NE	48 E / 14 / NW	48 E / 14 / NE
48 E / 10 / SE	48 E / 14 / SW	48 E / 14 / SE
48 E / 11 / NE	48 E / 15 / NW	48 E / 15 / NE

Incidence on 1:50,000 Sheets

48 E / 9	48 E / 13	48 I / 1
48 E / 10	48 E / 14	48 I / 2
48 E / 11	48 E / 15	48 I / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
LISS-IV	02/20/2016
LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

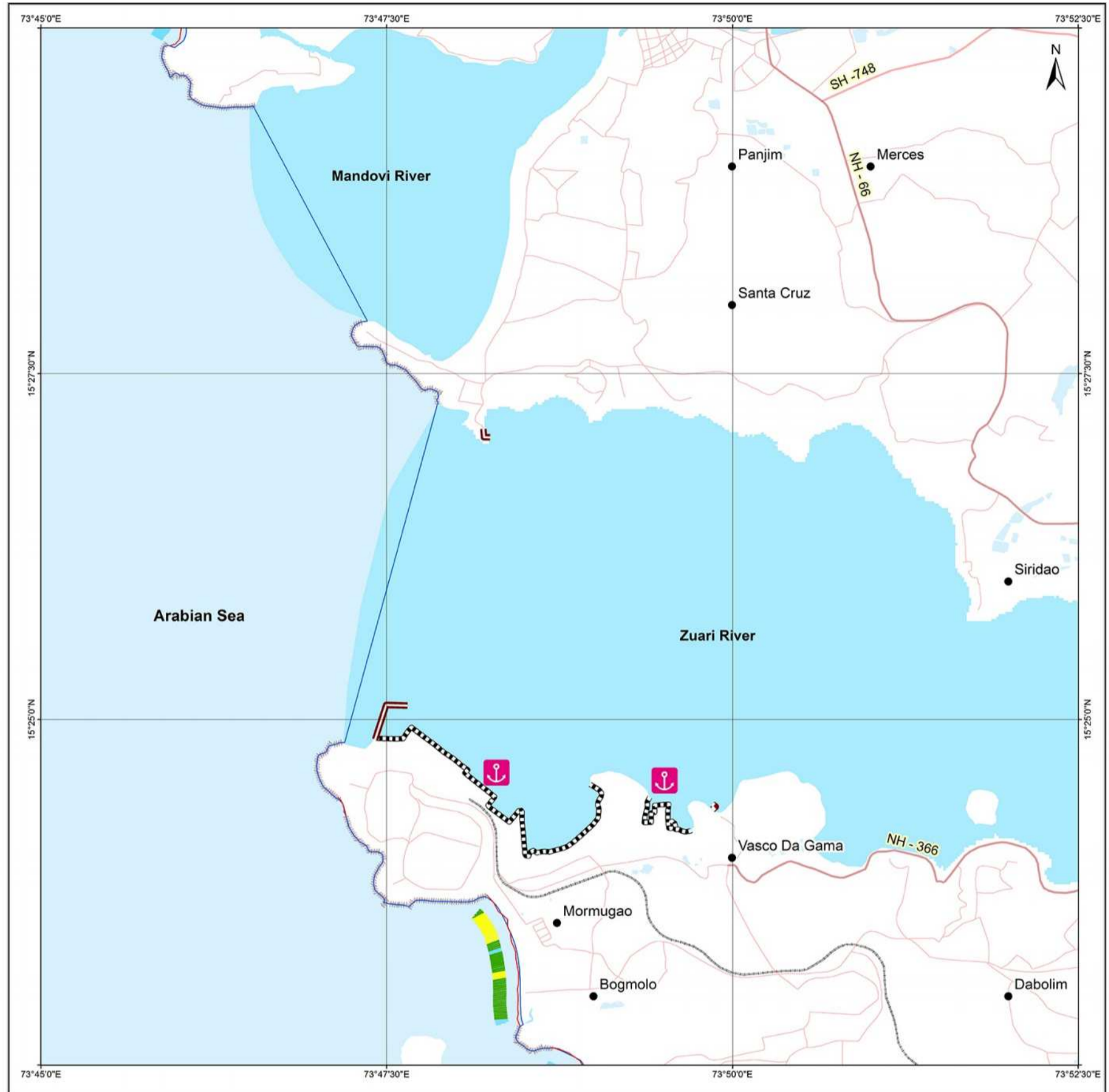
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1990-2018
SOUTH GOA
& NORTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 15 / NW
Map No. : NCCR/SCM/199



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

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48 E / 10 / SE	48 E / 14 / SW	48 E / 14 / SE
48 E / 11 / NE	48 E / 15 / NW	48 E / 15 / NE
48 E / 11 / SE	48 E / 15 / SW	48 E / 15 / SE

Incidence on 1:50,000 Sheets

48 E / 10	48 E / 14	48 I / 2
48 E / 11	48 E / 15	48 I / 3
48 E / 12	48 E / 16	48 I / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
LISS-IV	02/20/2016
LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

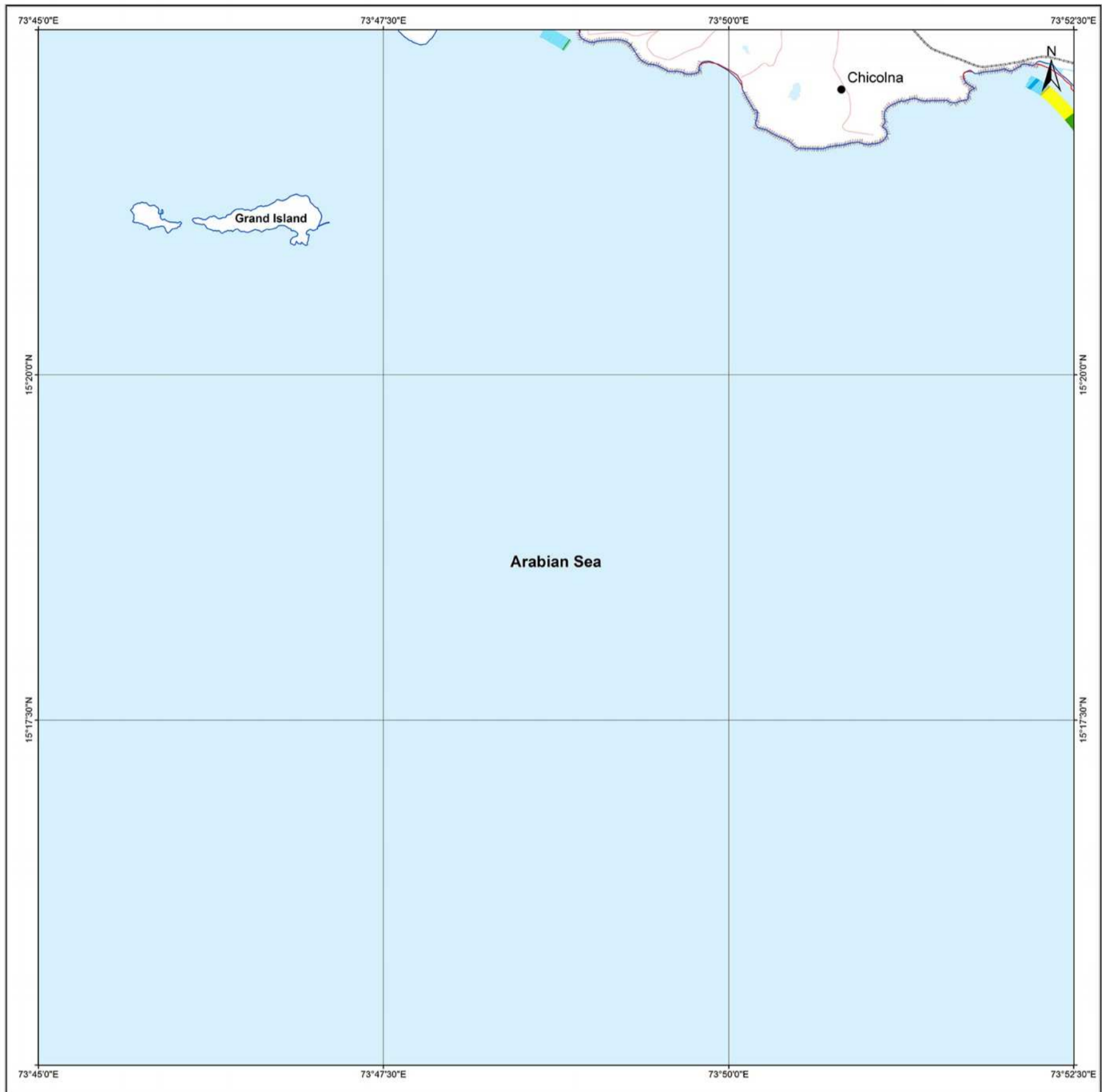
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1990-2018
SOUTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 15 / SW
Map No. : NCCR/SCM/200



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

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48 E / 11 / NE	48 E / 15 / NW	48 E / 15 / NE
48 E / 11 / SE	48 E / 15 / SW	48 E / 15 / SE
48 E / 12 / NE	48 E / 16 / NW	48 E / 16 / NE

Incidence on 1:50,000 Sheets

48 E / 10	48 E / 14	48 I / 2
48 E / 11	48 E / 15	48 I / 3
48 E / 12	48 E / 16	48 I / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
LISS-IV	02/20/2016
LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

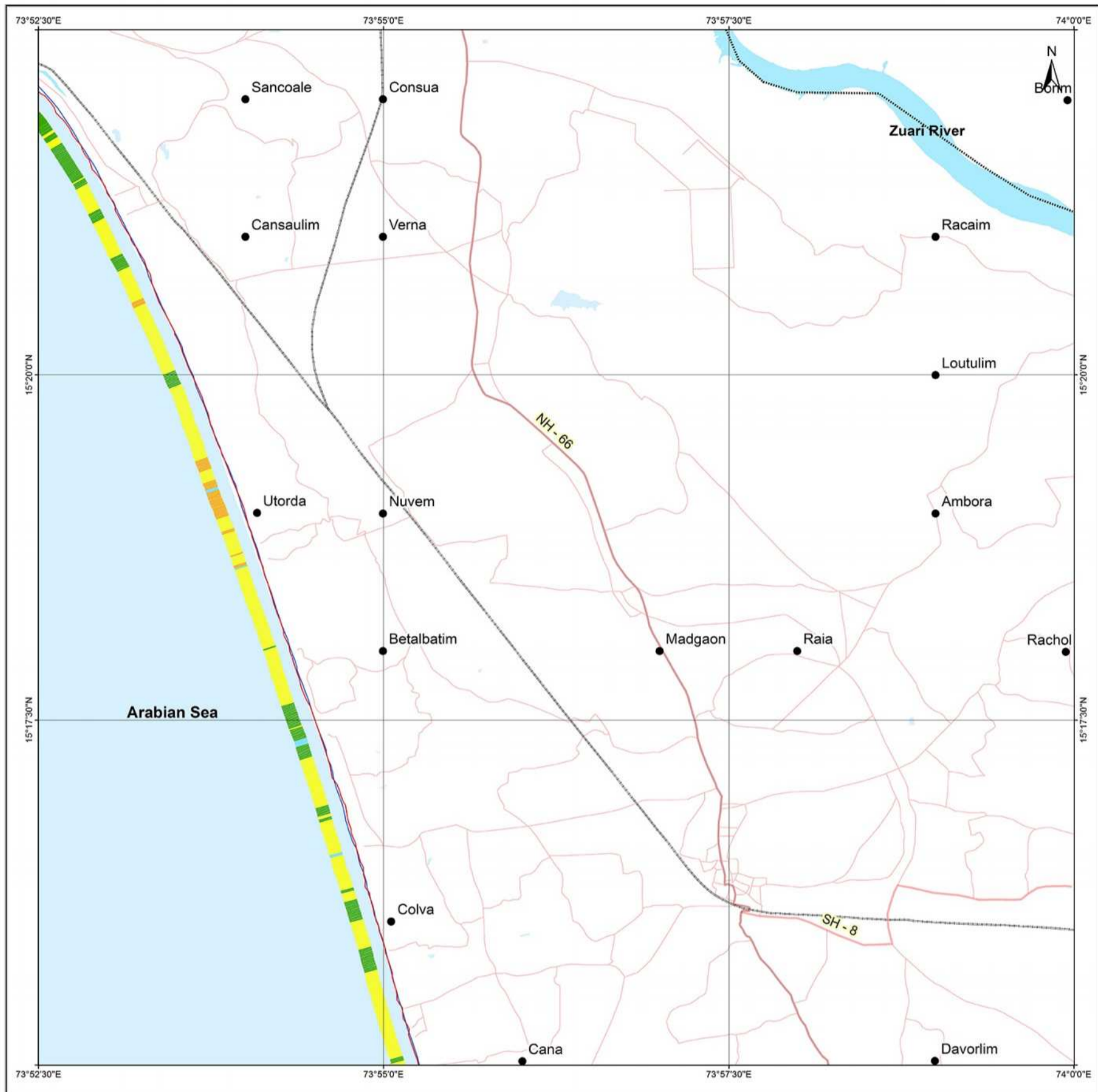
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1990-2018
SOUTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 15 / SE
Map No. : NCCR/SCM/201



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

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48 E / 15 / NW	48 E / 15 / NE	48 I / 3 / NW
48 E / 15 / SW	48 E / 15 / SE	48 I / 3 / SW
48 E / 16 / NW	48 E / 16 / NE	48 I / 4 / NW

Incidence on 1:50,000 Sheets

48 E / 10	48 E / 14	48 I / 2
48 E / 11	48 E / 15	48 I / 3
48 E / 12	48 E / 16	48 I / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
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LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
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- █ Rivers

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1990-2018
SOUTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 16 / NE
Map No. : NCCR/SCM/202



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

Index to sheets

48 E / 15 / SW	48 E / 15 / SE	48 I / 3 / SW
48 E / 16 / NW	48 E / 16 / NE	48 I / 4 / NW
48 E / 16 / SW	48 E / 16 / SE	48 I / 4 / SW

Incidence on 1:50,000 Sheets

48 E / 11	48 E / 15	48 I / 3
48 E / 12	48 E / 16	48 I / 4
48 F / 9	48 F / 13	48 J / 1
48 F / 10	48 F / 14	48 J / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
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LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- State Highways
- Other Roads
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- Lakes
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1990-2018
SOUTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 E / 16 / SE
Map No. : NCCR/SCM/203



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018

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48 E / 16 / NW	48 E / 16 / NE	48 I / 4 / NW
48 E / 16 / SW	48 E / 16 / SE	48 I / 4 / SW
48 F / 13 / NW	48 F / 13 / NE	48 J / 1 / NW

Incidence on 1:50,000 Sheets

48 E / 11	48 E / 15	48 I / 3
48 E / 12	48 E / 16	48 I / 4
48 F / 9	48 F / 13	48 J / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018
LISS-IV	21/01/2017
LISS-IV	02/20/2016
LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
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- State Highways
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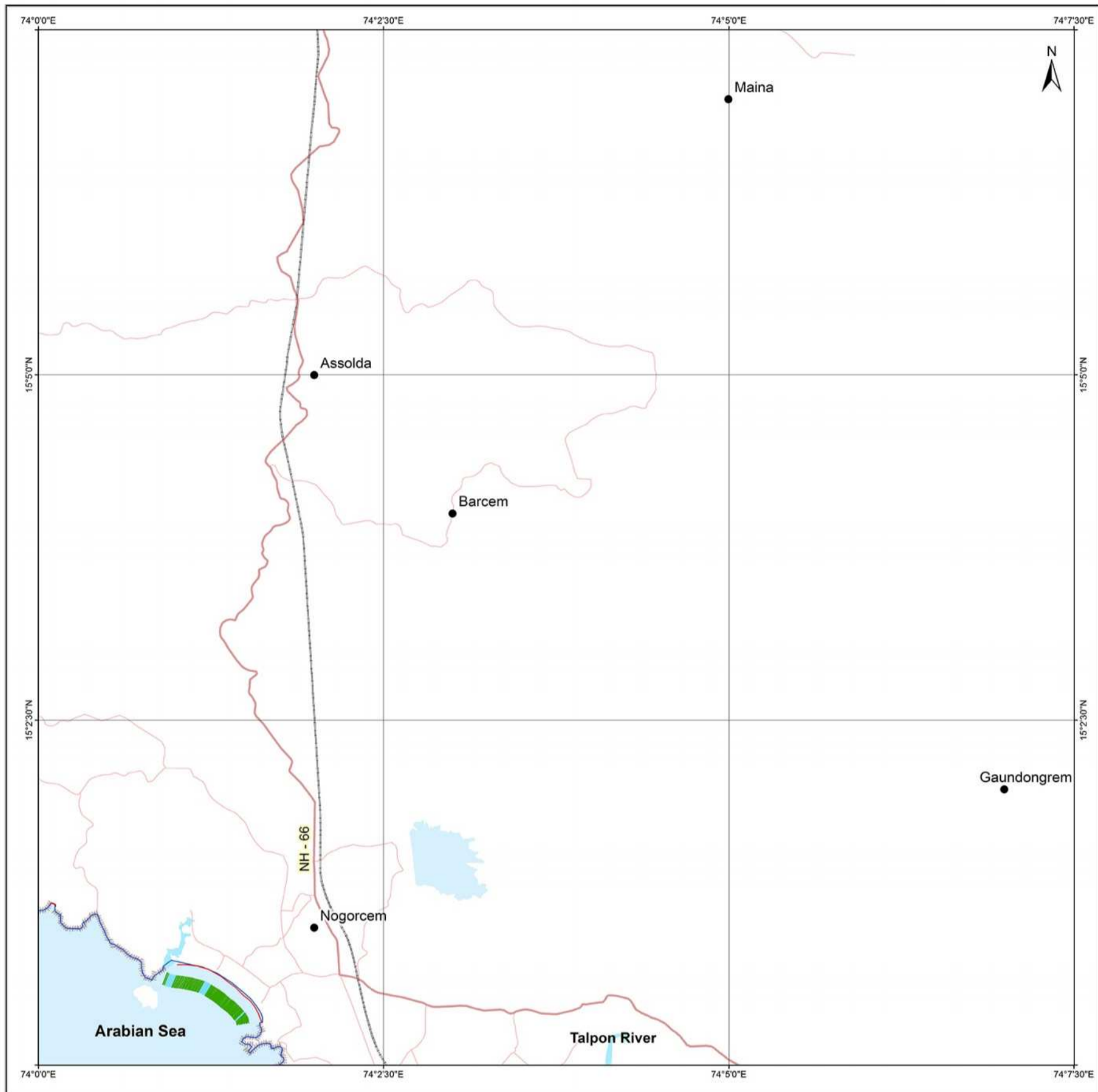
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1990-2018
SOUTH GOA

SHORELINE CHANGE MAP GOA

Restricted Use
48 I / 4 / SW
Map No. : NCCR/SCM/204



Shoreline Change Trend for Period 1990-2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 02/23/1990
- 04/01/2018 & 15/01/2018

Index to sheets

48 E / 16 / NE	48 I / 4 / NW	48 I / 4 / NE
48 E / 16 / SE	48 I / 4 / SW	48 I / 4 / SE
48 F / 13 / NE	48 J / 1 / NW	48 J / 1 / NE

Incidence on 1:50,000 Sheets

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48 E / 16	48 I / 4	48 I / 8
48 F / 13	48 J / 1	48 J / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	04/01/2018 & 15/01/2018
LISS-IV	21/01/2017 & 02/20/2016
LISS-IV	03/21/2015
LISS-IV	03/02/2014
LISS-IV	03/31/2013
LISS-IV	03/12/2012
LISS-III	02/02/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	02/23/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

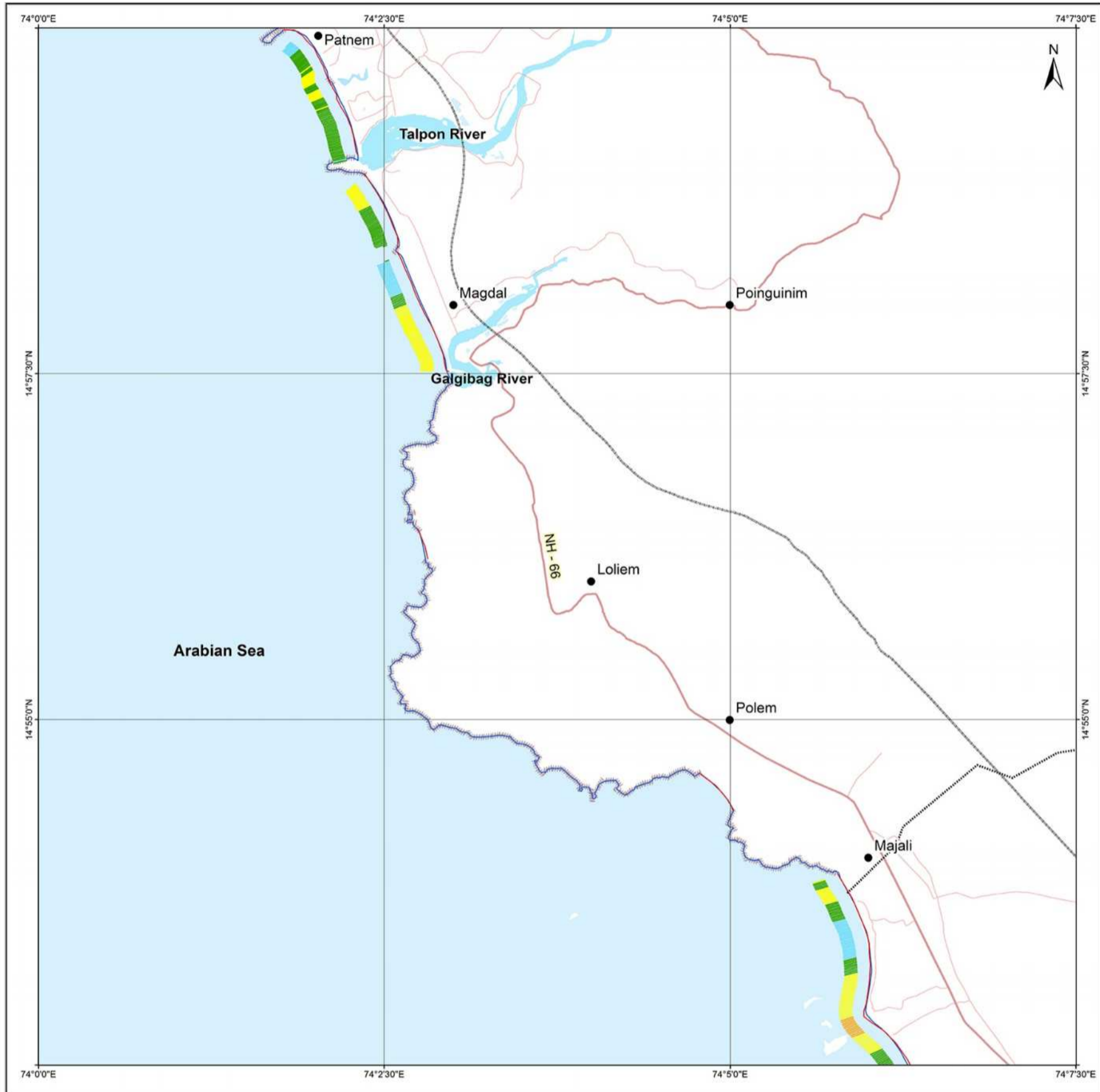
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1990-2018
SOUTH GOA
&UTTARA KANNADA

SHORELINE CHANGE MAP GOA & KARNATAKA

Restricted Use
48 J / 1 / NW
Map No. : NCCR/SCM/205



Shoreline Change Trend for Period 1990-2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 02/23/1990
- █ 15/01/2018 & 16/01/2018

Index to sheets

48 E / 16 / SE	48 I / 4 / SW	48 I / 4 / SE
48 F / 13 / NE	48 J / 1 / NW	48 J / 1 / NE
48 F / 13 / SE	48 J / 1 / SW	48 J / 1 / SE

Incidence on 1:50,000 Sheets

48 E / 16	48 I / 4	48 I / 8
48 F / 13	48 J / 1	48 J / 5
48 F / 14	48 J / 2	48 J / 6

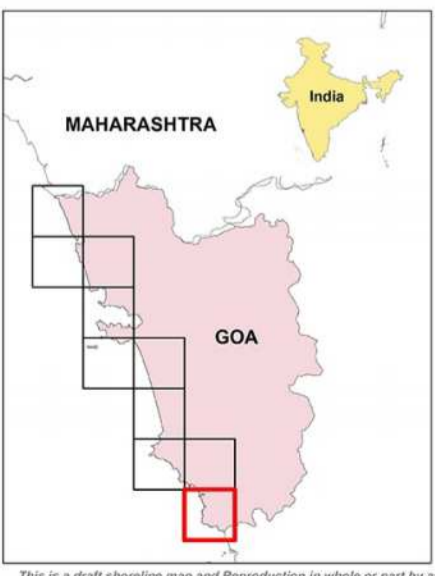
Scale
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1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	15/01/2018 & 16/01/2018
LISS-IV	21/01/2017 & 14/02/2017
LISS-IV	03/15/2016 & 02/20/2016
LISS-IV	02/25/2015
LISS-IV	03/02/2014 03/26/2014
LISS-IV	03/31/2013 & 03/07/2013
LISS-IV	03/12/2012 & 02/17/2012
LISS-III	02/02/2008 01/14/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999 & 03/14/2000
TM	02/23/1990

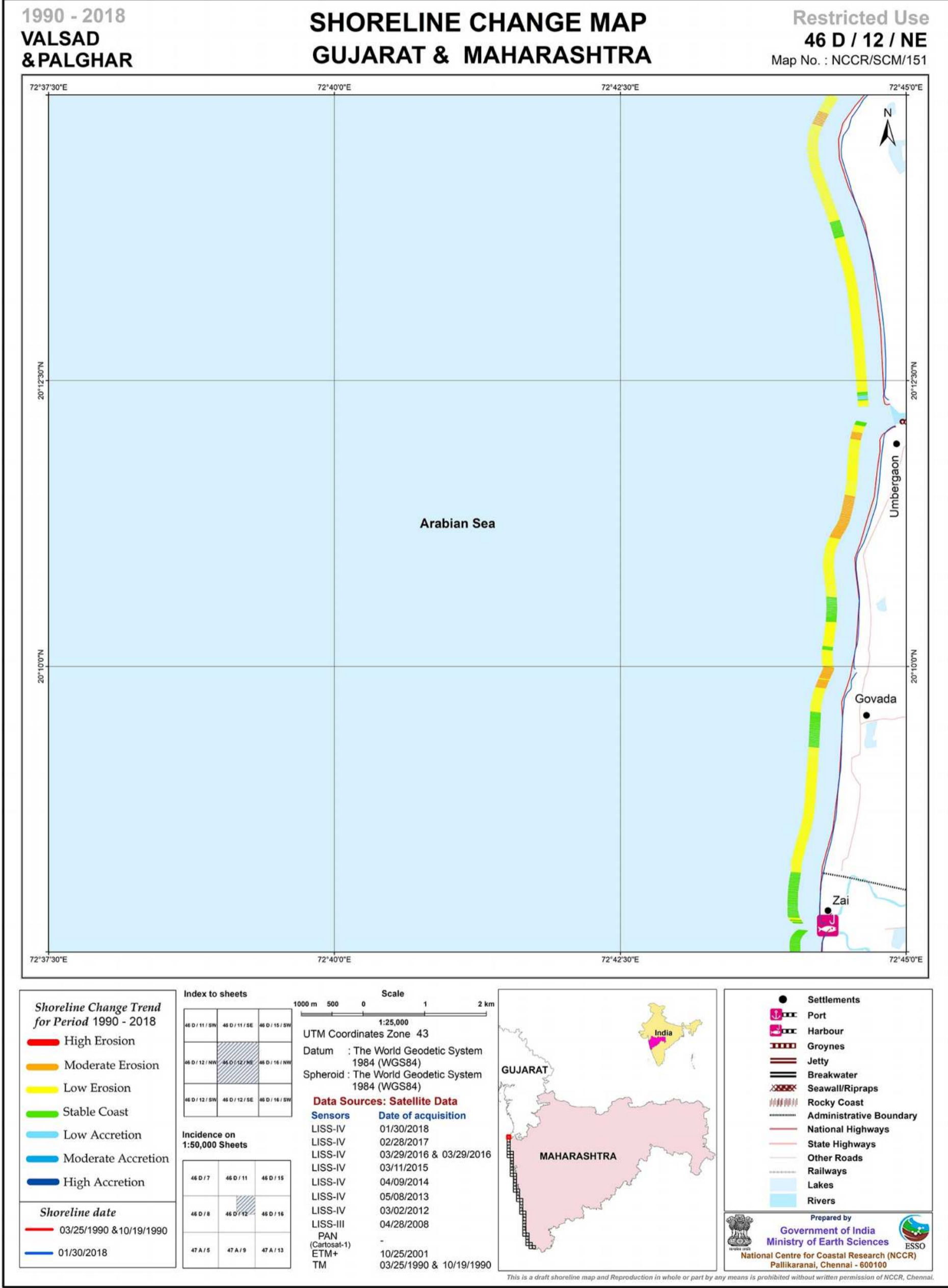


- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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Maharashtra



1990 - 2018
PALGHAR

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
46 D / 12 / SE
Map No. : NCCR/SCM/152



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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46 D / 12 / NW	46 D / 12 / NE	46 D / 16 / NW
46 D / 12 / SW	46 D / 12 / SE	46 D / 16 / SW
47 A / 9 / NW	47 A / 9 / NE	47 A / 13 / NW

Incidence on 1:50,000 Sheets

46 D / 7	46 D / 11	46 D / 15
46 D / 8	46 D / 12	46 D / 16
47 A / 5	47 A / 9	47 A / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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1990 - 2018
PALGHAR

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 9 / NE
Map No. : NCCR/SCM/153



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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46 D / 12 / SW	46 D / 12 / SE	46 D / 16 / SW
47 A / 9 / NW	47 A / 9 / NE	47 A / 13 / NW
47 A / 9 / SW	47 A / 9 / SE	47 A / 13 / SW

Incidence on 1:50,000 Sheets

46 D / 8	46 D / 12	46 D / 16
47 A / 5	47 A / 9	47 A / 13
47 A / 6	47 A / 10	47 A / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

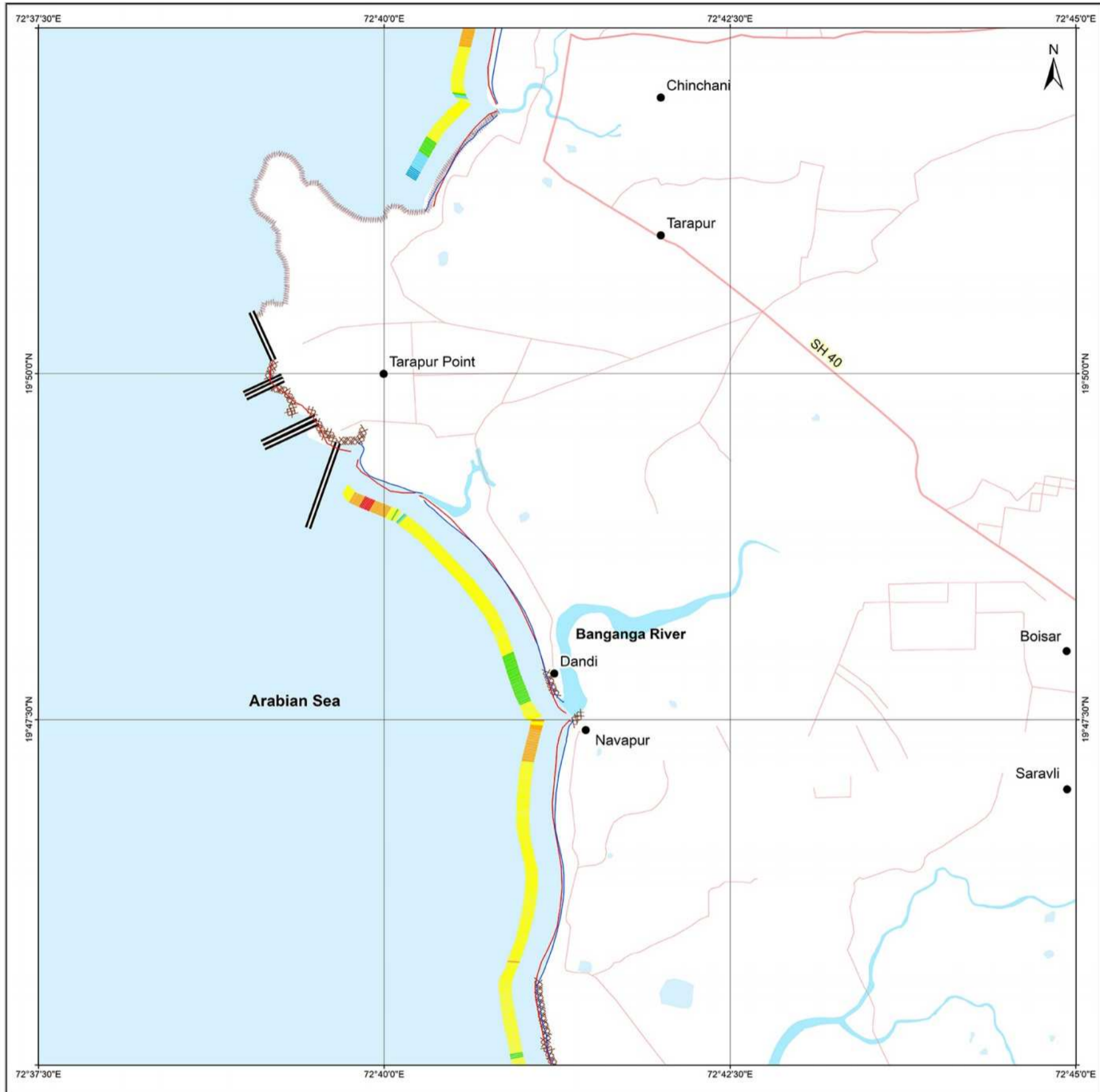
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1990 - 2018
PALGHAR

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 9 / SE
Map No. : NCCR/SCM/154



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

Index to sheets

47 A / 9 / NW	47 A / 9 / NE	47 A / 13 / NW
47 A / 9 / SW	47 A / 9 / SE	47 A / 13 / SW
47 A / 10 / NW	47 A / 10 / NE	47 A / 14 / NW

Incidence on 1:50,000 Sheets

46 D / 8	46 D / 12	46 D / 16
47 A / 5	47 A / 9	47 A / 13
47 A / 6	47 A / 10	47 A / 14

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	02/16/2008 & 04/28/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

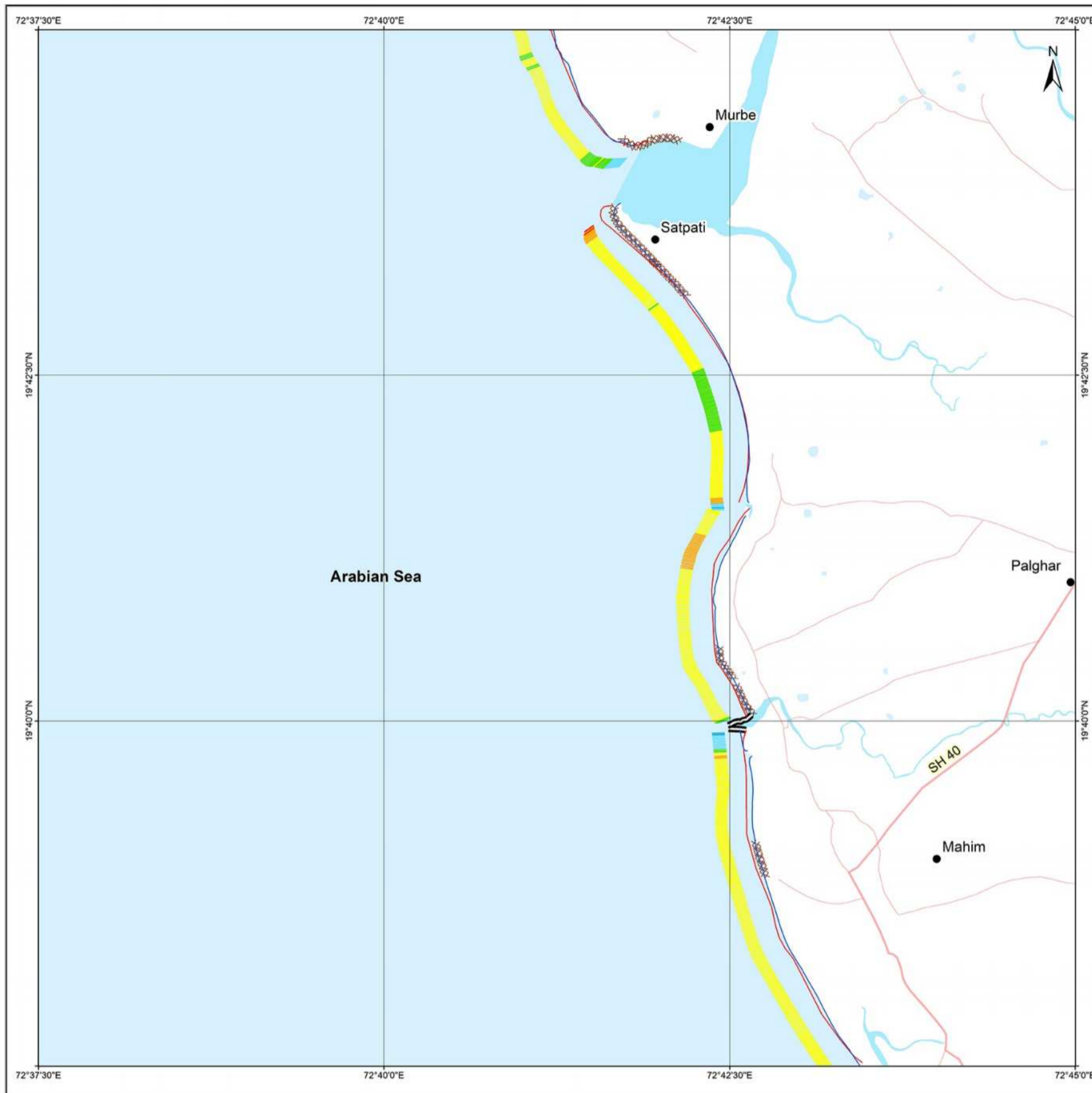
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1990 - 2018
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 10 / NE
Map No. : NCCR/SCM/155



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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47 A / 10 / NW	47 A / 10 / NE	47 A / 14 / NW
47 A / 10 / SW	47 A / 10 / SE	47 A / 14 / SW

Incidence on 1:50,000 Sheets

47 A / 5	47 A / 9	47 A / 13
47 A / 6	47 A / 10	47 A / 14
47 A / 7	47 A / 11	47 A / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014 & 2/20/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012 & 01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

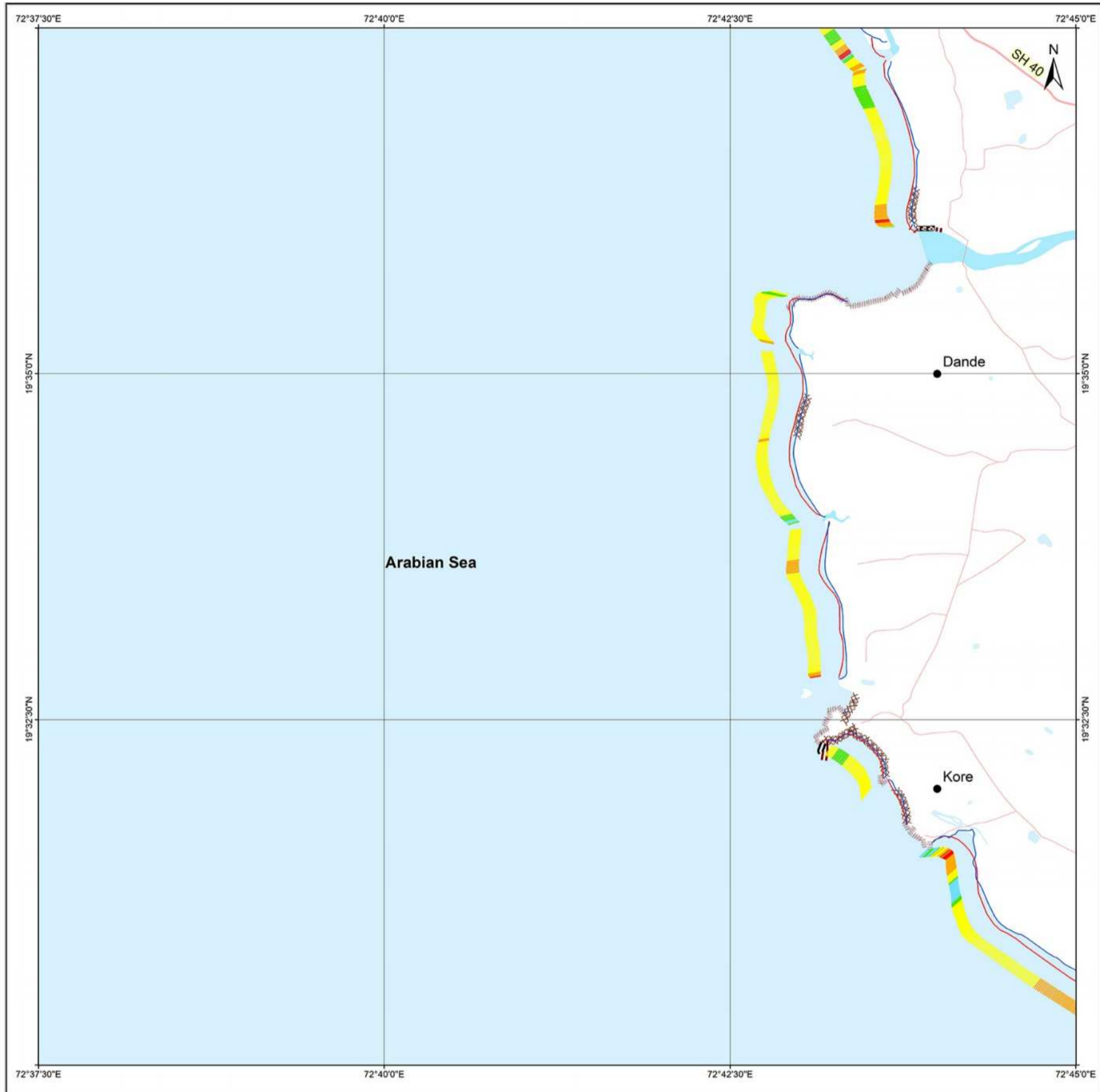
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SHORELINE CHANGE MAP MAHARASHTRA

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47 A / 10 / SE
Map No. : NCCR/SCM/156



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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47 A / 10 / NW	47 A / 10 / NE	47 A / 14 / NW
47 A / 10 / SW	47 A / 10 / SE	47 A / 14 / SW
47 A / 11 / NW	47 A / 11 / NE	47 A / 15 / NW

Incidence on 1:50,000 Sheets

47 A / 5	47 A / 9	47 A / 13
47 A / 6	47 A / 10	47 A / 14
47 A / 7	47 A / 11	47 A / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
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- Seawall/Ripraps
- Rocky Coast
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- National Highways
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- Other Roads
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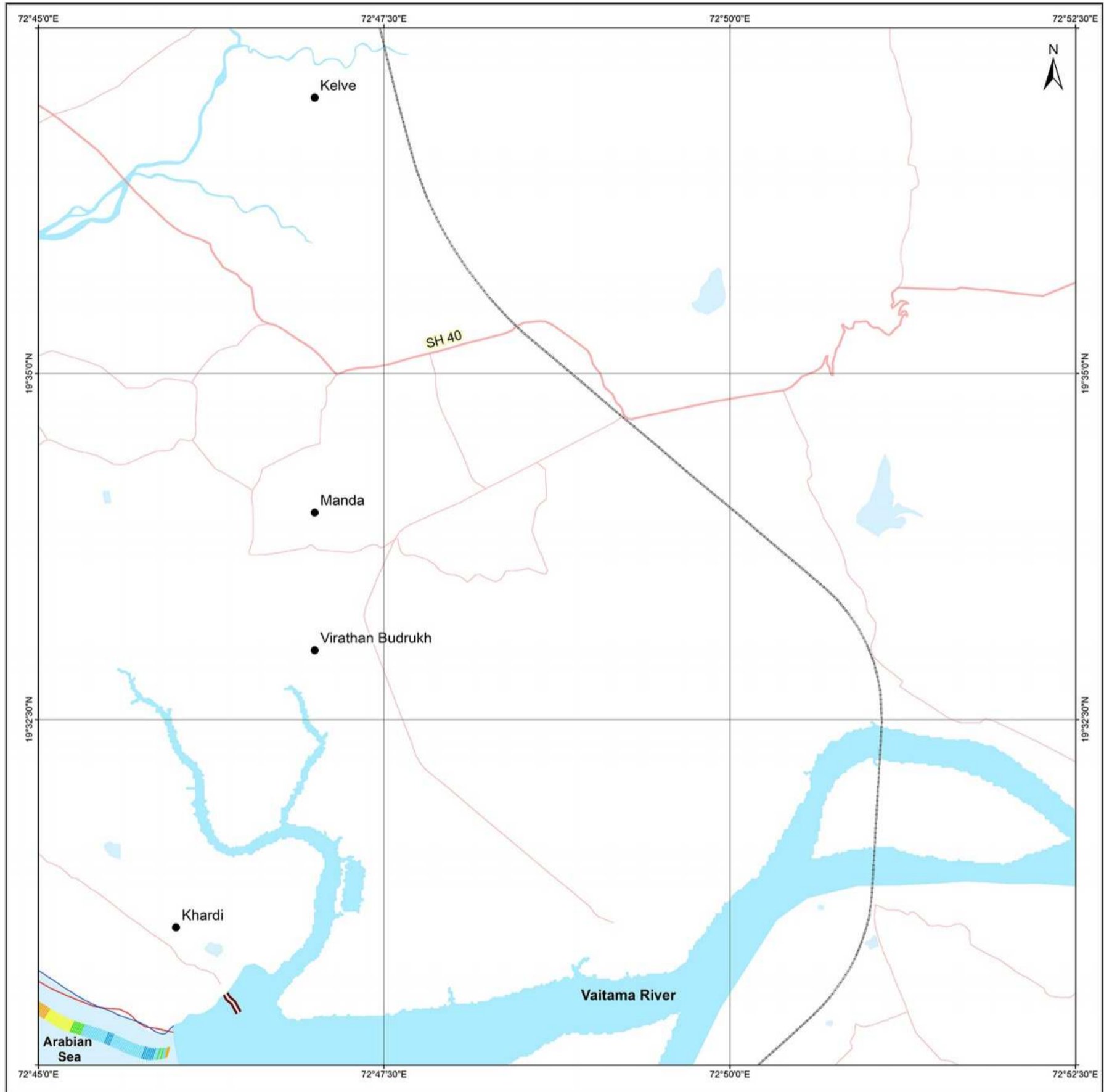
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 14 / SW
Map No. : NCCR/SCM/157



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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47 A / 10 / NE	47 A / 14 / NW	47 A / 14 / NE
47 A / 10 / SE	47 A / 14 / SW	47 A / 14 / SE
47 A / 11 / NE	47 A / 15 / NW	47 A / 15 / NE

Incidence on 1:50,000 Sheets

47 A / 9	47 A / 13	47 E / 1
47 A / 10	47 A / 14	47 E / 2
47 A / 11	47 A / 15	47 E / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

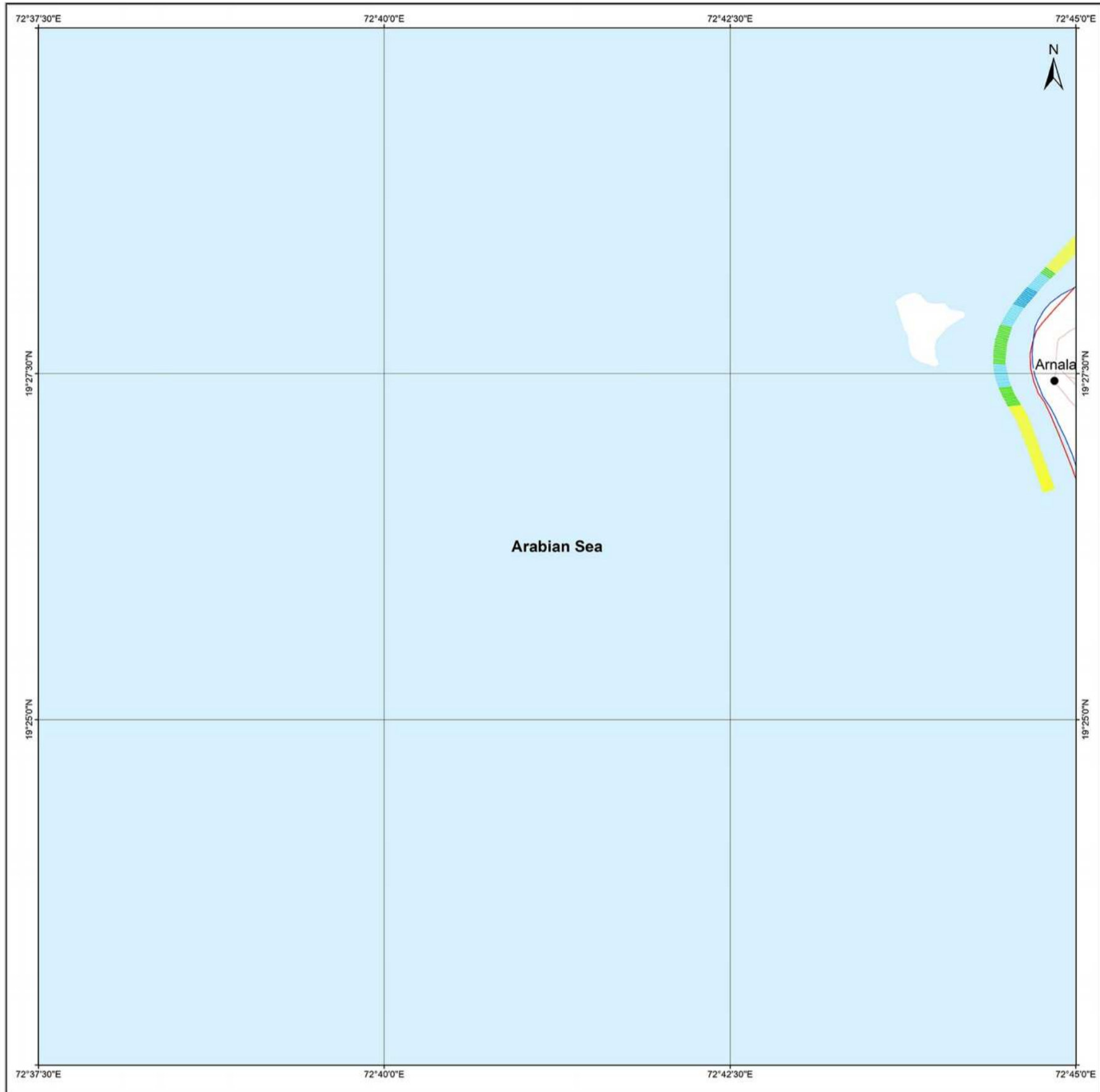
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PALGHAR

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 11 / NE
Map No. : NCCR/SCM/158



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/19/1990
- 01/30/2018

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47 A / 10 / SW	47 A / 10 / SE	47 A / 14 / SW
47 A / 11 / NW	47 A / 11 / NE	47 A / 15 / NW
47 A / 11 / SW	47 A / 11 / SE	47 A / 15 / SW

Incidence on 1:50,000 Sheets

47 A / 6	47 A / 10	47 A / 14
47 A / 7	47 A / 11	47 A / 15
47 A / 8	47 A / 12	47 A / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/19/1990



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

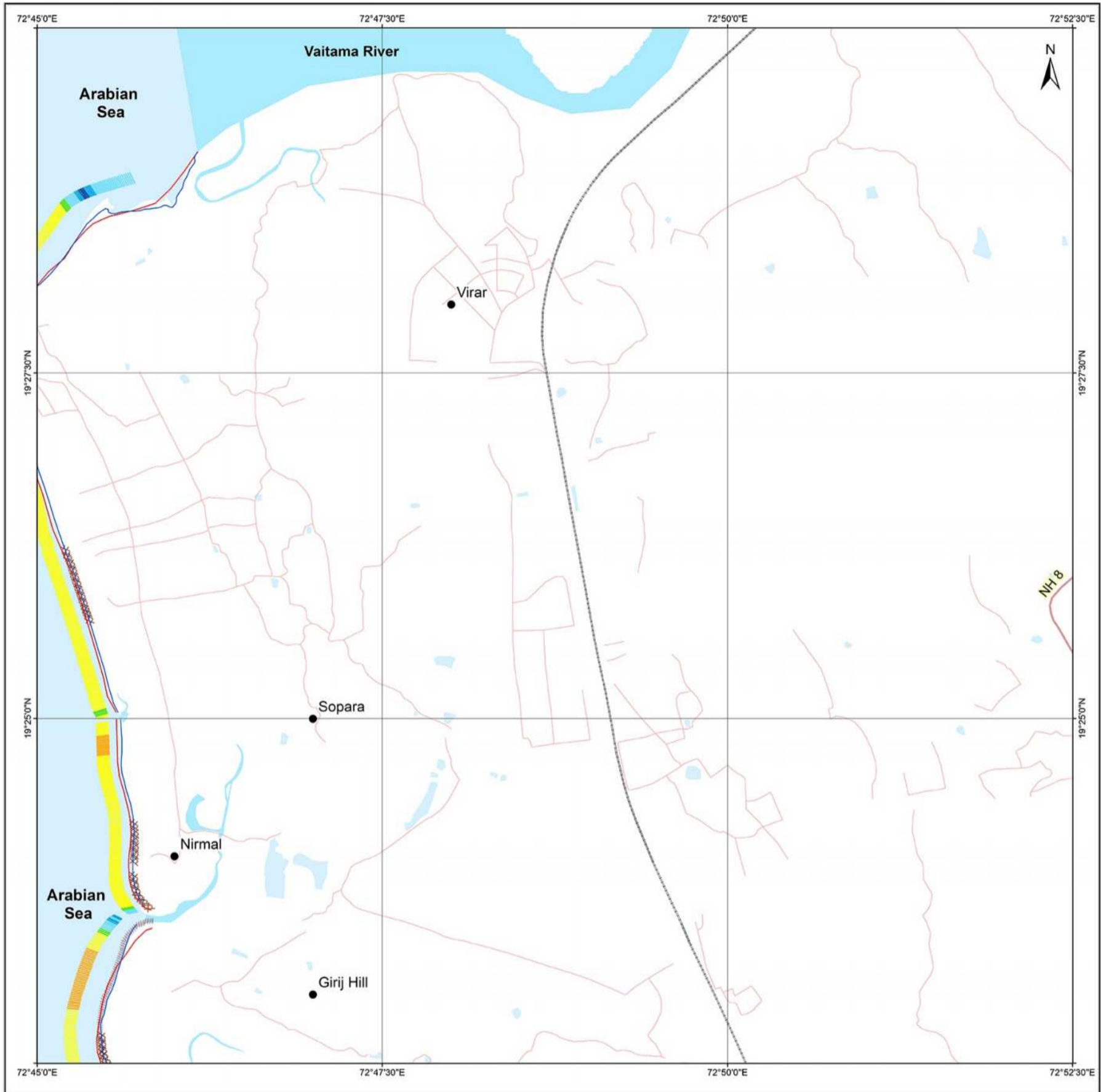
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1992 - 2018
PALGHAR

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 15 / NW
Map No. : NCCR/SCM/159



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 11/09/1992
- █ 01/30/2018

Index to sheets

47 A / 10 / SE	47 A / 14 / SW	47 A / 14 / SE
47 A / 11 / NE	47 A / 15 / NW	47 A / 15 / NE
47 A / 11 / SE	47 A / 15 / SW	47 A / 15 / SE

Incidence on 1:50,000 Sheets

47 A / 10	47 A / 14	47 E / 2
47 A / 11	47 A / 15	47 E / 3
47 A / 12	47 A / 16	47 E / 4

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
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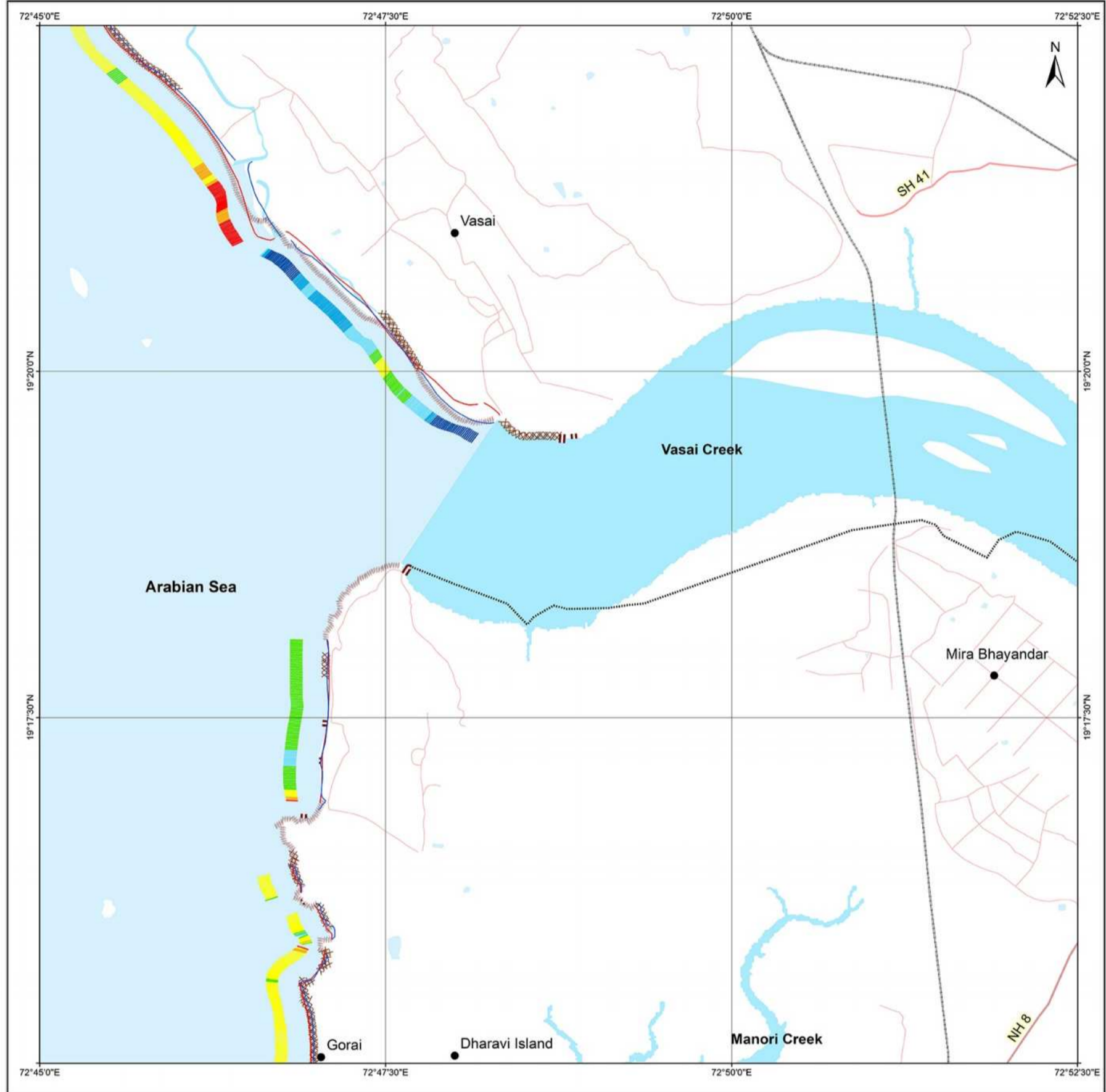
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& THANE

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 15 / SW
Map No. : NCCR/SCM/160



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 11/09/1992
- 01/30/2018

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47 A / 11 / NE	47 A / 15 / NW	47 A / 15 / NE
47 A / 11 / SE	47 A / 15 / SW	47 A / 15 / SE
47 A / 12 / NE	47 A / 16 / NW	47 A / 16 / NE

Incidence on 1:50,000 Sheets

47 A / 10	47 A / 14	47 E / 2
47 A / 11	47 A / 15	47 E / 3
47 A / 12	47 A / 16	47 E / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

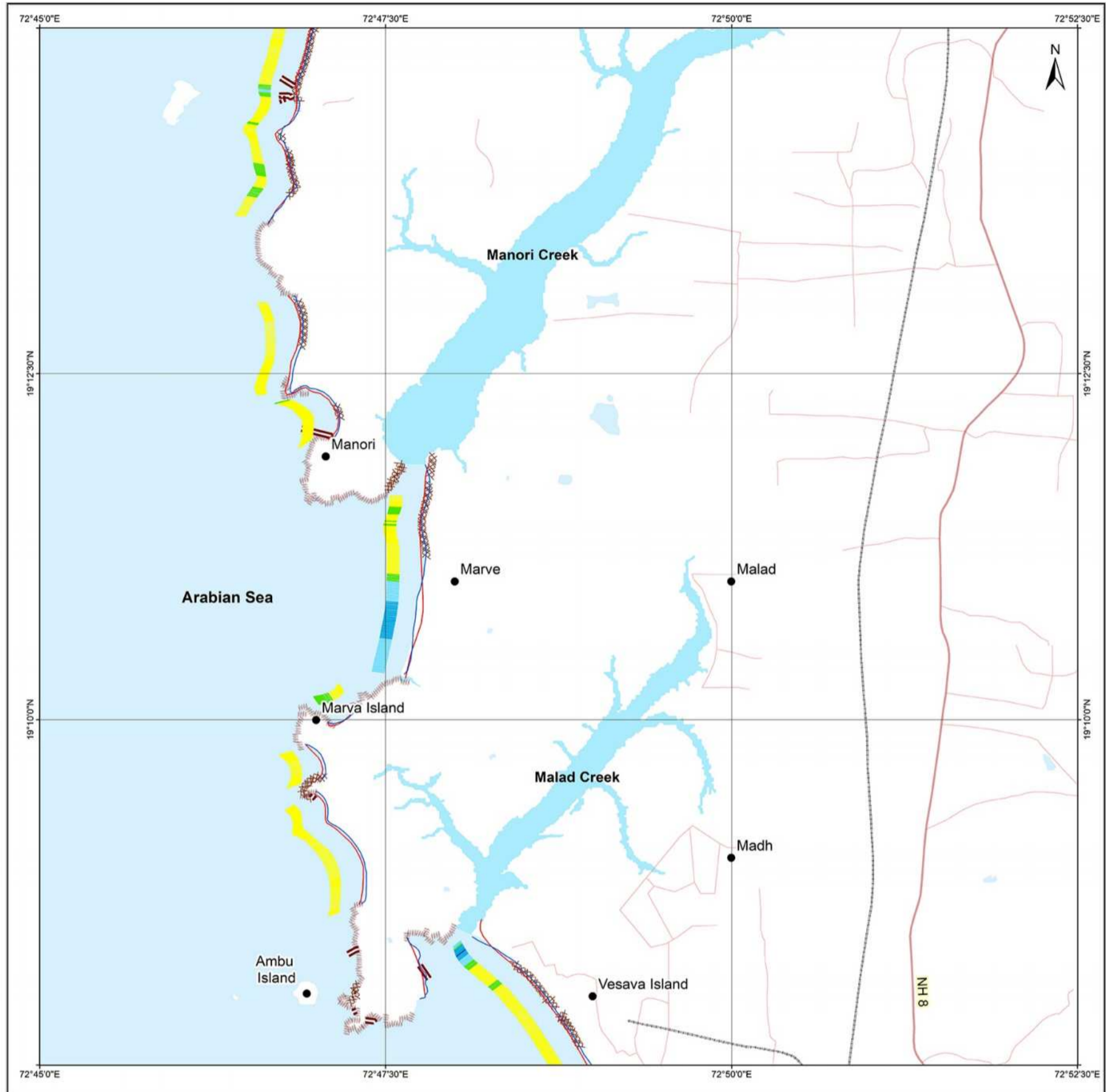
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MUMBAI SUB URBAN
& THANE

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 16 / NW
Map No. : NCCR/SCM/161



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 11/09/1992
- █ 01/30/2018

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47 A / 11 / SE	47 A / 15 / SW	47 A / 15 / SE
47 A / 12 / NE	47 A / 16 / NW	47 A / 16 / NE
47 A / 12 / SE	47 A / 16 / SW	47 A / 16 / SE

Incidence on 1:50,000 Sheets

47 A / 11	47 A / 15	47 E / 3
47 A / 12	47 A / 16	47 E / 4
47 B / 9	47 B / 13	47 F / 1

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

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MUMBAI
& MUMBAI SUB URBAN

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 A / 16 / SW
Map No. : NCCR/SCM/162



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 11/09/1992
- █ 01/30/2018

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47 A / 12 / NE	47 A / 15 / NW	47 A / 16 / NE
47 A / 12 / SE	47 A / 16 / SW	47 A / 16 / SE
47 B / 9 / NE	47 B / 13 / NW	47 B / 13 / NE

Incidence on 1:50,000 Sheets

47 A / 11	47 A / 15	47 E / 3
47 A / 12	47 A / 16	47 E / 4
47 B / 9	47 B / 13	47 F / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	02/20/2014 & 04/09/2014
LISS-IV	05/08/2013
LISS-IV	01/14/2012 & 03/02/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

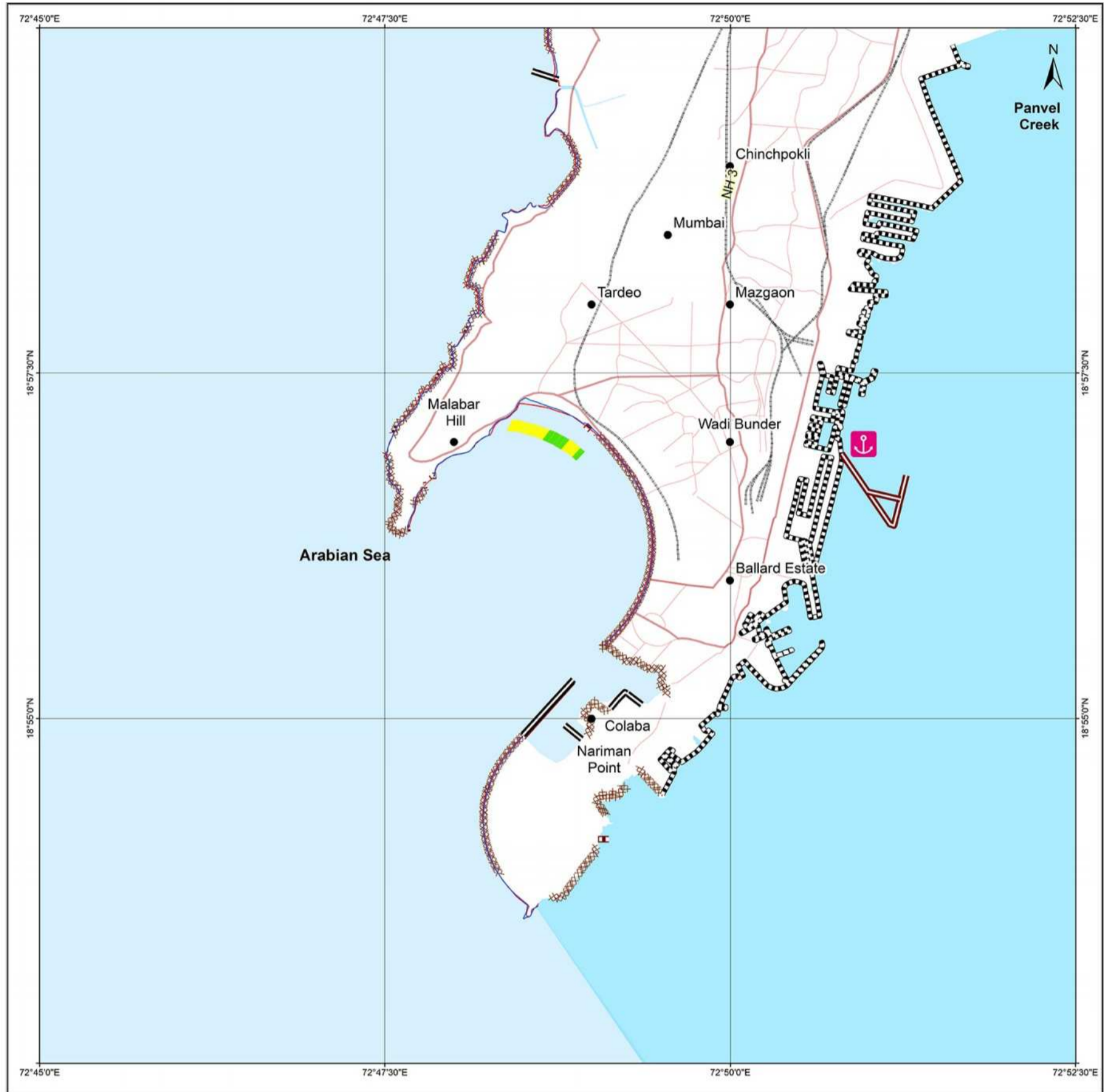
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1992 - 2018
MUMBAI

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 13 / NW
Map No. : NCCR/SCM/163



Shoreline Change Trend for Period 1992 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 11/09/1992
- 01/30/2018

Index to sheets

47 A / 12 / SE	47 A / 16 / SW	47 A / 16 / SE
47 B / 9 / NE	47 B / 13 / NW	47 B / 13 / NE
47 B / 9 / SE	47 B / 13 / SW	47 B / 13 / SE

Incidence on 1:50,000 Sheets

47 A / 12	47 A / 16	47 E / 4
47 B / 9	47 B / 13	47 F / 1
47 B / 10	47 B / 14	47 F / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	04/04/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

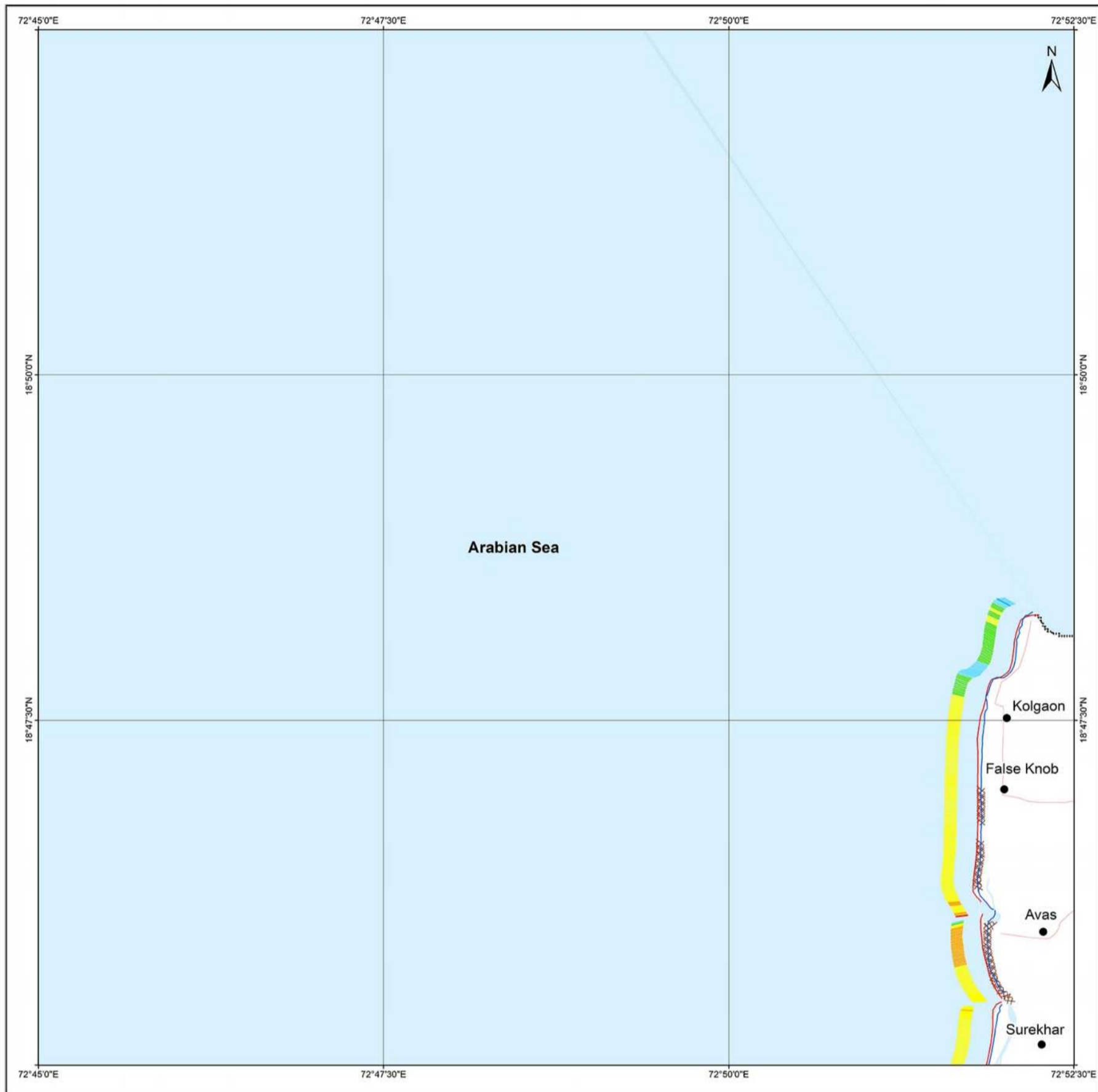
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1992 - 2018
RAIGAD

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 13 / SW
Map No. : NCCR/SCM/164



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018 & 01/30/2018

Index to sheets

47 B / 9 / NE	47 B / 13 / NW	47 B / 13 / NE
47 B / 9 / SE	47 B / 13 / SW	47 B / 13 / SE
47 B / 10 / NE	47 B / 14 / NW	47 B / 14 / NE

Incidence on 1:50,000 Sheets

47 A / 12	47 A / 16	47 E / 14
47 B / 9	47 B / 13	47 F / 1
47 B / 10	47 B / 14	47 F / 2

Scale

1000 m 500 0 1 2 km

1:25,000

UTM Coordinates Zone 43

Datum : The World Geodetic System 1984 (WGS84)

Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018 & 01/30/2018
LISS-IV	03/24/2017 & 02/28/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	04/14/2013
LISS-IV	03/26/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992

MAHARASHTRA

- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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1992 - 2018
RAIGAD

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 14 / NW
Map No. : NCCR/SCM/165



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 11/09/1992
- █ 01/06/2018

Index to sheets

47 B / 9 / SE	47 B / 13 / SW	47 B / 13 / SE
47 B / 10 / NE	47 B / 14 / NW	47 B / 14 / NE
47 B / 10 / SE	47 B / 14 / SW	47 B / 14 / SE

Incidence on 1:50,000 Sheets

47 B / 9	47 B / 13	47 F / 1
47 B / 10	47 B / 14	47 F / 2
47 B / 11	47 B / 15	47 F / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	04/14/2013
LISS-IV	03/26/2012
LISS-III	02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

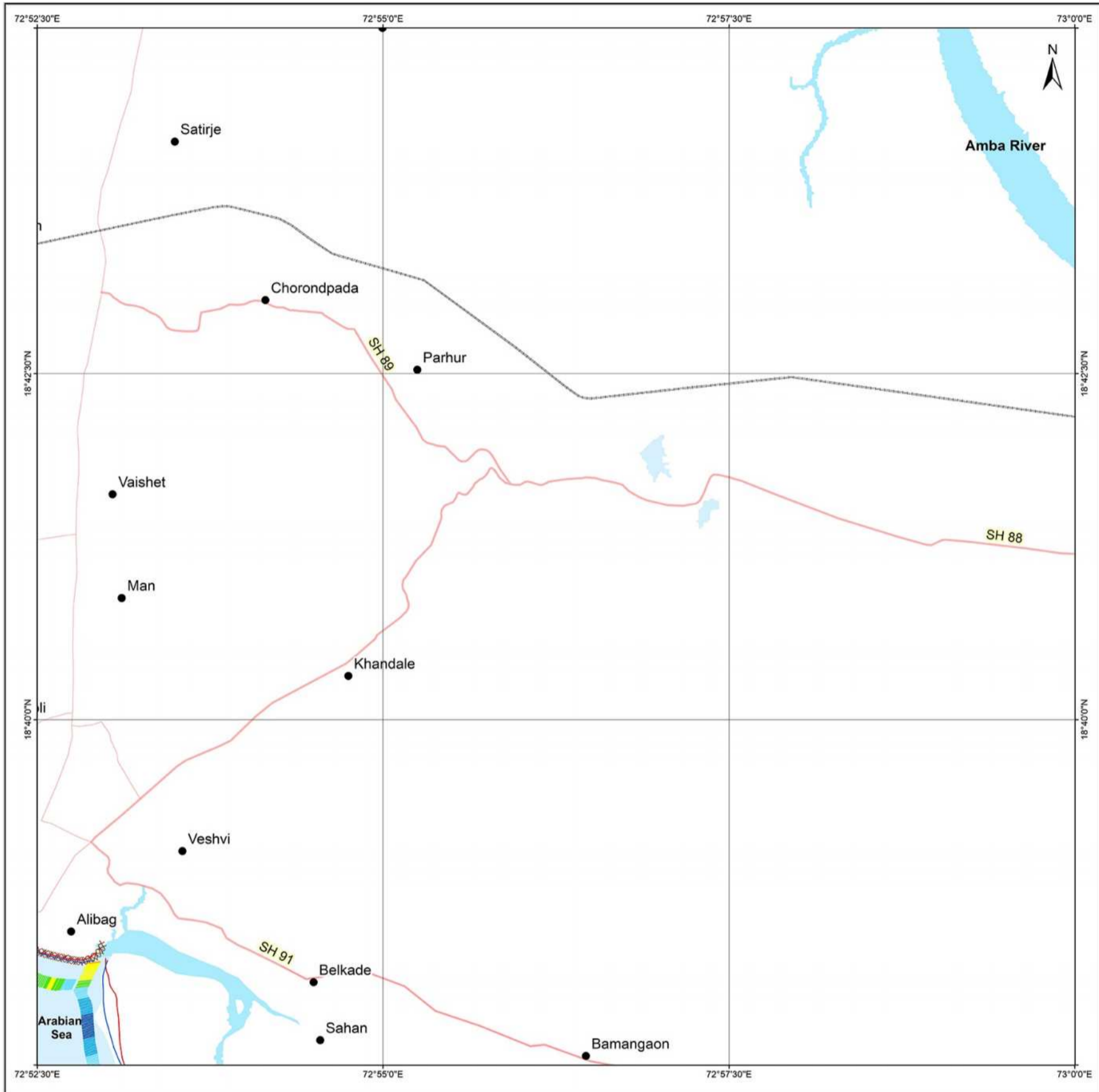
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1992 - 2018
RAIGAD

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 14 / NE
Map No. : NCCR/SCM/166



Shoreline Change Trend for Period 1992 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018

Index to sheets

47 B / 13 / SW	47 B / 13 / SE	47 F / 1 / SW
47 B / 14 / NW	47 B / 14 / NE	47 F / 2 / NW
47 B / 14 / SW	47 B / 14 / SE	47 F / 2 / SW

Incidence on 1:50,000 Sheets

47 B / 9	47 B / 13	47 F / 1
47 B / 10	47 B / 14	47 F / 2
47 B / 11	47 B / 15	47 F / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	04/14/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008 & 02/16/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

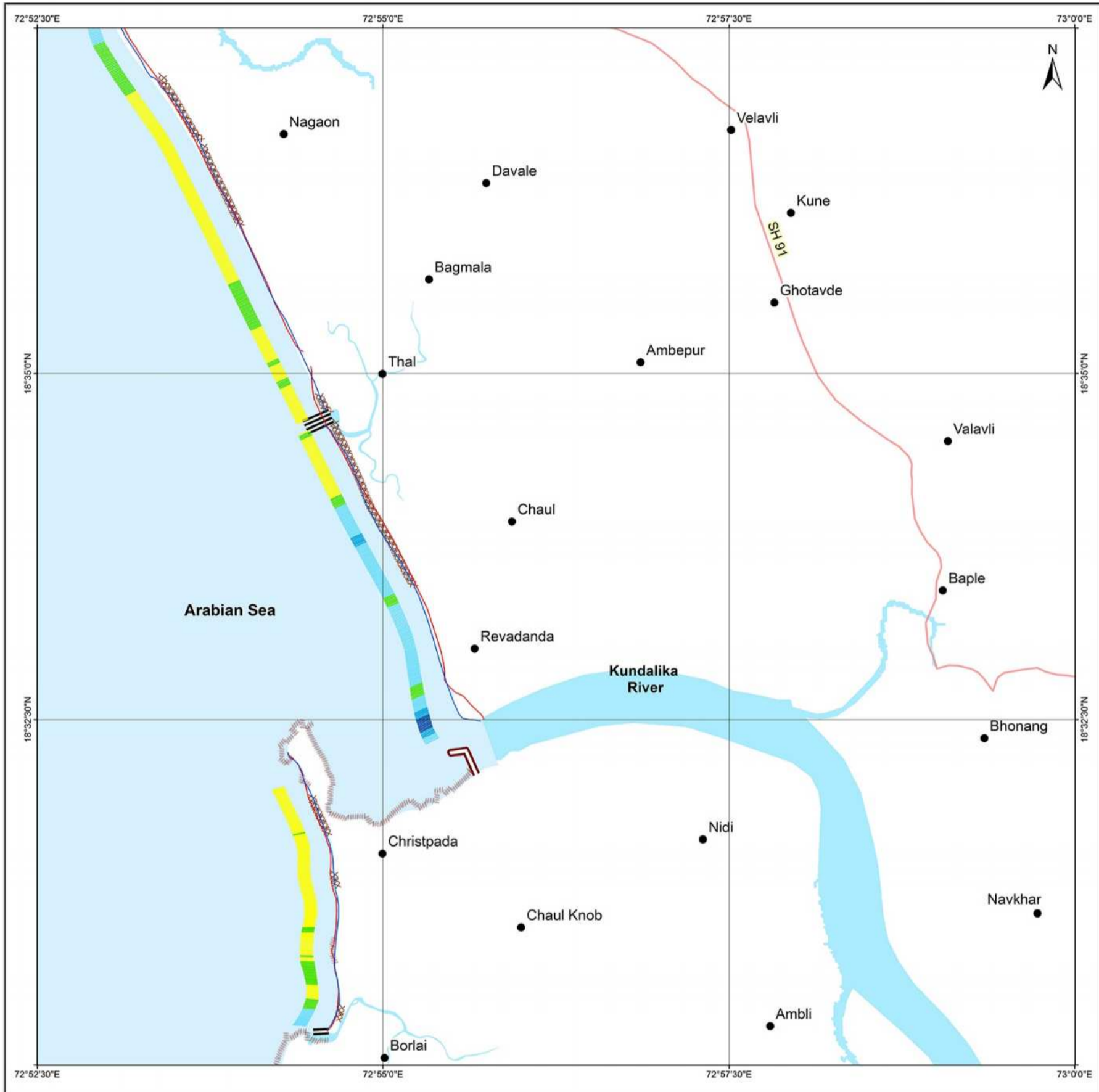
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 14 / SE
Map No. : NCCR/SCM/167



Shoreline Change Trend for Period 1992 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018

Index to sheets

47 B / 14 / NW	47 B / 14 / NE	47 F / 2 / NW
47 B / 14 / SW	47 B / 14 / SE	47 F / 2 / SW
47 B / 15 / NW	47 B / 15 / NE	47 F / 3 / NW

Incidence on 1:50,000 Sheets

47 B / 9	47 B / 13	47 F / 1
47 B / 10	47 B / 14	47 F / 2
47 B / 11	47 B / 15	47 F / 3

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	04/14/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

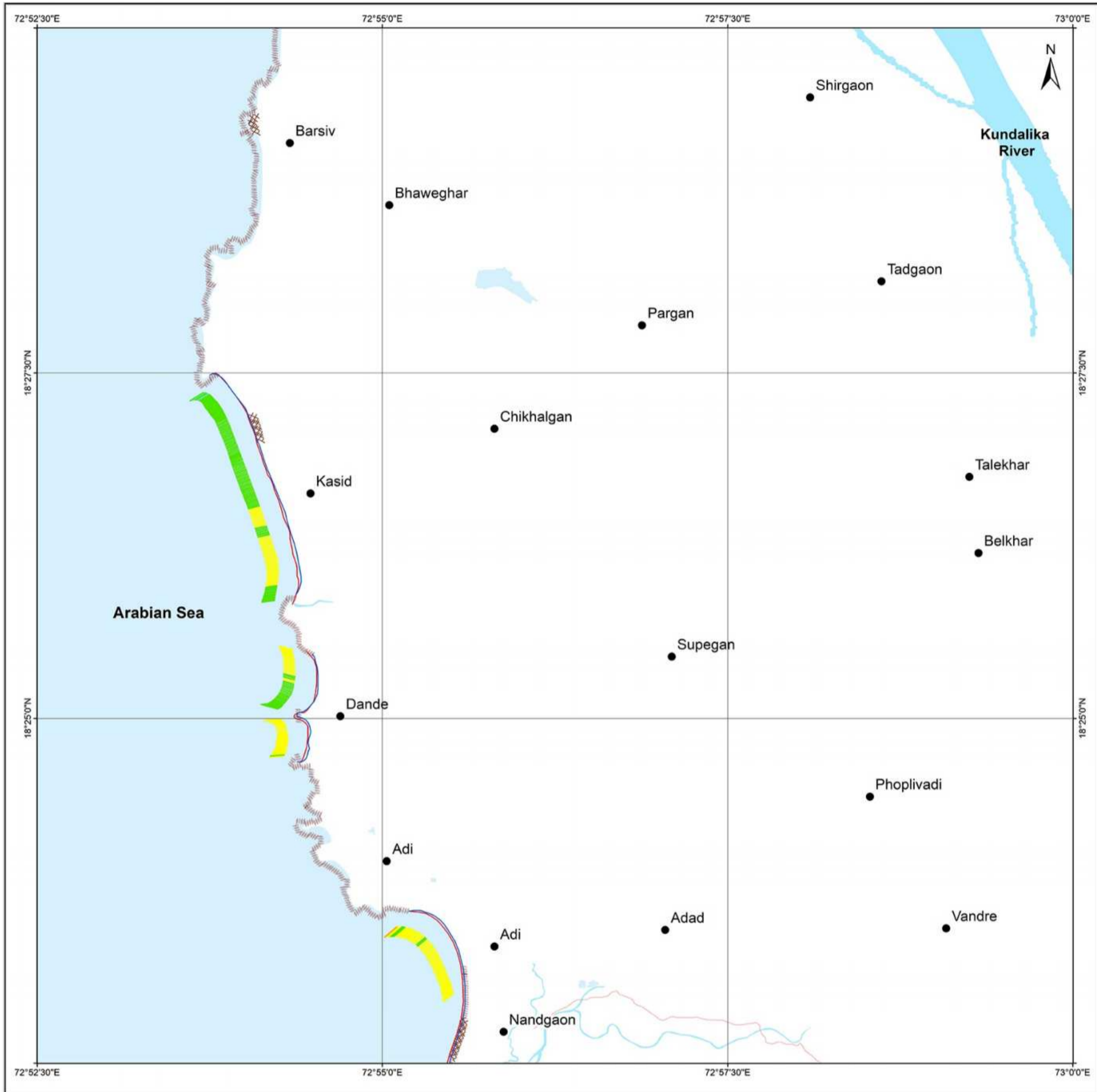
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 15 / NE
Map No. : NCCR/SCM/168



Shoreline Change Trend for Period 1992 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018

Index to sheets

47 B / 14 / SW	47 B / 14 / SE	47 F / 2 / SW
47 B / 15 / NW	47 B / 15 / NE	47 F / 3 / NW
47 B / 15 / SW	47 B / 15 / SE	47 F / 3 / SW

Incidence on 1:50,000 Sheets

47 B / 10	47 B / 14	47 F / 2
47 B / 11	47 B / 15	47 F / 3
47 B / 12	47 B / 16	47 F / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	02/25/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

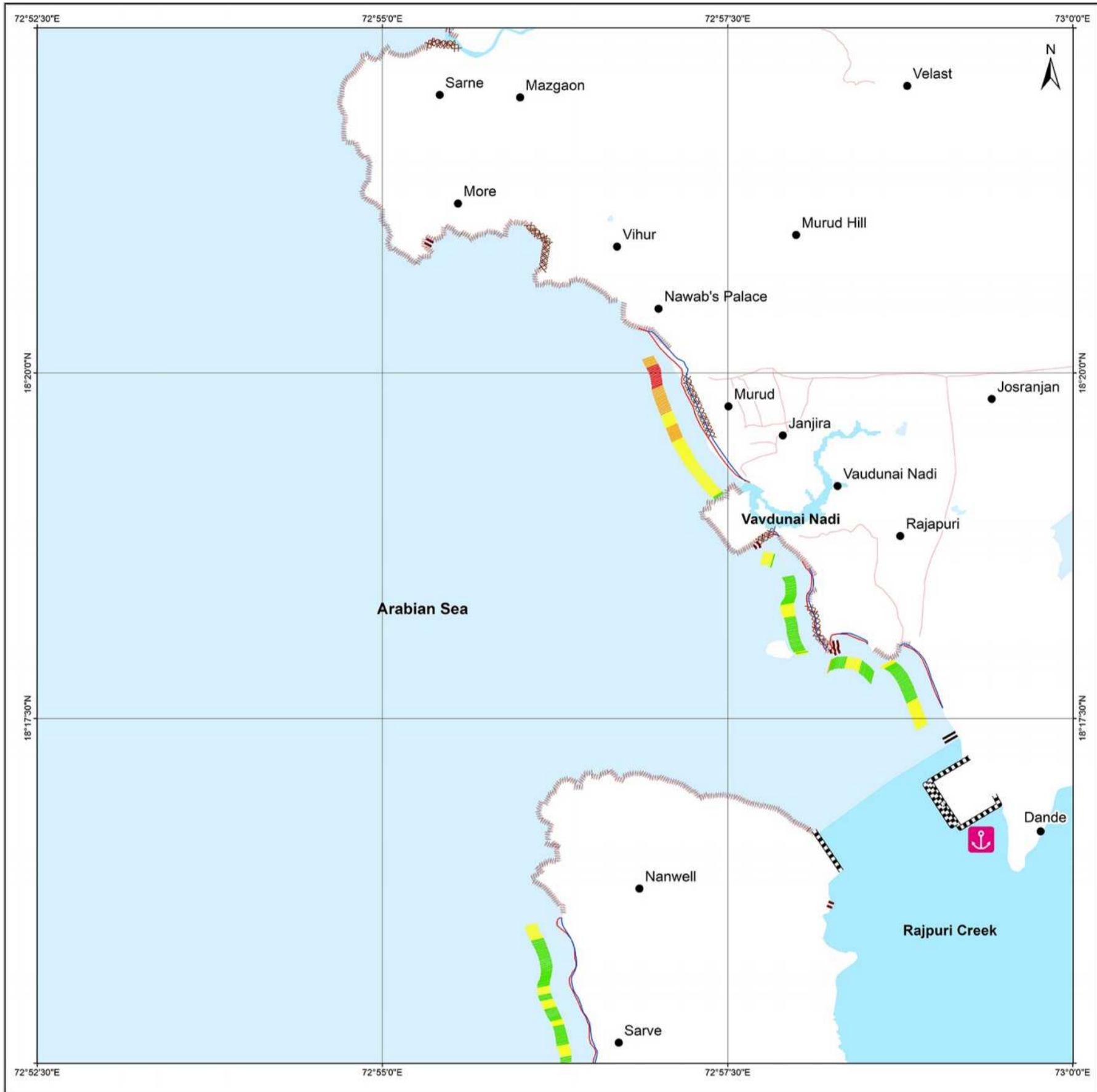
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1992 - 2018
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 15 / SE
Map No. : NCCR/SCM/169



Shoreline Change Trend for Period 1992 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018

Index to sheets

47 B / 15 / NN	47 B / 15 / NE	47 F / 3 / NW
47 B / 15 / SW	47 B / 15 / SE	47 F / 3 / SW
47 B / 16 / NW	47 B / 16 / NE	47 F / 4 / NW

Incidence on 1:50,000 Sheets

47 B / 10	47 B / 14	47 F / 2
47 B / 11	47 B / 15	47 F / 3
47 B / 12	47 B / 16	47 F / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	02/25/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

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1989 - 2018
RAIGAD

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 16 / NE
Map No. : NCCR/SCM/170



Shoreline Change Trend for Period 1989 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 10/25/1989 & 11/09/1992
- █ 01/06/2018

Index to sheets

47 B / 15 / SW	47 B / 15 / SE	47 F / 3 / SW
47 B / 16 / NW	47 B / 16 / NE	47 F / 4 / NW
47 B / 16 / SW	47 B / 16 / SE	47 F / 4 / SW

Incidence on 1:50,000 Sheets

47 B / 11	47 B / 15	47 F / 3
47 B / 12	47 B / 16	47 F / 4
47 C / 9	47 C / 13	47 G / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	04/04/2015
LISS-IV	03/16/2014
LISS-IV	02/25/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/25/1989 & 11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

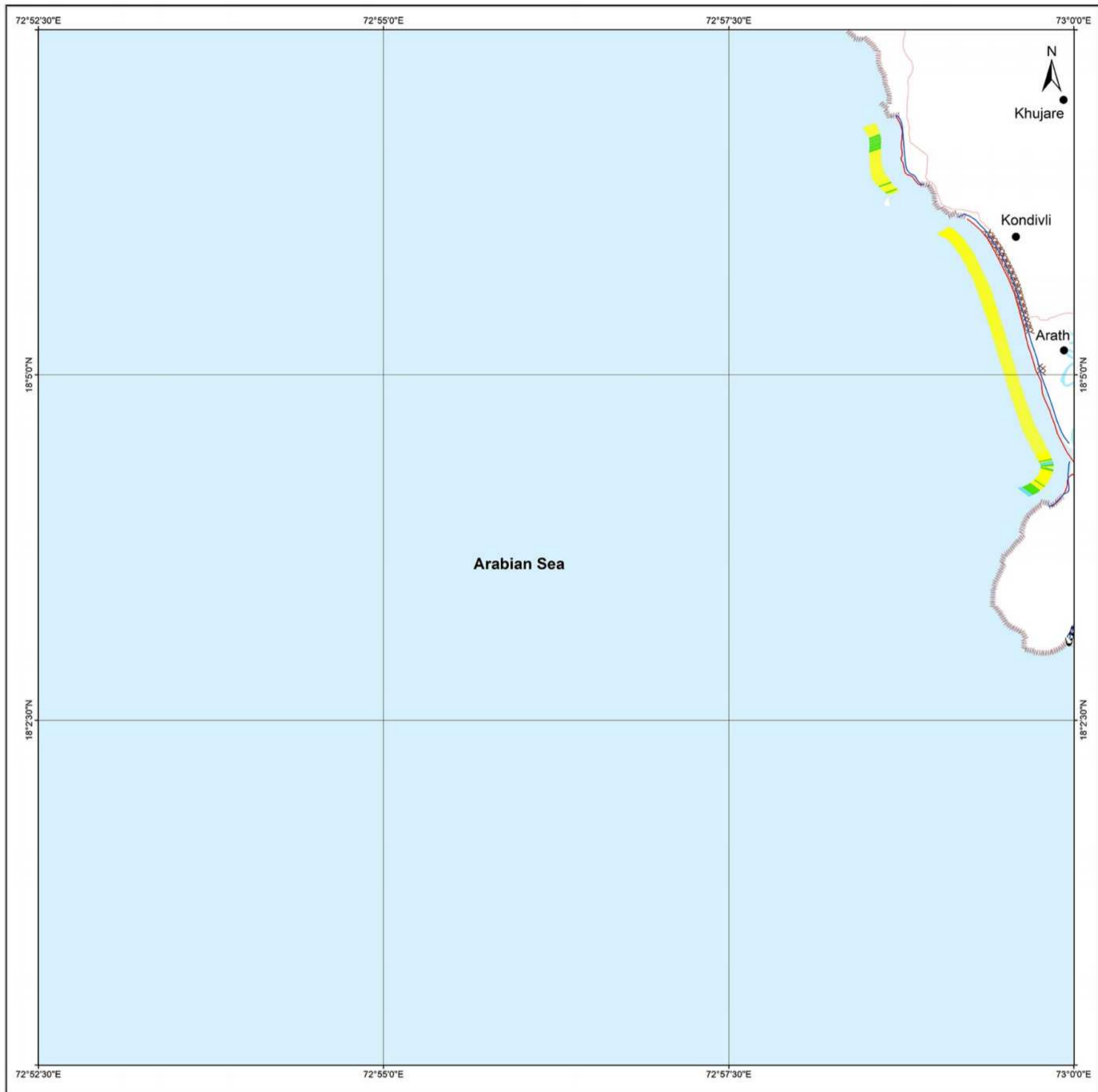
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 B / 16 / SE
Map No. : NCCR/SCM/171



Shoreline Change Trend for Period 1992 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 11/09/1992
- 01/06/2018

Index to sheets

47 B / 16 / NW	47 B / 16 / NE	47 F / 4 / NW
47 B / 16 / SW	47 B / 16 / SE	47 F / 4 / SW
47 C / 13 / NW	47 C / 13 / NE	47 G / 1 / NW

Incidence on 1:50,000 Sheets

47 B / 11	47 B / 15	47 F / 3
47 B / 12	47 B / 16	47 F / 4
47 C / 19	47 C / 13	47 G / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	03/05/2016
LISS-IV	01/22/2015 & 04/04/2015
LISS-IV	03/16/2014
LISS-IV	02/25/2013
LISS-IV	03/26/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	11/09/1992



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

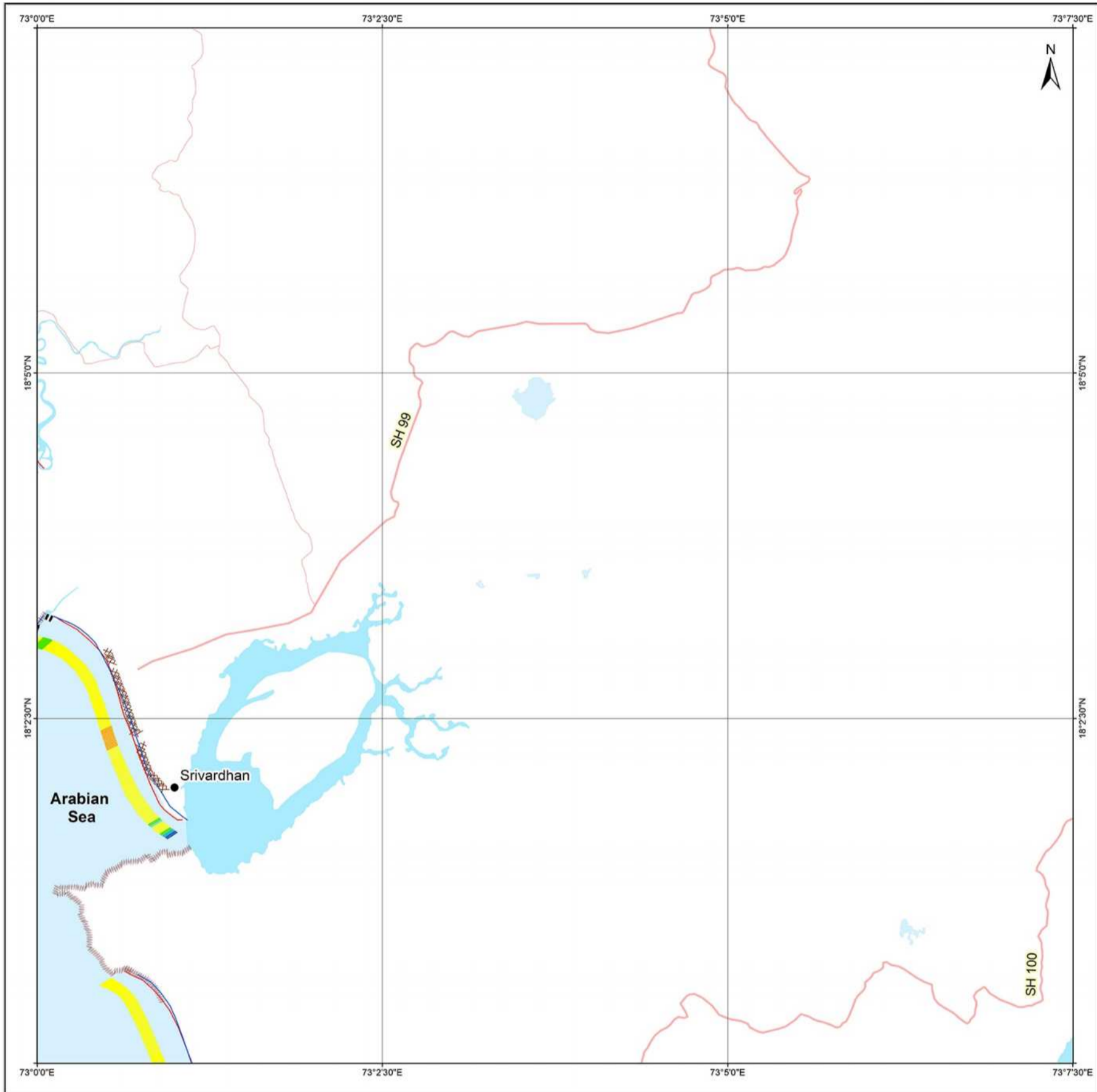
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 F / 4 / SW
Map No. : NCCR/SCM/172



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/06/2018

Index to sheets

47 B / 16 / NE	47 F / 4 / NW	47 F / 4 / NE
47 B / 16 / SE	47 F / 4 / SW	47 F / 4 / SE
47 C / 13 / NE	47 G / 1 / NW	47 G / 1 / NE

Incidence on 1:50,000 Sheets

47 B / 15	47 F / 3	47 F / 7
47 B / 16	47 F / 4	47 F / 8
47 C / 13	47 G / 1	47 G / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	02/15/2016 & 03/05/2016
LISS-IV	01/22/2015
LISS-IV	03/16/2014
LISS-IV	02/25/2013
LISS-IV	03/26/2012 & 03/07/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	10/25/2001
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

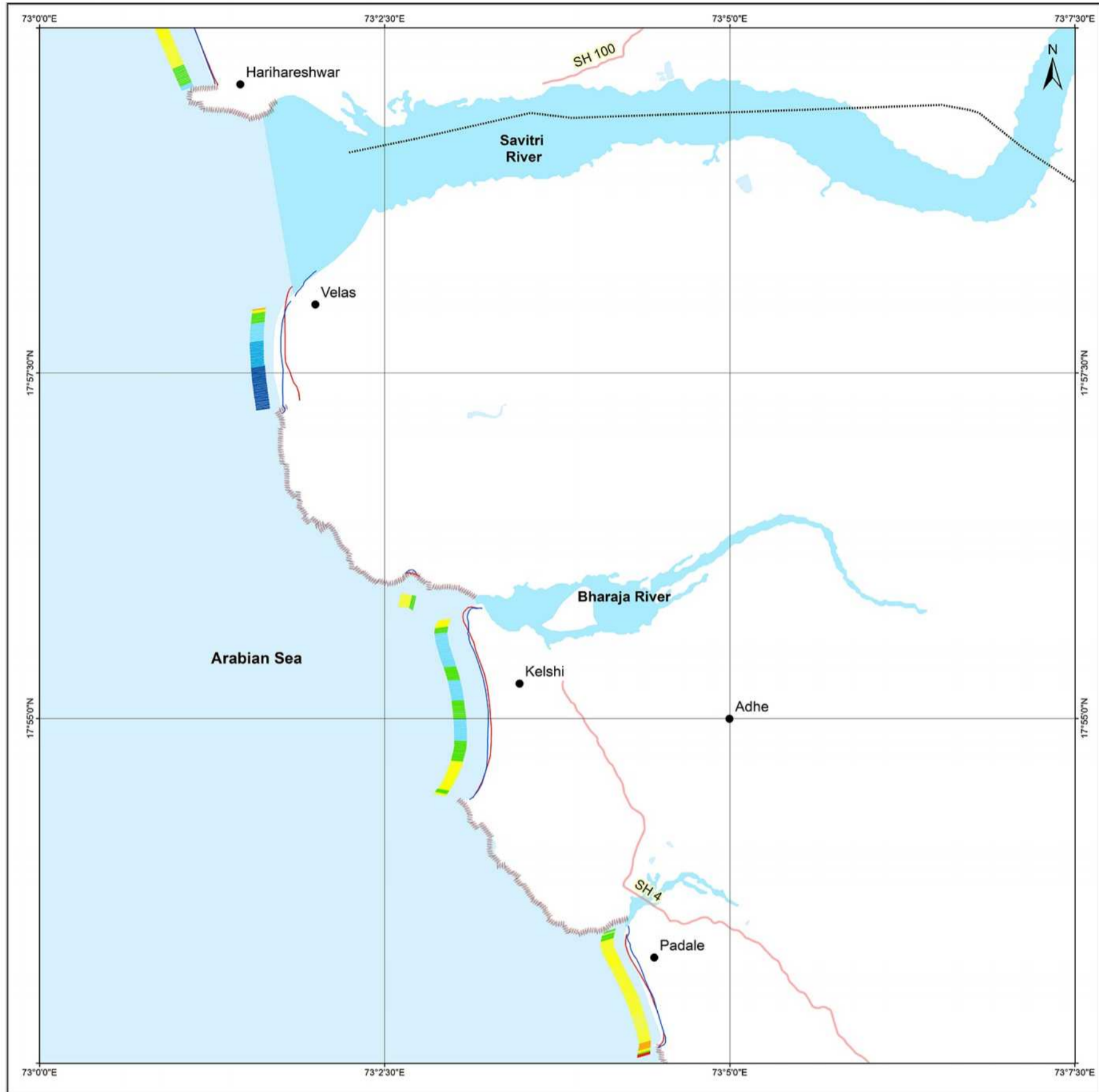
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 1 / NW
Map No. : NCCR/SCM/173



Shoreline Change Trend for Period 1989 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/22/1989
- 01/06/2018

Index to sheets

47 B / 16 / SE	47 F / 14 / SW	47 F / 14 / SE
47 C / 13 / NE	47 G / 11 / NW	47 G / 11 / NE
47 C / 13 / SE	47 G / 11 / SW	47 G / 11 / SE

Incidence on 1:50,000 Sheets

47 B / 16	47 F / 14	47 F / 18
47 C / 13	47 G / 11	47 G / 15
47 C / 14	47 G / 12	47 G / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/06/2018
LISS-IV	03/24/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	03/16/2014 & 04/14/2014
LISS-IV	02/25/2013
LISS-IV	03/07/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999 & 10/25/2001
TM	10/22/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

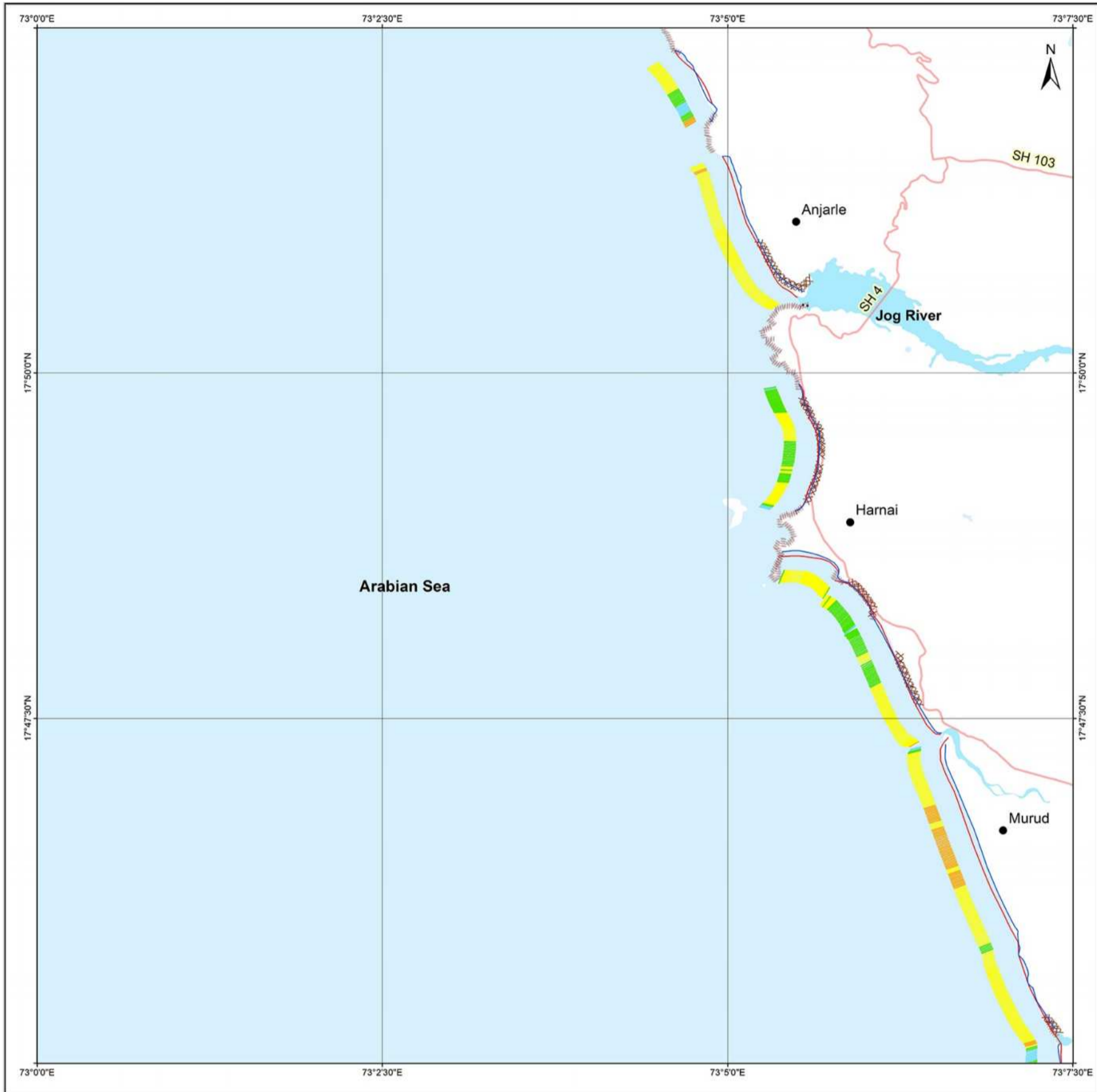
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1989 - 2018
RATNAGIRI

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 1 / SW
Map No. : NCCR/SCM/174



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018 & 01/06/2018

Index to sheets

47 C / 13 / NE	47 G / 1 / NW	47 G / 1 / NE
47 C / 13 / SE	47 G / 1 / SW	47 G / 1 / SE
47 C / 14 / NE	47 G / 2 / NW	47 G / 2 / NE

Incidence on 1:50,000 Sheets

47 B / 16	47 F / 4	47 F / 8
47 C / 13	47 G / 1	47 G / 5
47 C / 14	47 G / 2	47 G / 6

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018 & 01/06/2018
LISS-IV	03/05/2017 & 03/24/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	03/26/2013 & 02/25/2013
LISS-IV	03/07/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

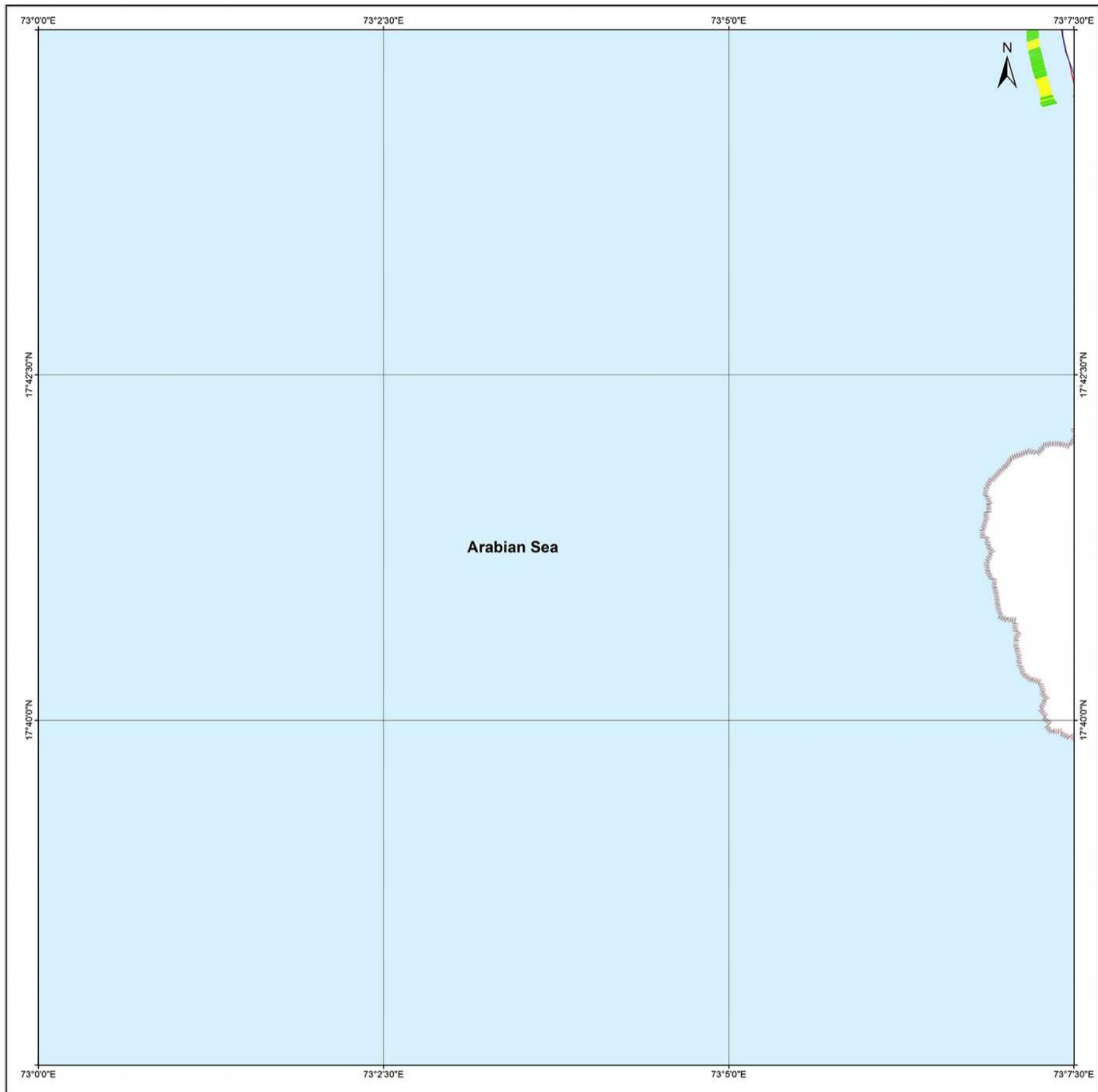
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1989 - 2018
RATNAGIRI

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 2 / NW
Map No. : NCCR/SCM/175



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 C / 13 / SE	47 G / 1 / SW	47 G / 1 / SE
47 C / 14 / NE	47 G / 2 / NW	47 G / 2 / NE
47 C / 14 / SE	47 G / 2 / SW	47 G / 2 / SE

Incidence on 1:50,000 Sheets

47 C / 13	47 G / 1	47 G / 5
47 C / 14	47 G / 2	47 G / 6
47 C / 15	47 G / 3	47 G / 7

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	03/13/2013
LISS-IV	03/07/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

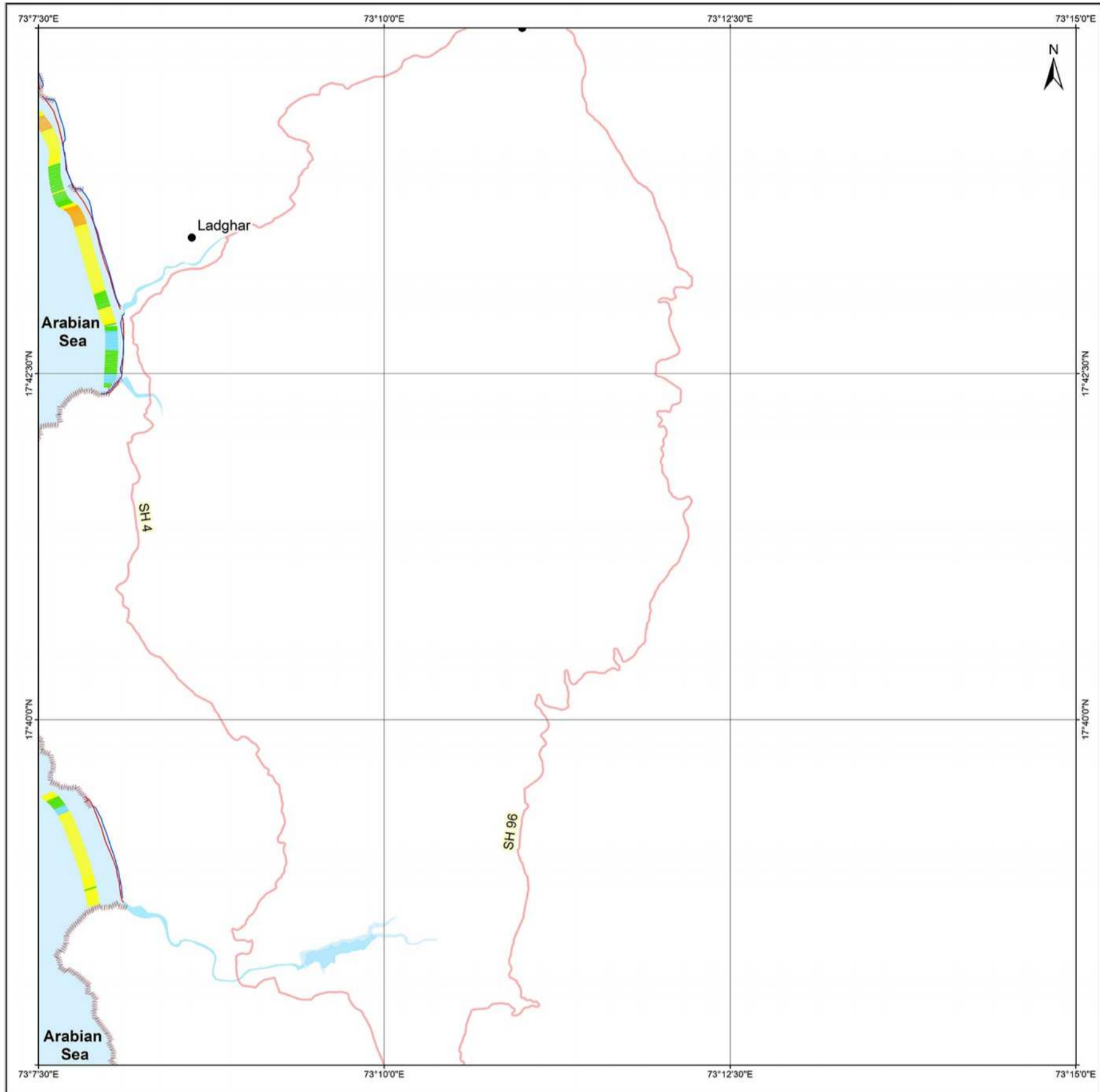
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1989 - 2018
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 2 / NE
Map No. : NCCR/SCM/176



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 1 / SW	47 G / 1 / SE	47 G / 5 / SW
47 G / 2 / NW	47 G / 2 / NE	47 G / 6 / NW
47 G / 2 / SW	47 G / 2 / SE	47 G / 6 / SW

Incidence on 1:50,000 Sheets

47 C / 13	47 G / 1	47 G / 5
47 C / 14	47 G / 2	47 G / 6
47 C / 15	47 G / 3	47 G / 7

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	03/26/2013 & 03/13/2013
LISS-IV	03/07/2012
LISS-III	03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

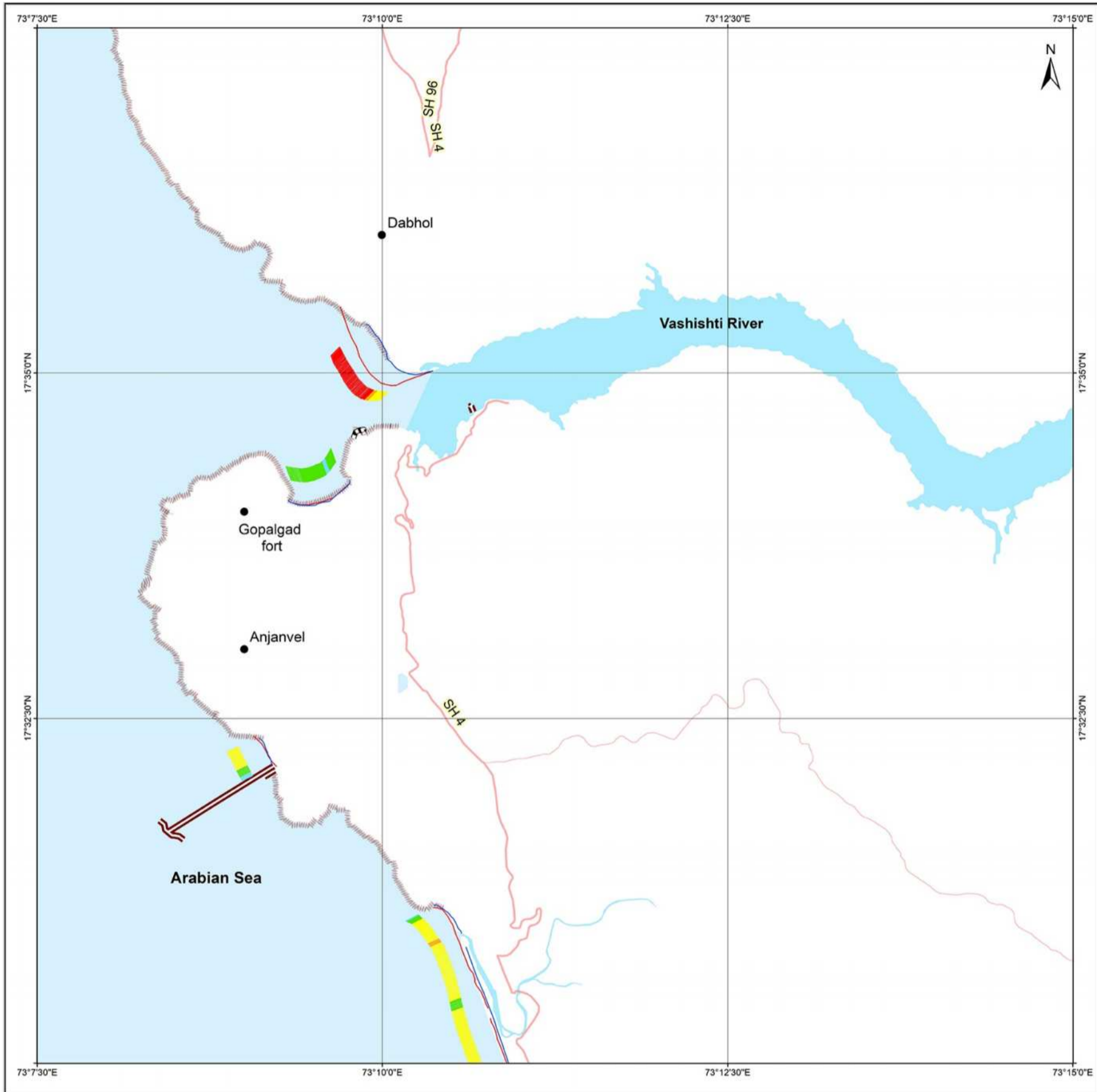
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 2 / SE
Map No. : NCCR/SCM/177



Shoreline Change Trend for Period 1989 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 2 / NW	47 G / 2 / NE	47 G / 6 / NW
47 G / 2 / SW	47 G / 2 / SE	47 G / 6 / SW
47 G / 3 / NW	47 G / 3 / NE	47 G / 7 / NW

Incidence on 1:50,000 Sheets

47 C / 13	47 G / 1	47 G / 5
47 C / 14	47 G / 2	47 G / 6
47 C / 15	47 G / 3	47 G / 7

Scale
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	03/26/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008 & 03/11/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

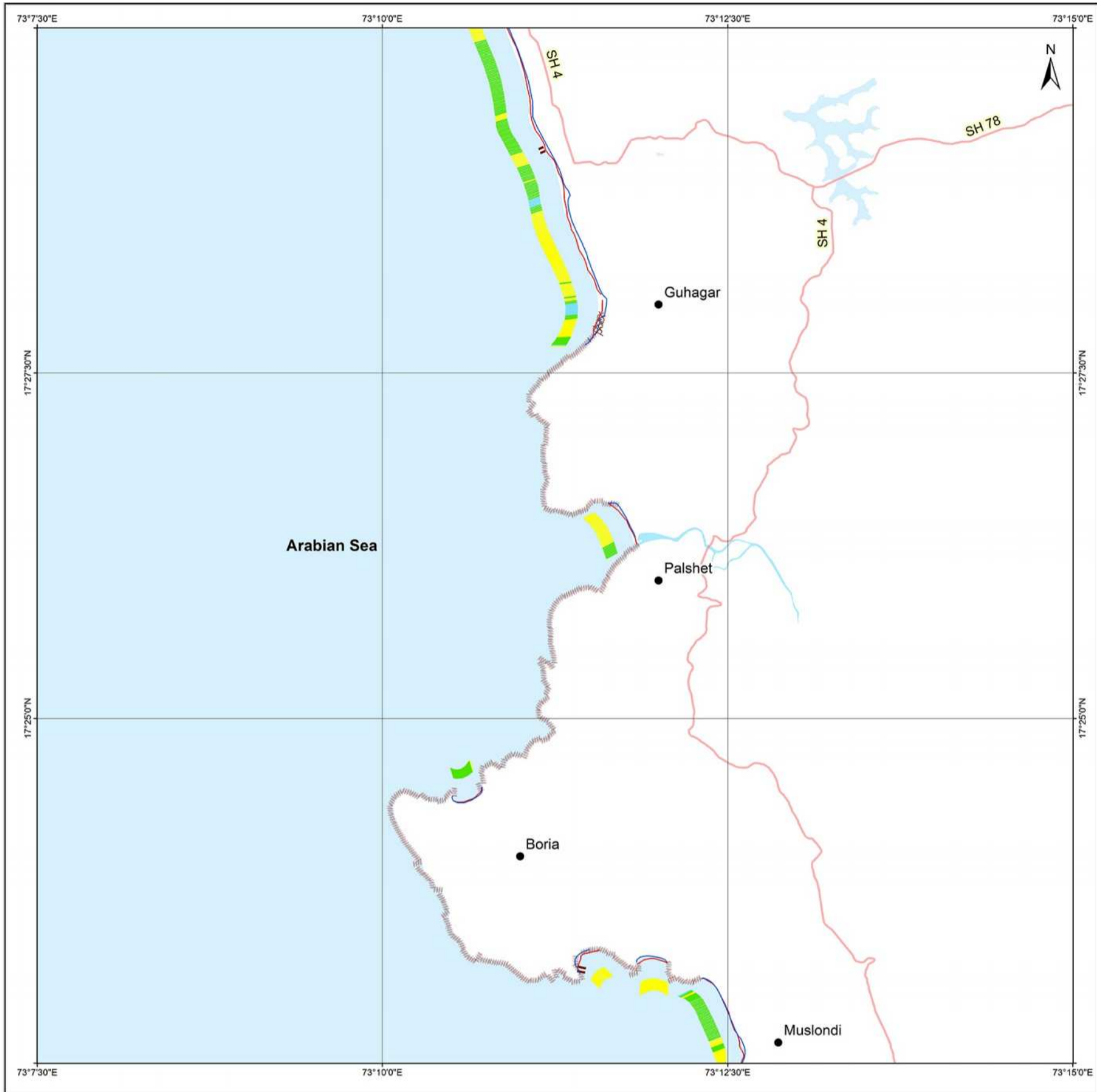
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SHORELINE CHANGE MAP MAHARASHTRA

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47 G / 3 / NE
Map No. : NCCR/SCM/178



Shoreline Change Trend for Period 1989 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 2 / SW	47 G / 2 / SE	47 G / 6 / SW
47 G / 3 / NW	47 G / 3 / NE	47 G / 7 / NW
47 G / 3 / SW	47 G / 3 / SE	47 G / 7 / SW

Incidence on 1:50,000 Sheets

47 C / 14	47 G / 2	47 G / 6
47 C / 15	47 G / 3	47 G / 7
47 C / 16	47 G / 4	47 G / 8

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013 & 03/26/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

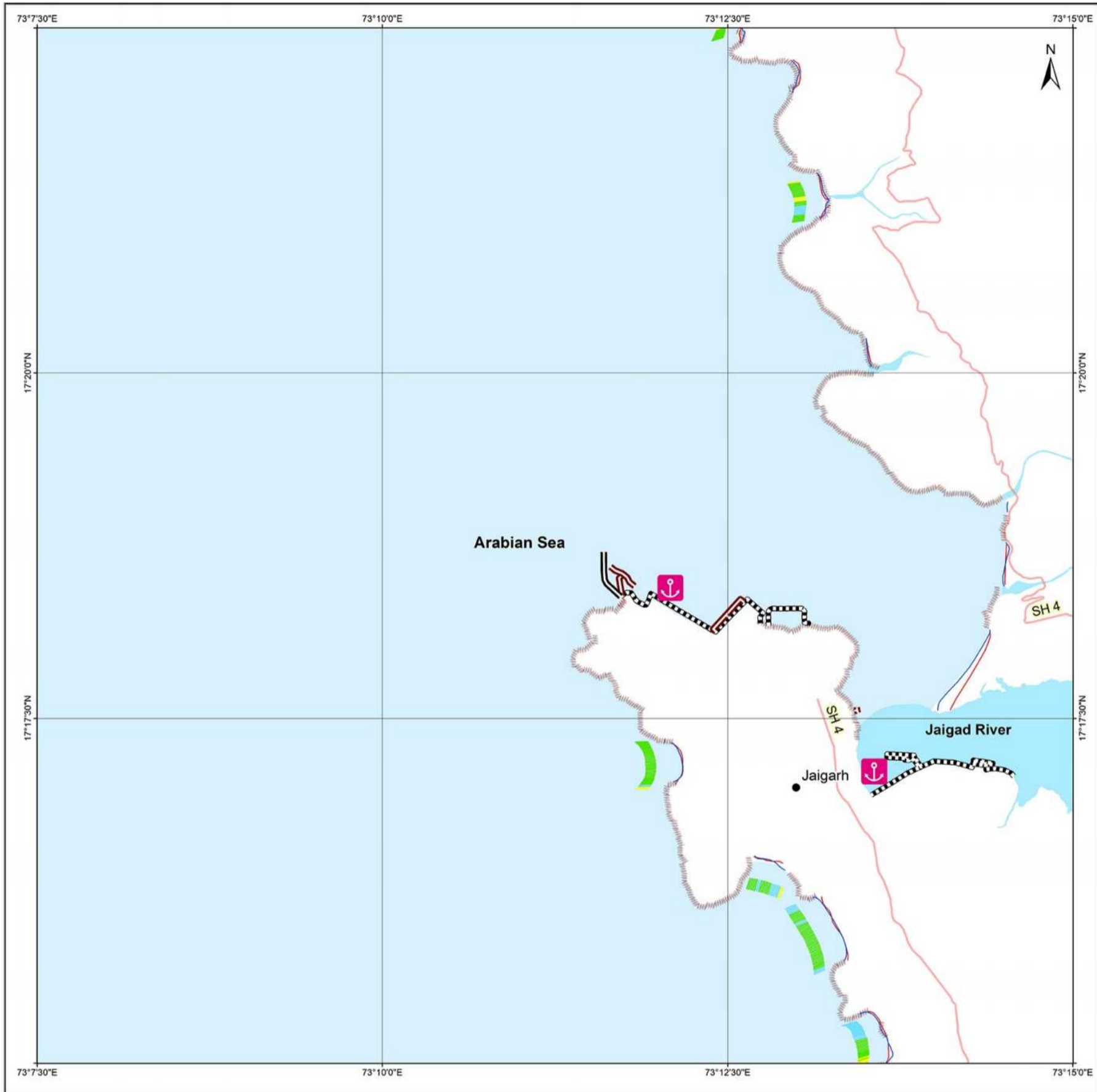
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 3 / SE
Map No. : NCCR/SCM/179



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 3 / NW	47 G / 3 / NE	47 G / 3 / NW
47 G / 3 / SW	47 G / 3 / SE	47 G / 3 / SW
47 G / 4 / NW	47 G / 4 / NE	47 G / 4 / NW

Incidence on 1:50,000 Sheets

47 C / 14	47 G / 2	47 G / 6
47 C / 15	47 G / 3	47 G / 7
47 C / 16	47 G / 4	47 G / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

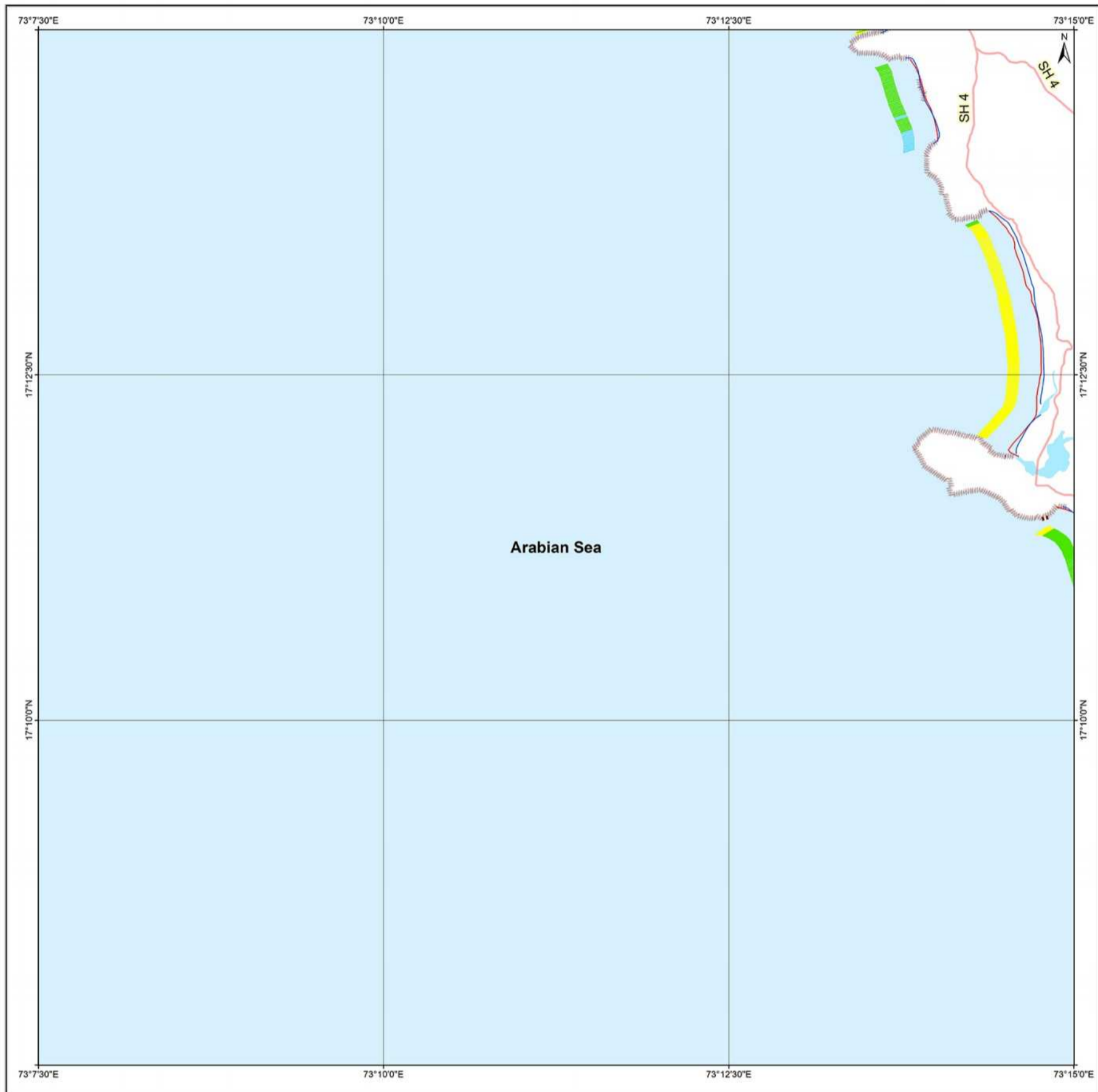
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 4 / NE
Map No. : NCCR/SCM/180



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

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47 G / 3 / SW	47 G / 3 / SE	47 G / 7 / SW
47 G / 4 / NW	47 G / 4 / NE	47 G / 8 / NW
47 G / 4 / SW	47 G / 4 / SE	47 G / 8 / SW

Incidence on 1:50,000 Sheets

47 C / 15	47 G / 3	47 G / 7
47 C / 16	47 G / 4	47 G / 8
47 D / 13	47 H / 1	47 H / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

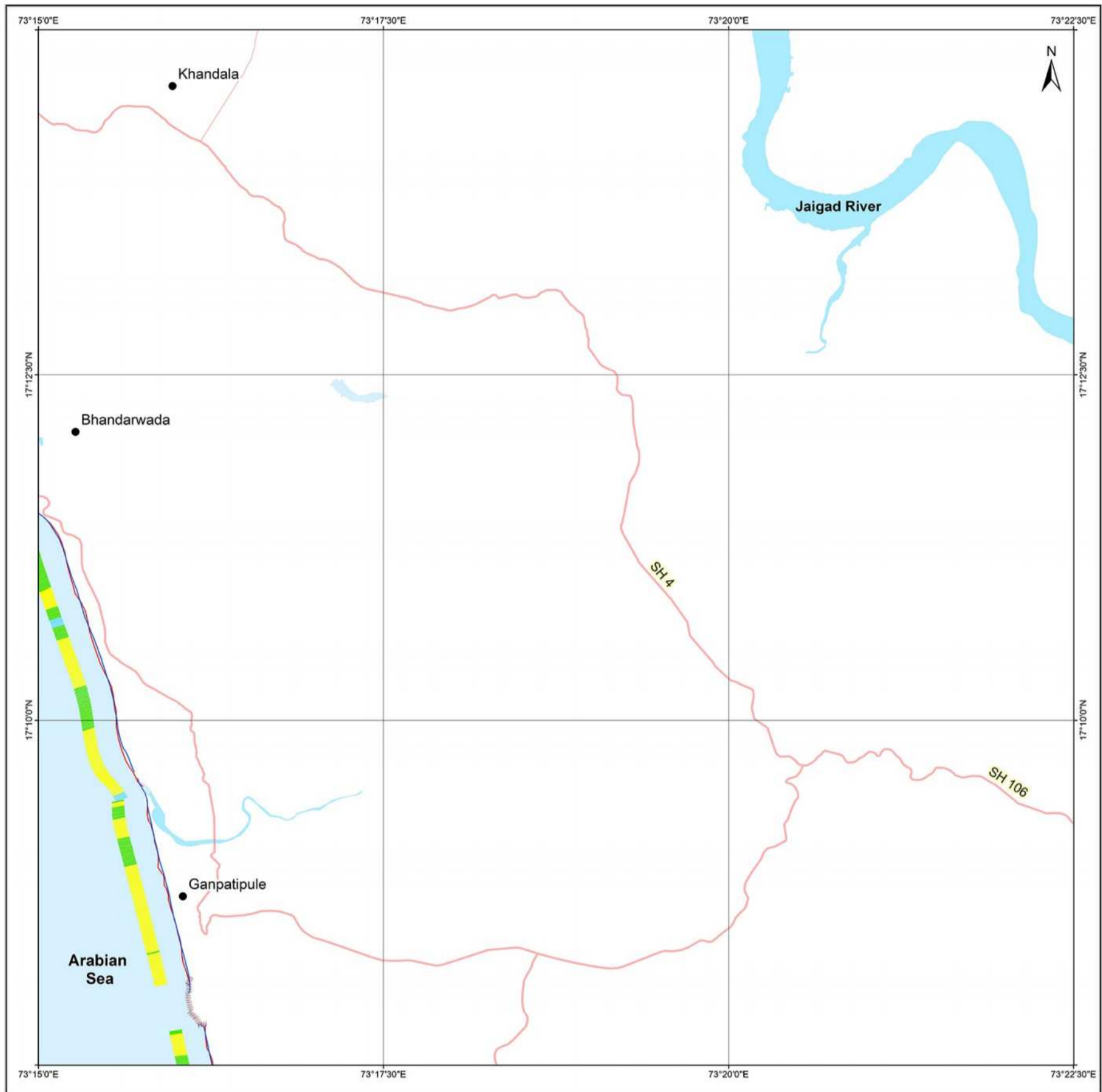
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 8 / NW
Map No. : NCCR/SCM/181



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 13 / SE	47 G / 17 / SW	47 G / 17 / SE
47 G / 14 / NE	47 G / 8 / NW	47 G / 8 / NE
47 G / 14 / SE	47 G / 8 / SW	47 G / 8 / SE

Incidence on 1:50,000 Sheets

47 G / 13	47 G / 17	47 G / 11
47 G / 14	47 G / 8	47 G / 12
47 H / 1	47 H / 15	47 H / 19

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

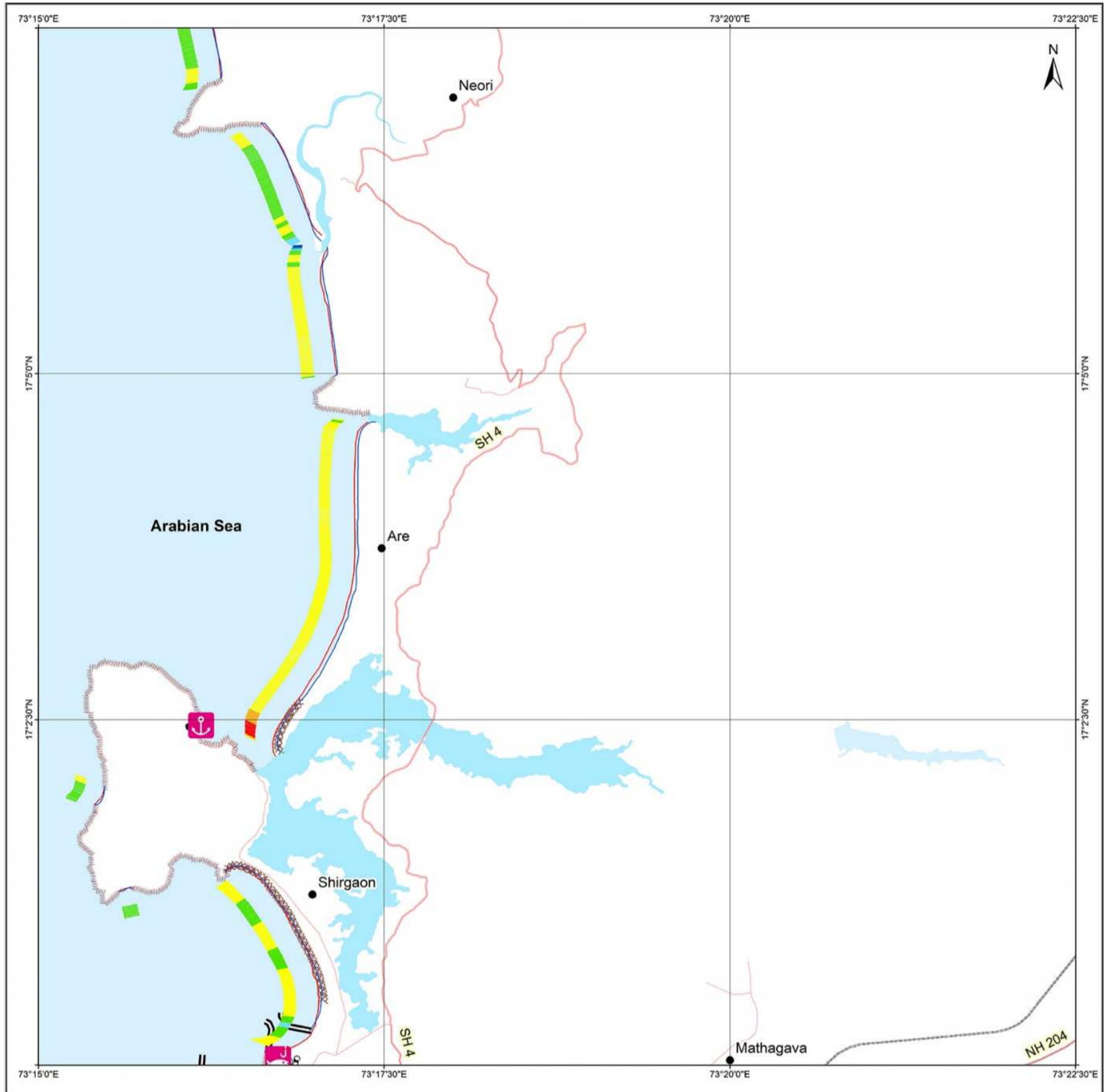
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 G / 8 / SW
Map No. : NCCR/SCM/182



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

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47 G / 4 / NE	47 G / 5 / NW	47 G / 6 / NE
47 G / 4 / SE	47 G / 5 / SW	47 G / 6 / SE
47 H / 1 / NE	47 H / 2 / NW	47 H / 3 / NE

Incidence on 1:50,000 Sheets

47 G / 3	47 G / 7	47 G / 11
47 G / 4	47 G / 8	47 G / 12
47 H / 1	47 H / 5	47 H / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
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- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
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- Lakes
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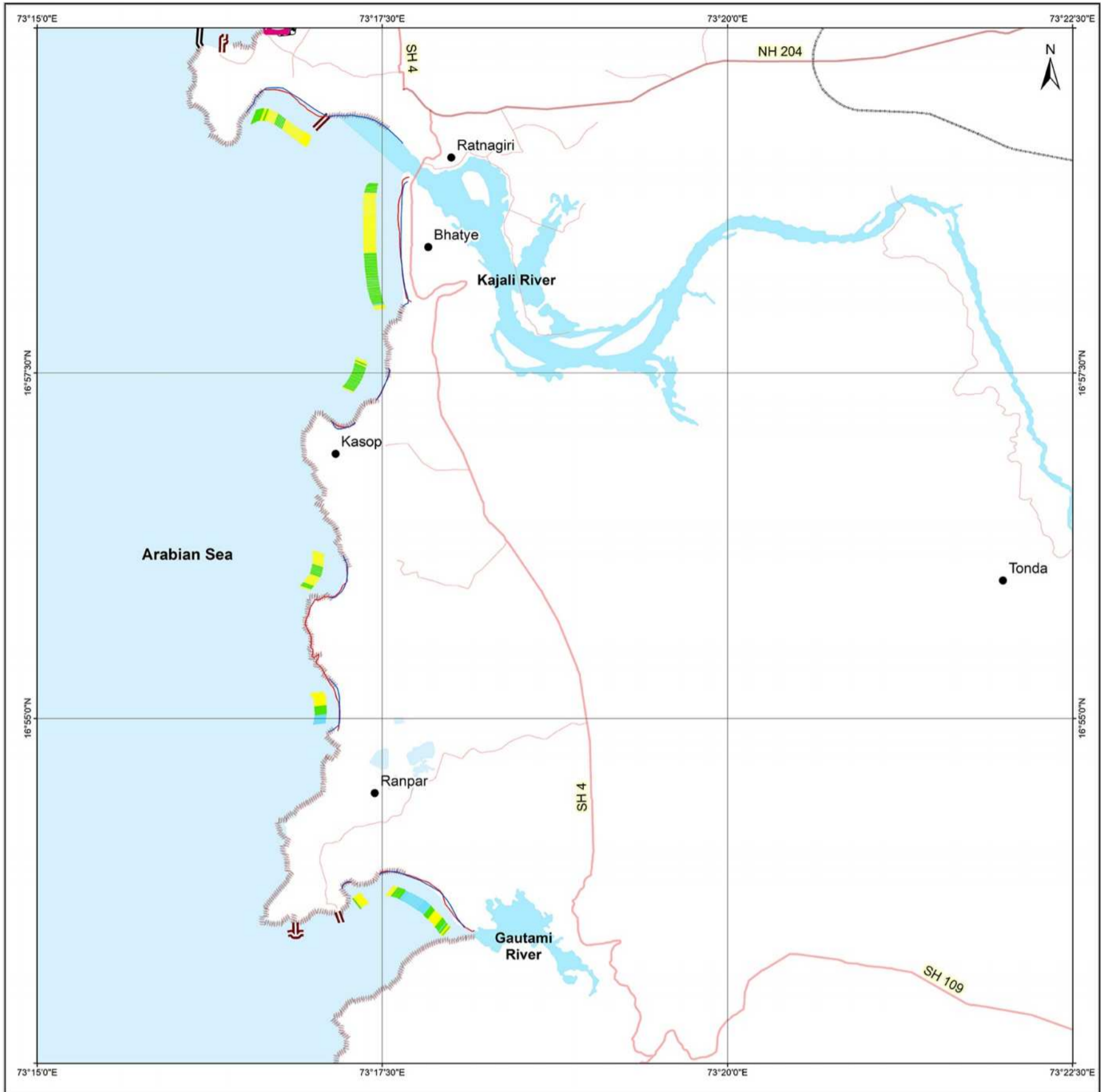
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 5 / NW
Map No. : NCCR/SCM/183



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 G / 4 / SE	47 G / 5 / SW	47 G / 6 / SE
47 H / 1 / NE	47 H / 5 / NW	47 H / 5 / NE
47 H / 1 / SE	47 H / 5 / SW	47 H / 5 / SE

Incidence on 1:50,000 Sheets

47 G / 4	47 G / 8	47 G / 12
47 H / 1	47 H / 5	47 H / 9
47 H / 2	47 H / 6	47 H / 10

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
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- Railways
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- Rivers

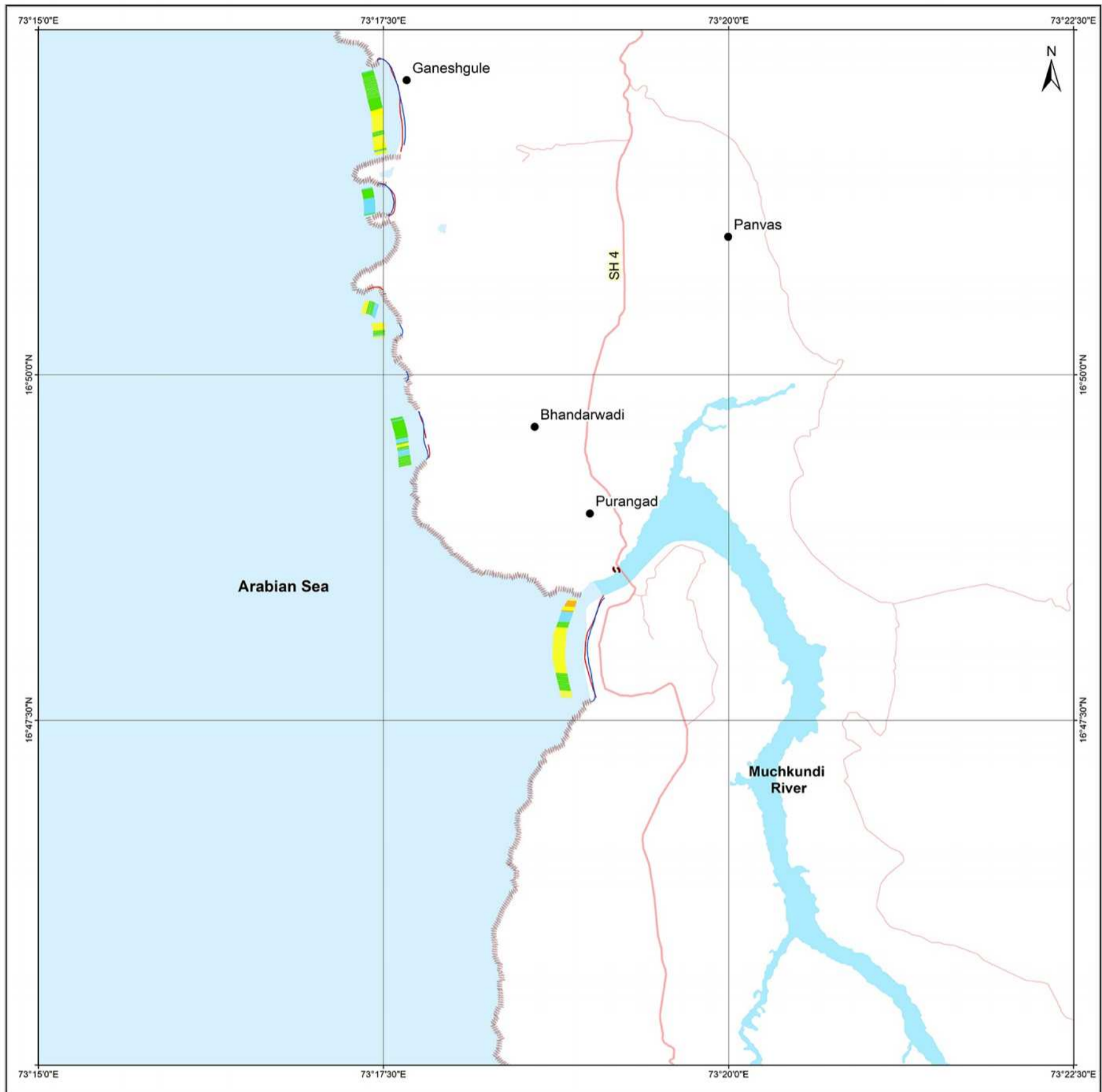
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 5 / SW
Map No. : NCCR/SCM/184



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 H / 1 / NE	47 H / 5 / NW	47 H / 5 / NE
47 H / 1 / SE	47 H / 5 / SW	47 H / 5 / SE
47 H / 2 / NE	47 H / 6 / NW	47 H / 6 / NE

Incidence on 1:50,000 Sheets

47 G / 4	47 G / 8	47 G / 12
47 H / 1	47 H / 5	47 H / 9
47 H / 2	47 H / 6	47 H / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	01/22/2015
LISS-IV	04/14/2014
LISS-IV	05/13/2013
LISS-IV	03/07/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
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- Rivers

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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 6 / NW
Map No. : NCCR/SCM/185



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018

Index to sheets

47 H / 1 / SE	47 H / 5 / SW	47 H / 5 / SE
47 H / 2 / NE	47 H / 6 / NW	47 H / 6 / NE
47 H / 2 / SE	47 H / 6 / SW	47 H / 6 / SE

Incidence on 1:50,000 Sheets

47 H / 1	47 H / 5	47 H / 9
47 H / 2	47 H / 6	47 H / 10
47 H / 3	47 H / 7	47 H / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018
LISS-IV	03/05/2017
LISS-IV	02/15/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012 & 03/31/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

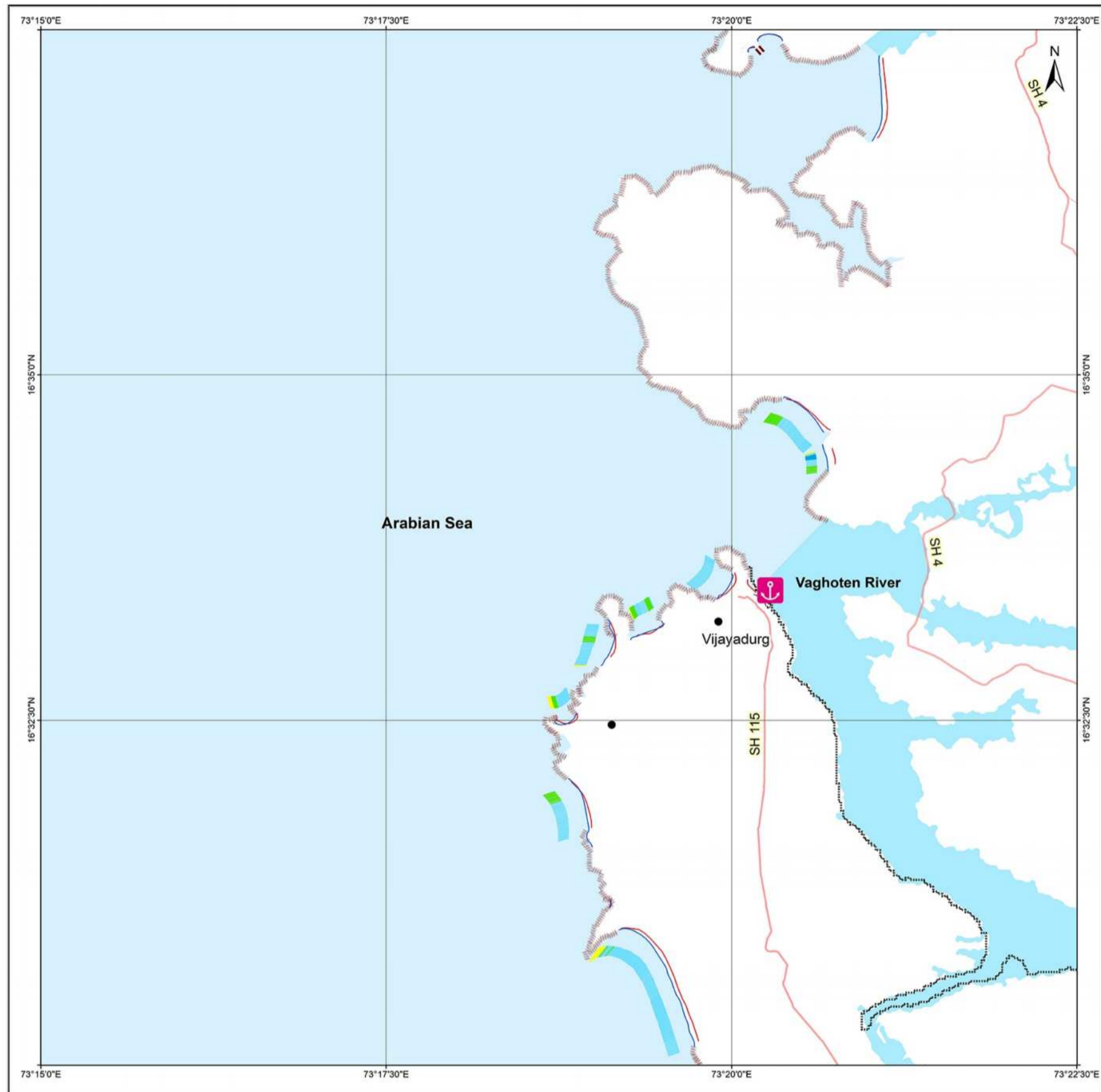
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1989 - 2018
SINDHUDURG
& RATNAGIRI

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 6 / SW
Map No. : NCCR/SCM/186



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 02/04/2018 & 01/11/2018

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47 H / 2 / NE	47 H / 6 / NW	47 H / 6 / NE
47 H / 2 / SE	47 H / 6 / SW	47 H / 6 / SE
47 H / 3 / NE	47 H / 7 / NW	47 H / 7 / NE

Incidence on 1:50,000 Sheets

47 H / 1	47 H / 5	47 H / 9
47 H / 2	47 H / 6	47 H / 10
47 H / 3	47 H / 7	47 H / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/04/2018 & 01/11/2018
LISS-IV	02/09/2017 & 03/05/2017
LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

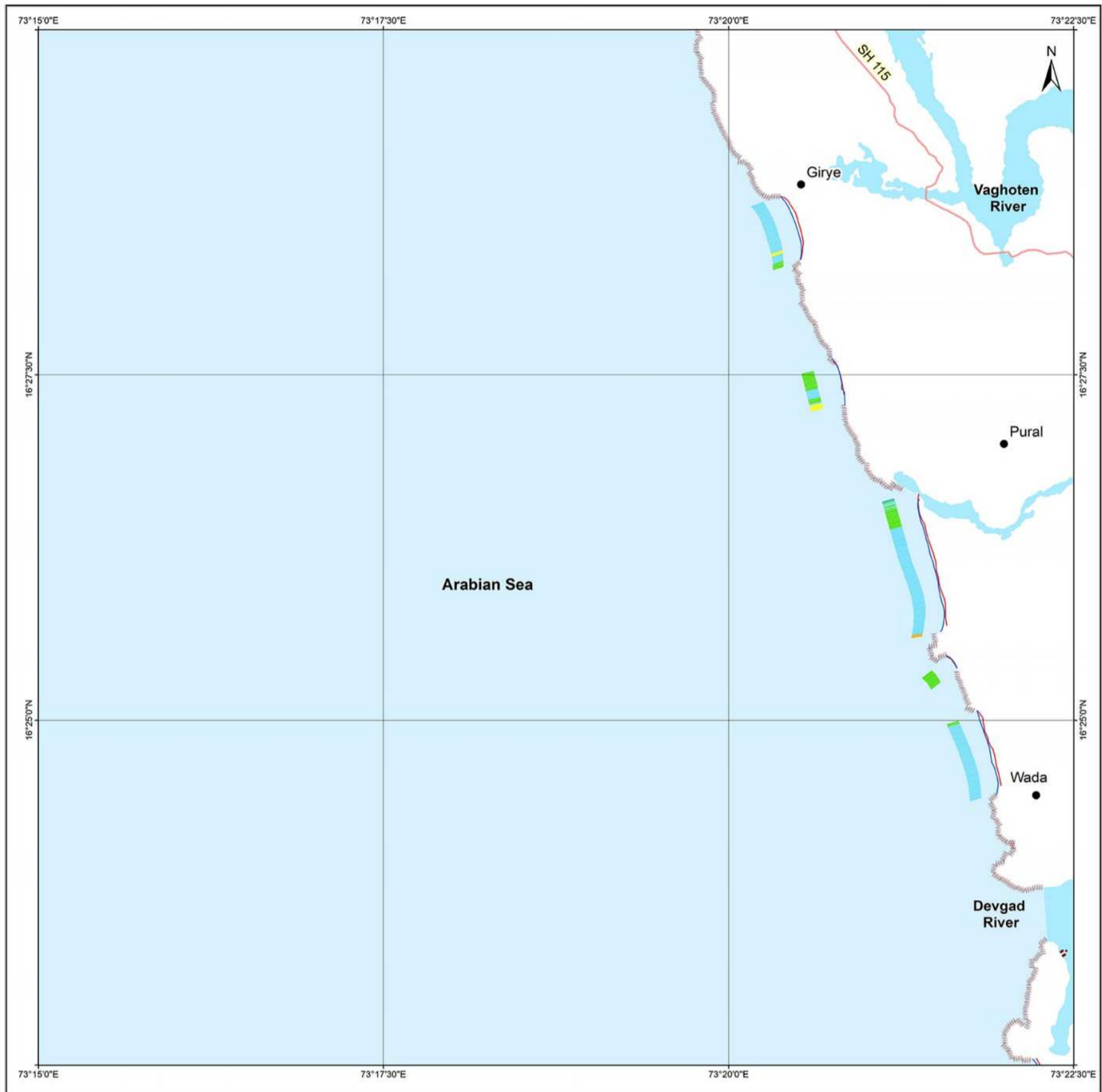
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 7 / NW
Map No. : NCCR/SCM/187



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 2 / SE	47 H / 6 / SW	47 H / 6 / SE
47 H / 3 / NE	47 H / 7 / NW	47 H / 7 / NE
47 H / 3 / SE	47 H / 7 / SW	47 H / 7 / SE

Incidence on 1:50,000 Sheets

47 H / 2	47 H / 6	47 H / 10
47 H / 3	47 H / 7	47 H / 11
47 H / 4	47 H / 8	47 H / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

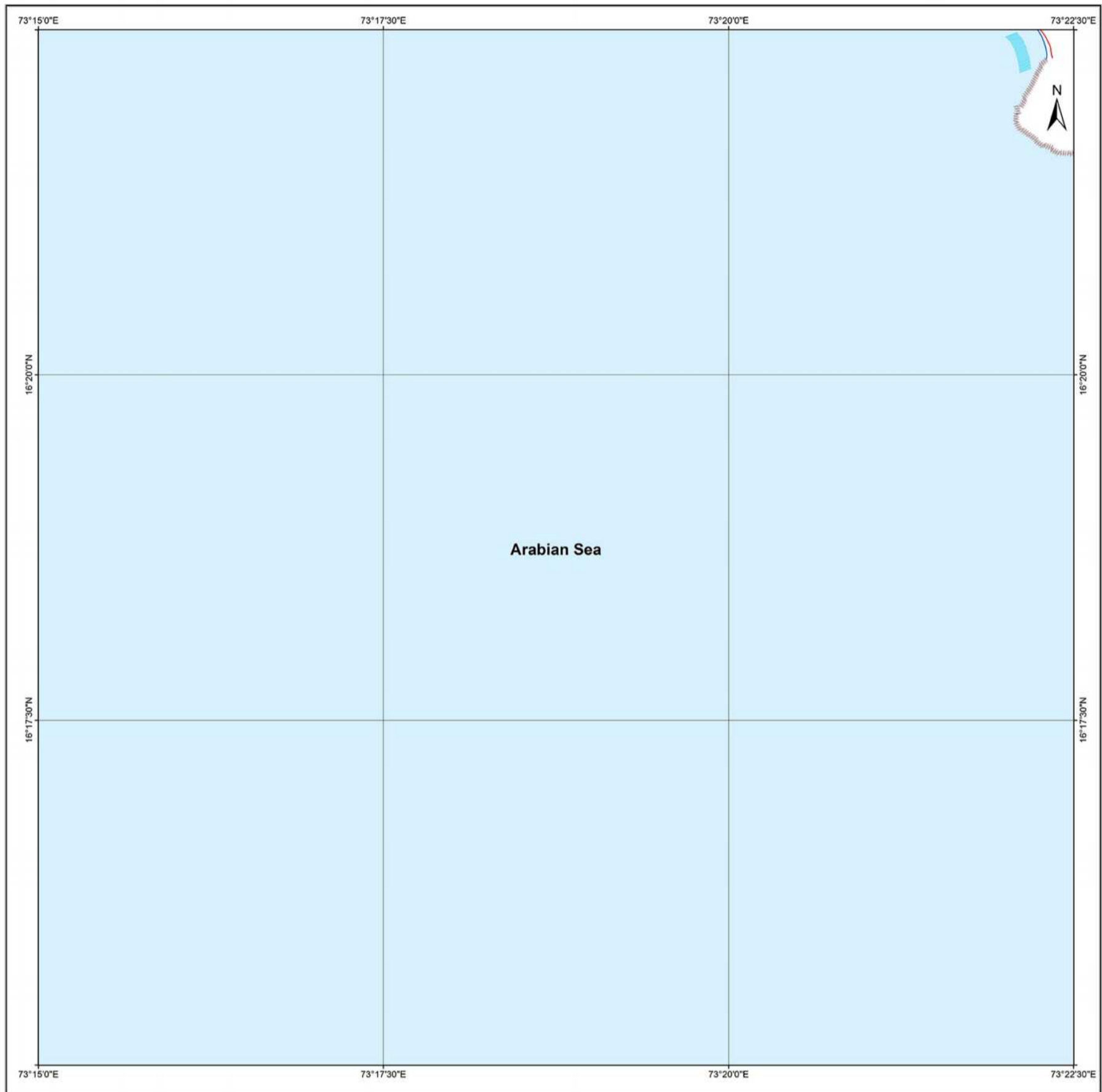
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 7 / SW
Map No. : NCCR/SCM/188



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

Index to sheets

47 H / 3 / NE	47 H / 7 / NW	47 H / 7 / NE
47 H / 3 / SE	47 H / 7 / SW	47 H / 7 / SE
47 H / 4 / NE	47 H / 8 / NW	47 H / 8 / NE

Incidence on 1:50,000 Sheets

47 H / 2	47 H / 6	47 H / 10
47 H / 3	47 H / 7	47 H / 11
47 H / 4	47 H / 8	47 H / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
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LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
- Port
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- Breakwater
- Seawall/Ripraps
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- Lakes
- Rivers

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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 7 / SE
Map No. : NCCR/SCM/189



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 7 / SW	47 H / 7 / SE	47 H / 11 / SW
47 H / 8 / NW	47 H / 8 / NE	47 H / 12 / NW

Incidence on 1:50,000 Sheets

47 H / 2	47 H / 6	47 H / 10
47 H / 3	47 H / 7	47 H / 11
47 H / 4	47 H / 8	47 H / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
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LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
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- Settlements
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- Breakwater
- Seawall/Ripraps
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- State Highways
- Other Roads
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- Lakes
- Rivers

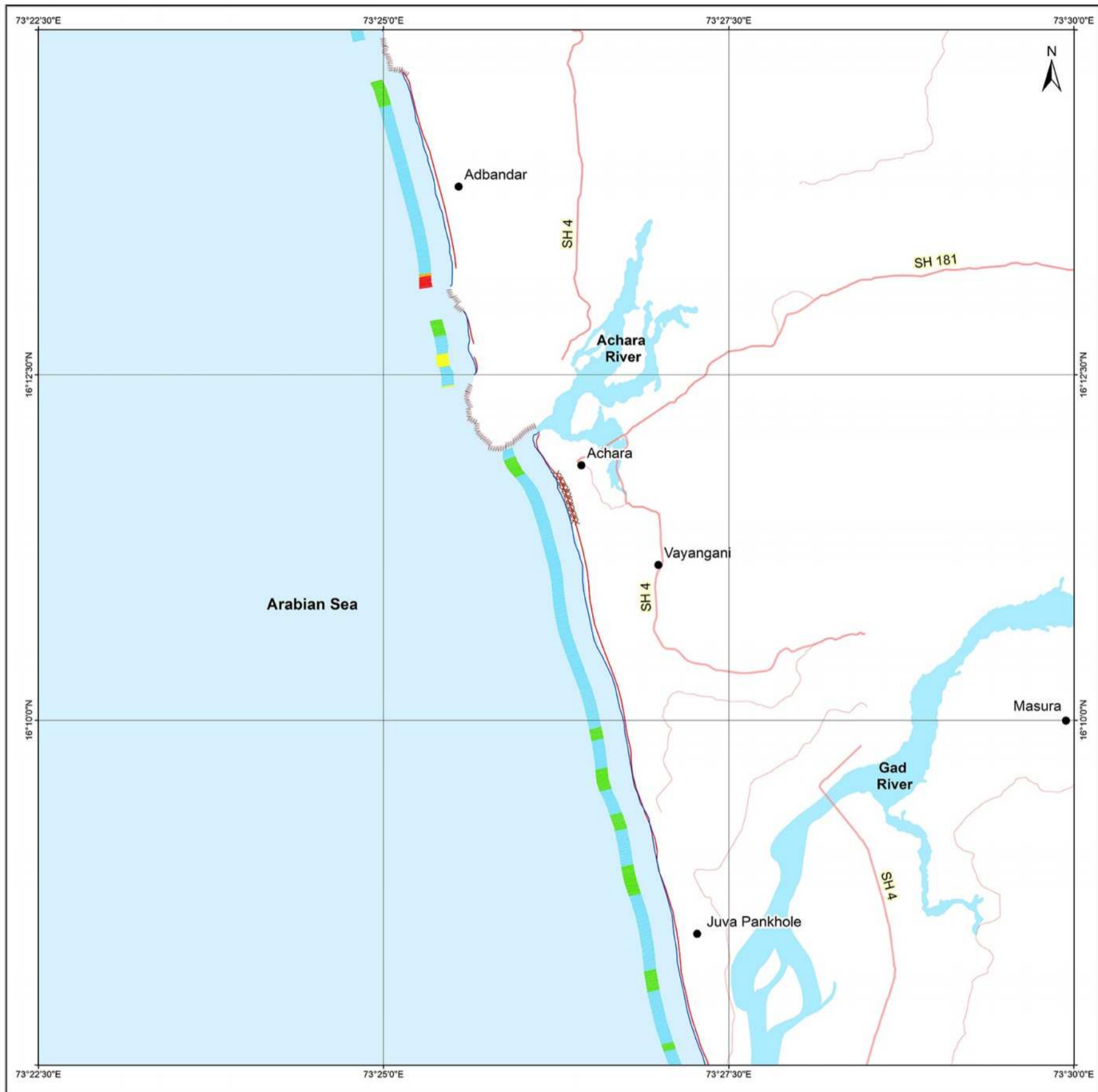
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 8 / NE
Map No. : NCCR/SCM/190



Shoreline Change Trend for Period 1989 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 7 / SW	47 H / 7 / SE	47 H / 11 / SW
47 H / 8 / NW	47 H / 8 / NE	47 H / 12 / NW
47 H / 8 / SW	47 H / 8 / SE	47 H / 12 / SW

Incidence on 1:50,000 Sheets

47 H / 3	47 H / 7	47 H / 11
47 H / 4	47 H / 8	47 H / 12
48 E / 1	48 E / 5	48 E / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
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- Breakwater
- Seawall/Ripraps
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- Lakes
- Rivers

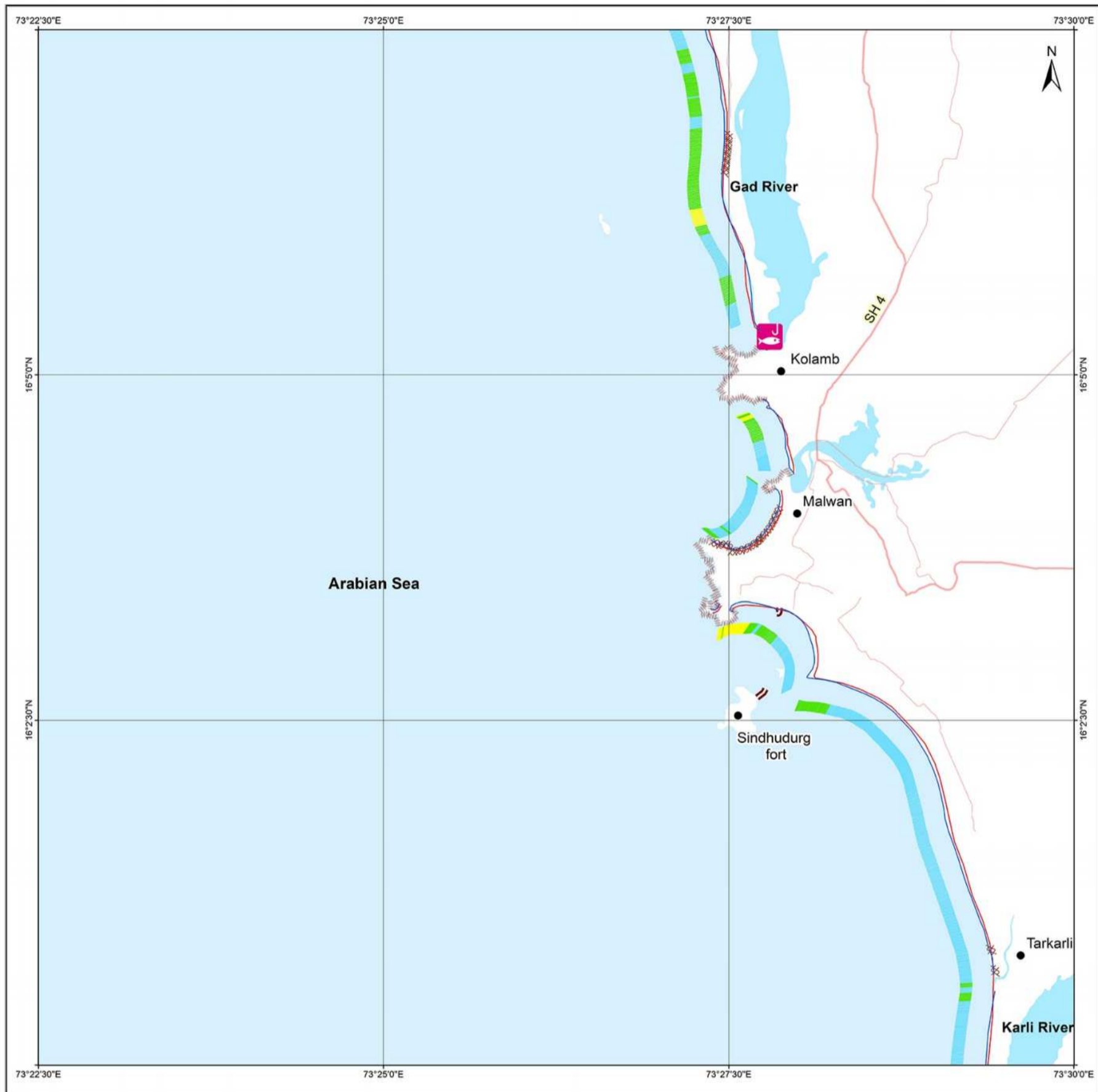
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
47 H / 8 / SE
Map No. : NCCR/SCM/191



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 8 / NW	47 H / 8 / NE	47 H / 12 / NW
47 H / 8 / SW	47 H / 8 / SE	47 H / 12 / SW
48 E / 5 / NW	48 E / 5 / NE	48 E / 9 / NW

Incidence on 1:50,000 Sheets

47 H / 3	47 H / 7	47 H / 11
47 H / 4	47 H / 8	47 H / 12
48 E / 1	48 E / 5	48 E / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012 & 03/31/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
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- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

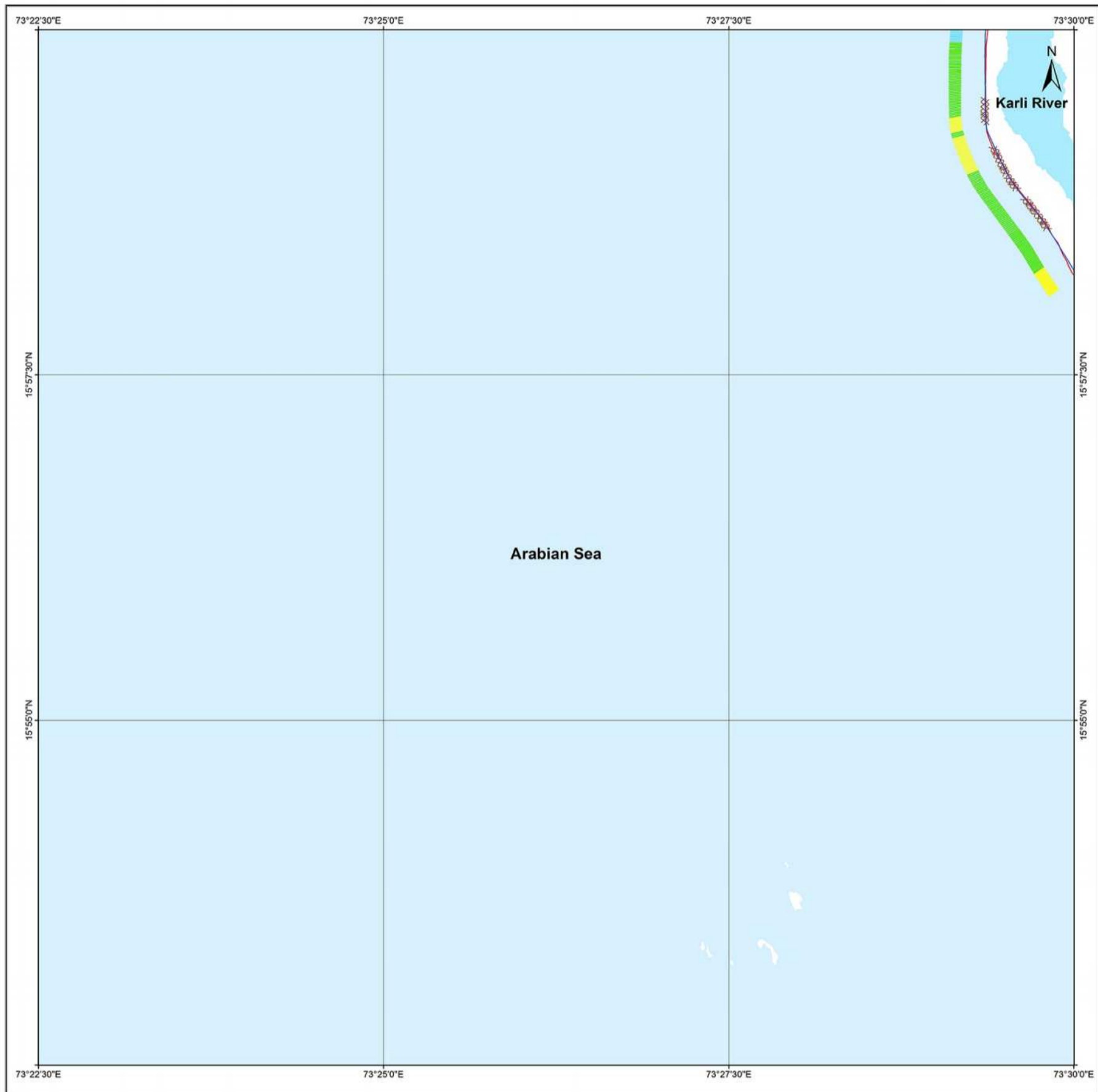
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1989 - 2018
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
48 E / 5 / NE
Map No. : NCCR/SCM/192



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 8 / SW	47 H / 8 / SE	47 H / 12 / SW
48 E / 5 / NW	48 E / 5 / NE	48 E / 9 / NW
48 E / 5 / SW	48 E / 5 / SE	48 E / 9 / SW

Incidence on 1:50,000 Sheets

47 H / 4	47 H / 8	47 H / 12
48 E / 1	48 E / 5	48 E / 9
48 E / 2	48 E / 6	48 E / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- State Highways
- Other Roads
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- Rivers

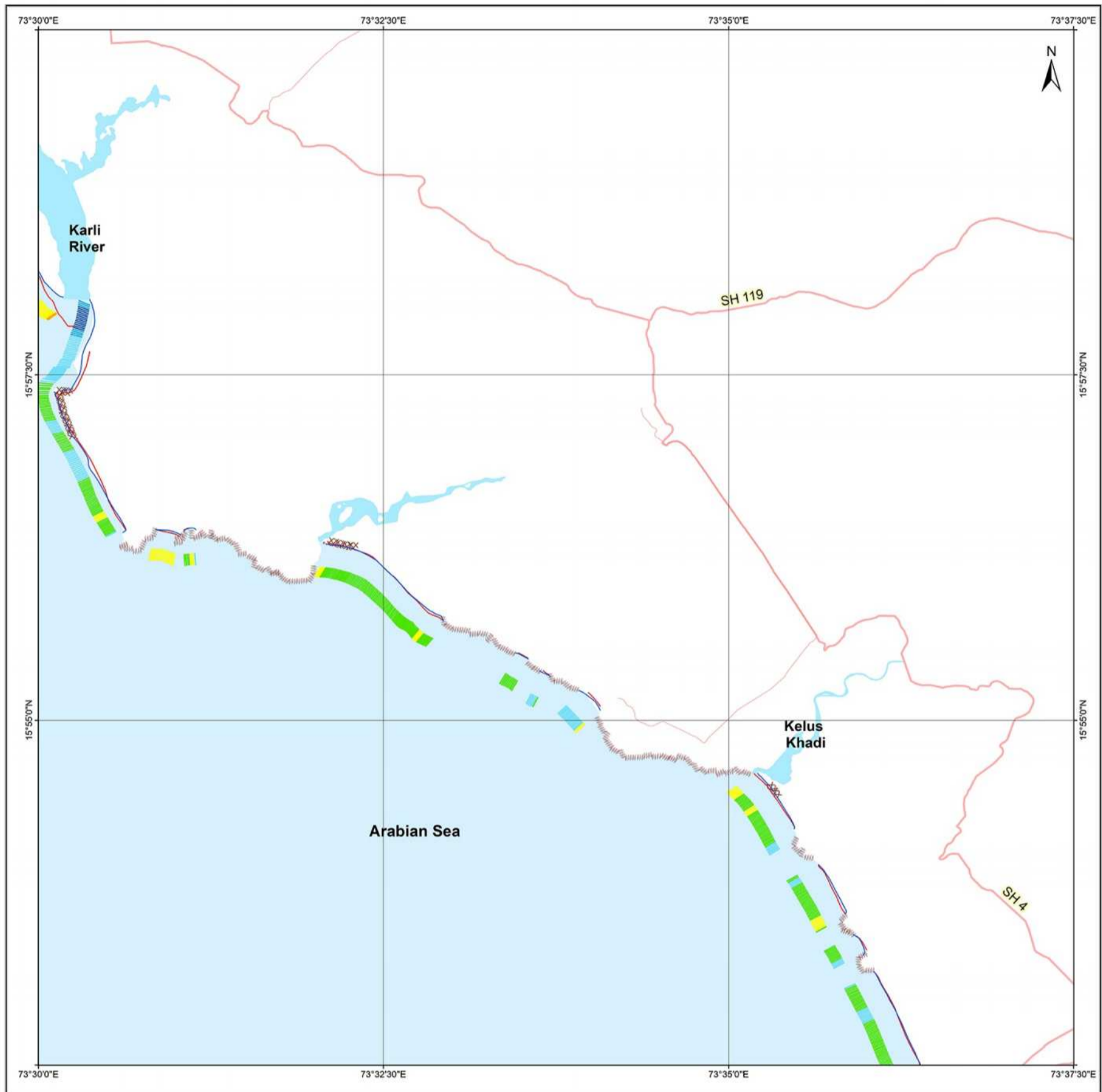
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1989 - 2018
SINDHUDURG

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
48 E / 9 / NW
Map No. : NCCR/SCM/193



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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47 H / 8 / SE	47 H / 12 / SW	47 H / 12 / SE
48 E / 5 / NE	48 E / 9 / NW	48 E / 9 / NE
48 E / 5 / SE	48 E / 9 / SW	48 E / 9 / SE

Incidence on 1:50,000 Sheets

47 H / 8	47 H / 12	47 H / 16
48 E / 5	48 E / 9	48 E / 13
48 E / 6	48 E / 10	48 E / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	02/20/2015 & 04/09/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	02/12/2012 & 03/31/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

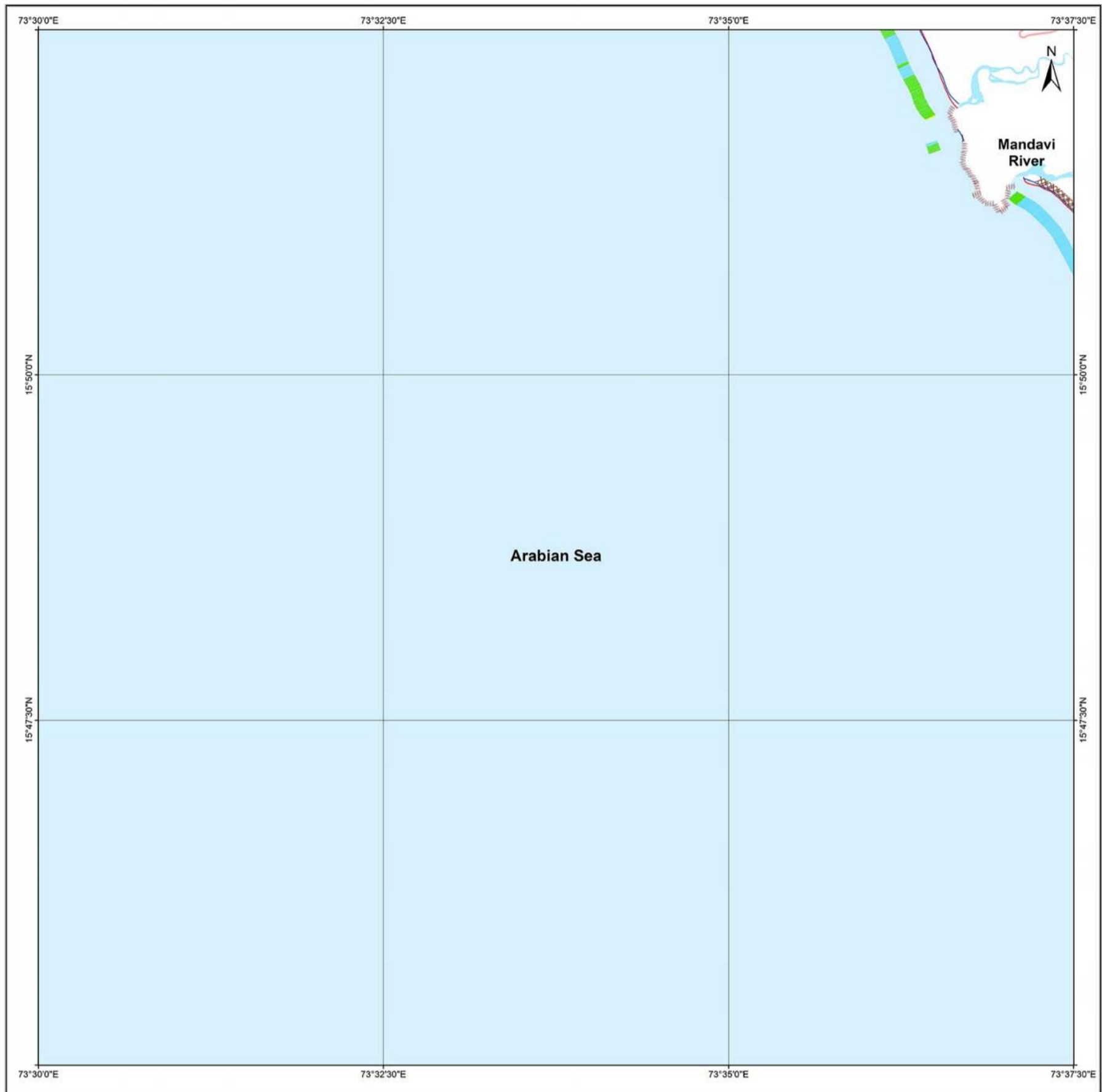
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SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
48 E / 9 / SW
Map No. : NCCR/SCM/194



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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48 E / 5 / NE	48 E / 9 / NW	48 E / 9 / NE
48 E / 5 / SE	48 E / 9 / SW	48 E / 9 / SE
48 E / 6 / NE	48 E / 10 / NW	48 E / 10 / NE

Incidence on 1:50,000 Sheets

47 H / 8	47 H / 12	47 H / 16
48 E / 5	48 E / 9	48 E / 13
48 E / 6	48 E / 10	48 E / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	02/20/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	03/31/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
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- Rivers

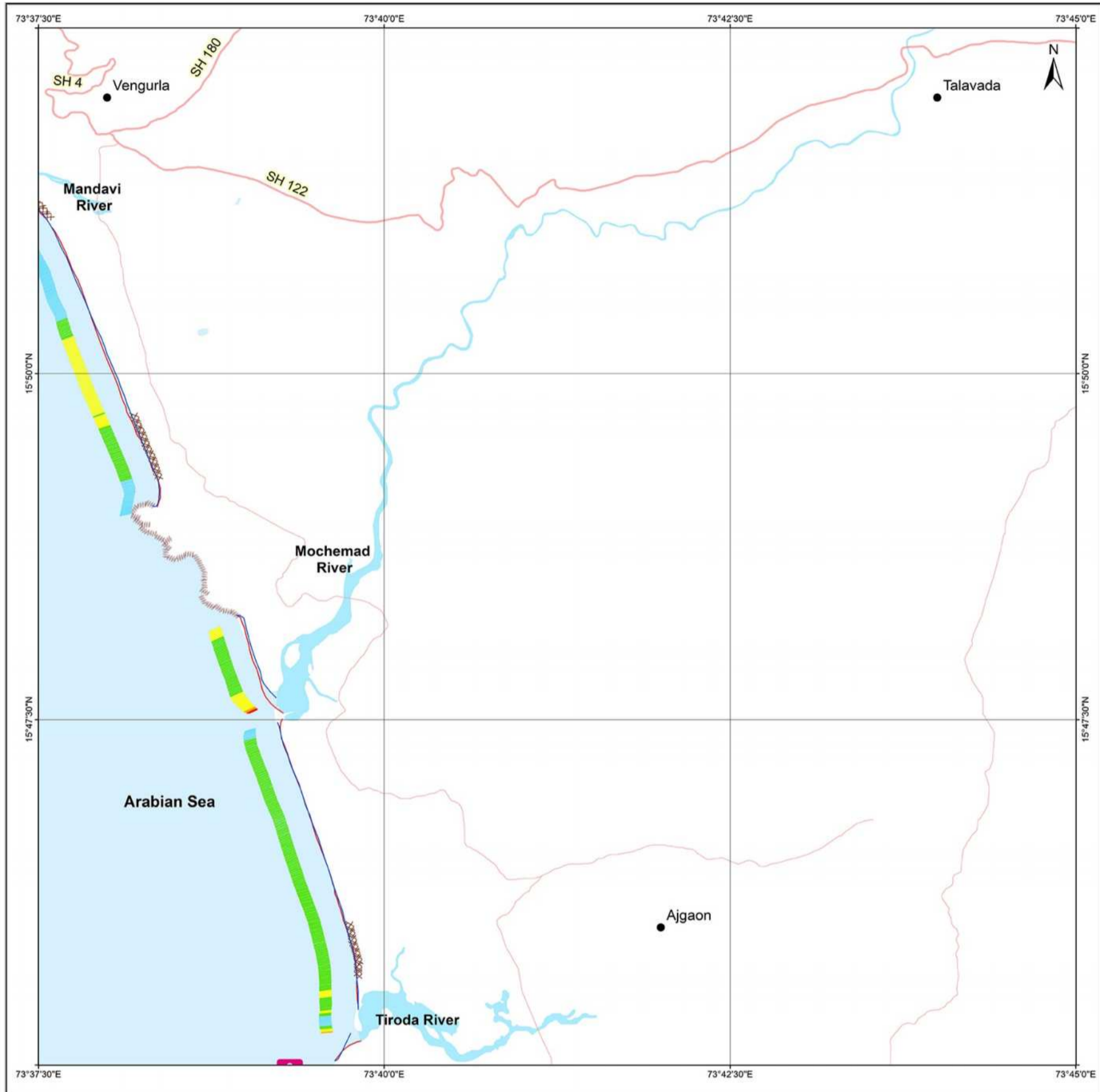
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1989 - 2018
SINDHUDURG

SHORELINE CHANGE MAP MAHARASHTRA

Restricted Use
48 E / 9 / SE
Map No. : NCCR/SCM/195



Shoreline Change Trend for Period 1989 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 10/25/1989
- 01/11/2018

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48 E / 9 / NW	48 E / 9 / NE	48 E / 13 / NW
48 E / 9 / SW	48 E / 9 / SE	48 E / 13 / SW
48 E / 10 / NW	48 E / 10 / NE	48 E / 14 / NW

Incidence on 1:50,000 Sheets

47 H / 8	47 H / 12	47 H / 16
48 E / 5	48 E / 9	48 E / 13
48 E / 6	48 E / 10	48 E / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/11/2018
LISS-IV	02/09/2017
LISS-IV	03/10/2016
LISS-IV	02/20/2015
LISS-IV	02/01/2014
LISS-IV	04/19/2013
LISS-IV	03/31/2012
LISS-III	01/04/2008
PAN (Cartosat-1)	07/01/2006
ETM+	11/14/1999
TM	10/25/1989



- Settlements
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- Railways
- Lakes
- Rivers

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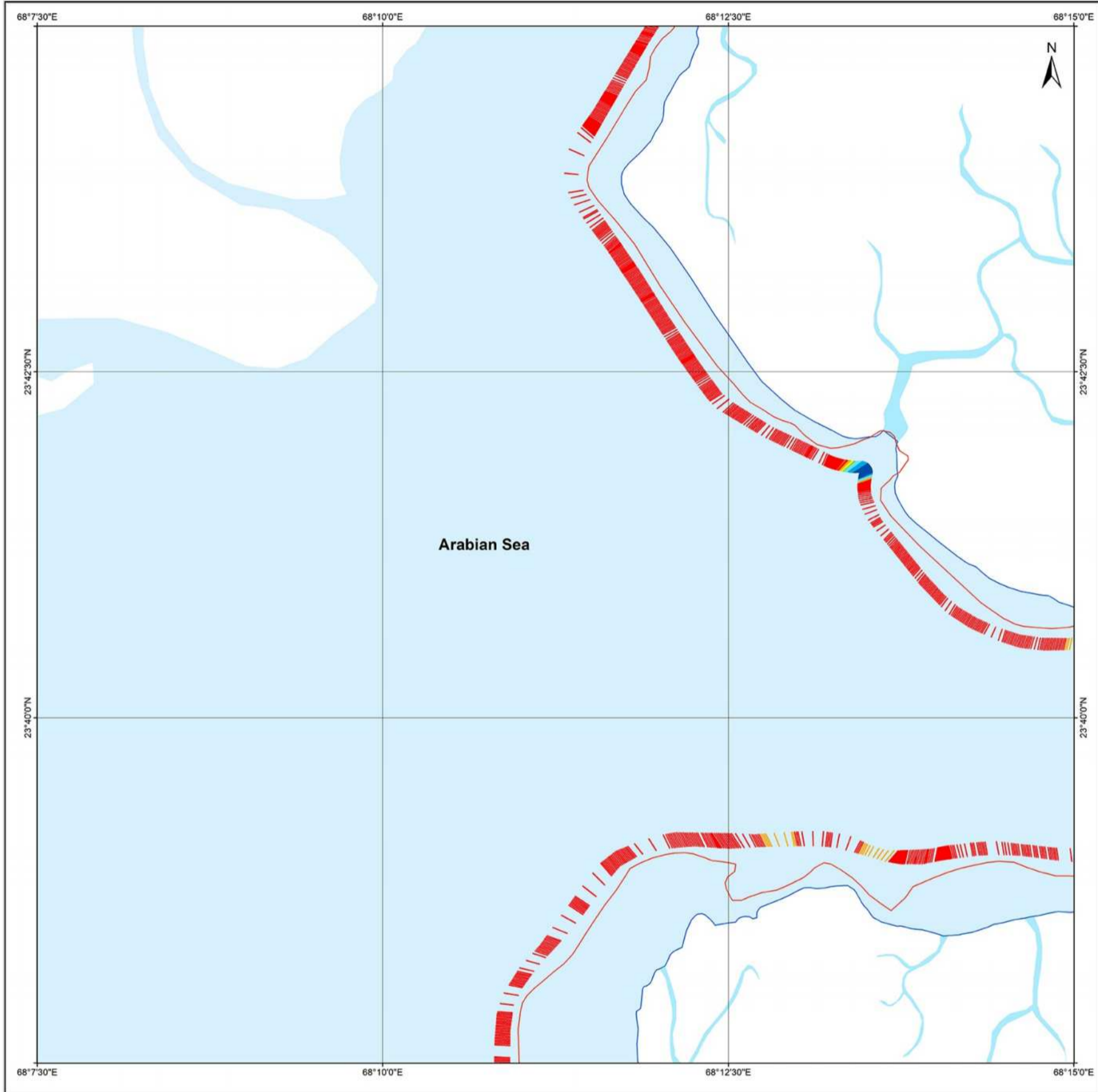
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Gujarat

1990 - 2018
KACHCHH

SHORELINE CHANGE MAP GUJARAT

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41 A / 2 / NE
Map No. : NCCR/SCM/001



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 1 / SW	41 A / 1 / SE	41 A / 5 / SW
41 A / 2 / NW	41 A / 2 / NE	41 A / 6 / NW
41 A / 2 / SW	41 A / 2 / SE	41 A / 6 / SW

Incidence on 1:50,000 Sheets

41 A / 1	41 A / 5
41 A / 2	41 A / 6
41 A / 3	41 A / 7

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/29/2018
LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

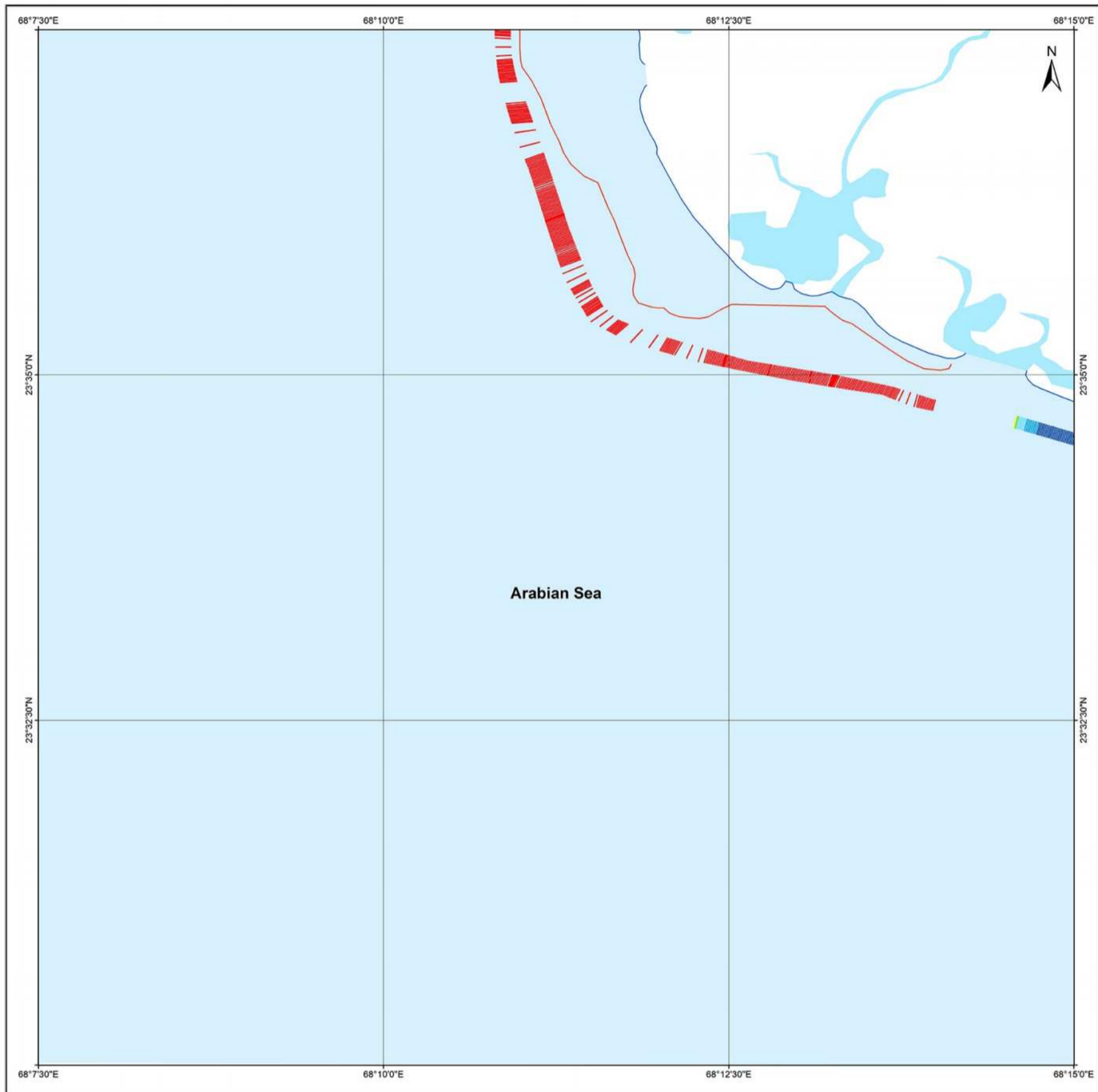
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SHORELINE CHANGE MAP GUJARAT

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41 A / 2 / SE
Map No. : NCCR/SCM/002



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 2 / NW	41 A / 2 / NE	41 A / 6 / NW
41 A / 2 / SW	41 A / 2 / SE	41 A / 6 / SW
41 A / 3 / NW	41 A / 3 / NE	41 A / 7 / NW

Incidence on 1:50,000 Sheets

41 A / 1	41 A / 5
41 A / 2	41 A / 6
41 A / 3	41 A / 7

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

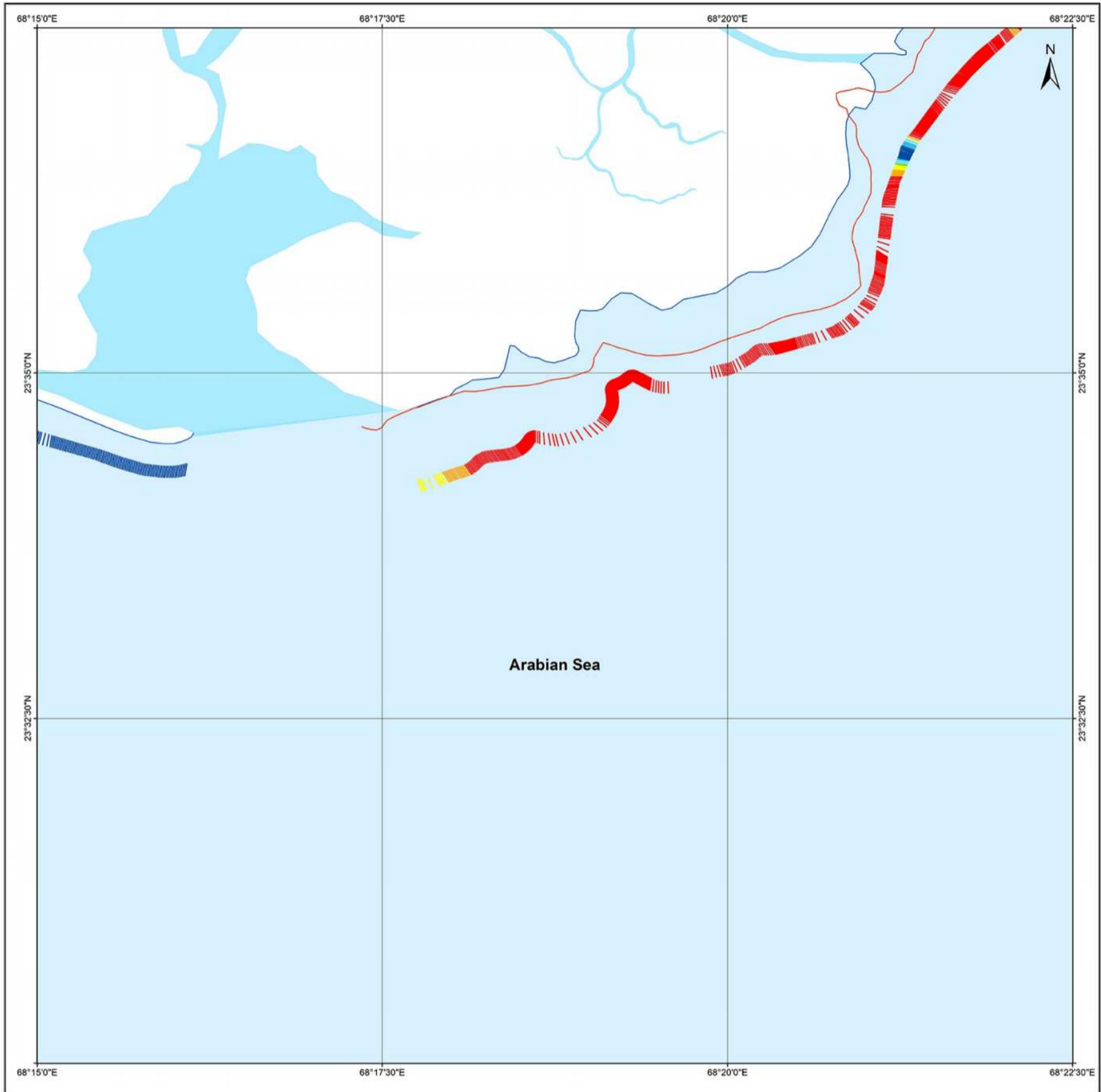
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/003



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 12 / NE	41 A / 6 / NW	41 A / 6 / NE
41 A / 2 / SE	41 A / 6 / SW	41 A / 6 / SE
41 A / 3 / NE	41 A / 7 / NW	41 A / 7 / NE

Incidence on 1:50,000 Sheets

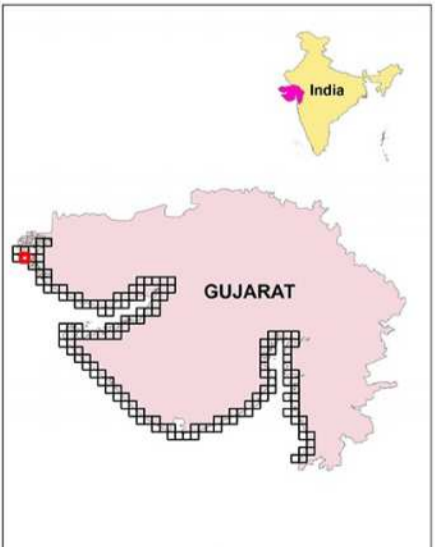
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41 A / 3	41 A / 7	41 A / 11

Scale
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1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

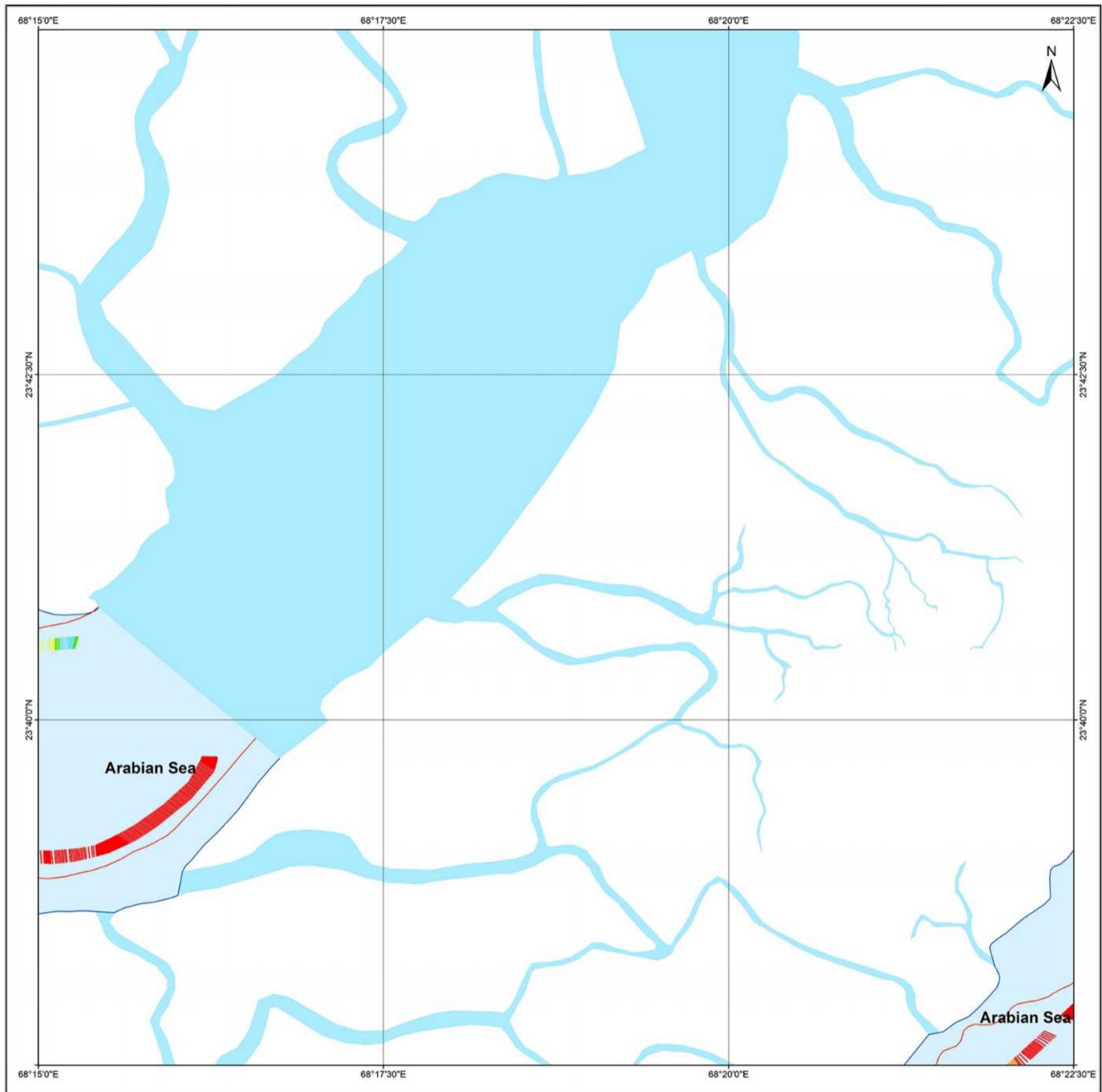
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Map No. : NCCR/SCM/004



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 1 / SE	41 A / 5 / SW	41 A / 5 / SE
41 A / 2 / NE	41 A / 6 / NW	41 A / 6 / NE
41 A / 2 / SE	41 A / 6 / SW	41 A / 6 / SE

Incidence on 1:50,000 Sheets

41 A / 1	41 A / 5	41 A / 9
41 A / 2	41 A / 6	41 A / 10
41 A / 3	41 A / 7	41 A / 11

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/22/2016
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LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

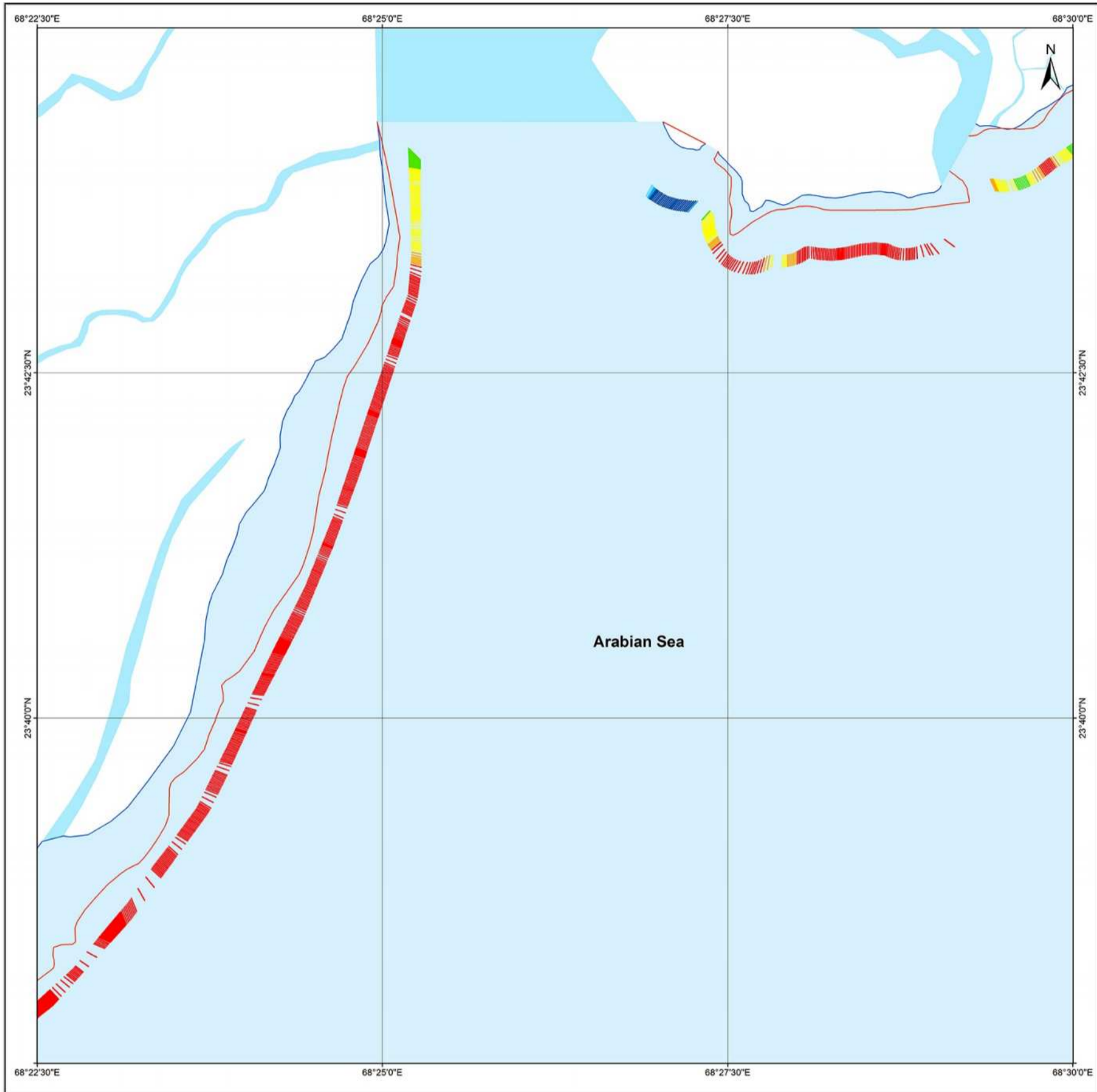
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Map No. : NCCR/SCM/005



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 5 / SW	41 A / 5 / SE	41 A / 9 / SW
41 A / 6 / NW	41 A / 6 / NE	41 A / 10 / NW
41 A / 6 / SW	41 A / 6 / SE	41 A / 10 / SW

Incidence on 1:50,000 Sheets

41 A / 1	41 A / 5	41 A / 9
41 A / 2	41 A / 6	41 A / 10
41 A / 3	41 A / 7	41 A / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

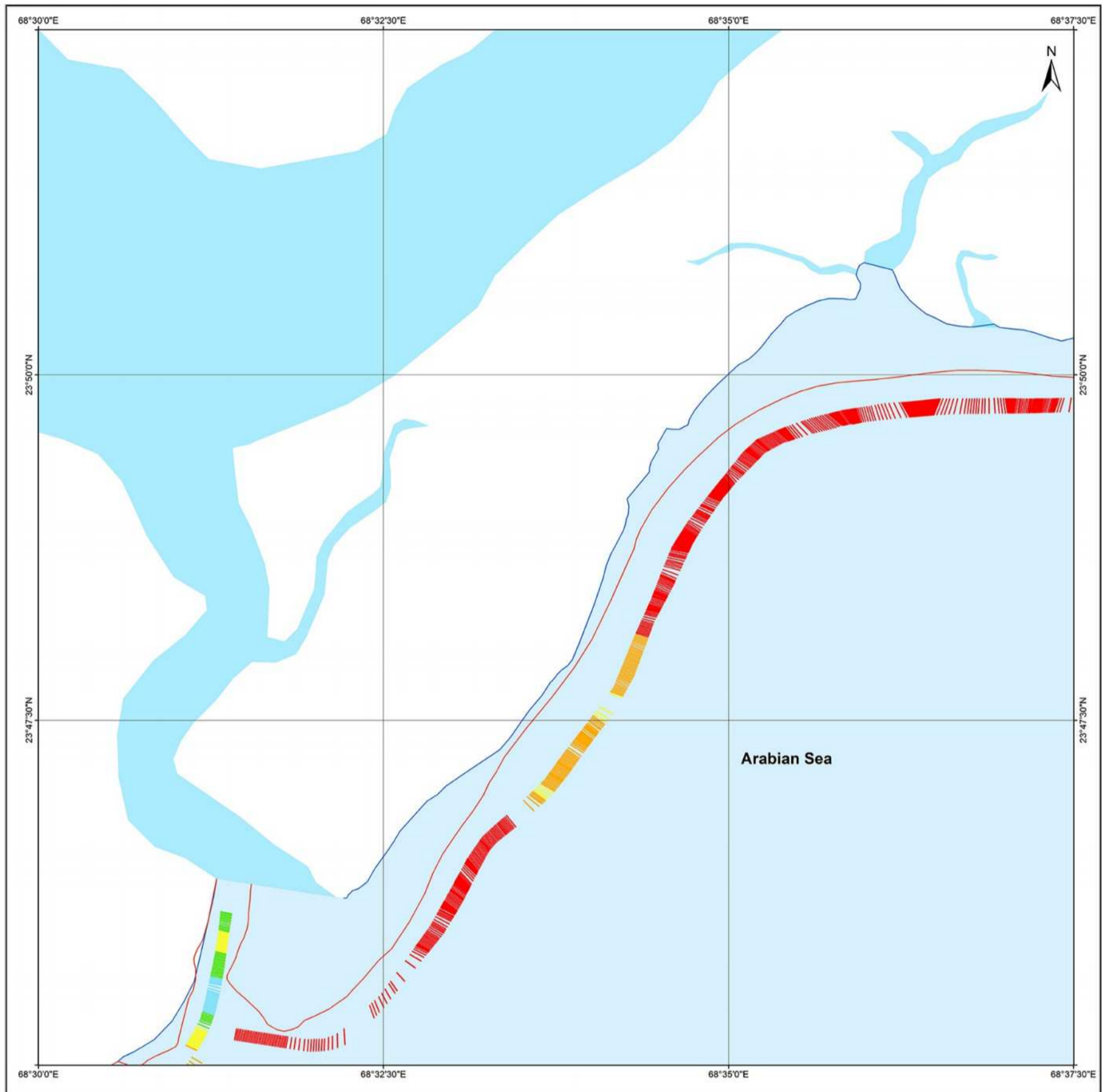
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/006



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 5 / NE	41 A / 9 / NW	41 A / 9 / NE
41 A / 5 / SE	41 A / 9 / SW	41 A / 9 / SE
41 A / 6 / NE	41 A / 10 / NW	41 A / 10 / NE

Incidence on 1:50,000 Sheets

40 D / 8	40 D / 12	40 D / 16
41 A / 5	41 A / 9	41 A / 13
41 A / 6	41 A / 10	41 A / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

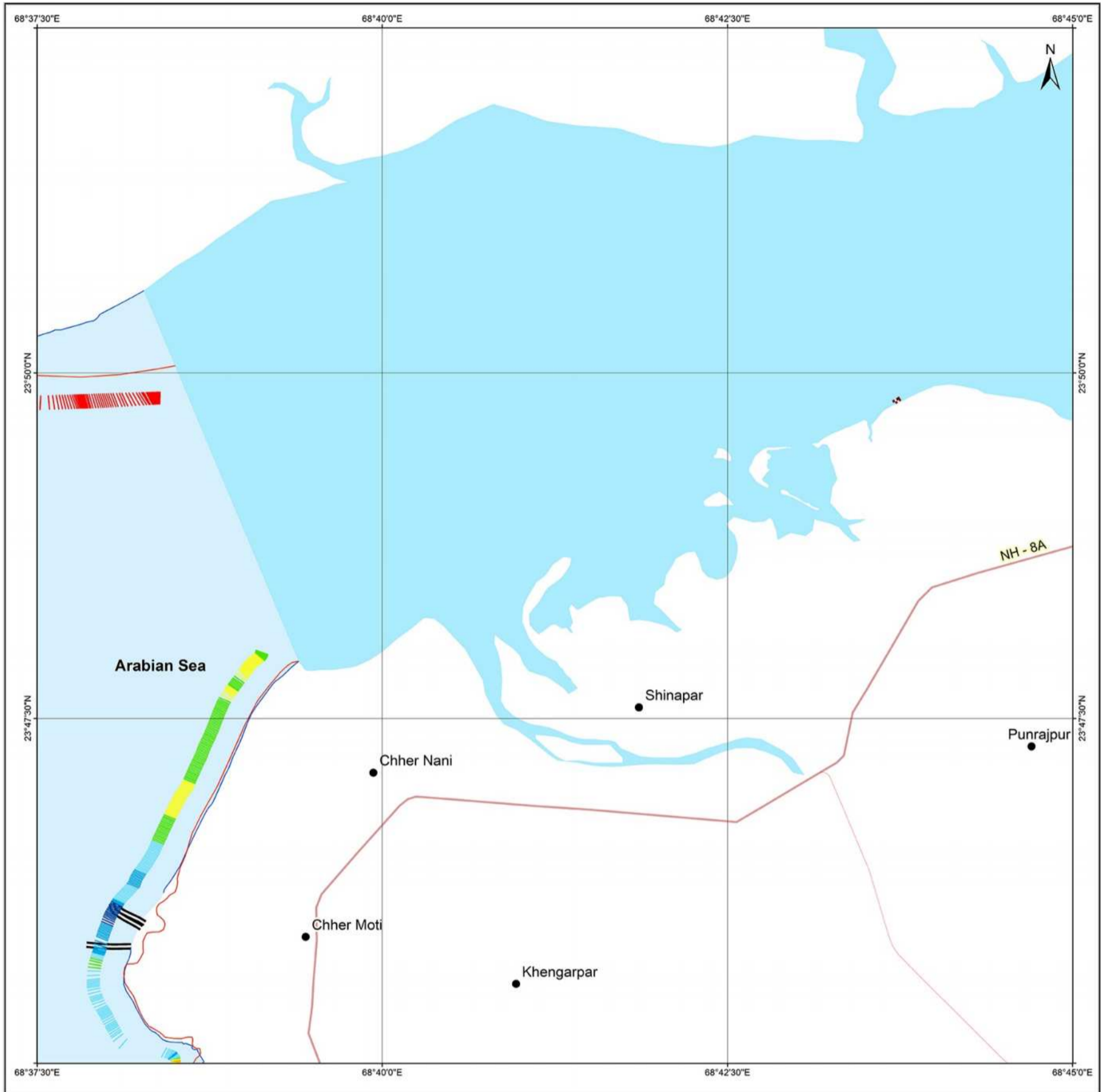
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/007



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 9 / NW	41 A / 9 / NE	41 A / 13 / NW
41 A / 9 / SW	41 A / 9 / SE	41 A / 13 / SW
41 A / 10 / NW	41 A / 10 / NE	41 A / 14 / NW

Incidence on 1:50,000 Sheets

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41 A / 5	41 A / 9	41 A / 13
41 A / 6	41 A / 10	41 A / 14

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

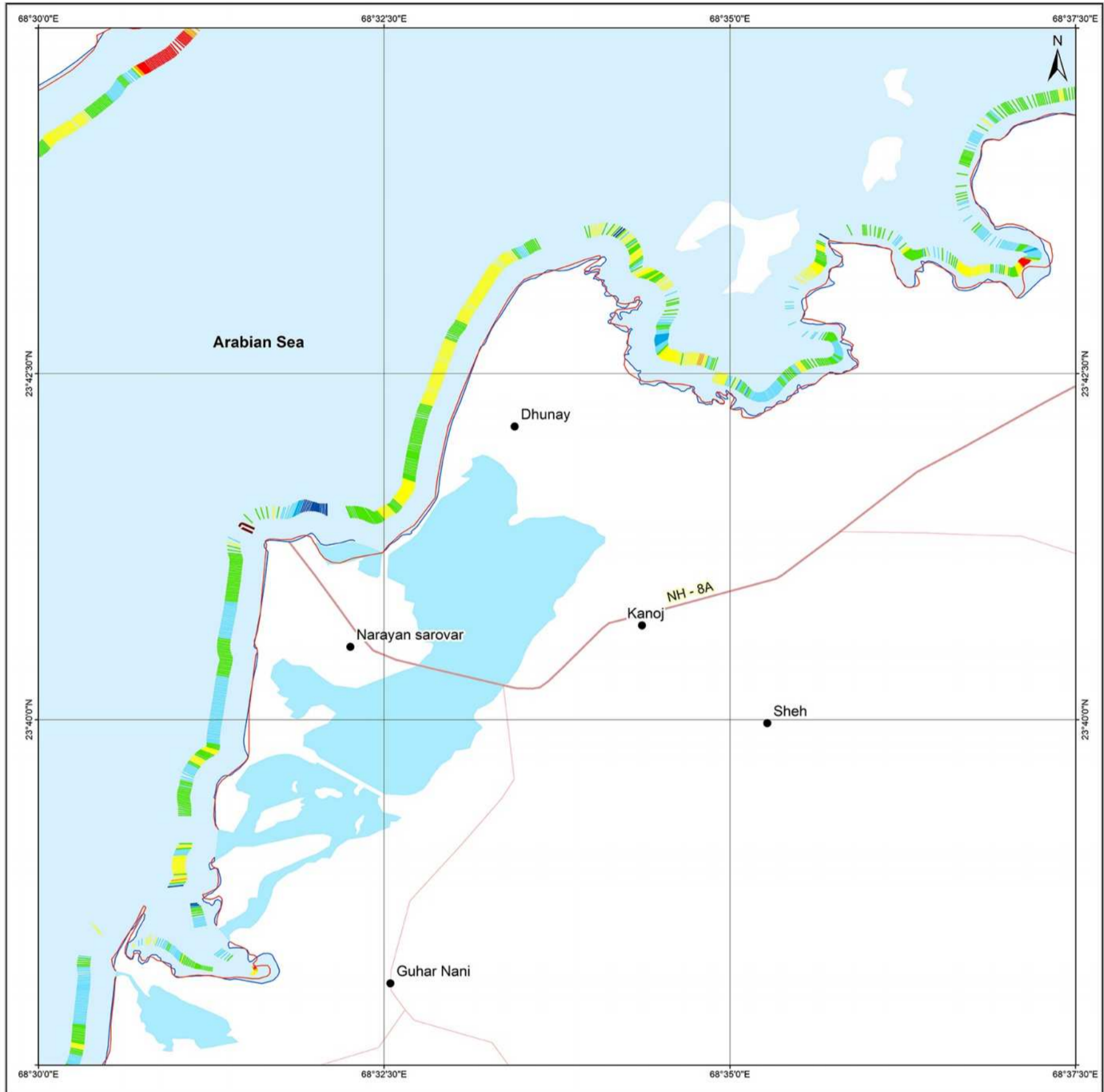
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Map No. : NCCR/SCM/008



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 5 / SE	41 A / 9 / SW	41 A / 9 / SE
41 A / 6 / NE	41 A / 10 / NW	41 A / 10 / NE
41 A / 6 / SE	41 A / 10 / SW	41 A / 10 / SE

Incidence on 1:50,000 Sheets

41 A / 5	41 A / 9	41 A / 13
41 A / 6	41 A / 10	41 A / 14
41 A / 7	41 A / 11	41 A / 15

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

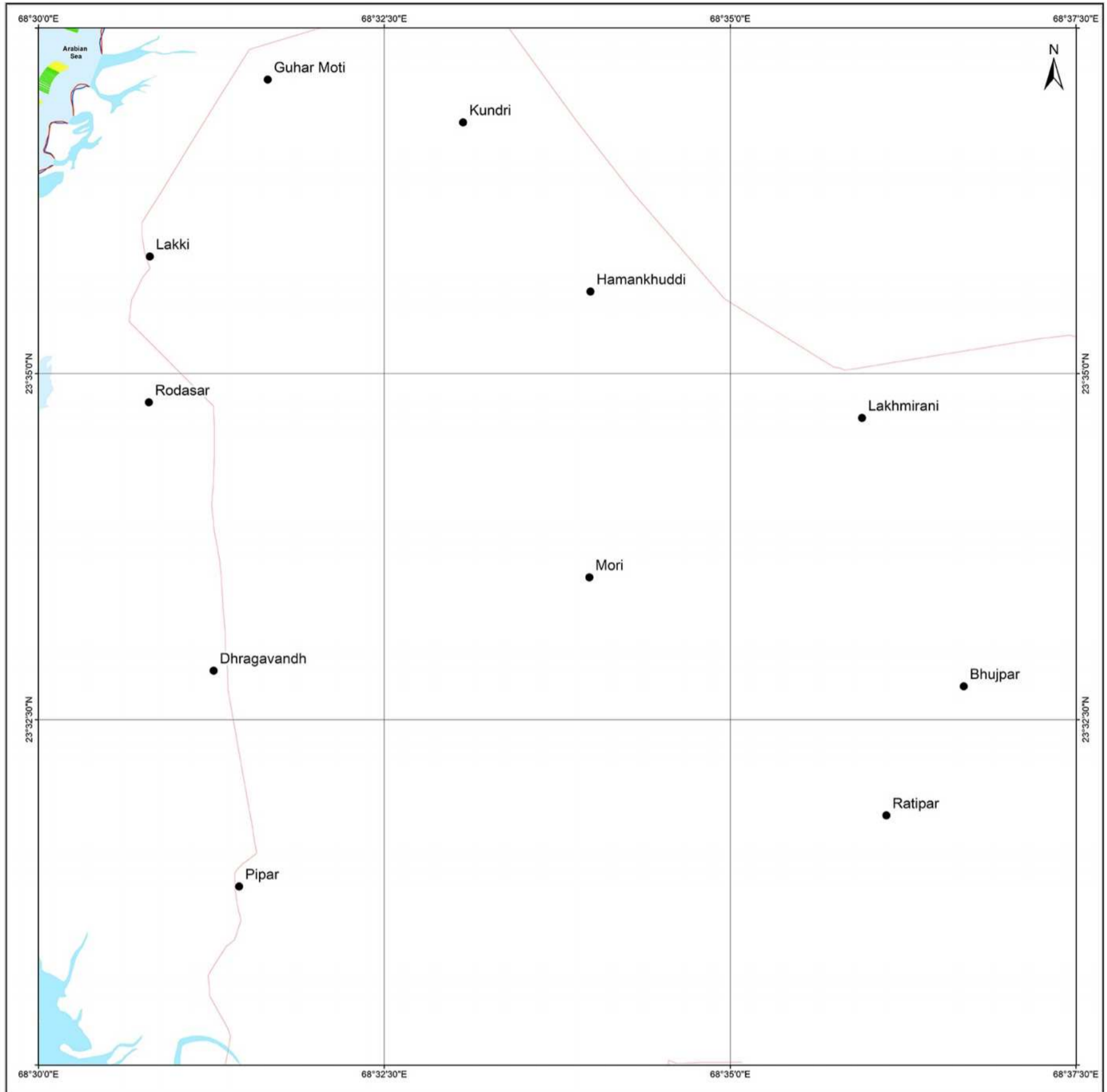
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/009



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 6 / NE	41 A / 10 / NW	41 A / 10 / NE
41 A / 6 / SE	41 A / 10 / SW	41 A / 10 / SE
41 A / 7 / NE	41 A / 11 / NW	41 A / 11 / NE

Incidence on 1:50,000 Sheets

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41 A / 7	41 A / 11	41 A / 15

Scale
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1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

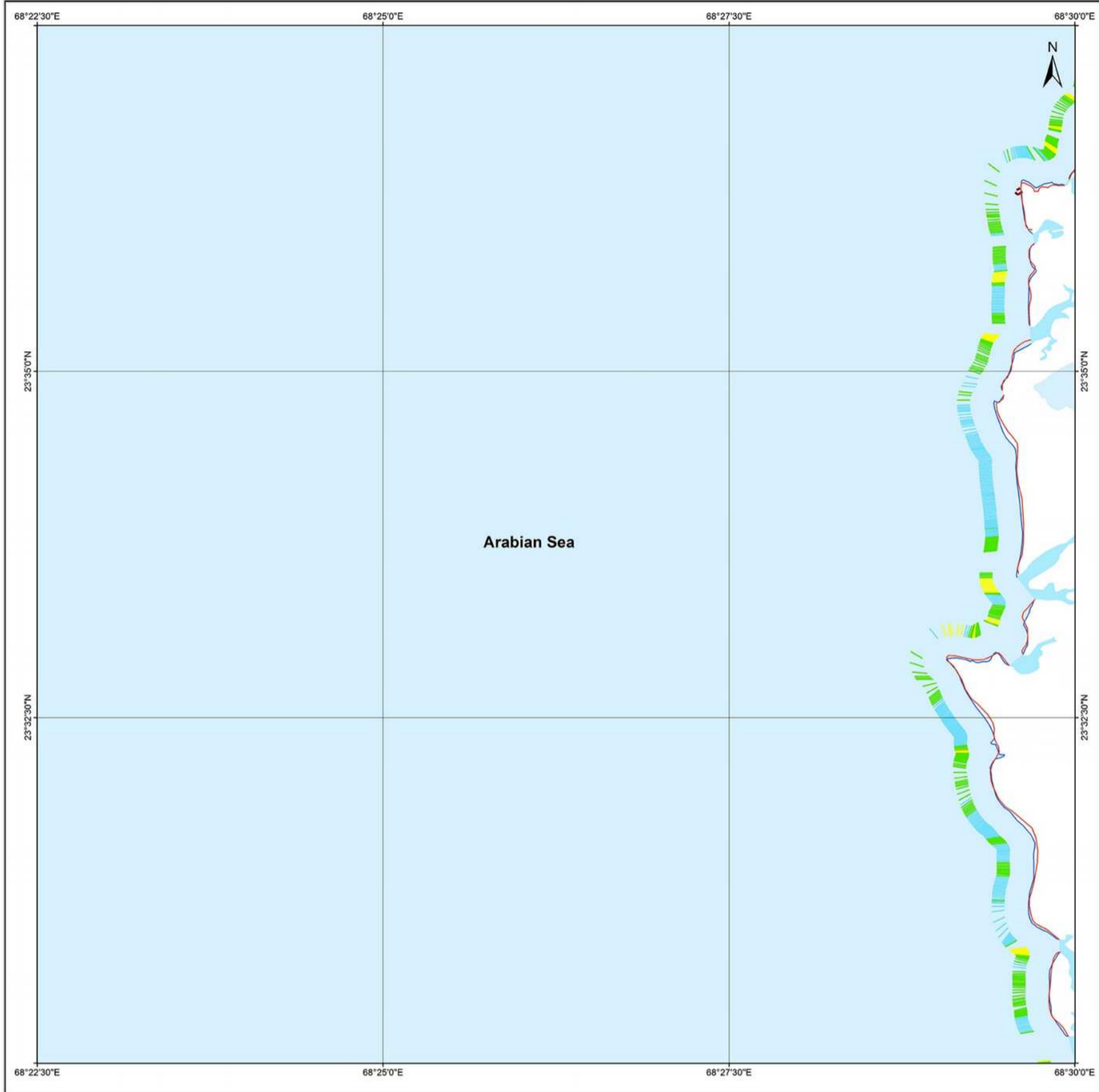
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 A / 6 / SE
Map No. : NCCR/SCM/010



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

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41 A / 6 / NW	41 A / 6 / NE	41 A / 10 / NW
41 A / 6 / SW	41 A / 6 / SE	41 A / 10 / SW
41 A / 7 / NW	41 A / 7 / NE	41 A / 11 / NW

Incidence on 1:50,000 Sheets

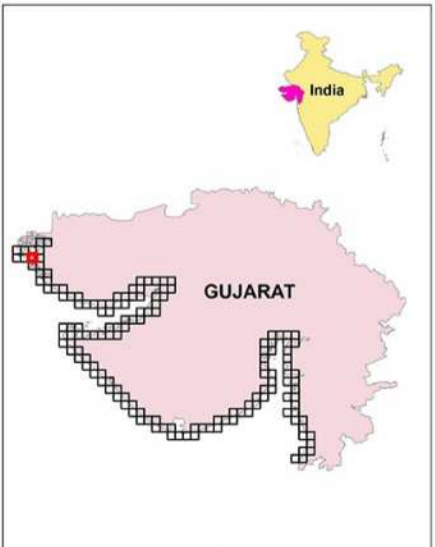
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41 A / 3	41 A / 7	41 A / 11

Scale
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1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

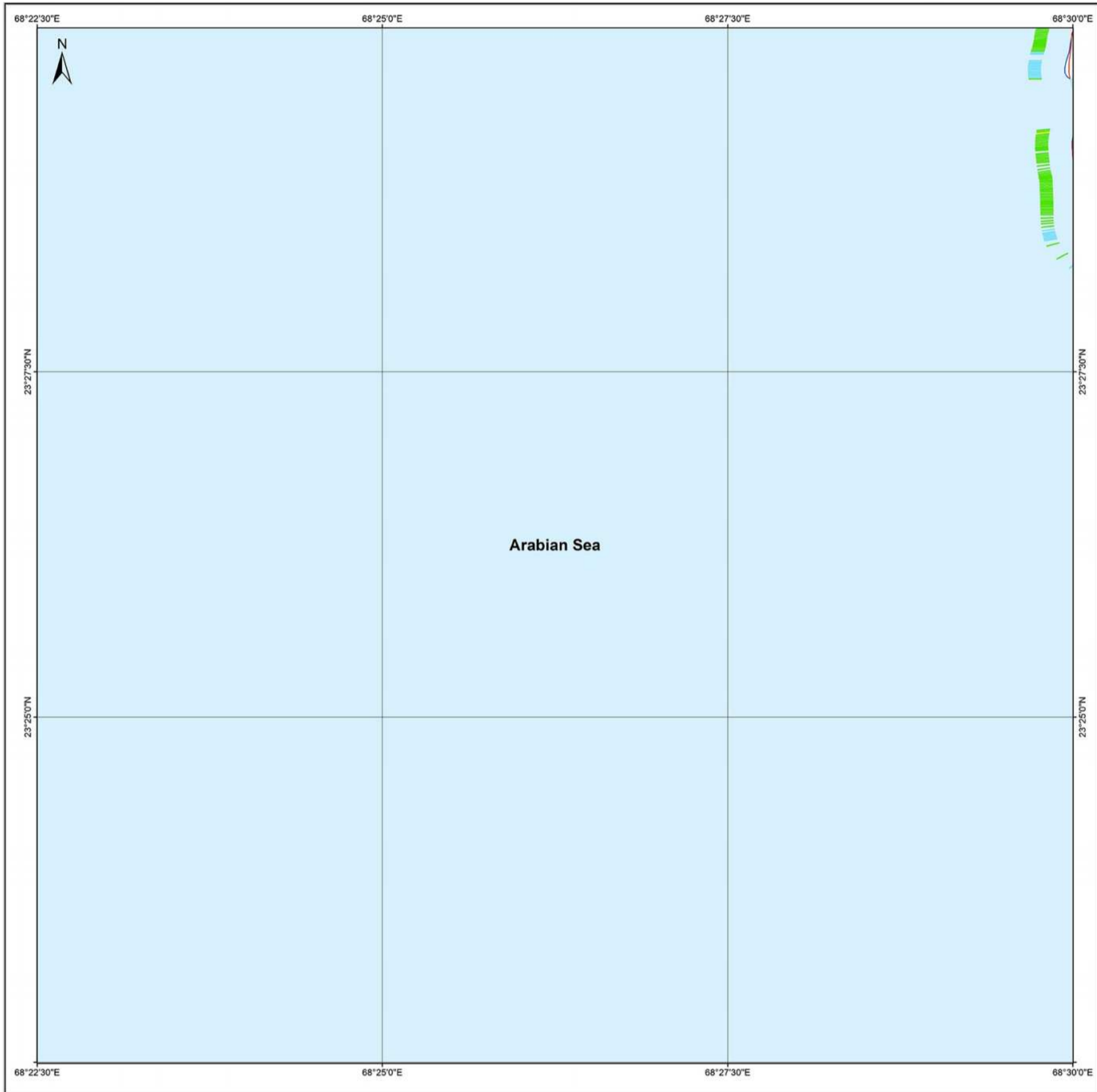
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 A / 7 / NE
Map No. : NCCR/SCM/ 011



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/30/1990
- █ 01/29/2018

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41 A / 6 / SW	41 A / 6 / SE	41 A / 10 / SW
41 A / 7 / NW	41 A / 7 / NE	41 A / 11 / NW
41 A / 7 / SW	41 A / 7 / SE	41 A / 11 / SW

Incidence on 1:50,000 Sheets

41 A / 2	41 A / 6	41 A / 10
41 A / 3	41 A / 7	41 A / 11
41 A / 4	41 A / 8	41 A / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	04/10/2000
ETM+ TM	03/30/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

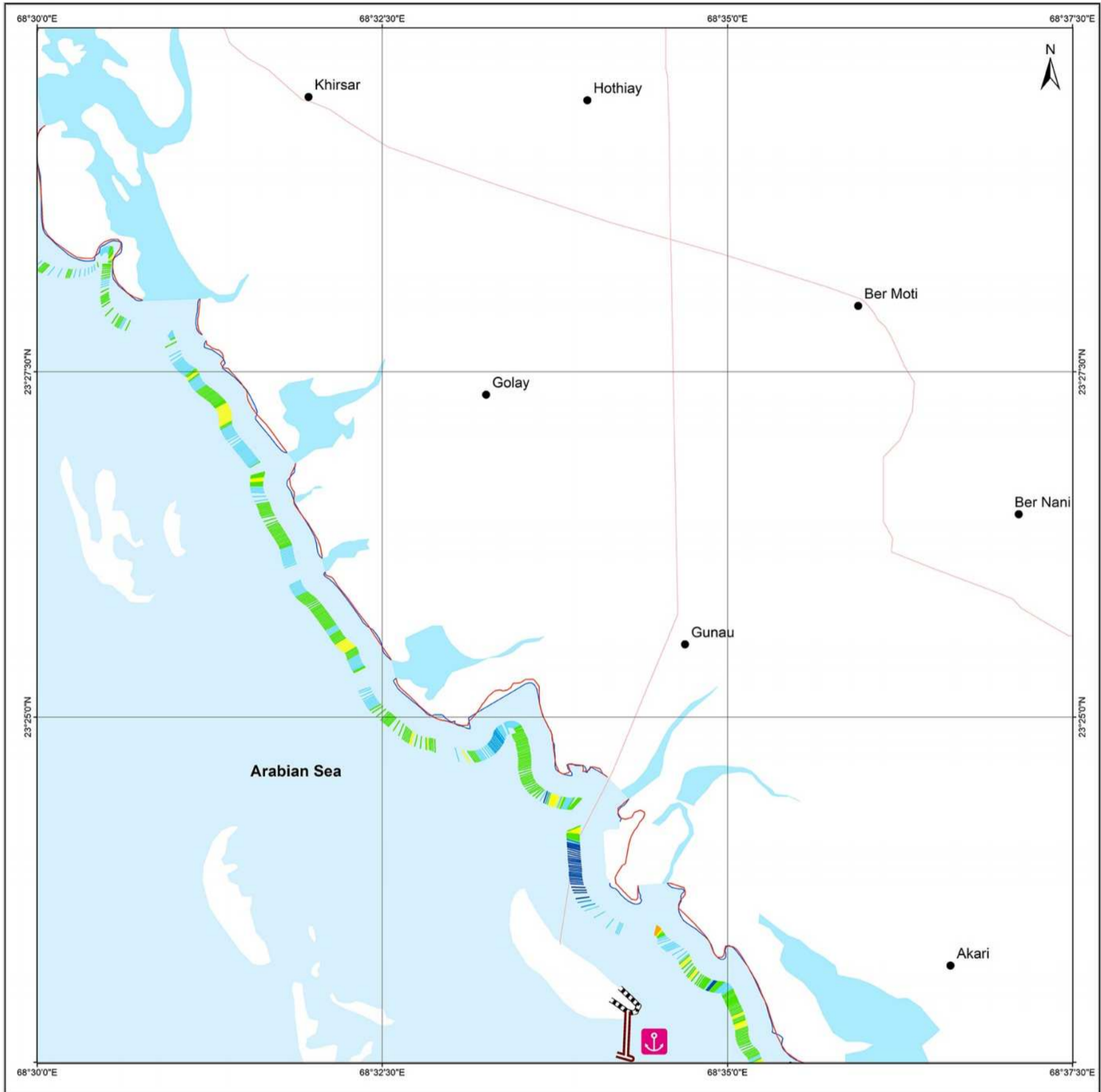
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 A / 11 / NW
Map No. : NCCR/SCM/012



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/30/1990
- █ 01/29/2018

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41 A / 6 / SE	41 A / 10 / SW	41 A / 10 / SE
41 A / 7 / NE	41 A / 11 / NW	41 A / 11 / NE
41 A / 7 / SE	41 A / 11 / SW	41 A / 11 / SE

Incidence on 1:50,000 Sheets

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41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

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LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

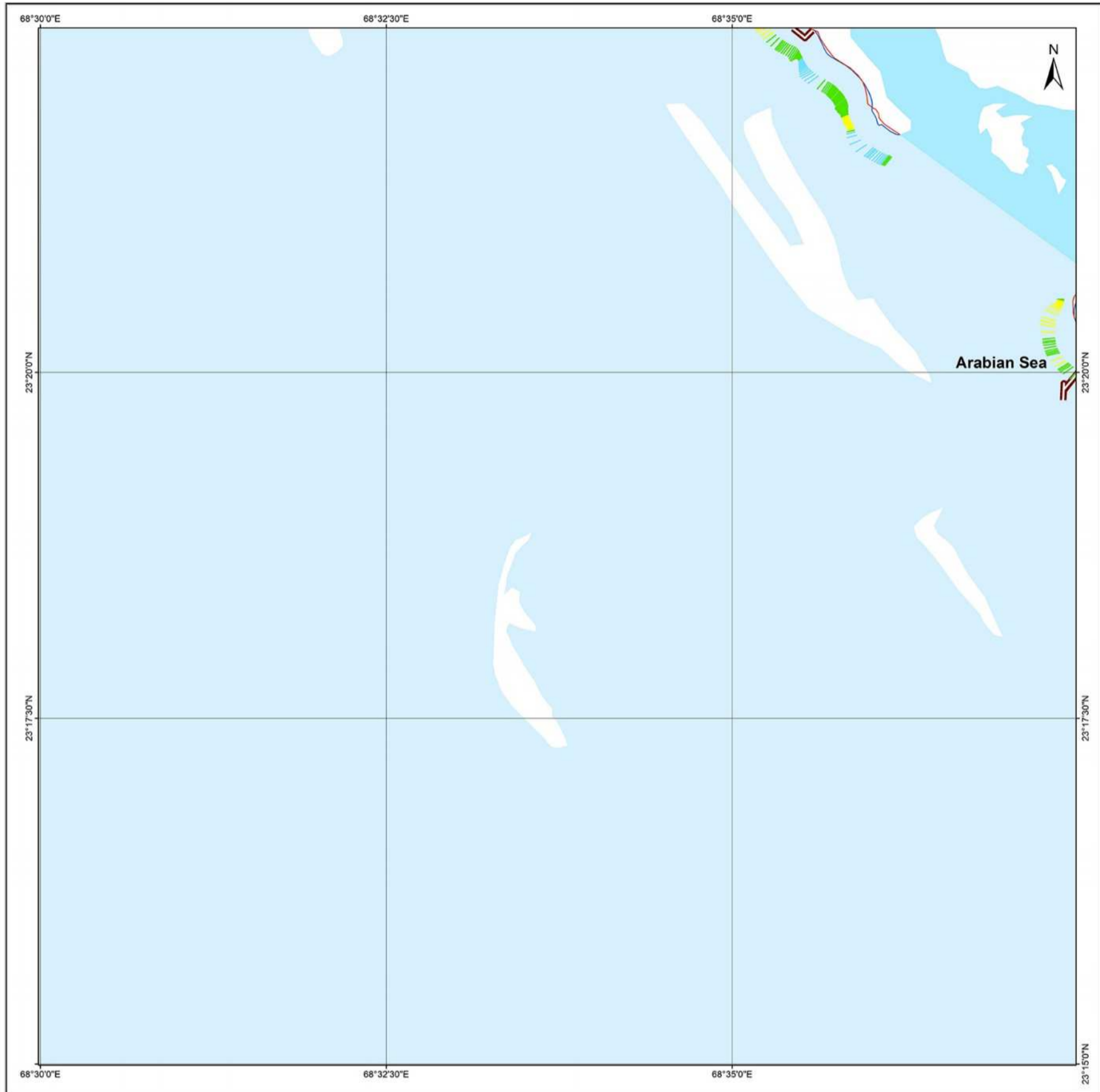
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SHORELINE CHANGE MAP GUJARAT

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41 A / 11 / SW
Map No. : NCCR/SCM/013



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018

Index to sheets

41 A / 7 / NE	41 A / 11 / NW	41 A / 11 / NE
41 A / 7 / SE	41 A / 11 / SW	41 A / 11 / SE
41 A / 8 / NE	41 A / 12 / NW	41 A / 12 / NE

Incidence on 1:50,000 Sheets

41 A / 6	41 A / 10	41 A / 14
41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/29/2018
LISS-IV	01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

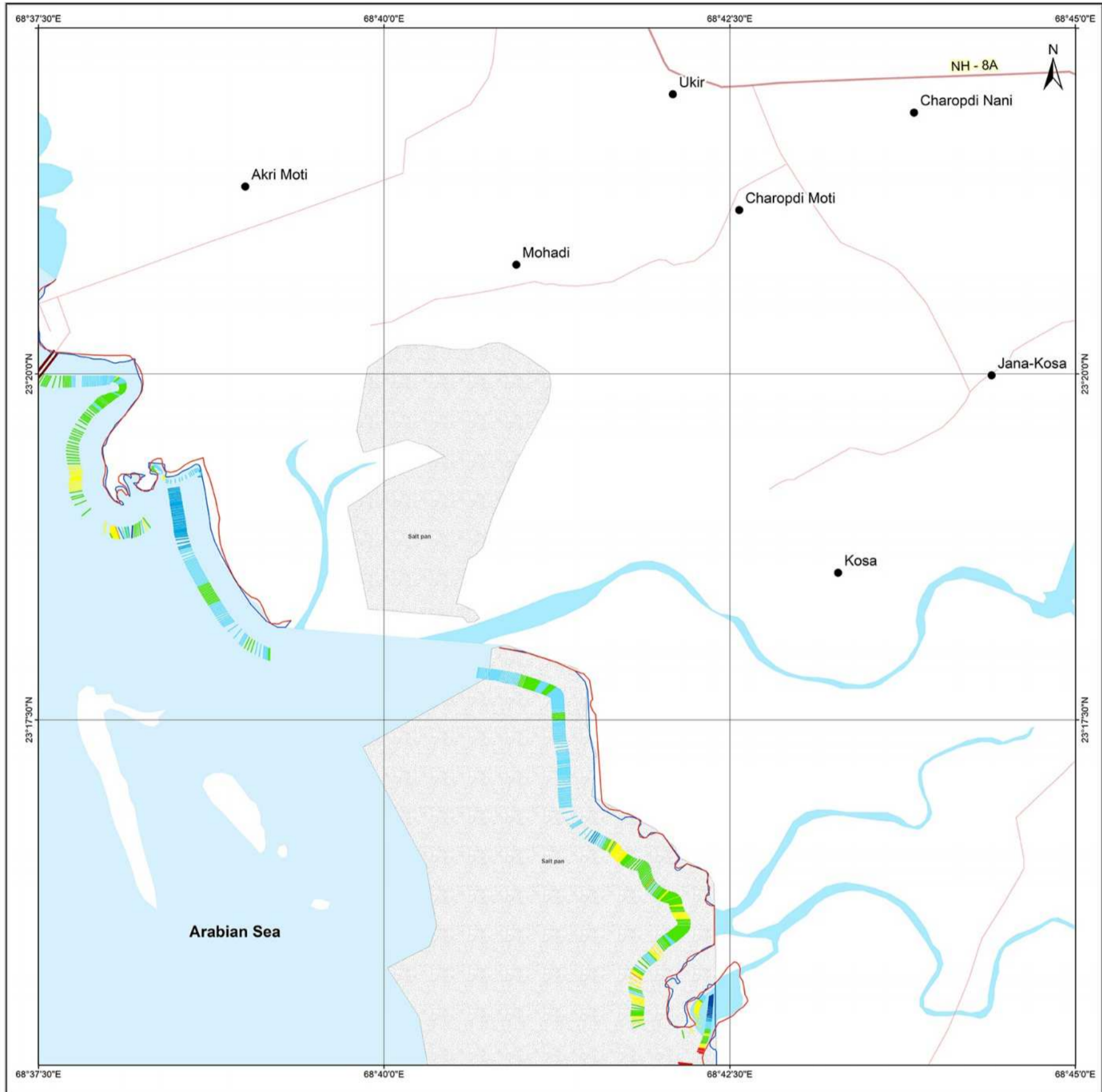
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 A / 11 / SE
Map No. : NCCR/SCM/014



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 01/29/2018 & 02/03/2018

Index to sheets

41 A / 11 / NW	41 A / 11 / NE	41 A / 15 / NW
41 A / 11 / SW	41 A / 11 / SE	41 A / 15 / SW
41 A / 12 / NW	41 A / 12 / NE	41 A / 16 / NW

Incidence on 1:50,000 Sheets

41 A / 6	41 A / 10	41 A / 14
41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/25/2017 & 01/10/2017
LISS-IV	04/22/2016
LISS-IV	04/20/2015
LISS-IV	05/02/2014 & 04/08/2014
LISS-IV	03/21/2013
LISS-IV	03/18/2012
LISS-III	04/16/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

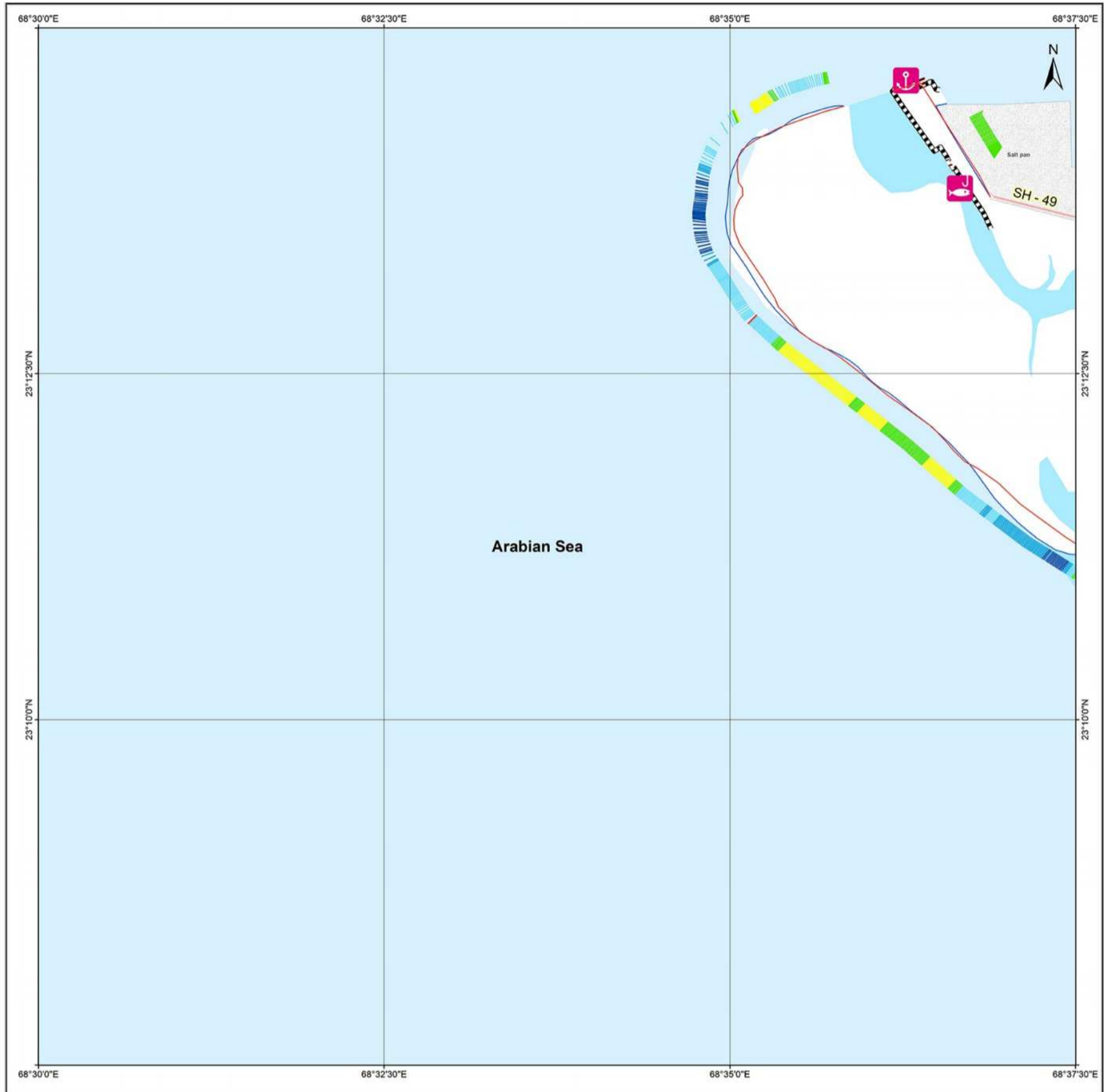
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SHORELINE CHANGE MAP GUJARAT

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41 A / 12 / NW
Map No. : NCCR/SCM/015



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/30/1990
- █ 02/22/2018 & 01/29/2018

Index to sheets

41 A / 7 / SE	41 A / 11 / SW	41 A / 11 / SE
41 A / 8 / NE	41 A / 12 / NW	41 A / 12 / NE
41 A / 8 / SE	41 A / 12 / SW	41 A / 12 / SE

Incidence on 1:50,000 Sheets

41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16
41 B / 5	41 B / 9	41 B / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/22/2018 & 01/29/2018
LISS-IV	05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	04/08/2014
LISS-IV	04/13/2013
LISS-IV	03/25/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

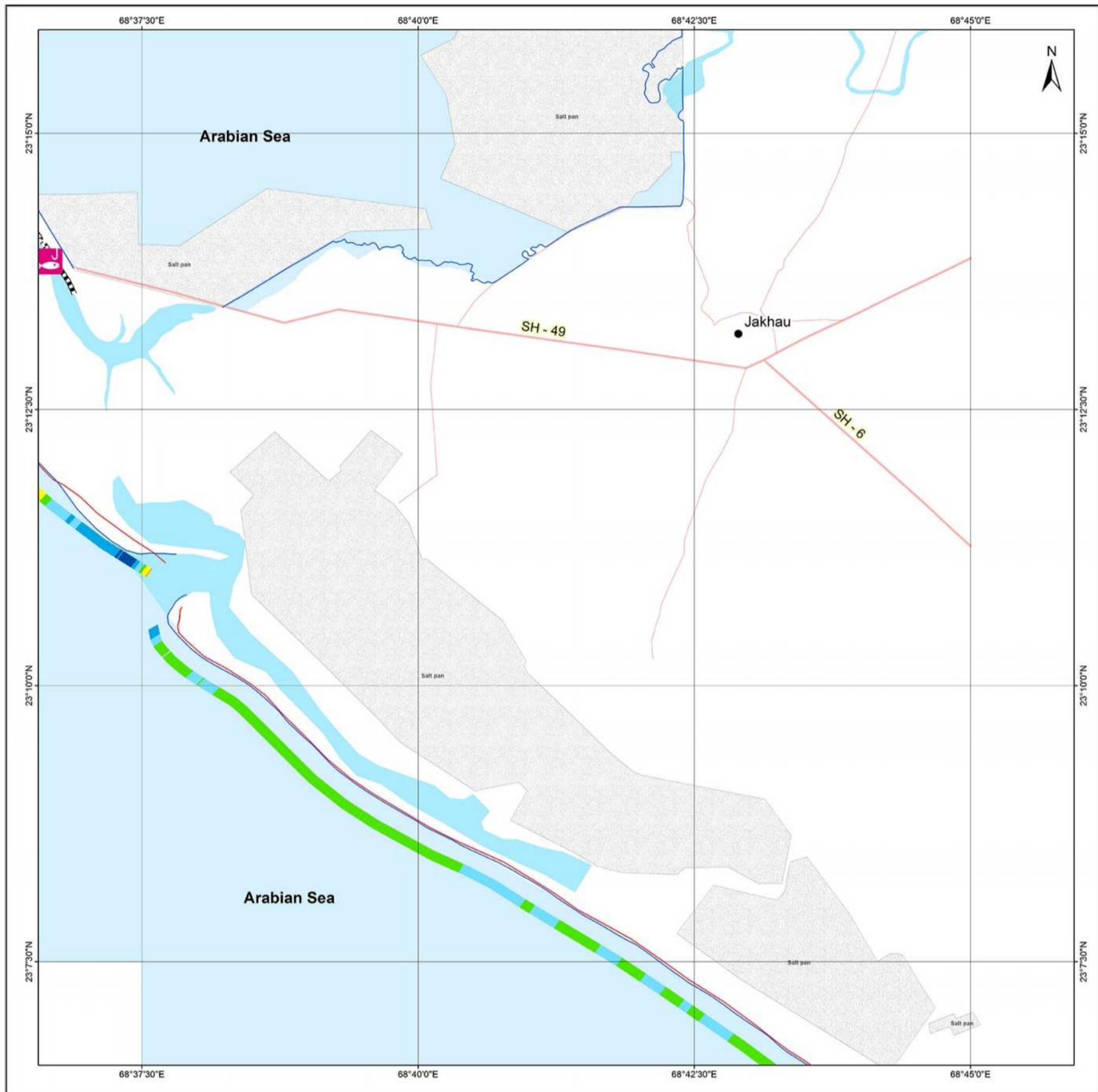
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SHORELINE CHANGE MAP GUJARAT

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41 A / 12 / NE
Map No. : NCCR/SCM/016



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/22/2018 & 02/03/2018

Index to sheets

41 A / 11 / SW	41 A / 11 / SE	41 A / 15 / SW
41 A / 12 / NW	41 A / 12 / NE	41 A / 16 / NW
41 A / 12 / SW	41 A / 12 / SE	41 A / 16 / SW
41 B / 5 / NW	41 B / 9 / NW	41 B / 13 / NW

Incidence on 1:50,000 Sheets

41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16
41 B / 5	41 B / 9	41 B / 13

Scale
1000 m 500 0 1 2 km
1:31,250

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	04/08/2014
LISS-IV	04/13/2013
LISS-IV	03/25/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

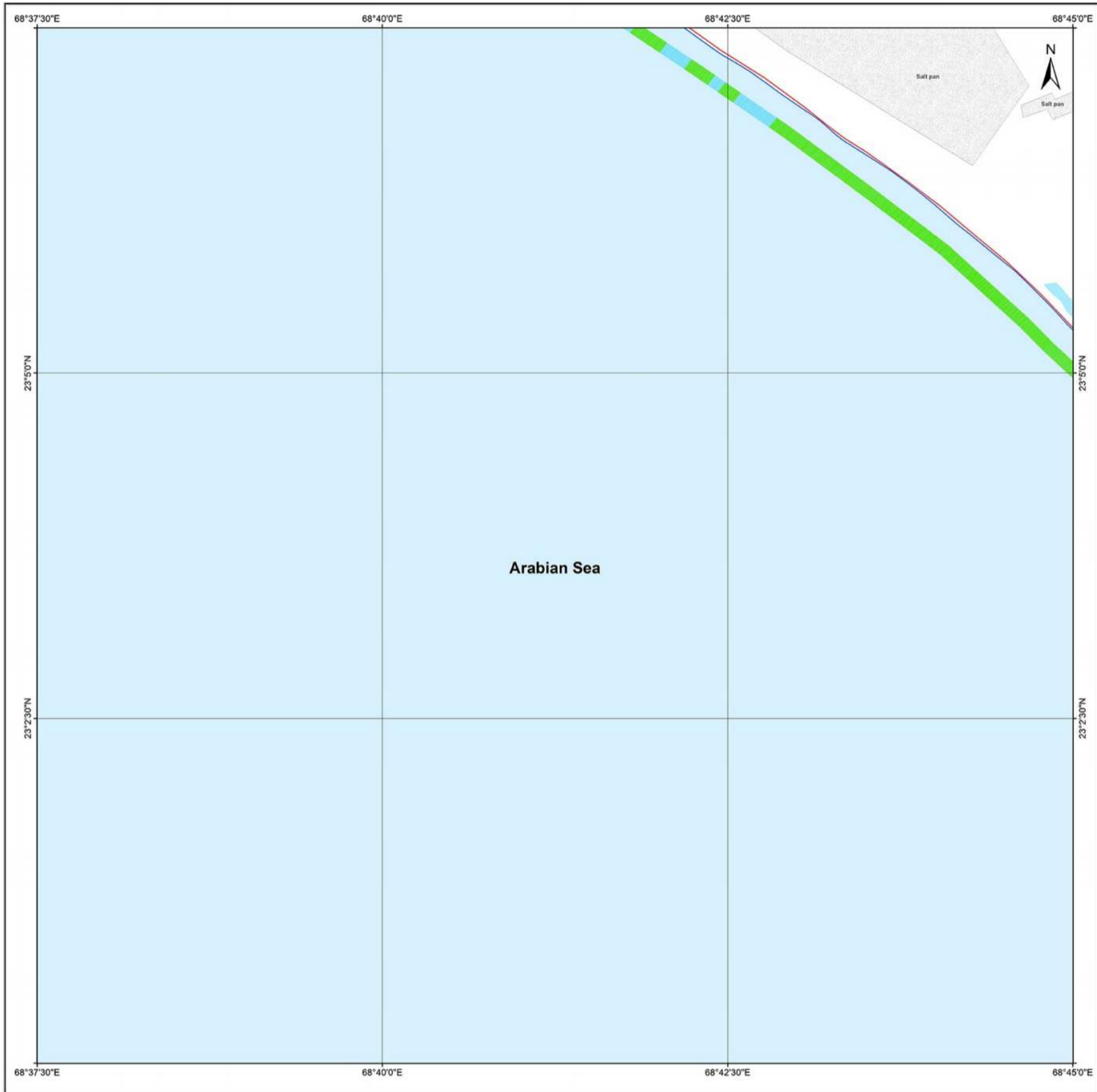
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41 A / 12 / SE
Map No. : NCCR/SCM/017



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/22/2018

Index to sheets

41 A / 12 / NW	41 A / 12 / NE	41 A / 16 / NW
41 A / 12 / SW	41 A / 12 / SE	41 A / 16 / SW
41 B / 9 / NW	41 B / 9 / NE	41 B / 13 / NW

Incidence on 1:50,000 Sheets

41 A / 7	41 A / 11	41 A / 15
41 A / 8	41 A / 12	41 A / 16
41 B / 5	41 B / 9	41 B / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/22/2018
LISS-IV	05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	04/13/2013
LISS-IV	03/25/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

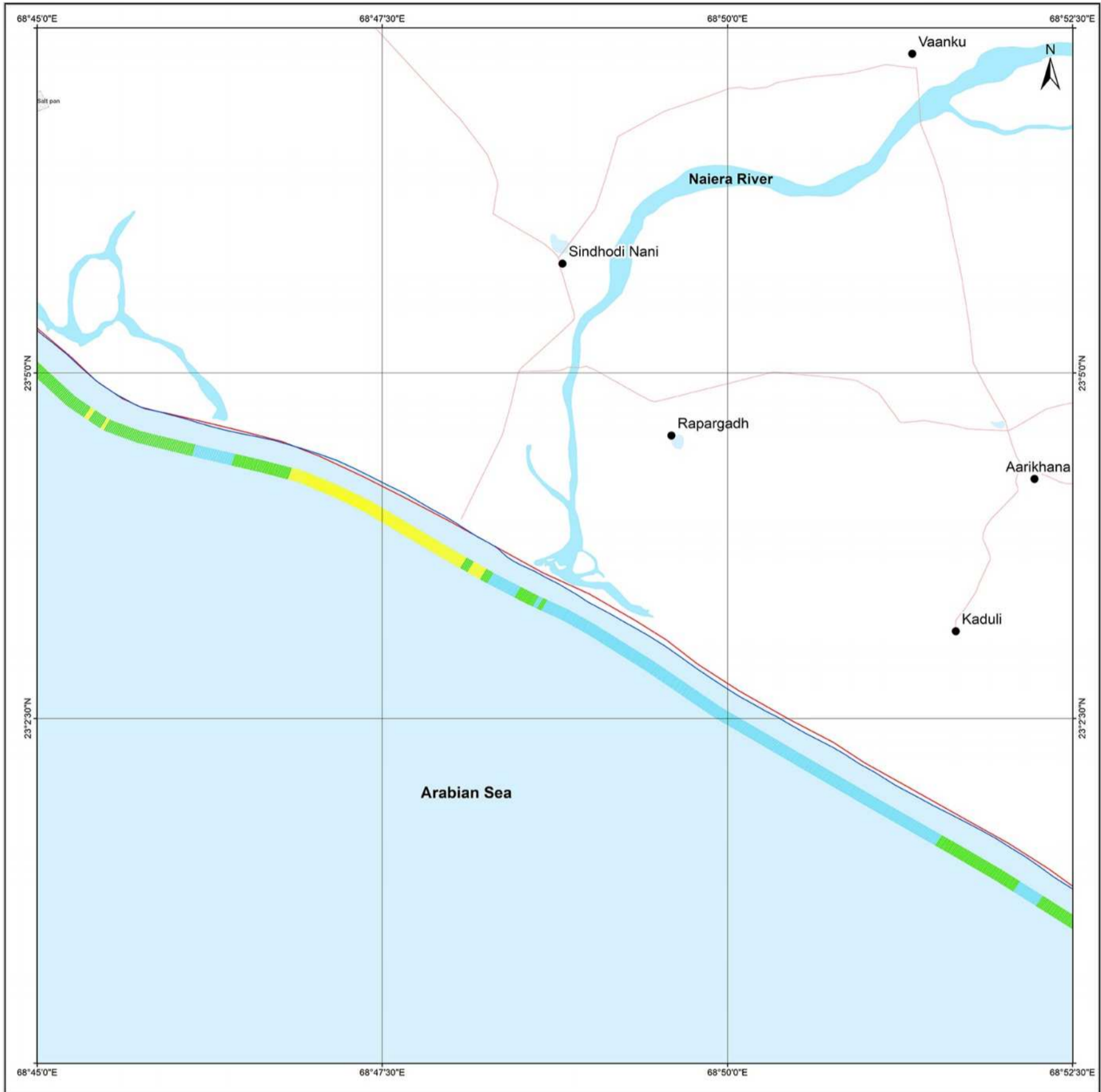
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SHORELINE CHANGE MAP GUJARAT

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41 A / 16 / SW
Map No. : NCCR/SCM/018



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 02/22/2018

Index to sheets

41 A / 12 / NE	41 A / 16 / NW	41 A / 16 / NE
41 A / 12 / SE	41 A / 16 / SW	41 A / 16 / SE
41 B / 9 / NE	41 B / 13 / NW	41 B / 13 / NE

Incidence on 1:50,000 Sheets

41 A / 11	41 A / 15	41 E / 3
41 A / 12	41 A / 16	41 E / 4
41 B / 9	41 B / 13	41 F / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	04/13/2013
LISS-IV	03/25/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

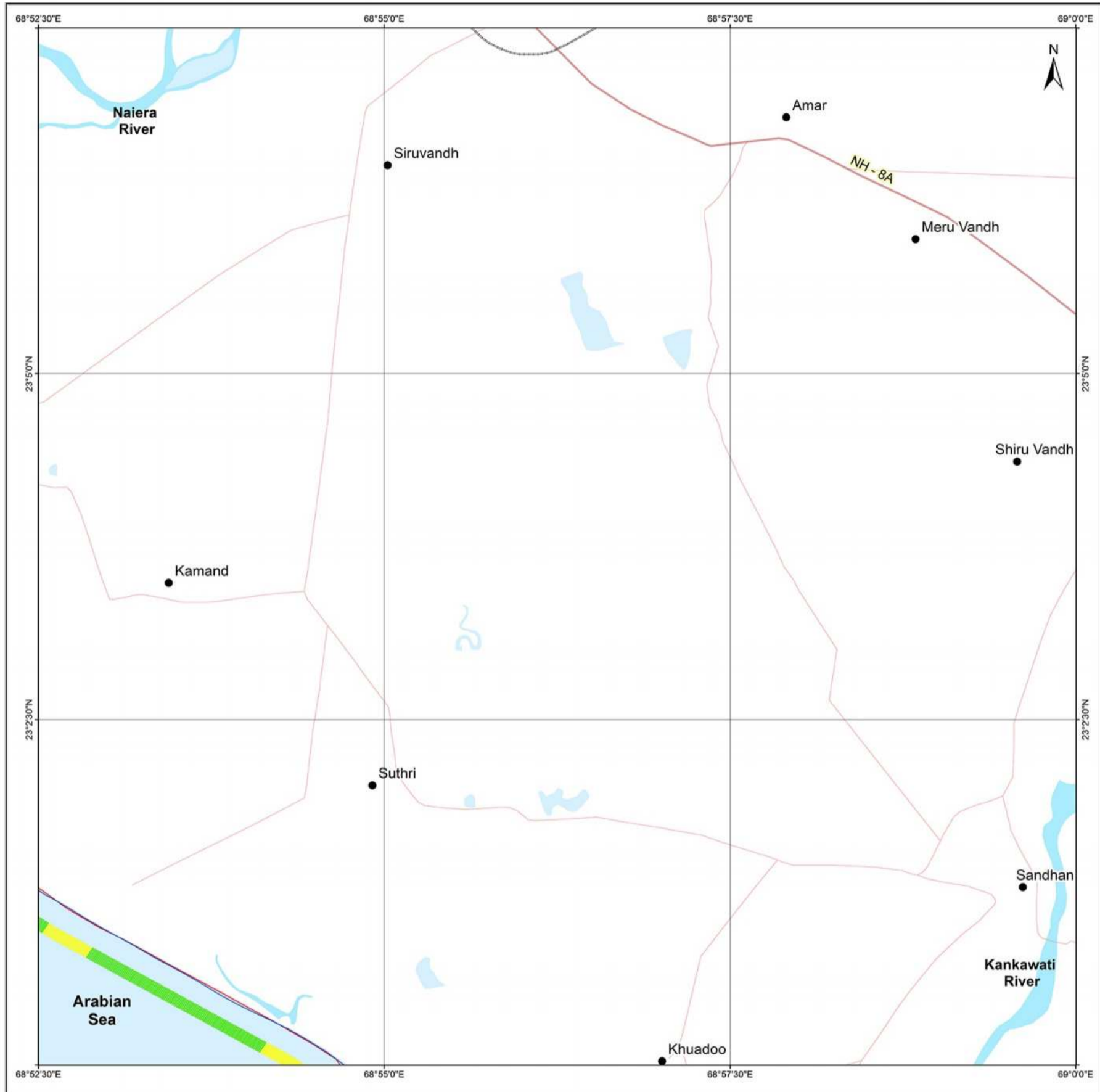
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SHORELINE CHANGE MAP GUJARAT

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41 A / 16 / SE
Map No. : NCCR/SCM/019



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/22/2018

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41 A / 16 / NW	41 A / 16 / NE	41 E / 4 / NW
41 A / 16 / SW	41 B / 16 / SE	41 E / 4 / SW
41 B / 13 / NW	41 B / 13 / NE	41 F / 1 / NW

Incidence on 1:50,000 Sheets

41 A / 11	41 A / 15	41 E / 3
41 A / 12	41 A / 16	41 E / 4
41 B / 9	41 B / 13	41 F / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	04/13/2013
LISS-IV	03/25/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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41 B / 13 / NE
Map No. : NCCR/SCM/020



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/22/2018

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41 A / 16 / SW	41 A / 16 / SE	41 E / 4 / SW
41 B / 13 / NW	41 B / 13 / NE	41 F / 1 / NW
41 B / 13 / SW	41 B / 13 / SE	41 F / 1 / SW

Incidence on 1:50,000 Sheets

41 A / 12	41 A / 16	41 E / 4
41 B / 9	41 B / 13	41 F / 1
41 B / 10	41 B / 14	41 F / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/03/2017 & 05/10/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

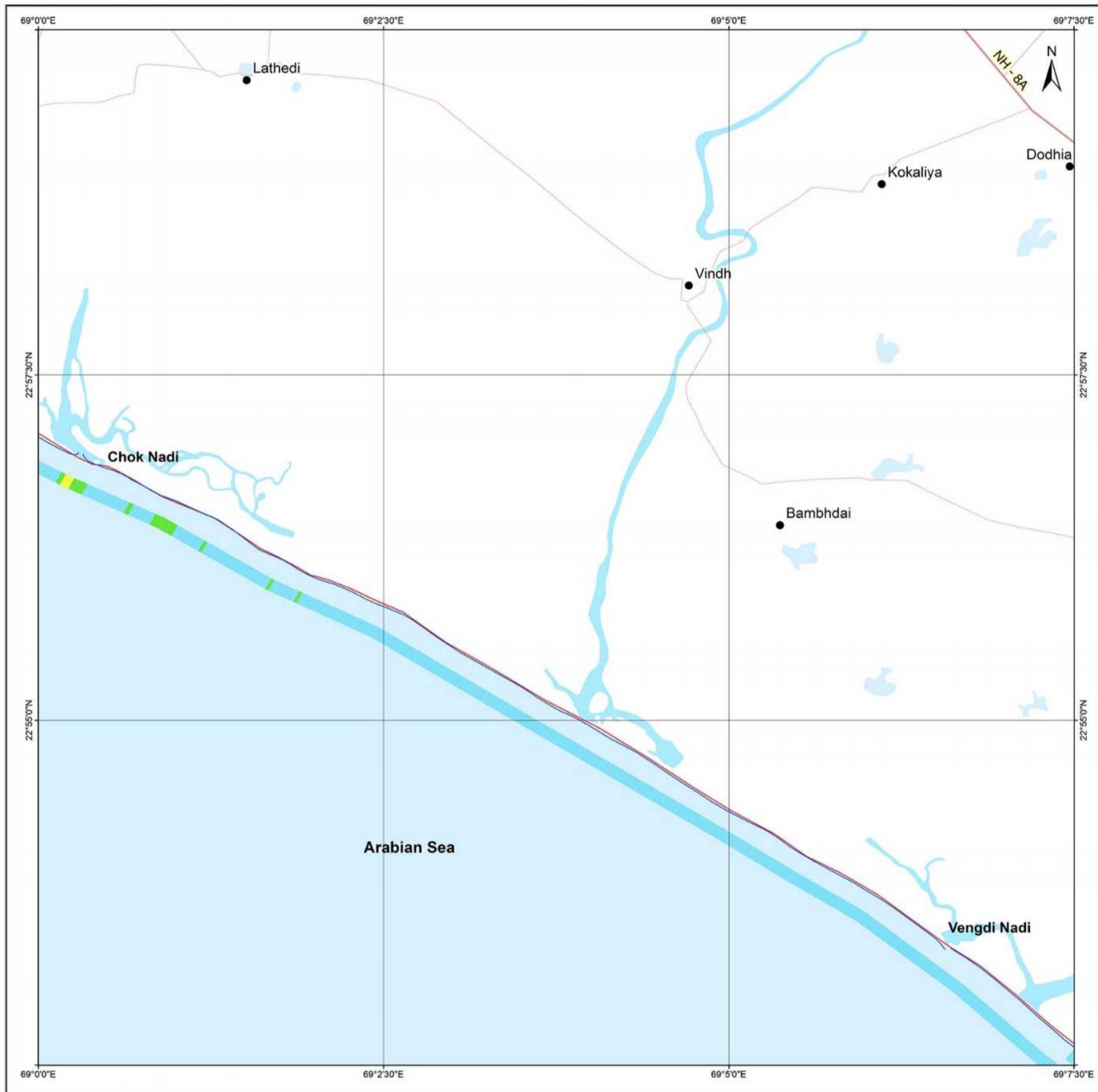
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SHORELINE CHANGE MAP GUJARAT

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41 F / 1 / NW
Map No. : NCCR/SCM/021



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/03/2018 & 02/22/2018

Index to sheets

41 A / 16 / SE	41 E / 4 / SW	41 E / 4 / SE
41 B / 13 / NE	41 F / 1 / NW	41 F / 1 / NE
41 B / 13 / SE	41 F / 1 / SW	41 F / 1 / SE

Incidence on 1:50,000 Sheets

41 A / 16	41 E / 4	41 E / 8
41 B / 13	41 F / 1	41 F / 5
41 B / 14	41 F / 2	41 F / 6

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

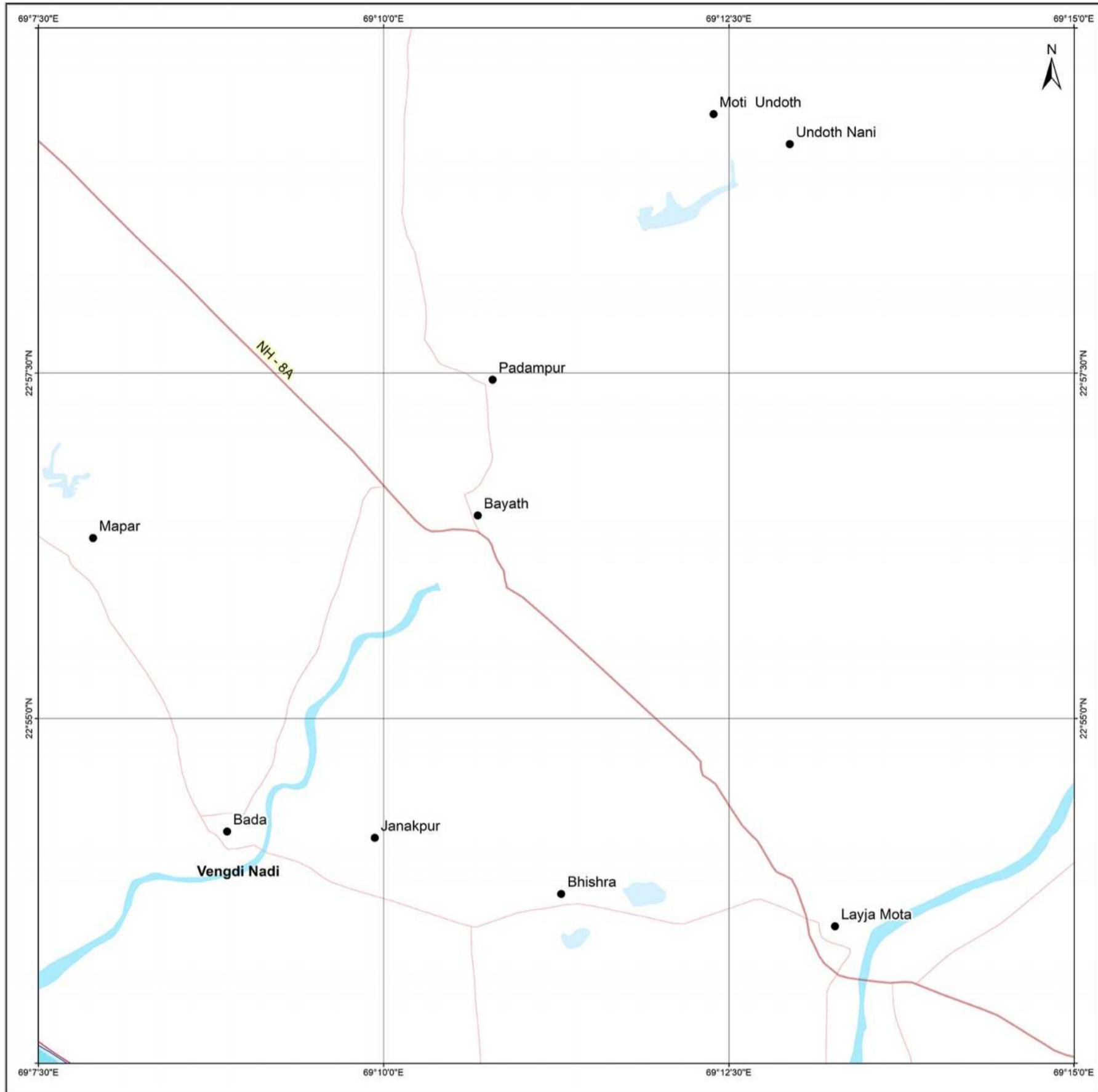
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SHORELINE CHANGE MAP GUJARAT

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41 F / 1 / NE
Map No. : NCCR/SCM/022



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/03/2018

Index to sheets

41 E / 4 / SW	41 E / 4 / SE	41 E / 8 / SW
41 F / 1 / NW	41 F / 1 / NE	41 F / 5 / NW
41 F / 1 / SW	41 F / 1 / SE	41 F / 5 / SW

Incidence on 1:50,000 Sheets

41 A / 16	41 E / 4	41 E / 8
41 B / 13	41 F / 1	41 F / 5
41 B / 14	41 F / 2	41 F / 6

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/03/2017
LISS-IV	03/04/2016
LISS-IV	05/21/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	04/27/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

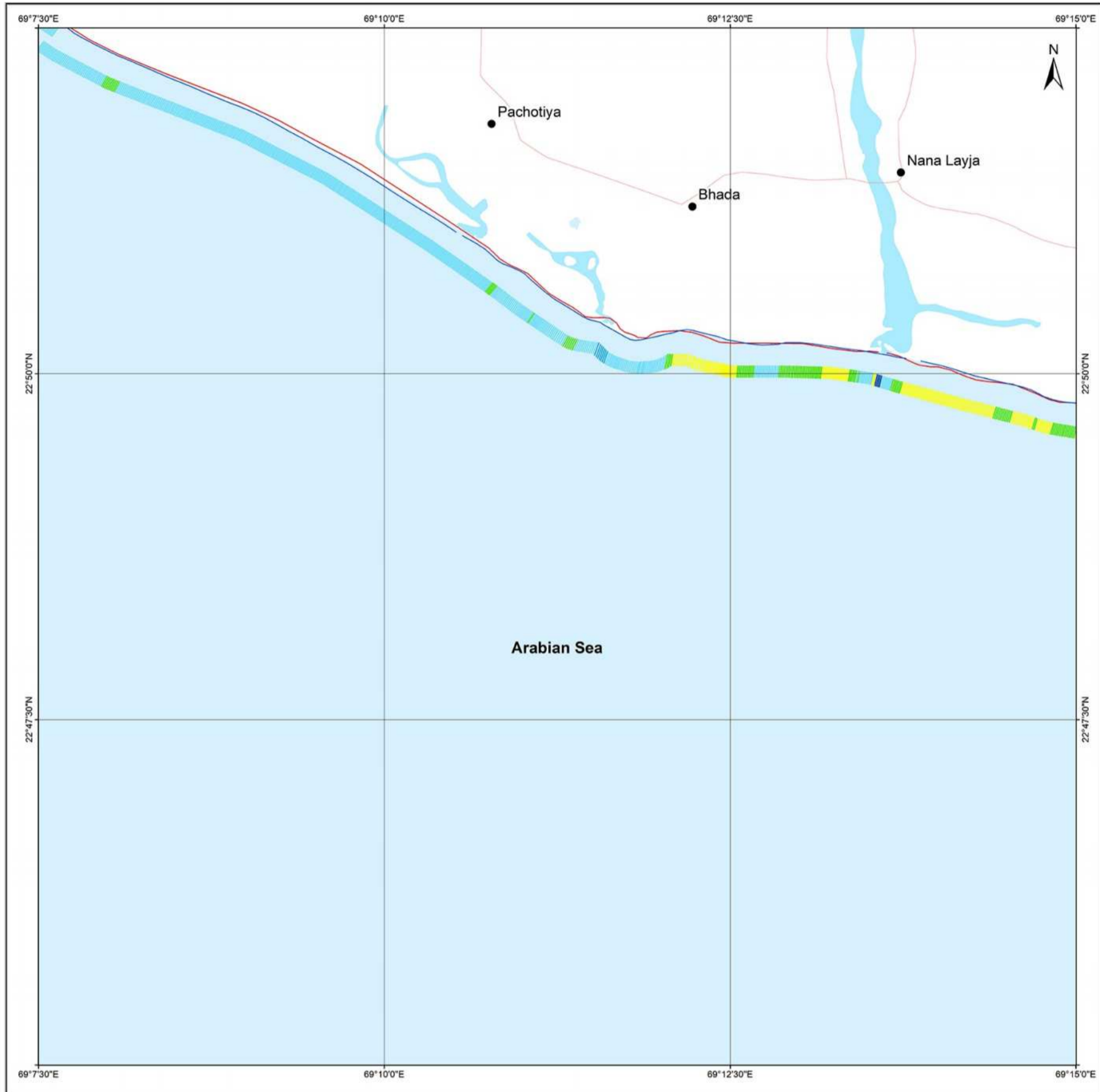
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SHORELINE CHANGE MAP GUJARAT

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41 F / 1 / SE
Map No. : NCCR/SCM/023



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/30/1990
- 02/03/2018

Index to sheets

41 F / 1 / NW	41 F / 1 / NE	41 F / 1 / SW
41 F / 1 / SW	41 F / 1 / SE	41 F / 1 / SW
41 F / 2 / NW	41 F / 2 / NE	41 F / 2 / SW

Incidence on 1:50,000 Sheets

41 A / 16	41 E / 4	41 E / 8
41 B / 13	41 F / 1	41 F / 5
41 B / 14	41 F / 2	41 F / 6

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	04/03/2017
LISS-IV	03/04/2016
LISS-IV	05/02/2015 & 05/21/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	04/27/2008 & 05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
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SHORELINE CHANGE MAP GUJARAT

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41 F / 5 / SW
Map No. : NCCR/SCM/024



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 02/03/2018

Index to sheets

41 F / 1 / NE	41 F / 5 / NW	41 F / 5 / NE
41 F / 1 / SE	41 F / 5 / SW	41 F / 5 / SE
41 F / 2 / NE	41 F / 6 / NW	41 F / 6 / NE

Incidence on 1:50,000 Sheets

41 E / 4	41 E / 8	41 E / 12
41 F / 1	41 F / 5	41 F / 9
41 F / 2	41 F / 6	41 F / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	04/03/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

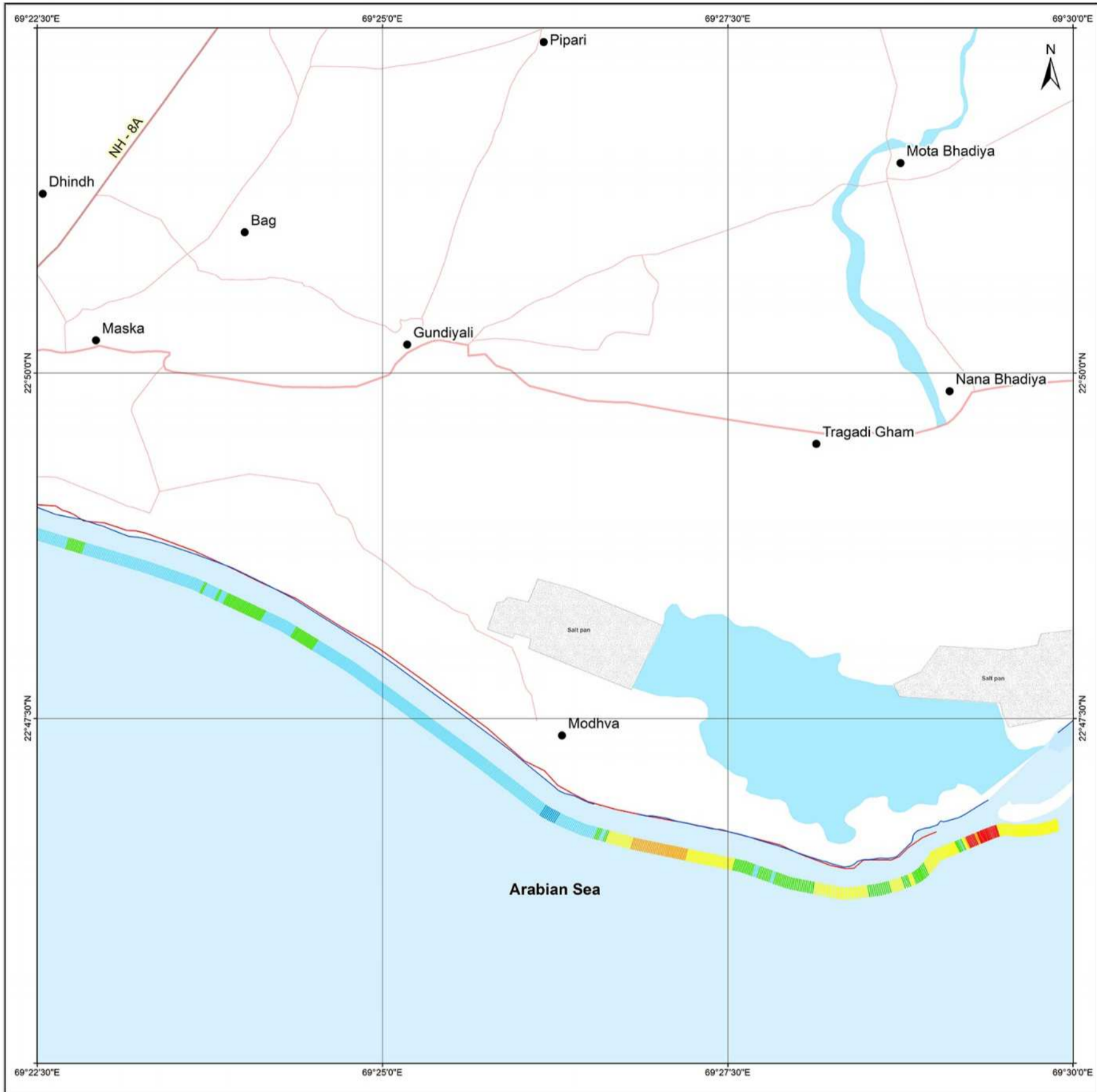
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SHORELINE CHANGE MAP GUJARAT

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41 F / 5 / SE
Map No. : NCCR/SCM/025



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/30/1990
- 02/03/2018

Index to sheets

41 F / 5 / NW	41 F / 5 / NE	41 F / 9 / NW
41 F / 5 / SW	41 F / 5 / SE	41 F / 9 / SW
41 F / 6 / NW	41 F / 6 / NE	41 F / 10 / NW

Incidence on 1:50,000 Sheets

41 E / 4	41 E / 8	41 E / 12
41 F / 1	41 F / 5	41 F / 9
41 F / 2	41 F / 6	41 F / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	04/03/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	05/21/2014
LISS-IV	05/12/2013
LISS-IV	03/06/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

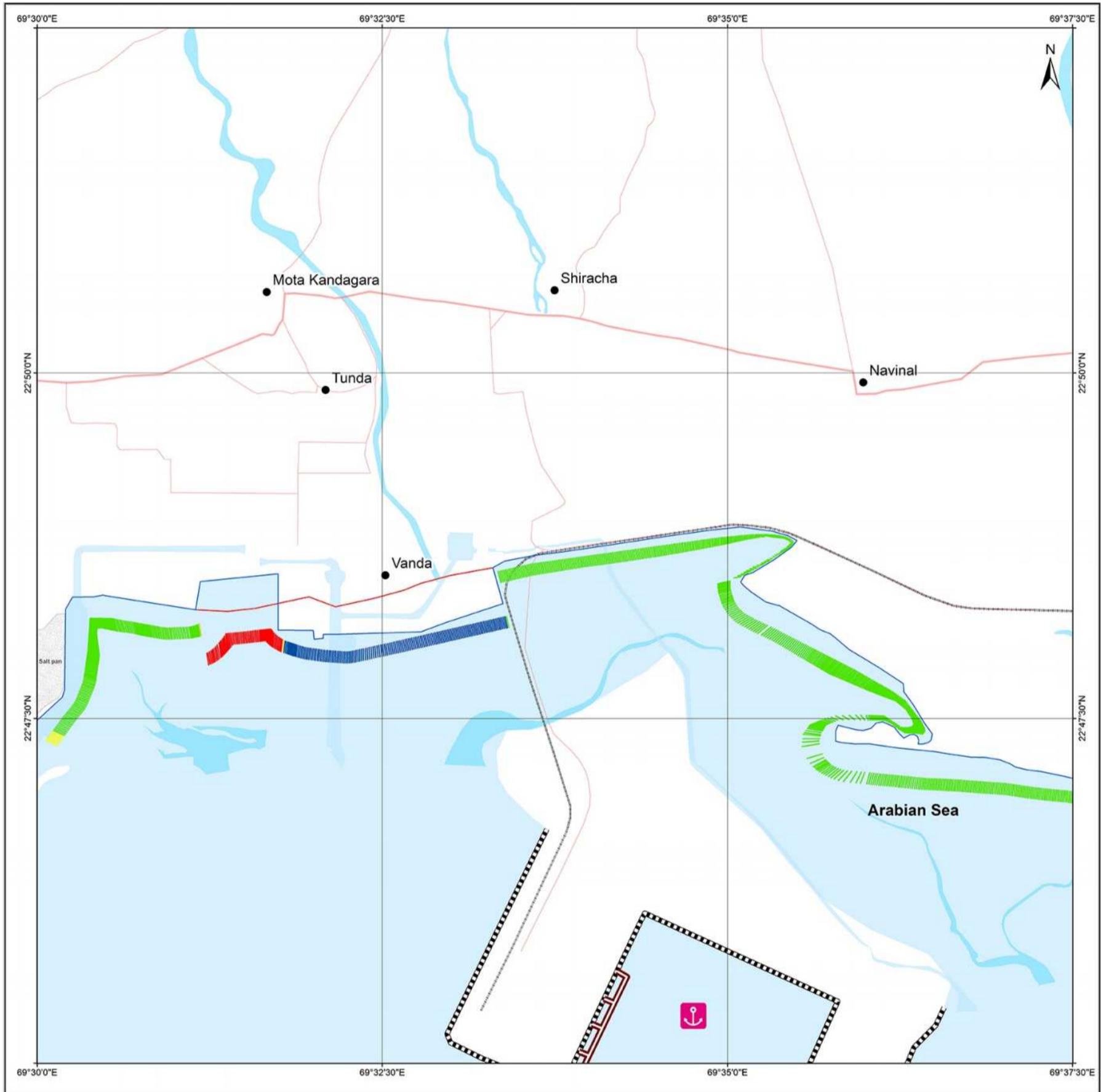
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SHORELINE CHANGE MAP GUJARAT

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41 F / 9 / SW
Map No. : NCCR/SCM/026



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990 & 03/30/1990
- █ 02/27/2018 & 02/03/2018

Index to sheets

41 F / 5 / NE	41 F / 9 / NW	41 F / 9 / NE
41 F / 5 / SE	41 F / 9 / SW	41 F / 9 / SE
41 F / 6 / NE	41 F / 10 / NW	41 F / 10 / NE

Incidence on 1:50,000 Sheets

41 E / 8	41 E / 12	41 E / 16
41 F / 5	41 F / 9	41 F / 13
41 F / 6	41 F / 10	41 F / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018 & 02/03/2018
LISS-IV	04/03/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015 & 01/21/2015
LISS-IV	05/21/2014
LISS-IV	01/21/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/07/1990 & 03/30/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

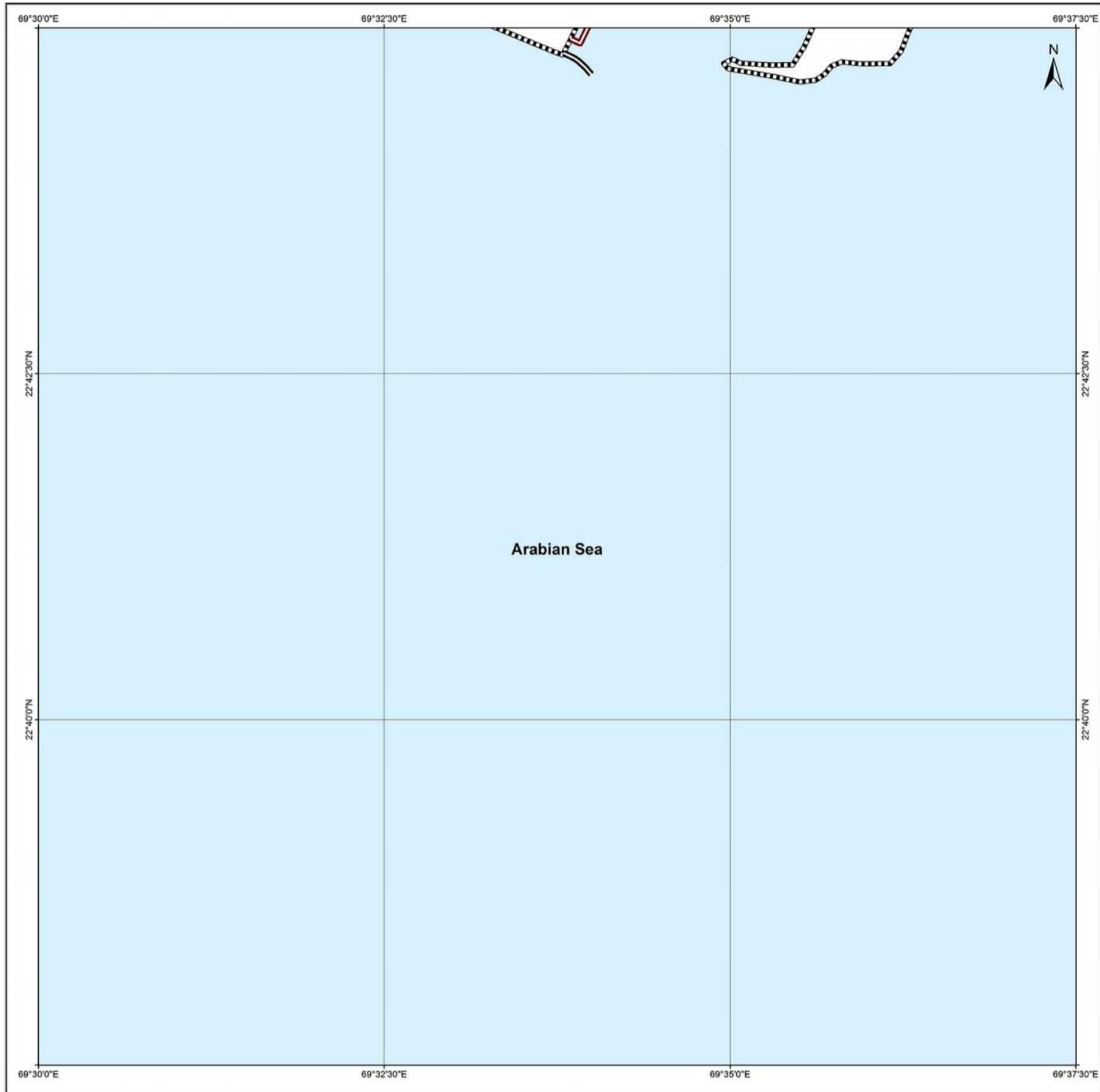
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SHORELINE CHANGE MAP GUJARAT

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41 F / 10 / NW
Map No. : NCCR/SCM/027



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990 & 03/30/1990
- █ 02/27/2018 & 02/03/2018

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41 F / 5 / SE	41 F / 9 / SW	41 F / 9 / SE
41 F / 6 / NE	41 F / 10 / NW	41 F / 10 / NE
41 F / 6 / SE	41 F / 10 / SW	41 F / 10 / SE

Incidence on 1:50,000 Sheets

41 F / 5	41 F / 9	41 F / 13
41 F / 6	41 F / 10	41 F / 14
41 F / 7	41 F / 11	41 F / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018 & 02/03/2018
LISS-IV	04/03/2017
LISS-IV	01/21/2016
LISS-IV	05/02/2015 & 01/21/2015
LISS-IV	05/21/2014
LISS-IV	01/21/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/07/1990 & 03/30/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

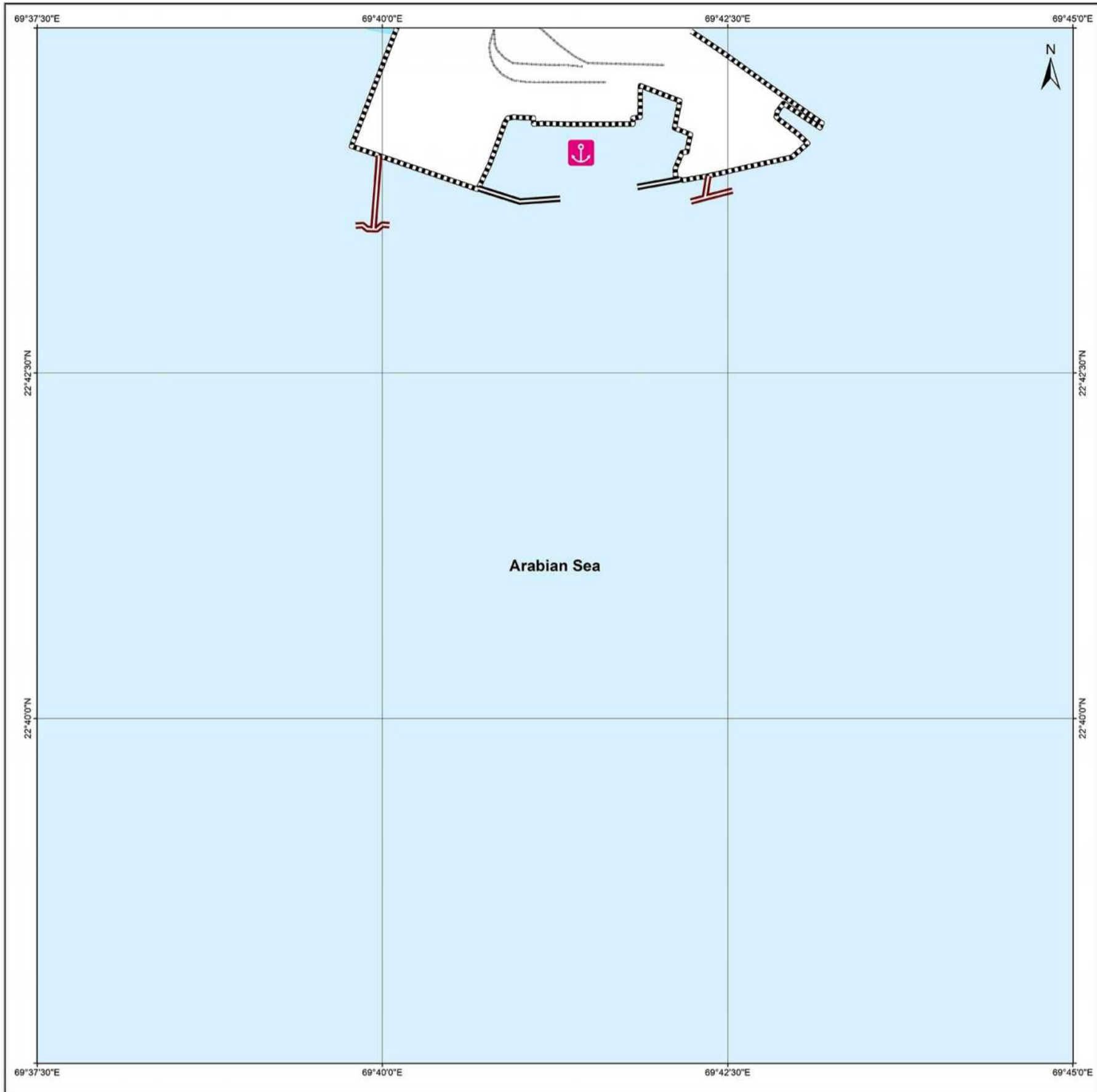
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SHORELINE CHANGE MAP GUJARAT

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41 F / 10 / NE
Map No. : NCCR/SCM/028



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 F / 9 / SW	41 F / 9 / SE	41 F / 13 / SW
41 F / 10 / NW	41 F / 10 / NE	41 F / 14 / NW
41 F / 10 / SW	41 F / 10 / SE	41 F / 14 / SW

Incidence on 1:50,000 Sheets

41 F / 5	41 F / 9	41 F / 13
41 F / 6	41 F / 10	41 F / 14
41 F / 7	41 F / 11	41 F / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017 & 04/03/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015 & 01/21/2015
LISS-IV	05/07/2014
LISS-IV	01/21/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

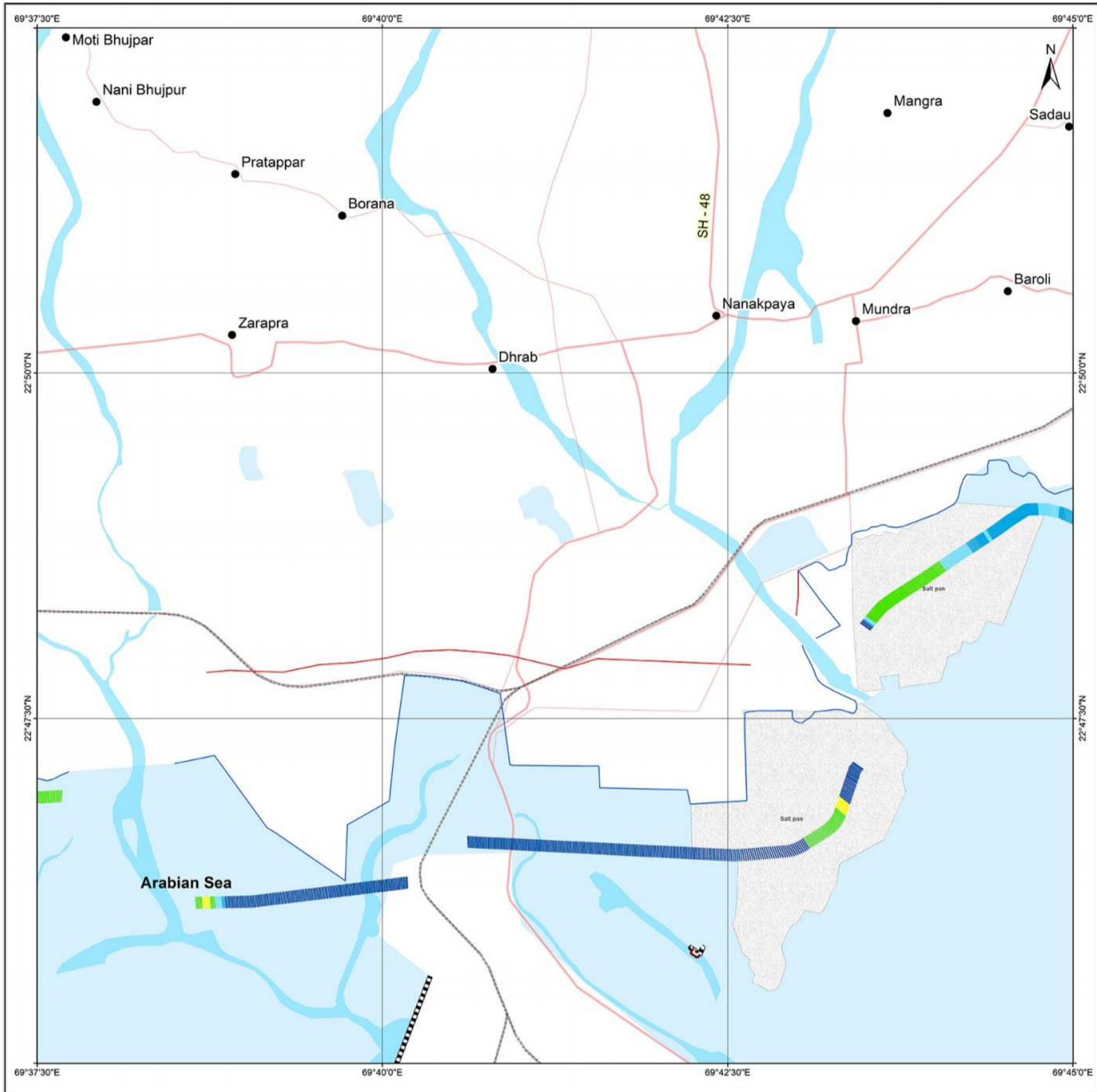
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41 F / 9 / SE
Map No. : NCCR/SCM/029



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 F / 9 / NW	41 F / 9 / NE	41 F / 13 / NW
41 F / 9 / SW	41 F / 9 / SE	41 F / 13 / SW
41 F / 10 / NW	41 F / 10 / NE	41 F / 14 / NW

Incidence on 1:50,000 Sheets

41 E / 8	41 E / 12	41 E / 16
41 F / 5	41 F / 9	41 F / 13
41 F / 6	41 F / 10	41 F / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/28/2017 & 04/03/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015 & 01/21/2015
LISS-IV	05/07/2014
LISS-IV	01/21/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

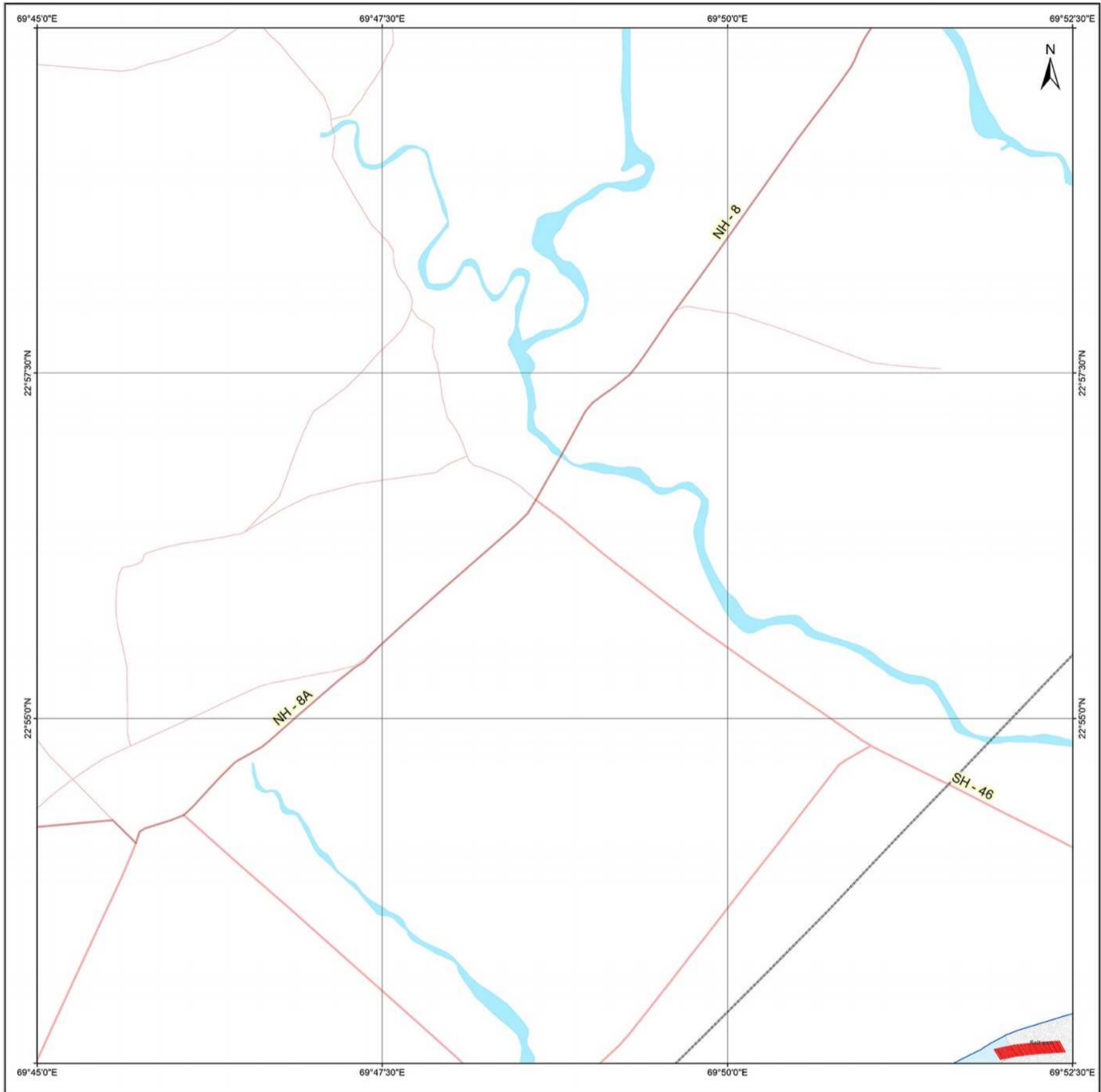
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SHORELINE CHANGE MAP GUJARAT

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41 F / 13 / NW
Map No. : NCCR/SCM/030



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

Index to sheets

41 E / 12 / SE	41 E / 16 / SW	41 E / 16 / SE
41 F / 9 / NE	41 F / 13 / NW	41 F / 13 / NE
41 F / 9 / SE	41 F / 13 / SW	41 F / 13 / SE

Incidence on 1:50,000 Sheets

41 E / 12	41 E / 16	41 I / 4
41 F / 9	41 F / 13	41 J / 1
41 F / 10	41 F / 14	41 J / 2

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

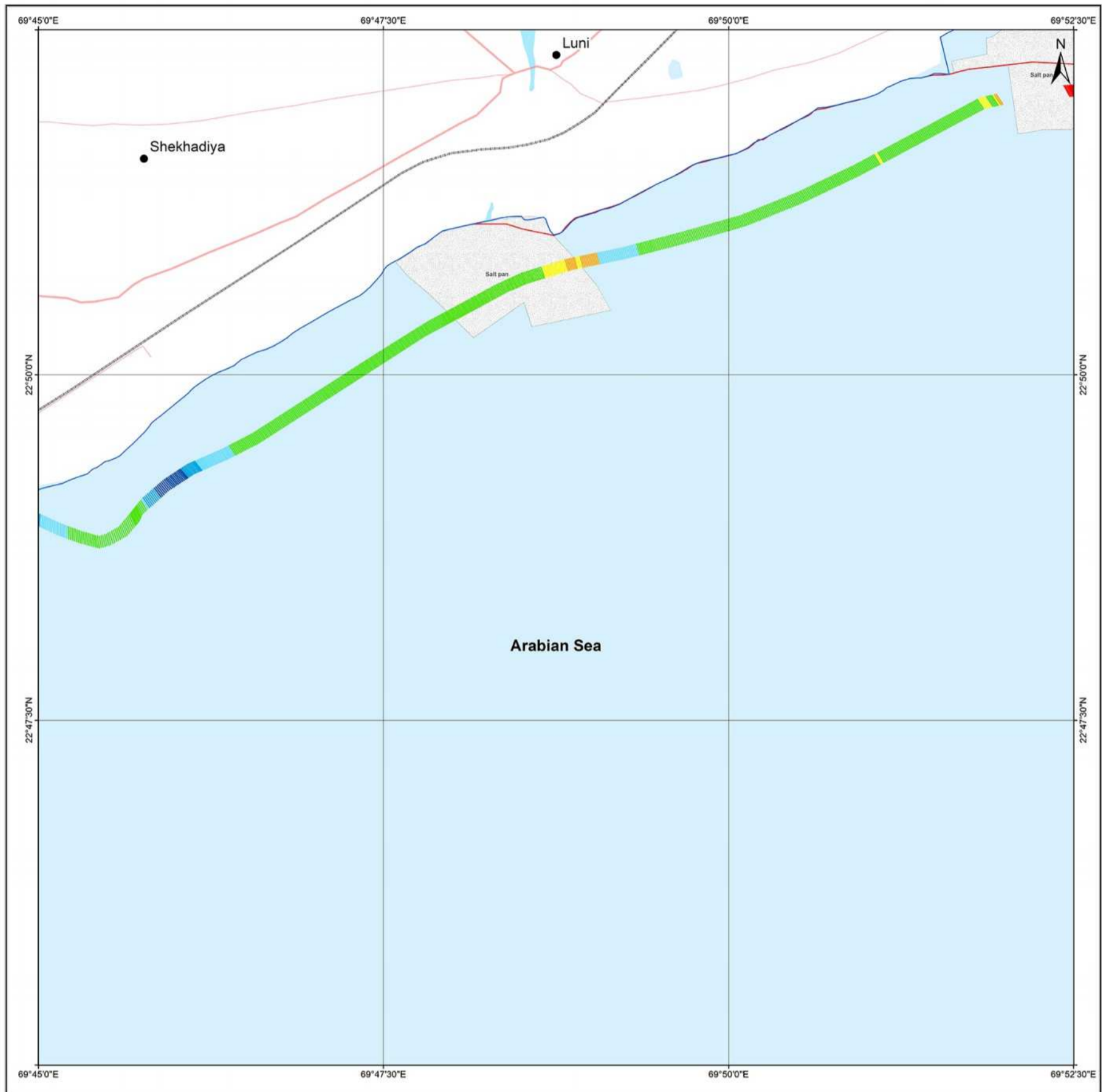
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/031



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 F / 9 / NE	41 F / 13 / NW	41 F / 13 / NE
41 F / 9 / SE	41 F / 13 / SW	41 F / 13 / SE
41 F / 10 / NE	41 F / 14 / NW	41 F / 14 / NE

Incidence on 1:50,000 Sheets

41 E / 12	41 E / 16	41 I / 4
41 F / 9	41 F / 13	41 J / 1
41 F / 10	41 F / 14	41 J / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

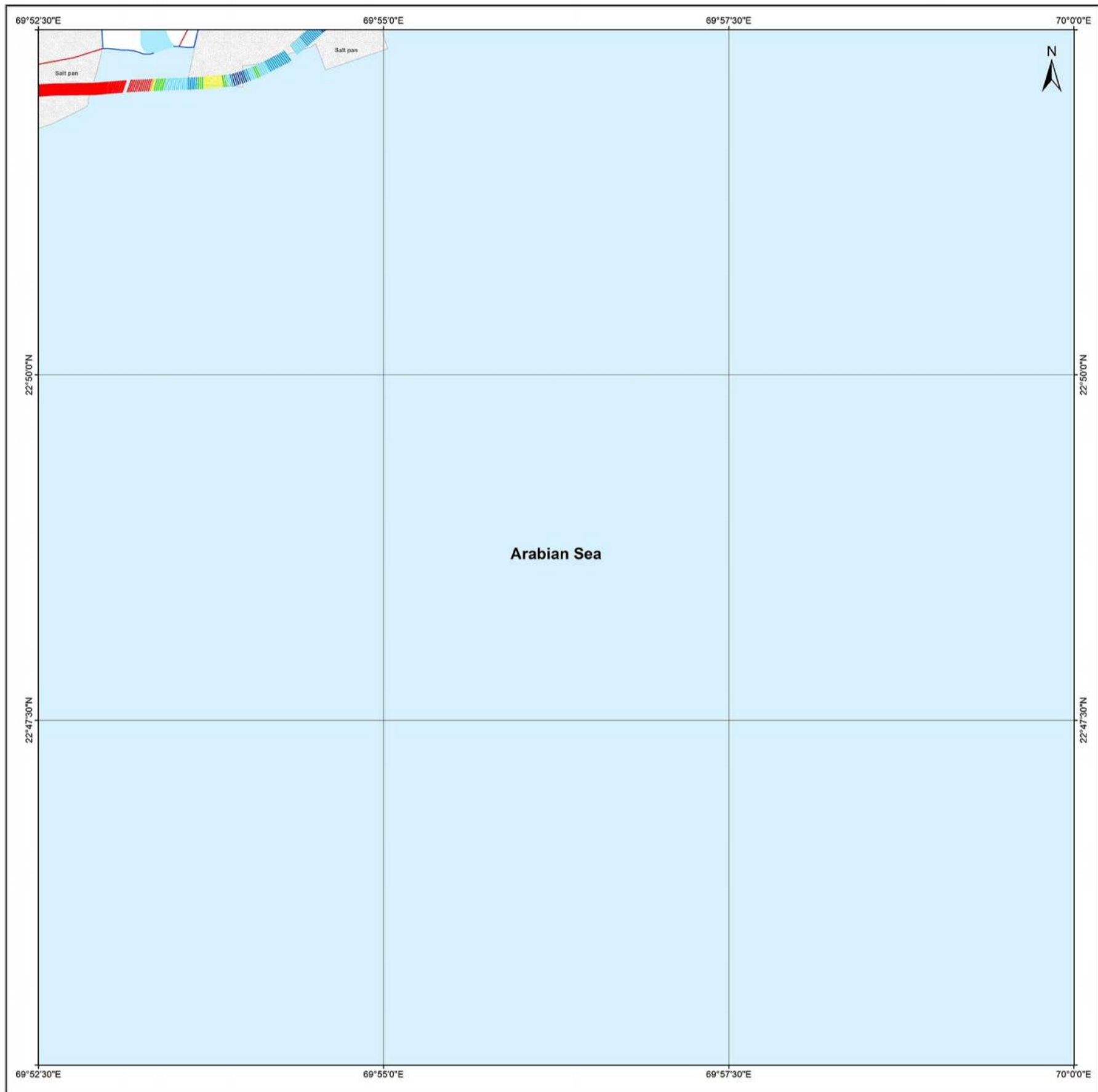
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SHORELINE CHANGE MAP GUJARAT

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41 F / 13 / SE
Map No. : NCCR/SCM/032



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

Index to sheets

41 F / 13 / NW	41 F / 13 / NE	41 J / 1 / NW
41 F / 13 / SW	41 F / 13 / SE	41 J / 1 / SW
41 F / 14 / NW	41 F / 14 / NE	41 J / 2 / NW

Incidence on 1:50,000 Sheets

41 E / 12	41 E / 16	41 I / 4
41 F / 9	41 F / 13	41 J / 1
41 F / 10	41 F / 14	41 J / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	04/10/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

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41 F / 13 / NE
Map No. : NCCR/SCM/033



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

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41 E / 16 / SW	41 E / 16 / SE	41 I / 4 / SW
41 F / 13 / NW	41 F / 13 / NE	41 J / 1 / NW
41 F / 13 / SW	41 F / 13 / SE	41 J / 1 / SW

Incidence on 1:50,000 Sheets

41 E / 12	41 E / 16	41 I / 4
41 F / 9	41 F / 13	41 J / 1
41 F / 10	41 F / 14	41 J / 2

Scale
1:25,000
1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

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LISS-IV	04/26/2017 & 03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	04/10/2000
	03/07/1990



- Settlements
- Port
- Harbour
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- State Highways
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- Railways
- Lakes
- Rivers

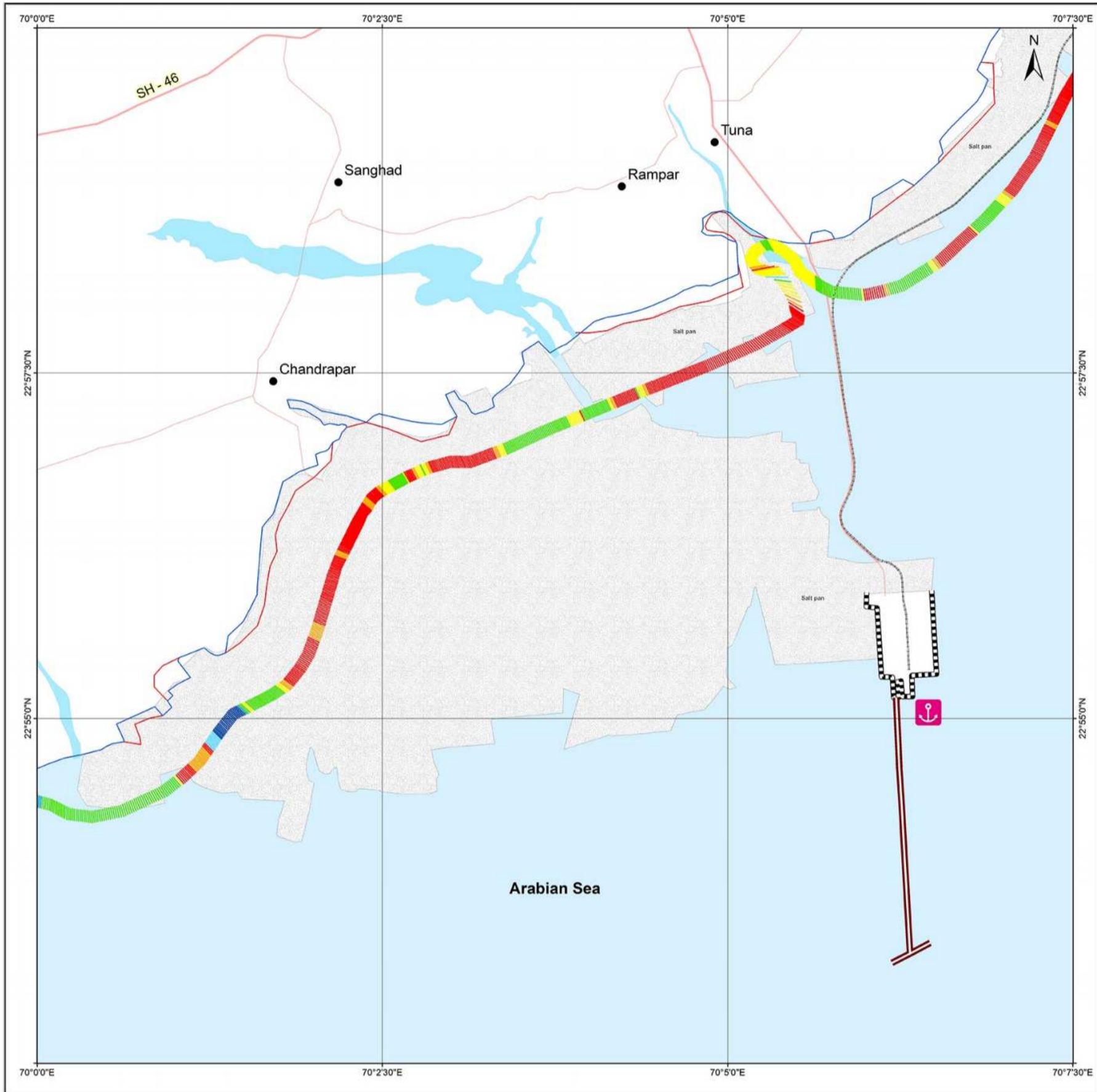
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41 J / 1 / NW
Map No. : NCCR/SCM/034



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

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41 E / 16 / SE	41 J / 4 / SW	41 I / 4 / SE
41 F / 13 / NE	41 J / 1 / NW	41 J / 1 / NE
41 F / 13 / SE	41 J / 1 / SW	41 J / 1 / SE

Incidence on 1:50,000 Sheets

41 E / 16	41 I / 4	41 I / 8
41 F / 13	41 J / 1	41 J / 5
41 F / 14	41 J / 2	41 J / 6

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

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LISS-IV	04/26/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/05/2000 & 04/10/2000
	03/07/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

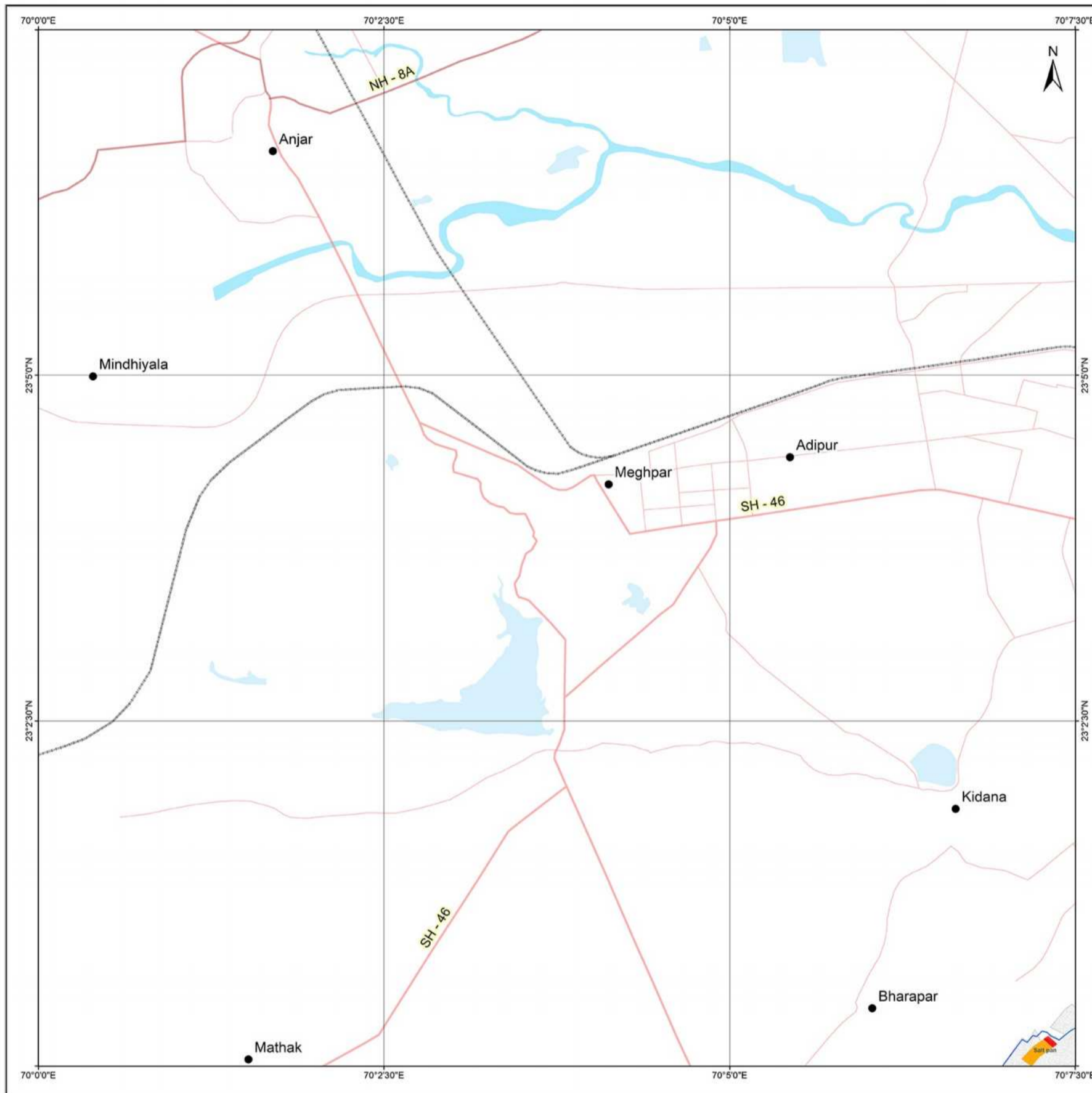
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SHORELINE CHANGE MAP GUJARAT

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41 I / 4 / SW
Map No. : NCCR/SCM/035



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 F / 13 / NE	41 J / 1 / NW	41 J / 1 / NE

Incidence on 1:50,000 Sheets

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41 E / 16	41 I / 4	41 I / 8
41 F / 13	41 J / 1	41 J / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	04/26/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

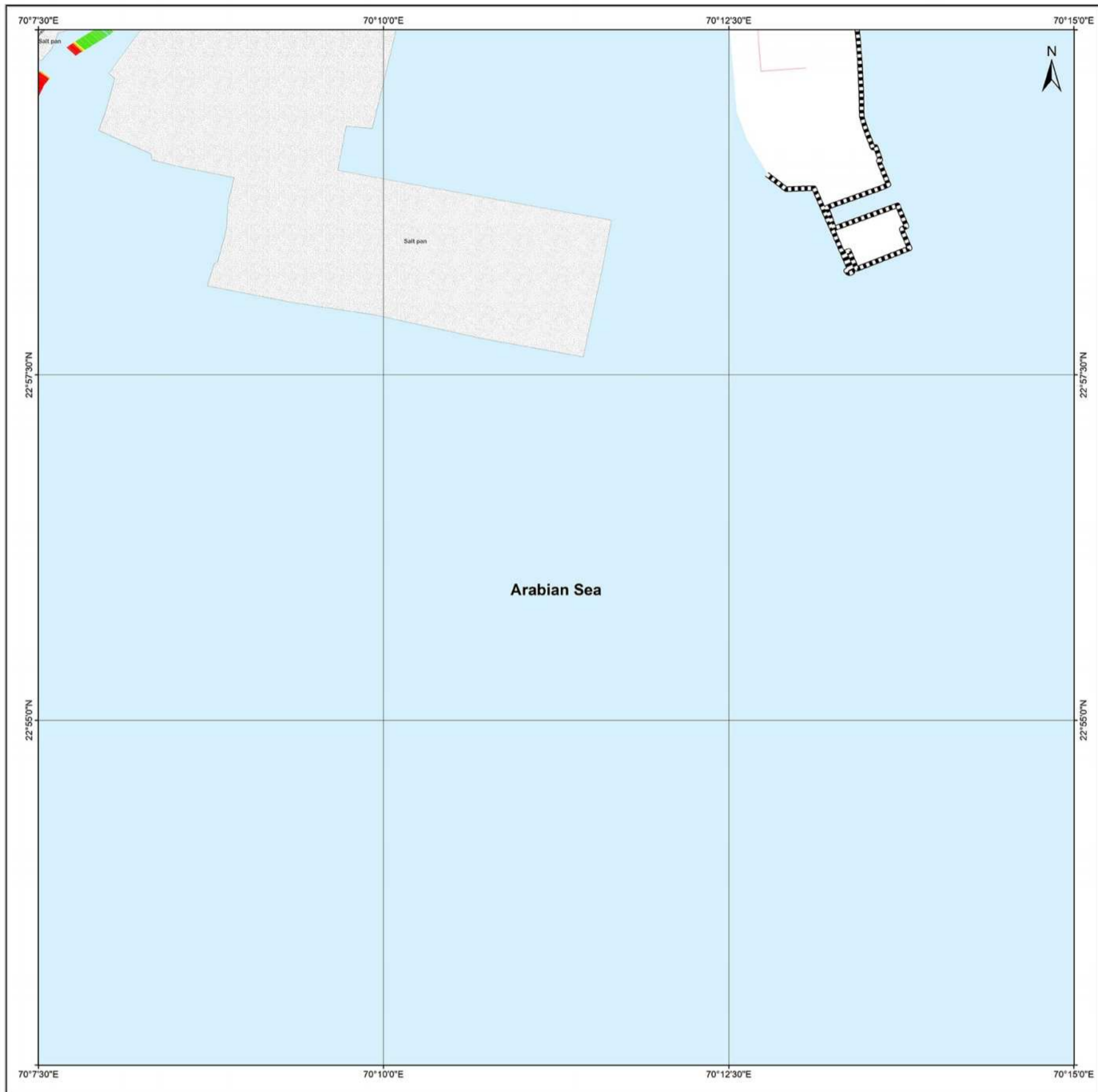
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SHORELINE CHANGE MAP GUJARAT

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41 J / 1 / NE
Map No. : NCCR/SCM/036



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 J / 1 / NW	41 J / 1 / NE	41 J / 5 / NW
41 J / 1 / SW	41 J / 1 / SE	41 J / 5 / SW

Incidence on 1:50,000 Sheets

41 E / 16	41 I / 4	41 I / 8
41 F / 13	41 J / 1	41 J / 5
41 F / 14	41 J / 2	41 J / 6

Scale
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1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

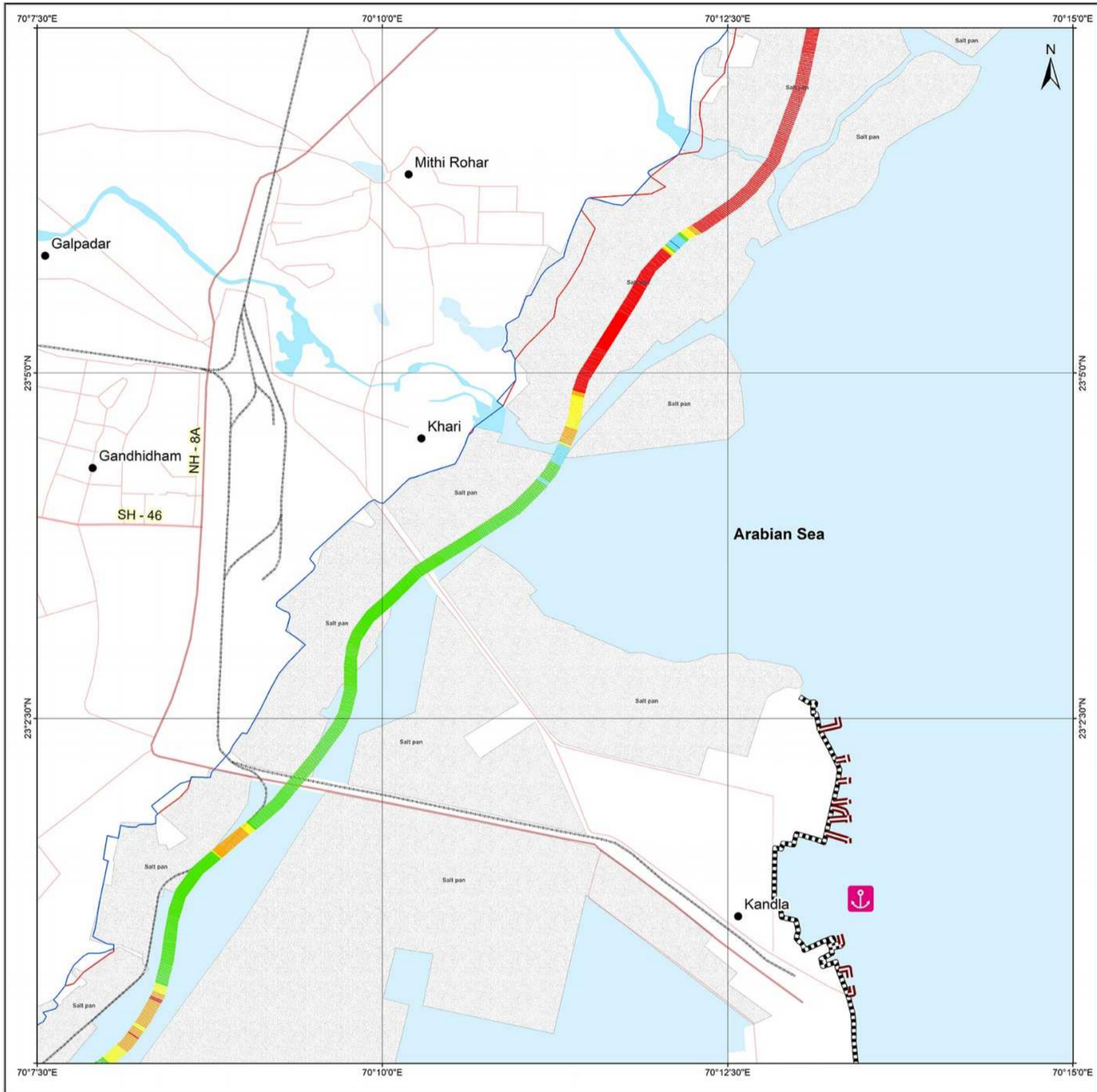
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SHORELINE CHANGE MAP GUJARAT

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41 I / 4 / SE
Map No. : NCCR/SCM/037



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

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41 I / 4 / SW	41 I / 4 / SE	41 I / 4 / SW
41 J / 5 / NW	41 J / 5 / NE	41 J / 5 / NW

Incidence on 1:50,000 Sheets

41 E / 15	41 I / 3	41 I / 7
41 E / 16	41 I / 4	41 I / 8
41 F / 13	41 J / 1	41 J / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	05/17/2012
PAN (Cartosat-1)	04/13/2008
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

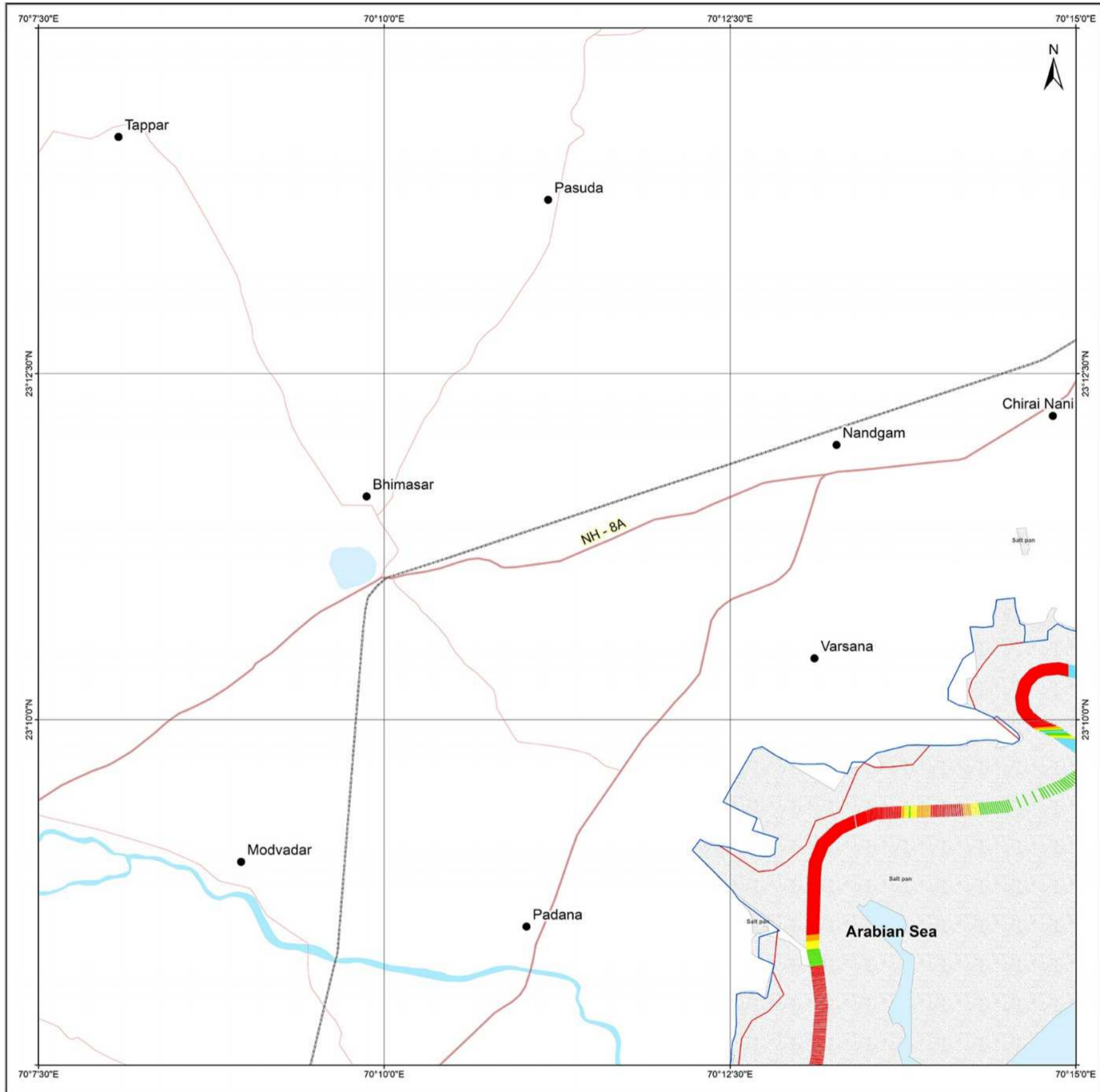
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SHORELINE CHANGE MAP GUJARAT

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41 I / 4 / NE
Map No. : NCCR/SCM/038



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/27/2018

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41 I / 4 / NW	41 I / 4 / NE	41 I / 8 / NW
41 I / 4 / SW	41 I / 4 / SE	41 I / 8 / SW

Incidence on 1:50,000 Sheets

41 E / 15	41 I / 3	41 I / 7
41 E / 16	41 I / 4	41 I / 8
41 F / 13	41 J / 1	41 J / 5

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

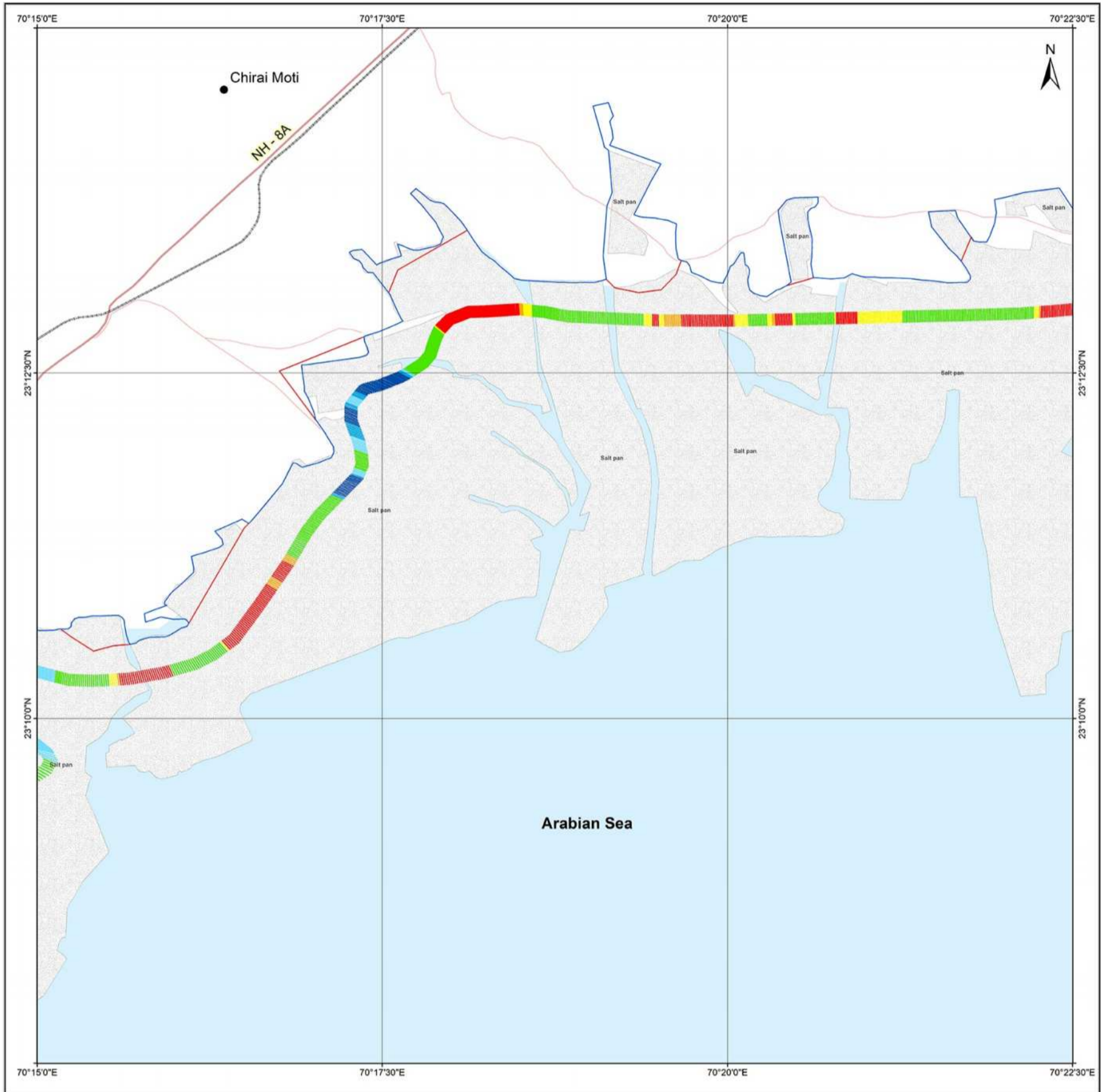
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41 I / 8 / NW
Map No. : NCCR/SCM/039



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018 & 02/27/2018

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Incidence on 1:50,000 Sheets

411/3	411/7	411/11
411/4	411/8	411/12
411/1	411/5	411/9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018 & 02/27/2018
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LISS-IV	04/07/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

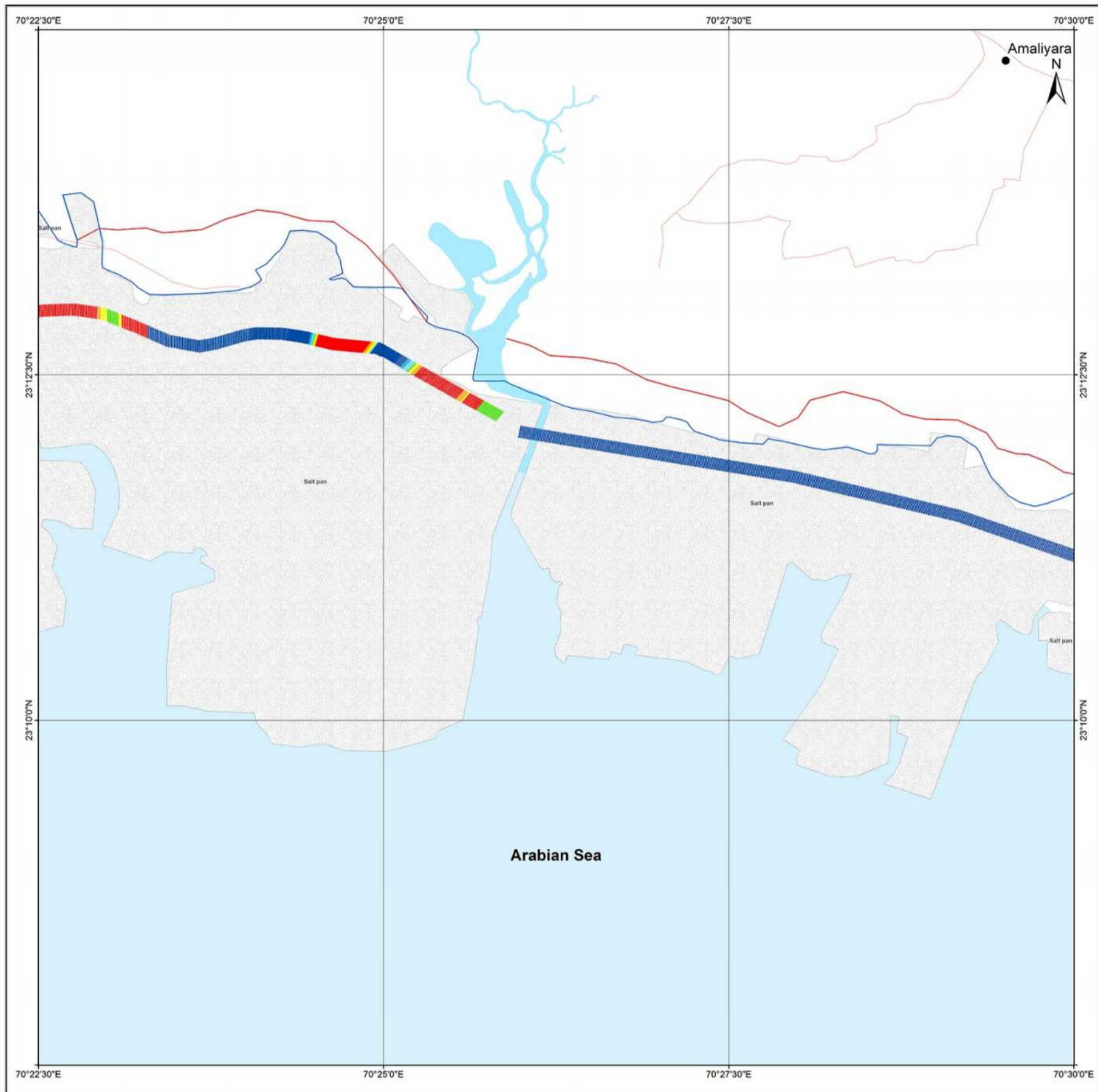
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Map No. : NCCR/SCM/040



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

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41 I / 8 / SW	41 I / 8 / SE	41 I / 12 / SW

Incidence on 1:50,000 Sheets

41 I / 3	41 I / 7	41 I / 11
41 I / 4	41 I / 8	41 I / 12
41 J / 1	41 J / 5	41 J / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/07/2015
LISS-IV	04/07/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

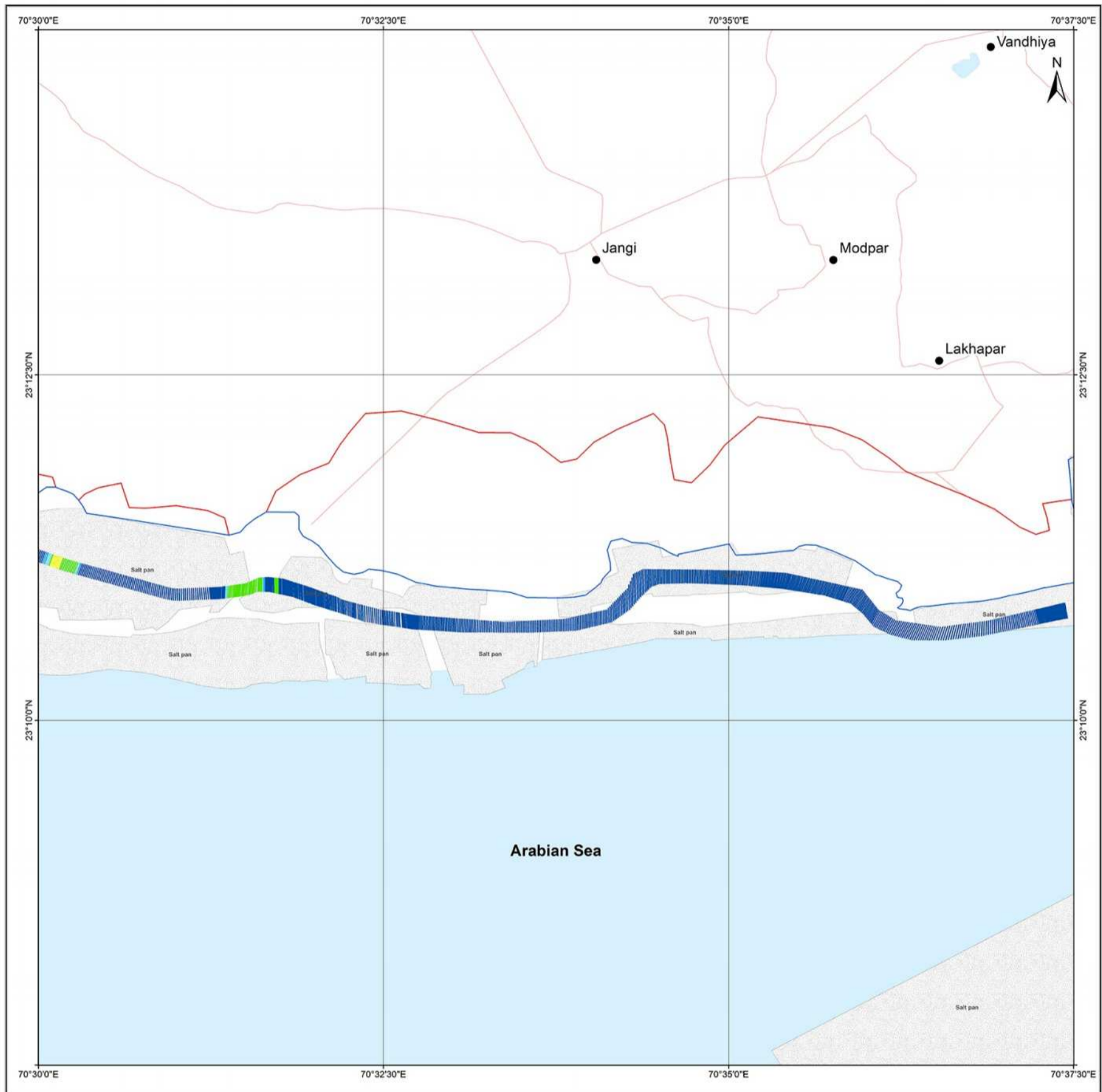
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Map No. : NCCR/SCM/041



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/08/2018

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Incidence on 1:50,000 Sheets

41 I / 7	41 I / 11	41 I / 15
41 I / 8	41 I / 12	41 I / 16
41 J / 5	41 J / 9	41 J / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/07/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

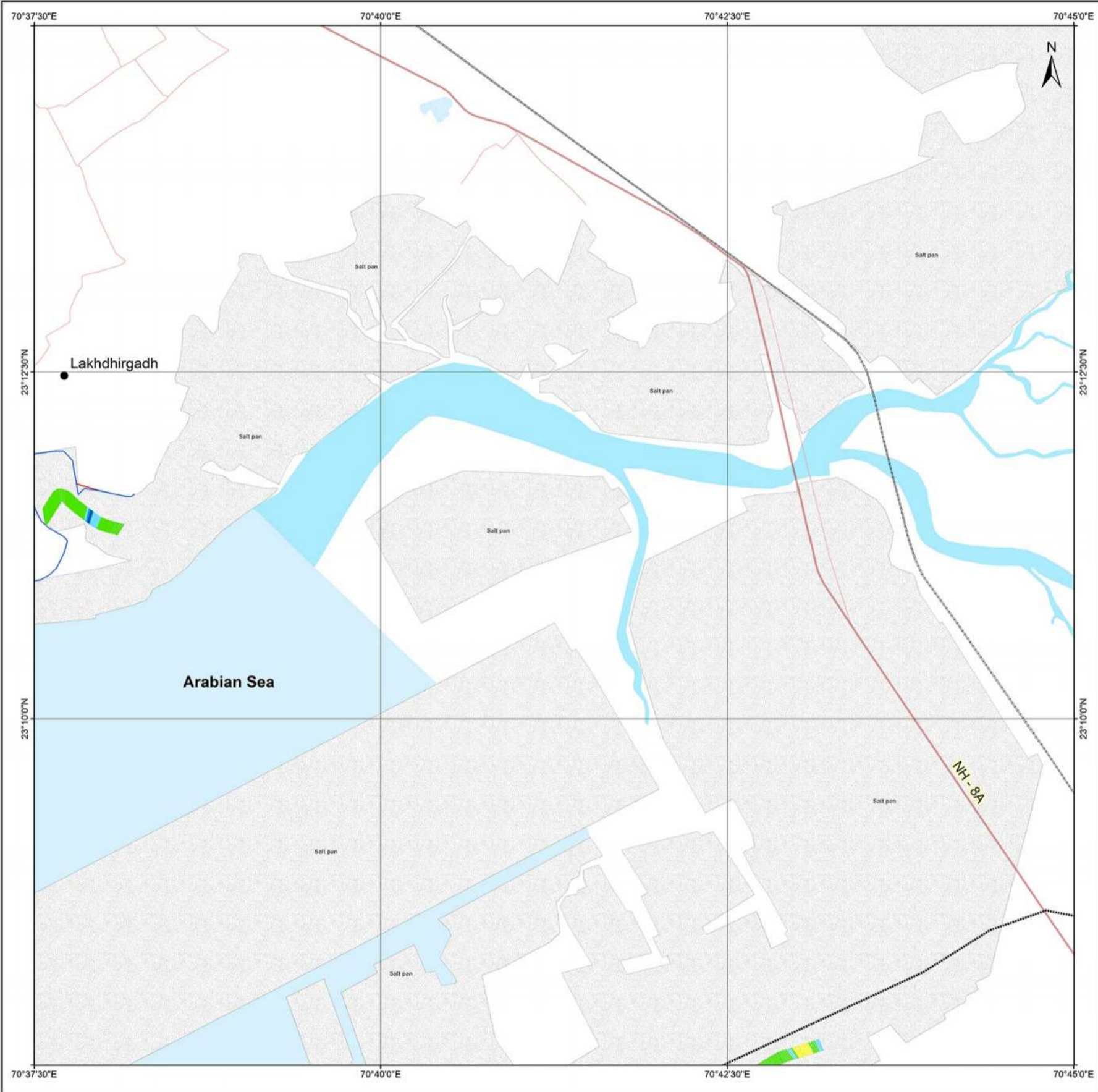
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Map No. : NCCR/SCM/042



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/08/2018

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41 I / 12 / NW	41 I / 12 / NE	41 I / 16 / NW
41 I / 12 / SW	41 I / 12 / SE	41 I / 16 / SW

Incidence on 1:50,000 Sheets

41 I / 7	41 I / 11	41 I / 15
41 I / 8	41 I / 12	41 I / 16
41 J / 5	41 J / 9	41 J / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/07/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/05/2000
	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

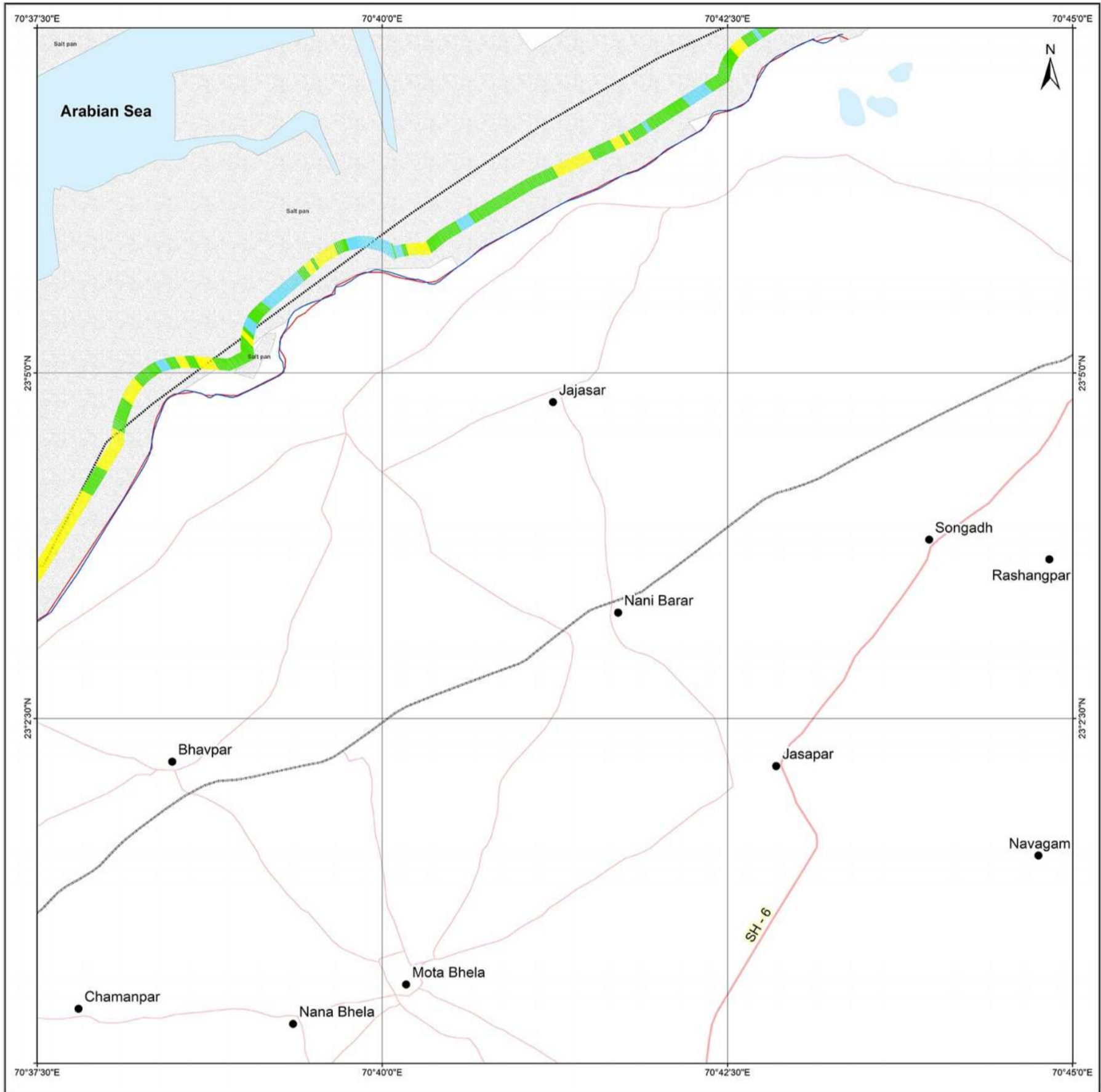
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Map No. : NCCR/SCM/043



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

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41 I / 12 / SW	41 I / 12 / SE	41 I / 16 / SW
41 J / 9 / NW	41 J / 9 / NE	41 J / 13 / NW

Incidence on 1:50,000 Sheets

41 I / 7	41 I / 11	41 I / 15
41 I / 8	41 I / 12	41 I / 16
41 J / 5	41 J / 9	41 J / 13

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

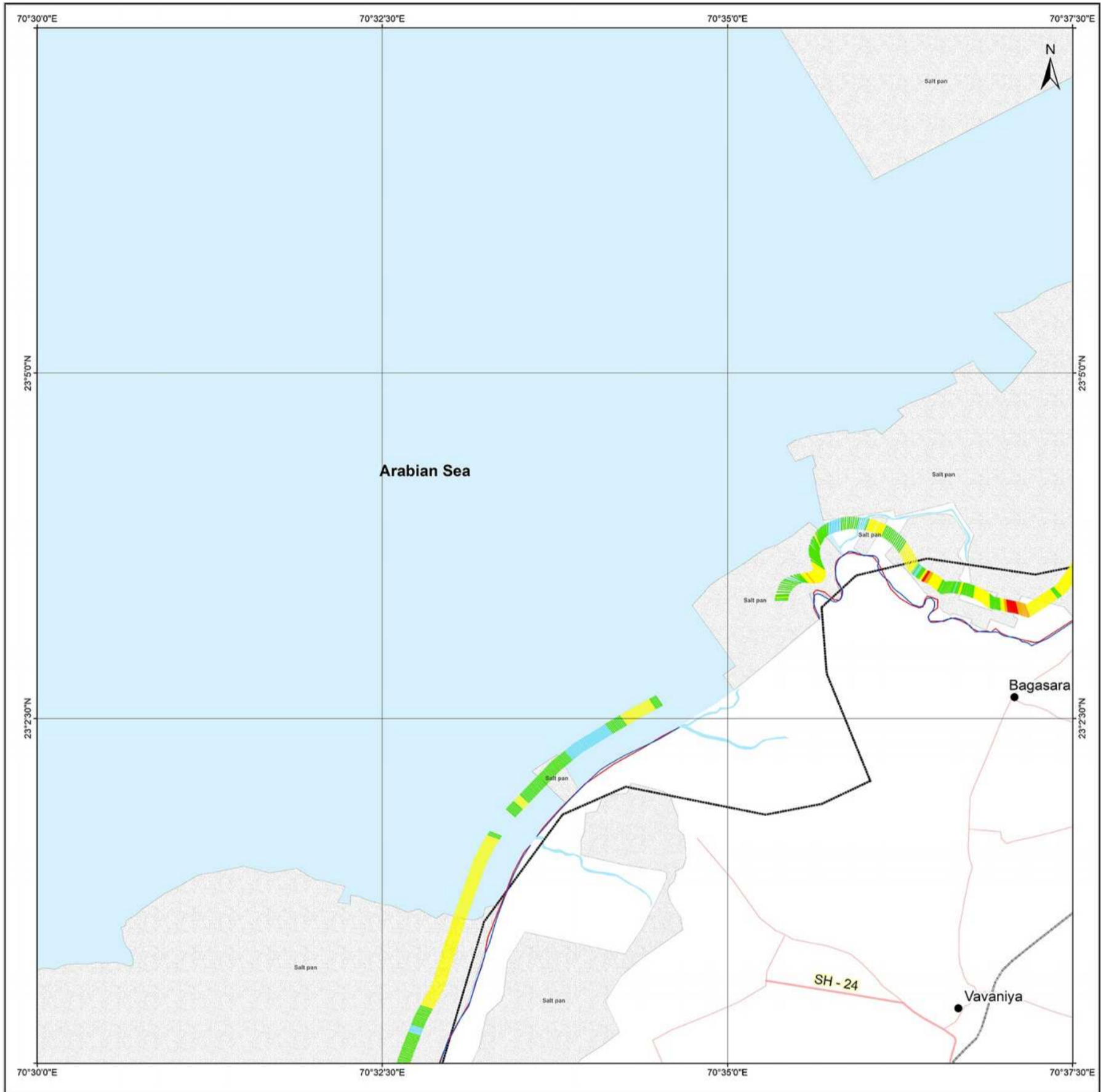
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SHORELINE CHANGE MAP GUJARAT

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Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

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41 I / 8 / SE	41 I / 12 / SW	41 I / 12 / SE
41 J / 5 / NE	41 J / 9 / NW	41 J / 9 / NE

Incidence on 1:50,000 Sheets

41 I / 7	41 I / 11	41 I / 15
41 I / 8	41 I / 12	41 I / 16
41 J / 5	41 J / 9	41 J / 13

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

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LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/05/2000
	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

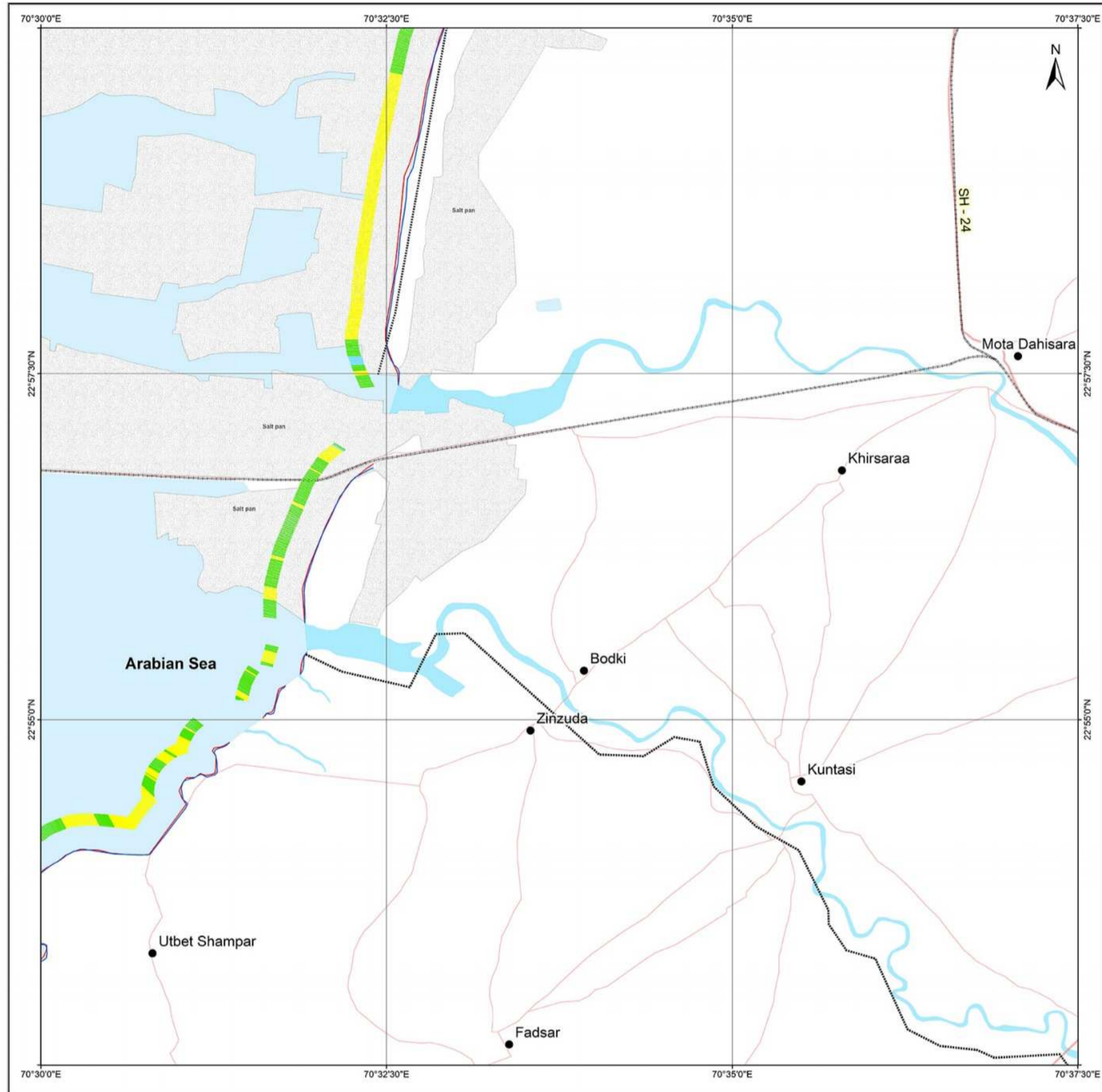
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41 J / 9 / NW
Map No. : NCCR/SCM/045



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

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41 J / 5 / NE	41 J / 9 / NW	41 J / 9 / NE
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Incidence on 1:50,000 Sheets

41 J / 8	41 J / 12	41 J / 16
41 J / 5	41 J / 9	41 J / 13
41 J / 6	41 J / 10	41 J / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

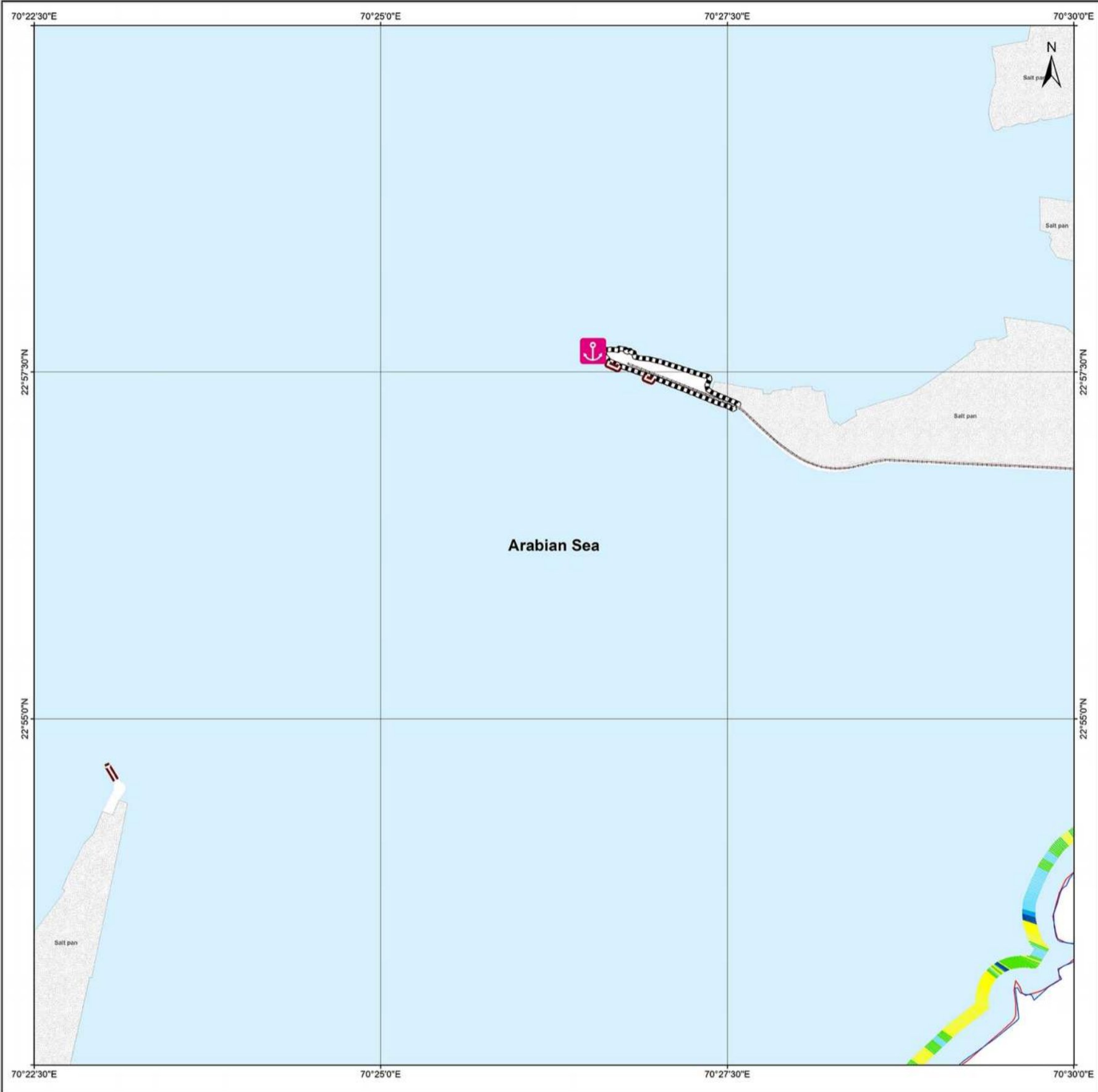
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SHORELINE CHANGE MAP GUJARAT

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41 J / 5 / NE
Map No. : NCCR/SCM/046



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/08/2018

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41 J / 5 / NW	41 J / 5 / NE	41 J / 9 / NW
41 J / 5 / SW	41 J / 5 / SE	41 J / 9 / SW

Incidence on 1:50,000 Sheets

41 J / 4	41 J / 8	41 J / 12
41 J / 1	41 J / 5	41 J / 9
41 J / 2	41 J / 6	41 J / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

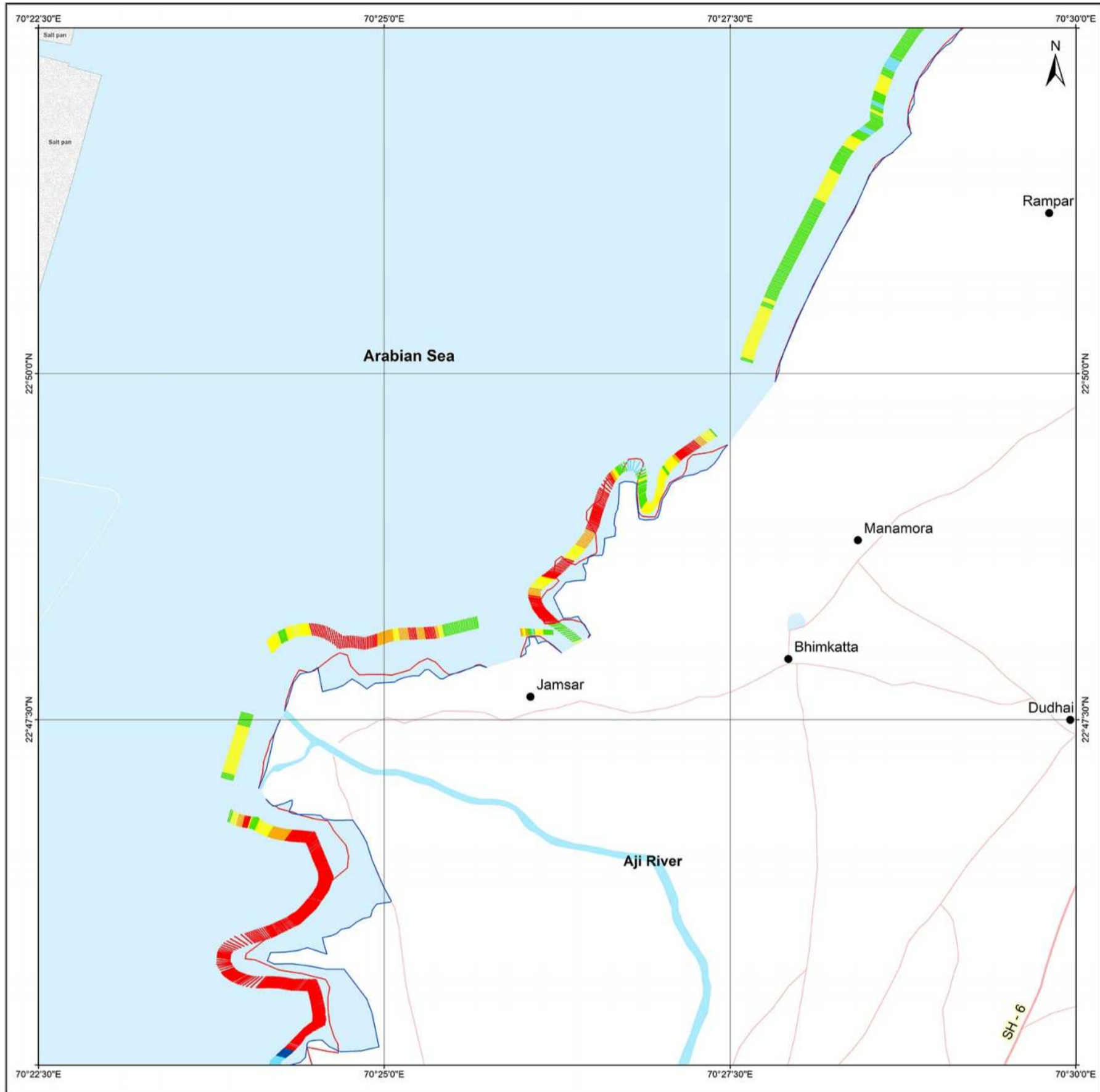
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1990 - 2018
JAMNAGAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 J / 5 / SE
Map No. : NCCR/SCM/047



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

Index to sheets

41 J / 5 / NW	41 J / 5 / NE	41 J / 9 / NW
41 J / 5 / SW	41 J / 5 / SE	41 J / 9 / SW
41 J / 6 / NW	41 J / 6 / NE	41 J / 10 / NW

Incidence on 1:50,000 Sheets

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41 J / 2	41 J / 6	41 J / 10

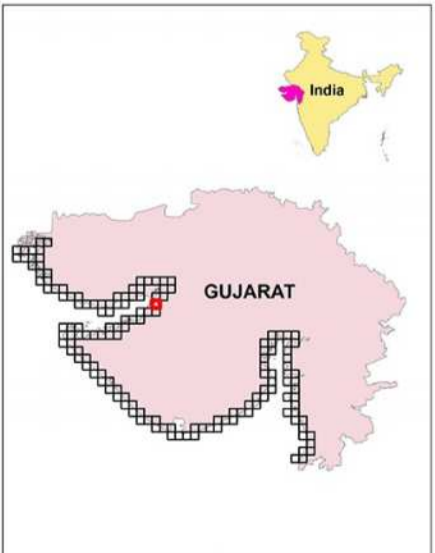
Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
LISS-IV	01/02/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	04/18/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

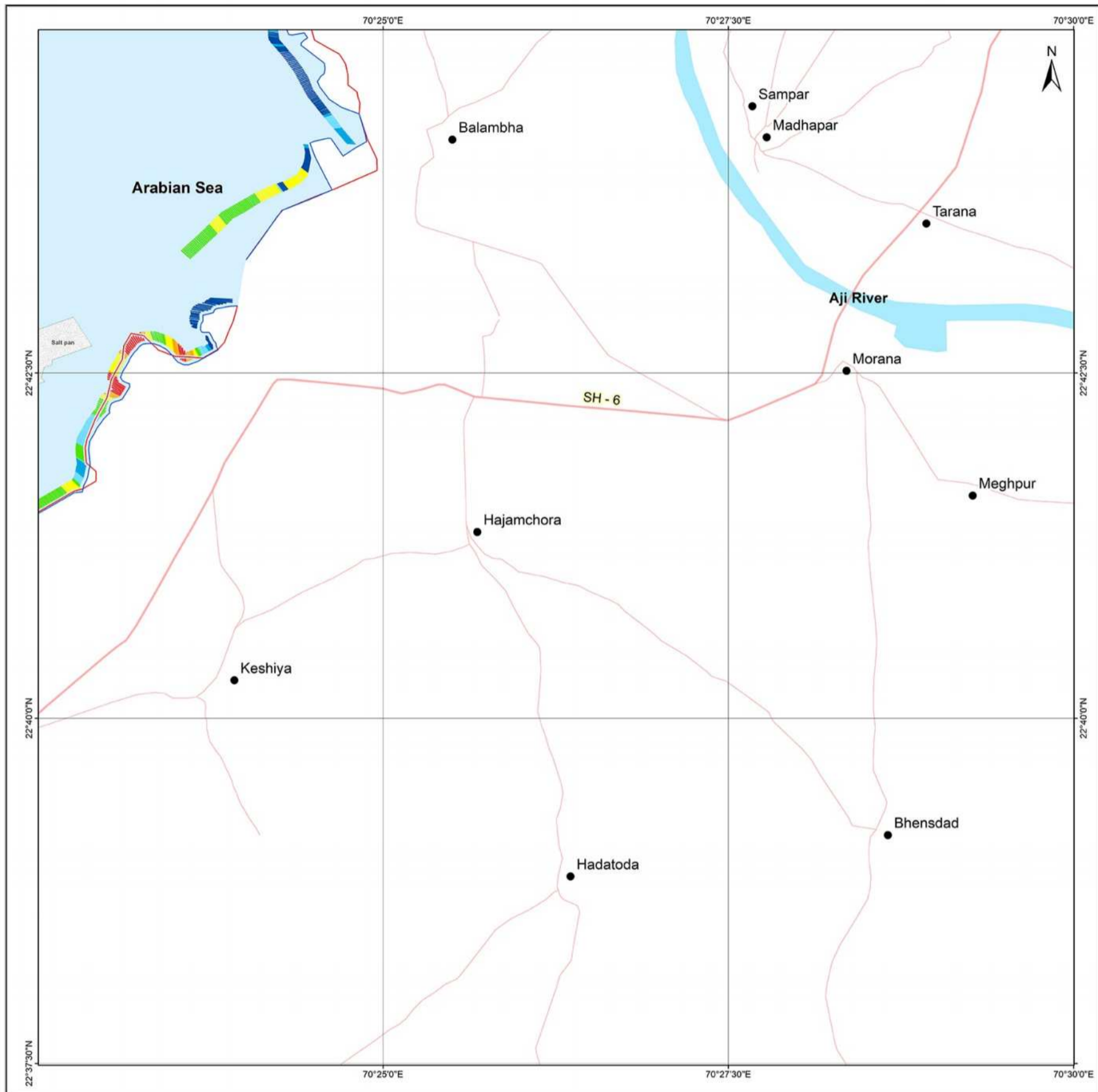
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 J / 6 / NE
Map No. : NCCR/SCM/048



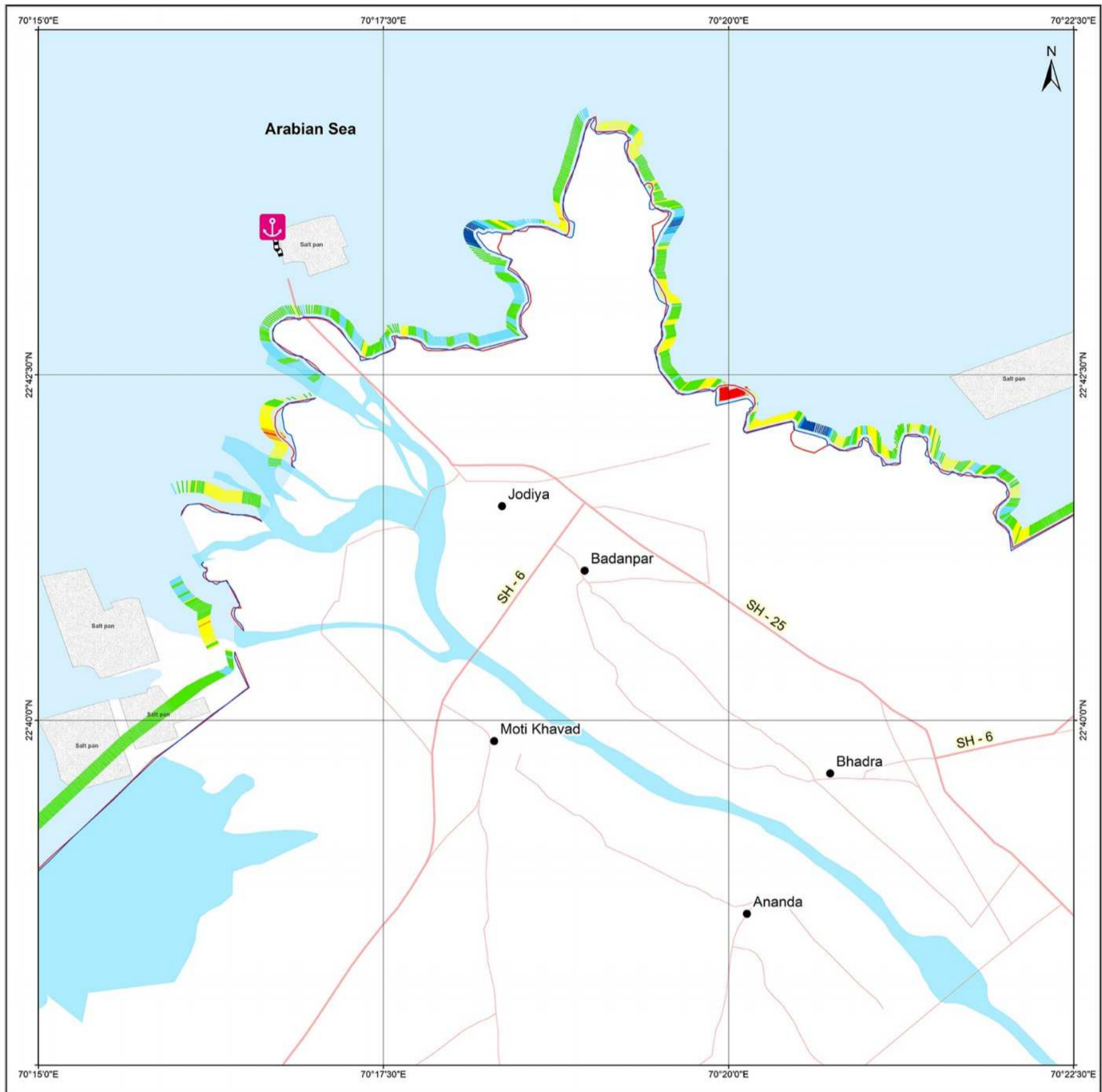
<p>Shoreline Change Trend for Period 1990 - 2018</p> <ul style="list-style-type: none"> — High Erosion — Moderate Erosion — Low Erosion — Stable Coast — Low Accretion — Moderate Accretion — High Accretion <p>Shoreline date</p> <ul style="list-style-type: none"> — 03/07/1990 — 02/08/2018 	<p>Index to sheets</p> <table border="1"> <tr> <td>41 J / 5 / SW</td> <td>41 J / 5 / SE</td> <td>41 J / 9 / SW</td> </tr> <tr> <td>41 J / 6 / NW</td> <td style="background-color: #cccccc;">41 J / 6 / NE</td> <td>41 J / 10 / NW</td> </tr> <tr> <td>41 J / 6 / SW</td> <td>41 J / 6 / SE</td> <td>41 J / 10 / SW</td> </tr> </table> <p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>41 J / 1</td> <td>41 J / 5</td> <td>41 J / 9</td> </tr> <tr> <td>41 J / 2</td> <td style="background-color: #cccccc;">41 J / 6</td> <td>41 J / 10</td> </tr> <tr> <td>41 J / 3</td> <td>41 J / 7</td> <td>41 J / 11</td> </tr> </table>	41 J / 5 / SW	41 J / 5 / SE	41 J / 9 / SW	41 J / 6 / NW	41 J / 6 / NE	41 J / 10 / NW	41 J / 6 / SW	41 J / 6 / SE	41 J / 10 / SW	41 J / 1	41 J / 5	41 J / 9	41 J / 2	41 J / 6	41 J / 10	41 J / 3	41 J / 7	41 J / 11	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 42</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p> <p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>02/08/2018</td> </tr> <tr> <td>LISS-IV</td> <td>04/26/2017</td> </tr> <tr> <td>LISS-IV</td> <td>04/07/2016</td> </tr> <tr> <td>LISS-IV</td> <td>05/07/2015</td> </tr> <tr> <td>LISS-IV</td> <td>04/18/2014</td> </tr> <tr> <td>LISS-IV</td> <td>04/18/2013</td> </tr> <tr> <td>LISS-IV</td> <td>03/11/2012</td> </tr> <tr> <td>LISS-III</td> <td>05/02/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>-</td> </tr> <tr> <td>ETM+</td> <td>05/21/2000</td> </tr> <tr> <td>TM</td> <td>03/07/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	02/08/2018	LISS-IV	04/26/2017	LISS-IV	04/07/2016	LISS-IV	05/07/2015	LISS-IV	04/18/2014	LISS-IV	04/18/2013	LISS-IV	03/11/2012	LISS-III	05/02/2008	PAN (Cartosat-1)	-	ETM+	05/21/2000	TM	03/07/1990		<ul style="list-style-type: none"> ● Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers
41 J / 5 / SW	41 J / 5 / SE	41 J / 9 / SW																																												
41 J / 6 / NW	41 J / 6 / NE	41 J / 10 / NW																																												
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1990 - 2018
JAMNAGAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 J / 6 / NW
Map No. : NCCR/SCM/049



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

Index to sheets

41 J / 1 / SE	41 J / 5 / SW	41 J / 5 / SE
41 J / 2 / NE	41 J / 6 / NW	41 J / 6 / NE
41 J / 2 / SE	41 J / 6 / SW	41 J / 6 / SE

Incidence on 1:50,000 Sheets

41 J / 1	41 J / 5	41 J / 9
41 J / 2	41 J / 6	41 J / 10
41 J / 3	41 J / 7	41 J / 11

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
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LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	04/18/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

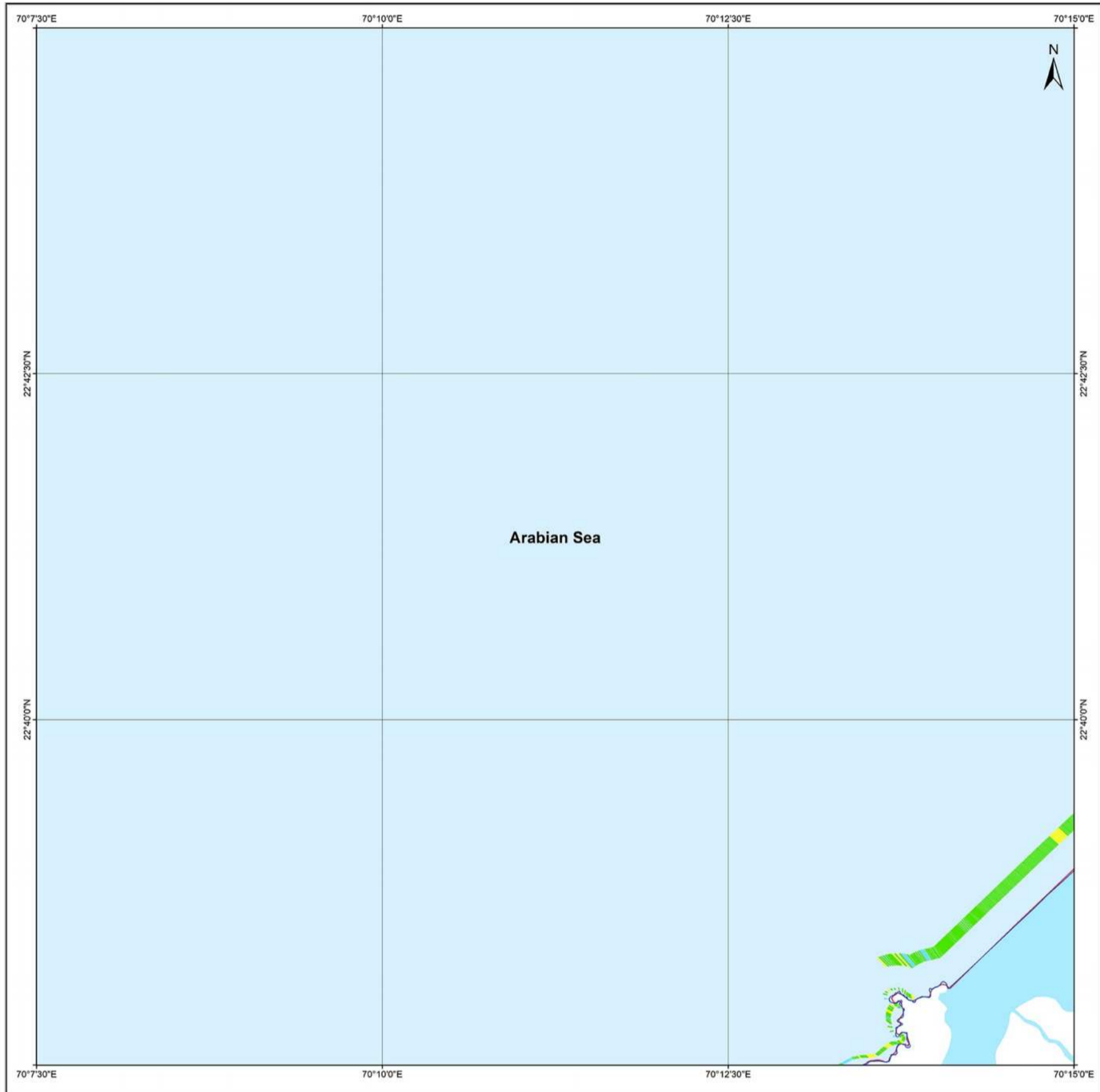
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 J / 2 / NE
Map No. : NCCR/SCM/050



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/07/1990
- █ 02/08/2018

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41 J / 1 / SW	41 J / 1 / SE	41 J / 5 / SW
41 J / 2 / NW	41 J / 2 / NE	41 J / 5 / NW
41 J / 2 / SW	41 J / 2 / SE	41 J / 5 / SW

Incidence on 1:50,000 Sheets

41 F / 13	41 J / 1	41 J / 5
41 F / 14	41 J / 2	41 J / 6
41 F / 15	41 J / 3	41 J / 7

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
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LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

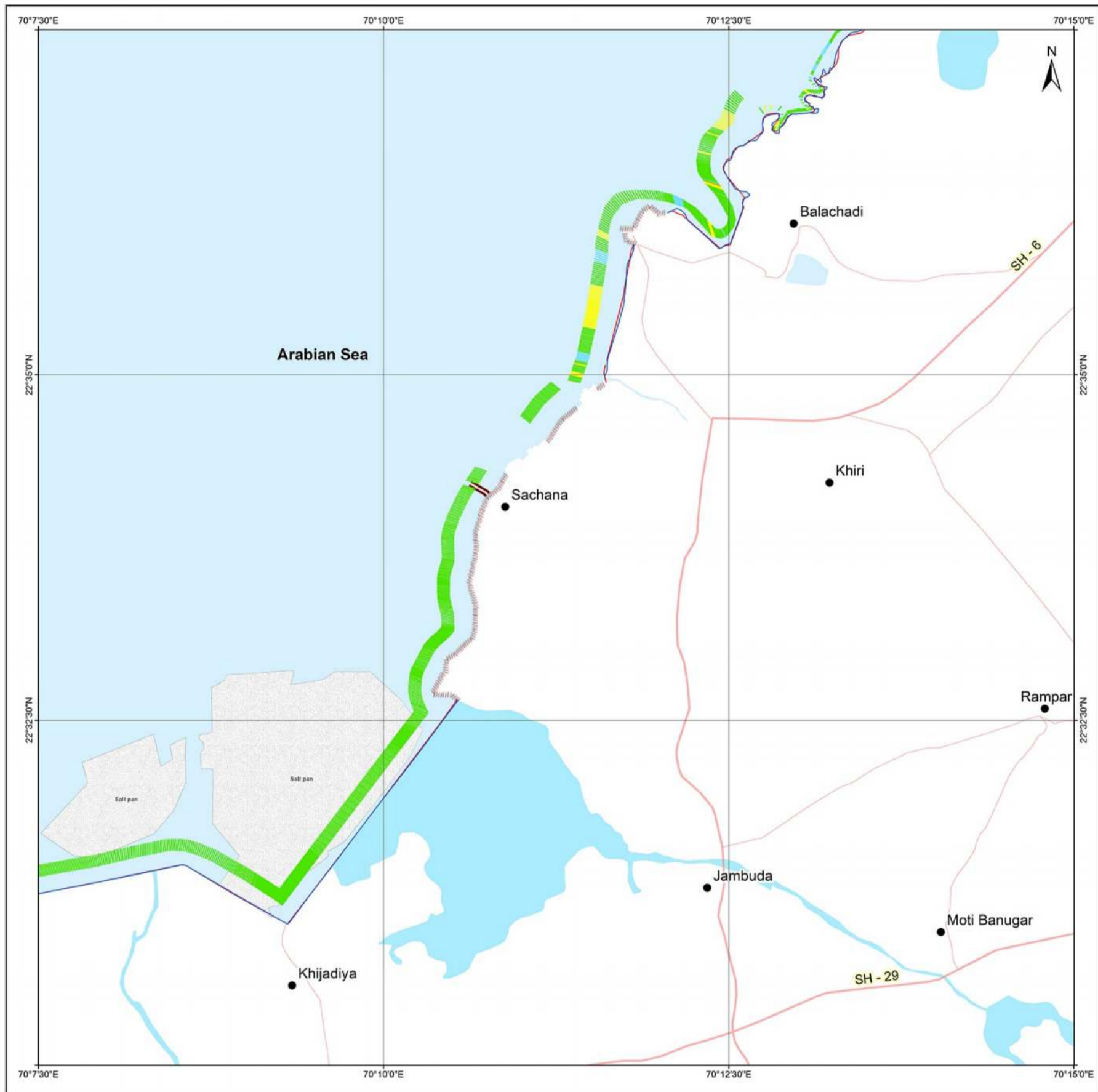
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 J / 2 / SE
Map No. : NCCR/SCM/051



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018 & 02/08/2018

Index to sheets

41 J / 2 / NW	41 J / 2 / NE	41 J / 3 / NW
41 J / 2 / SW	41 J / 2 / SE	41 J / 3 / SW
41 J / 3 / NW	41 J / 3 / NE	41 J / 3 / NW

Incidence on 1:50,000 Sheets

41 F / 13	41 J / 1	41 J / 5
41 F / 14	41 J / 2	41 J / 6
41 F / 15	41 J / 3	41 J / 7

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018 & 02/08/2018
LISS-IV	04/26/2017
LISS-IV	01/02/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/05/2000
TM	03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

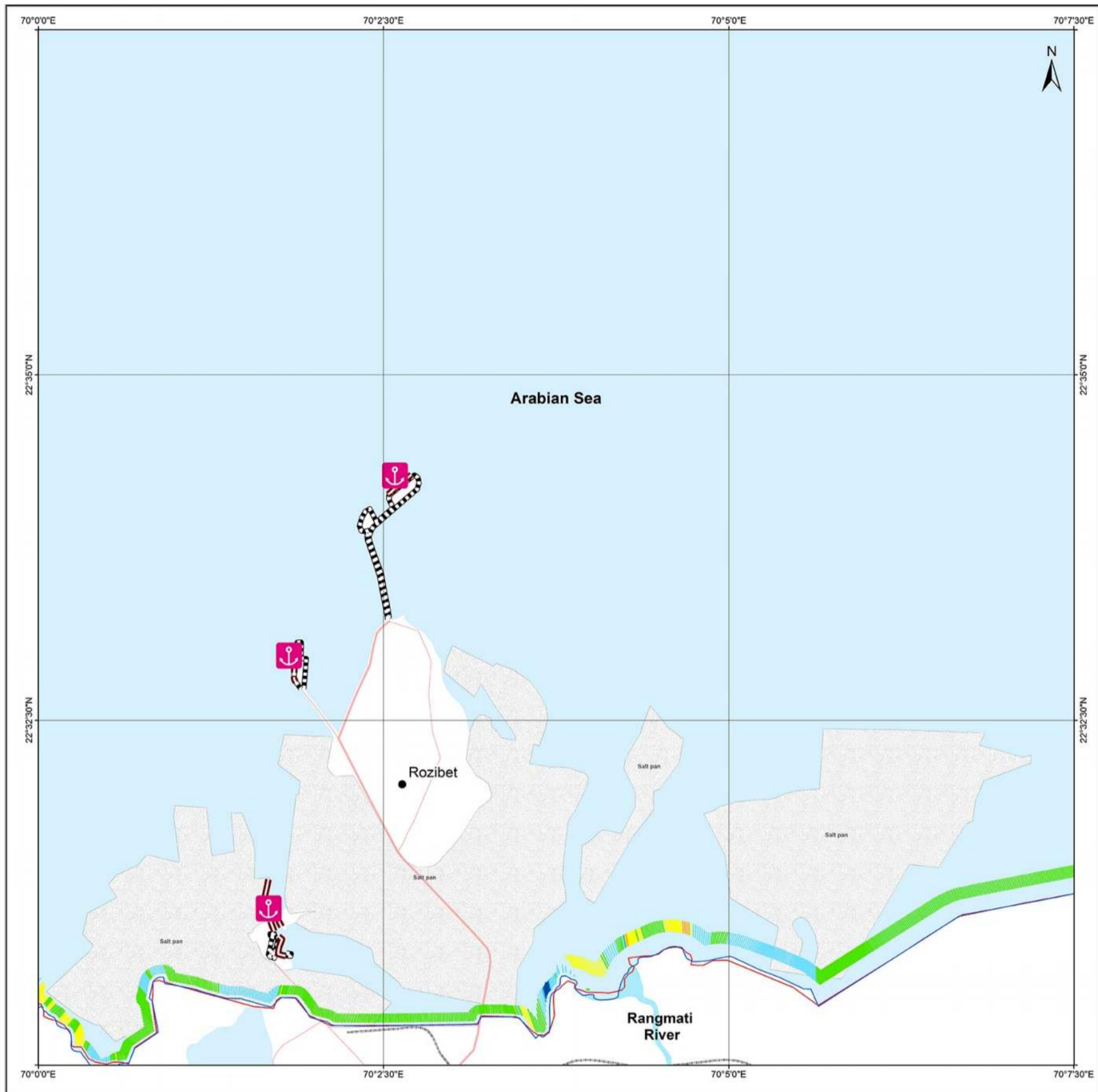
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SHORELINE CHANGE MAP GUJARAT

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41 J / 2 / SW
Map No. : NCCR/SCM/052



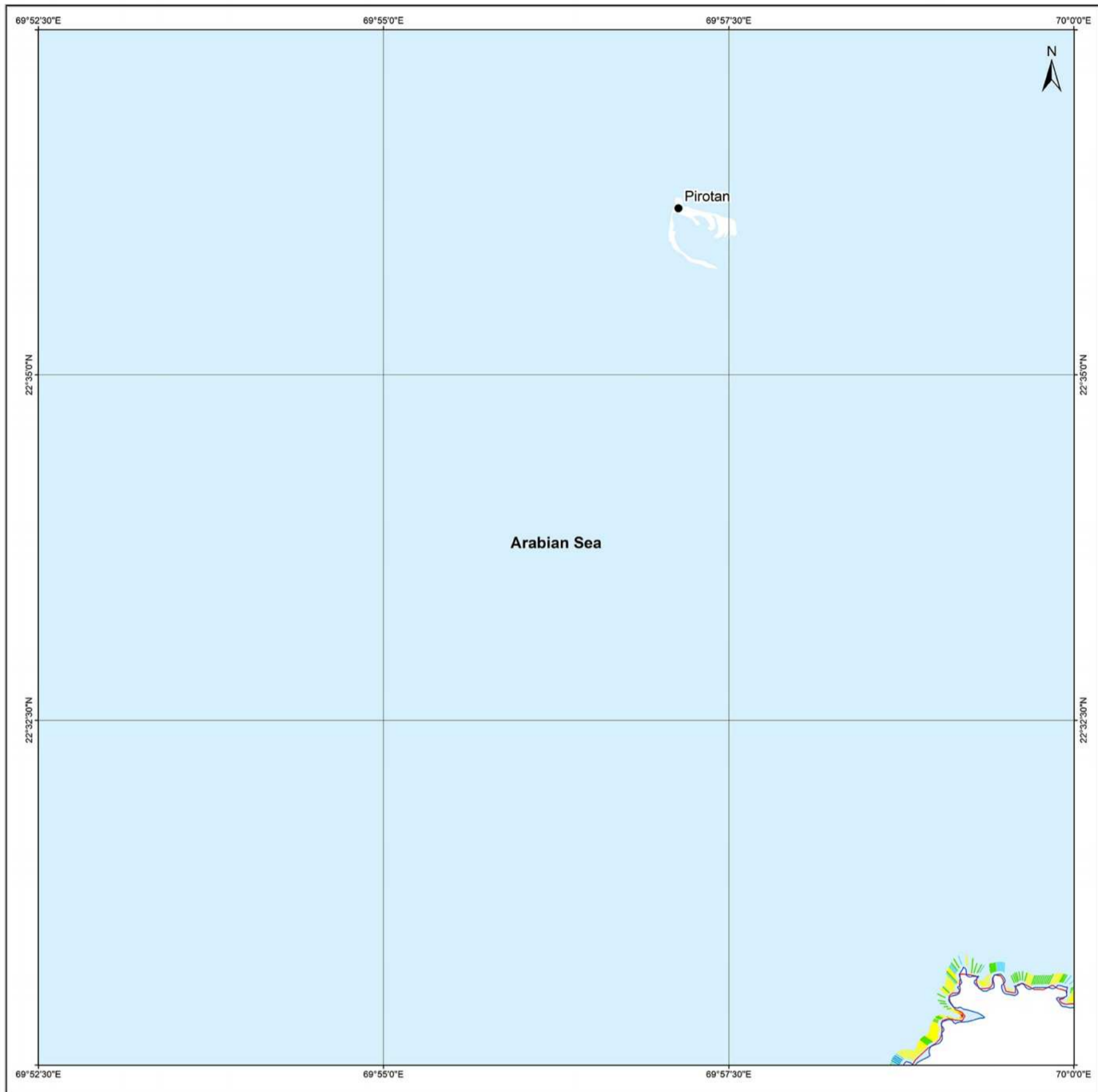
<p>Shoreline Change Trend for Period 1990 - 2018</p> <ul style="list-style-type: none"> High Erosion Moderate Erosion Low Erosion Stable Coast Low Accretion Moderate Accretion High Accretion 	<p>Index to sheets</p> <table border="1"> <tr> <td>41 F / 14 / NE</td> <td>41 J / 2 / NW</td> <td>41 J / 2 / NE</td> </tr> <tr> <td>41 F / 14 / SE</td> <td>41 J / 2 / SW</td> <td>41 J / 2 / SE</td> </tr> <tr> <td>41 F / 15 / NE</td> <td>41 J / 3 / NW</td> <td>41 J / 3 / NE</td> </tr> </table> <p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>41 F / 13</td> <td>41 J / 1</td> <td>41 J / 5</td> </tr> <tr> <td>41 F / 14</td> <td>41 J / 2</td> <td>41 J / 6</td> </tr> <tr> <td>41 F / 15</td> <td>41 J / 3</td> <td>41 J / 7</td> </tr> </table>	41 F / 14 / NE	41 J / 2 / NW	41 J / 2 / NE	41 F / 14 / SE	41 J / 2 / SW	41 J / 2 / SE	41 F / 15 / NE	41 J / 3 / NW	41 J / 3 / NE	41 F / 13	41 J / 1	41 J / 5	41 F / 14	41 J / 2	41 J / 6	41 F / 15	41 J / 3	41 J / 7	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 42</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p> <p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>02/27/2018</td> </tr> <tr> <td>LISS-IV</td> <td>04/26/2017</td> </tr> <tr> <td>LISS-IV</td> <td>01/02/2016</td> </tr> <tr> <td>LISS-IV</td> <td>05/07/2015</td> </tr> <tr> <td>LISS-IV</td> <td>04/18/2014</td> </tr> <tr> <td>LISS-IV</td> <td>04/18/2013</td> </tr> <tr> <td>LISS-IV</td> <td>05/17/2012</td> </tr> <tr> <td>LISS-III</td> <td>04/13/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>-</td> </tr> <tr> <td>ETM+ TM</td> <td>05/21/2000 & 05/05/2000</td> </tr> <tr> <td></td> <td>03/07/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	02/27/2018	LISS-IV	04/26/2017	LISS-IV	01/02/2016	LISS-IV	05/07/2015	LISS-IV	04/18/2014	LISS-IV	04/18/2013	LISS-IV	05/17/2012	LISS-III	04/13/2008	PAN (Cartosat-1)	-	ETM+ TM	05/21/2000 & 05/05/2000		03/07/1990		<ul style="list-style-type: none"> Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers
41 F / 14 / NE	41 J / 2 / NW	41 J / 2 / NE																																												
41 F / 14 / SE	41 J / 2 / SW	41 J / 2 / SE																																												
41 F / 15 / NE	41 J / 3 / NW	41 J / 3 / NE																																												
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1990 - 2018
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SHORELINE CHANGE MAP GUJARAT

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41 F / 14 / SE
Map No. : NCCR/SCM/053



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/07/1990
- 02/27/2018

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41 F / 14 / NW	41 F / 14 / NE	41 J / 2 / NW
41 F / 14 / SW	41 F / 14 / SE	41 J / 2 / SW
41 F / 15 / NW	41 F / 15 / NE	41 J / 3 / NW

Incidence on 1:50,000 Sheets

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41 F / 10	41 F / 14	41 J / 2
41 F / 11	41 F / 15	41 J / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
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LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	03/07/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

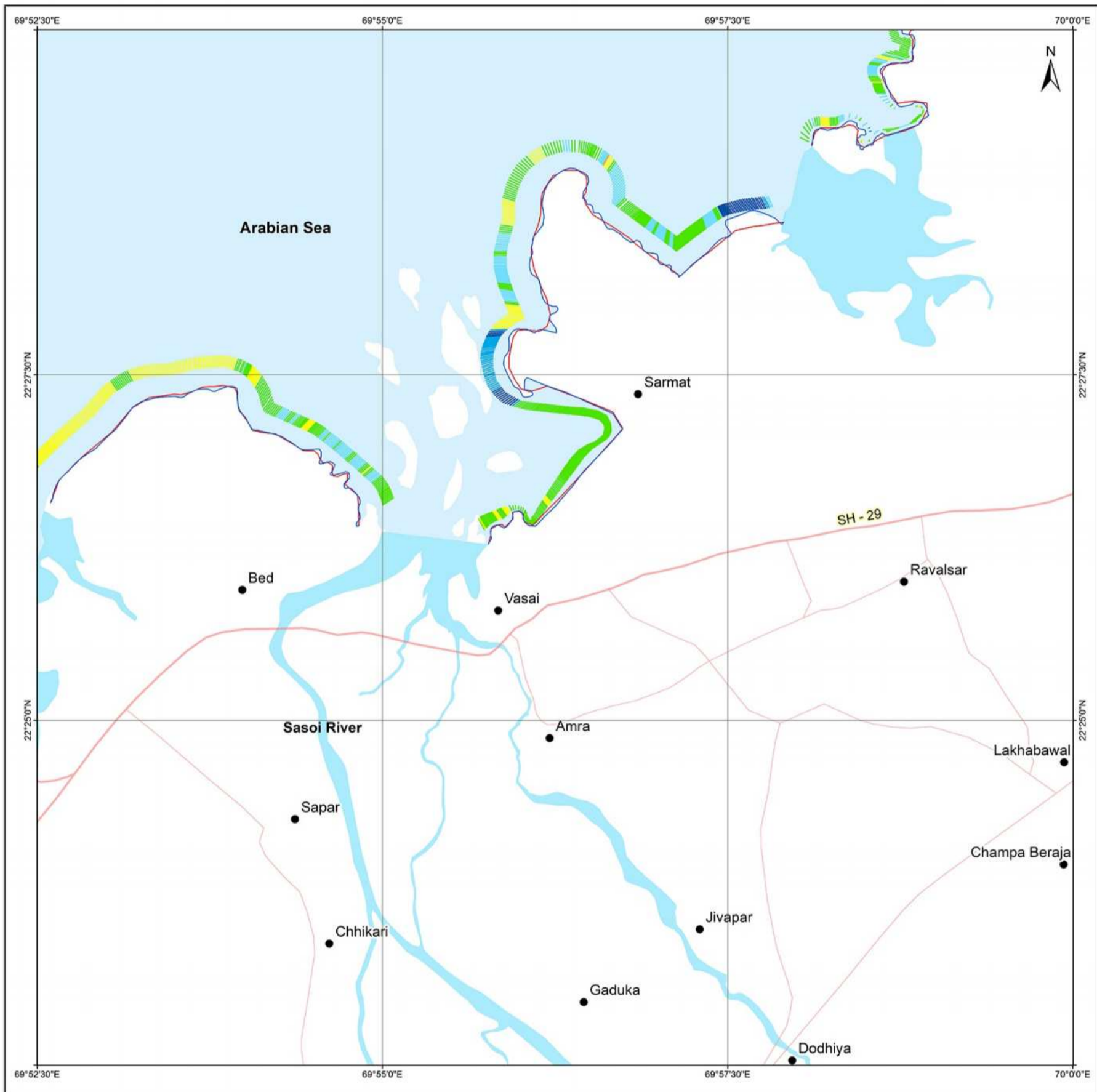
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SHORELINE CHANGE MAP GUJARAT

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Map No. : NCCR/SCM/054



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 04/24/1990 & 03/07/1990
- █ 02/27/2018

Index to sheets

41 F / 14 / SW	41 F / 14 / SE	41 J / 2 / SW
41 F / 15 / NW	41 F / 15 / NE	41 J / 3 / NW
41 F / 15 / SW	41 F / 15 / SE	41 J / 3 / SW

Incidence on 1:50,000 Sheets

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41 F / 11	41 F / 15	41 J / 3
41 F / 12	41 F / 16	41 J / 4

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
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Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/28/2017 & 04/26/2017
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LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990 & 03/07/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
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- Lakes
- Rivers

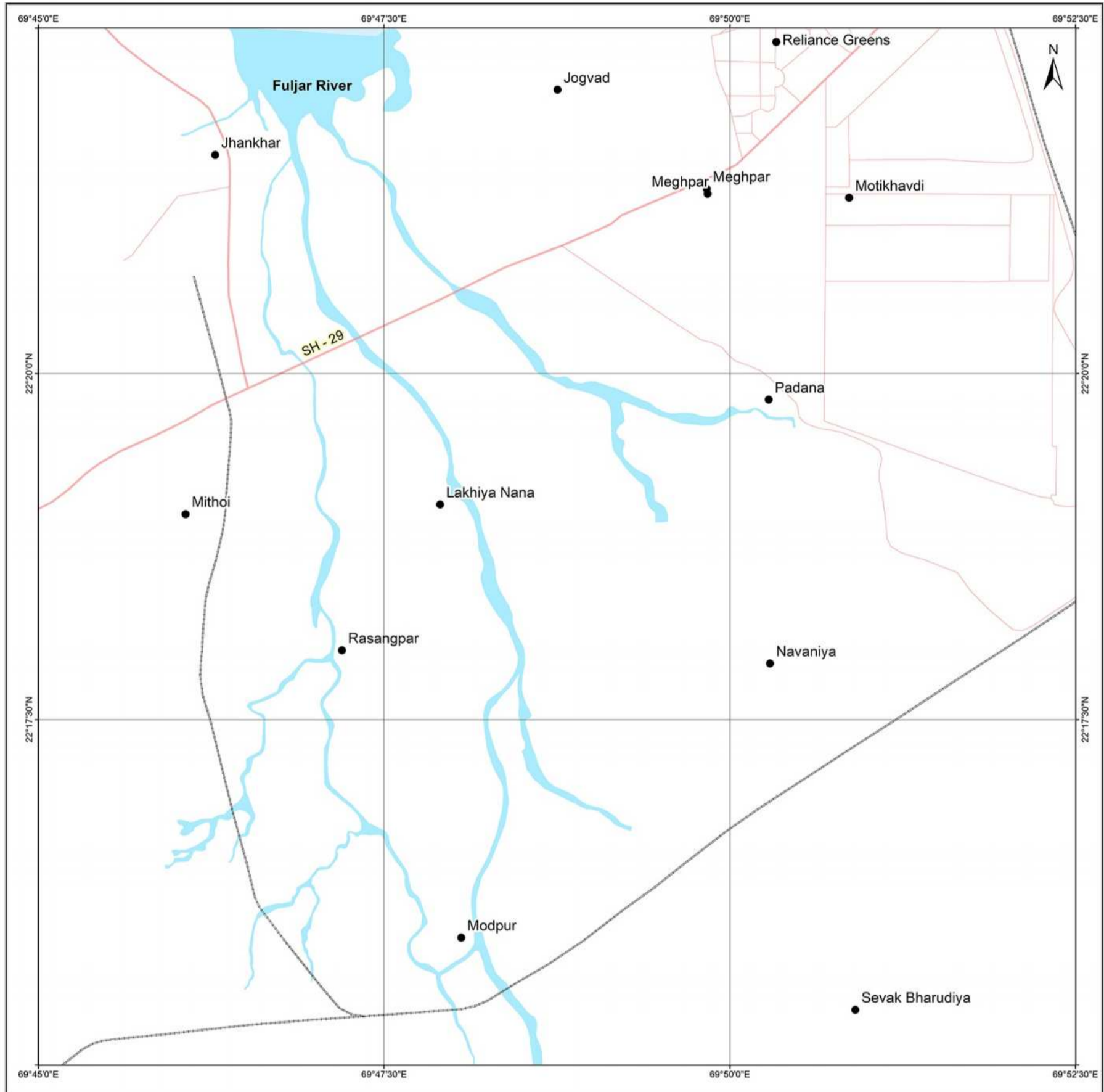
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National Centre for Coastal Research (NCCR)
Pallikaranai, Chennai - 600100

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1990 - 2018
JAMNAGAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 15 / SW
Map No. : NCCR/SCM/055



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 F / 11 / NE	41 F / 15 / NW	41 F / 15 / NE
41 F / 11 / SE	41 F / 15 / SW	41 F / 15 / SE
41 F / 12 / NE	41 F / 16 / NW	41 F / 16 / NE

Incidence on 1:50,000 Sheets

41 F / 10	41 F / 14	41 J / 2
41 F / 11	41 F / 15	41 J / 3
41 F / 12	41 F / 16	41 J / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

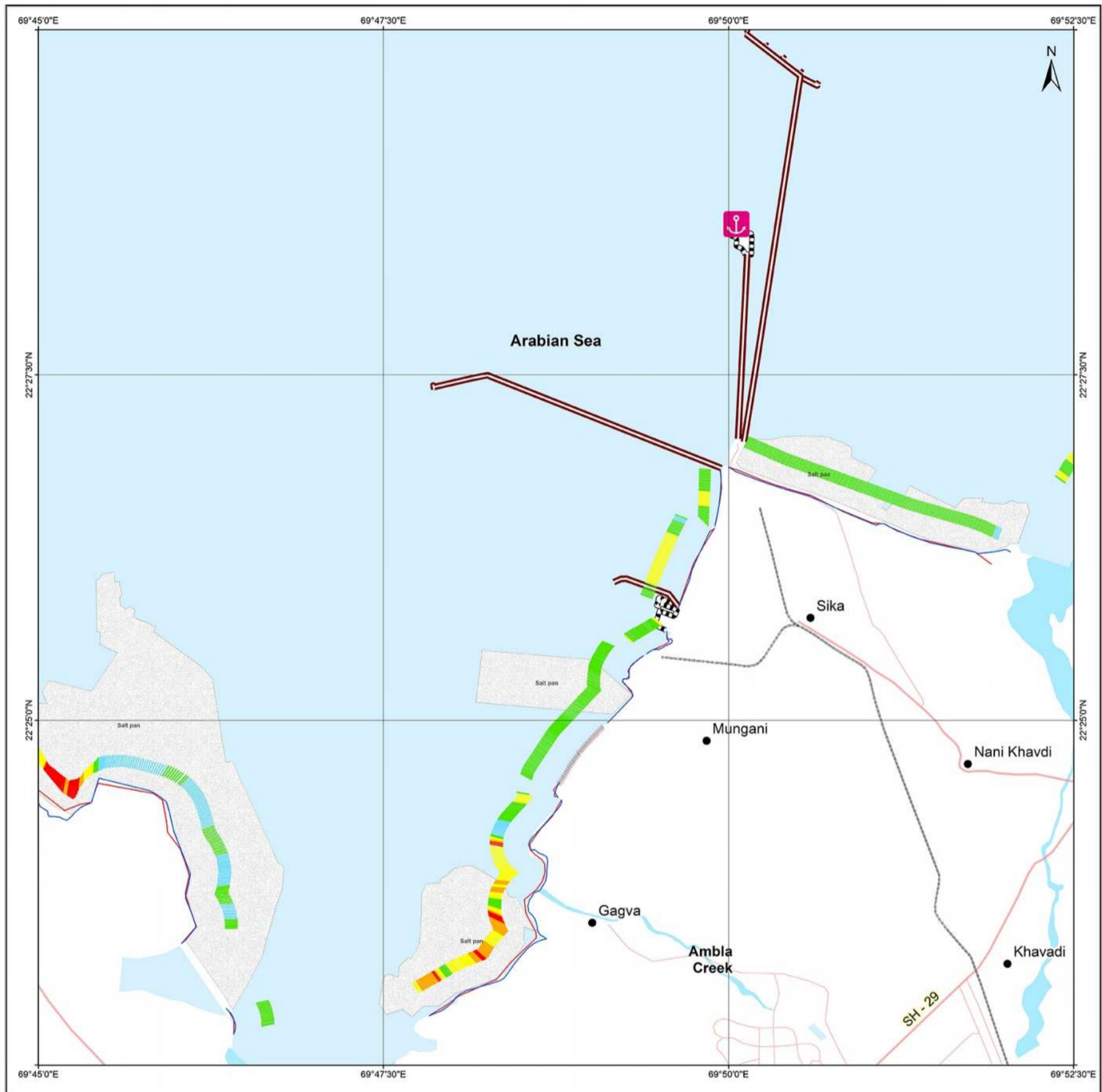
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 15 / NW
Map No. : NCCR/SCM/056



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 F / 10 / SE	41 F / 14 / SW	41 F / 14 / SE
41 F / 11 / NE	41 F / 15 / NW	41 F / 15 / NE
41 F / 11 / SE	41 F / 15 / SW	41 F / 15 / SE

Incidence on 1:50,000 Sheets

41 F / 10	41 F / 14	41 J / 2
41 F / 11	41 F / 15	41 J / 3
41 F / 12	41 F / 16	41 J / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

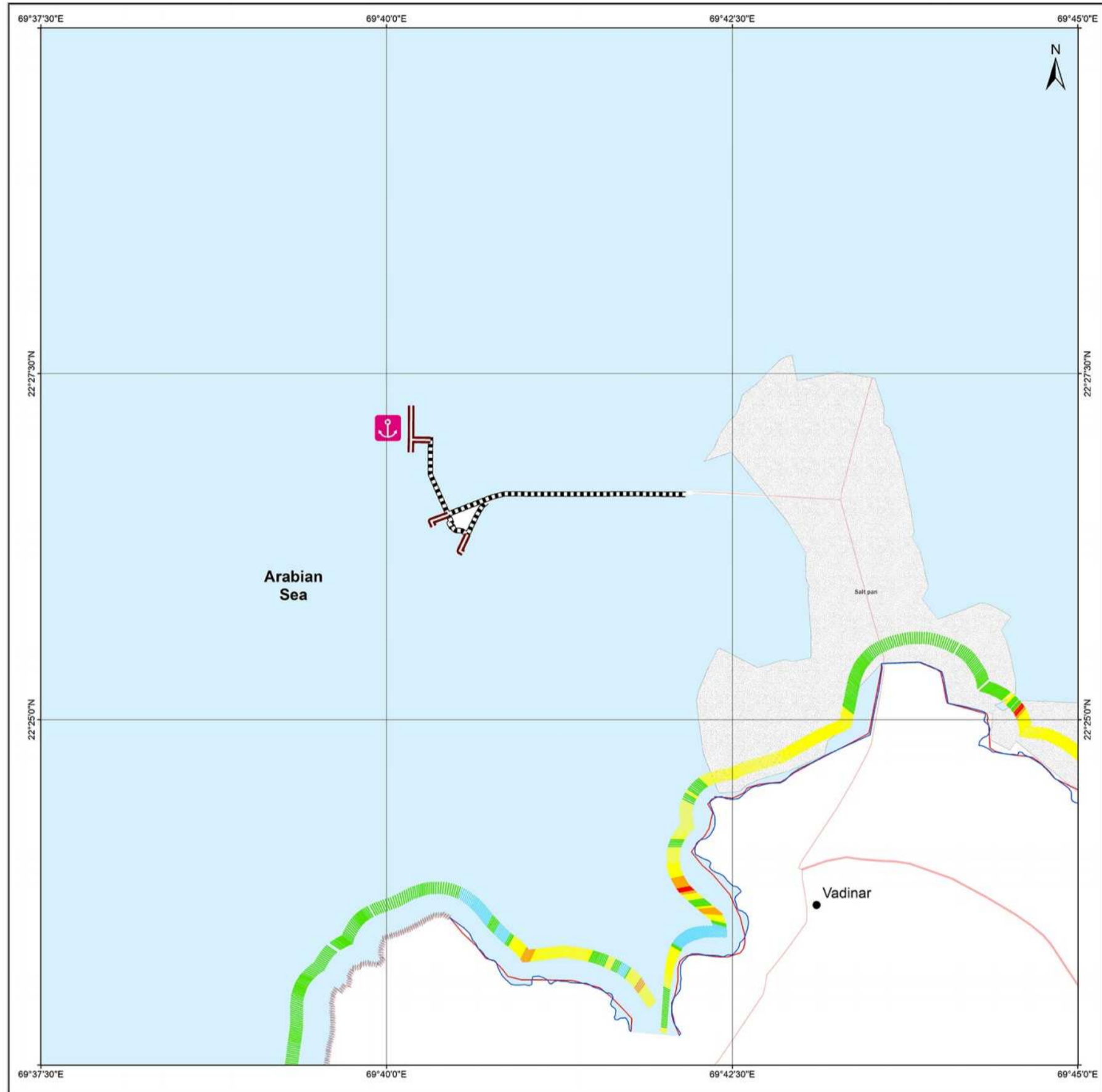
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 11 / NE
Map No. : NCCR/SCM/057



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 F / 10 / SW	41 F / 10 / SE	41 F / 14 / SW
41 F / 11 / NW	41 F / 11 / NE	41 F / 15 / NW
41 F / 11 / SW	41 F / 11 / SE	41 F / 15 / SW

Incidence on 1:50,000 Sheets

41 F / 6	41 F / 10	41 F / 14
41 F / 7	41 F / 11	41 F / 15
41 F / 8	41 F / 12	41 F / 16

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

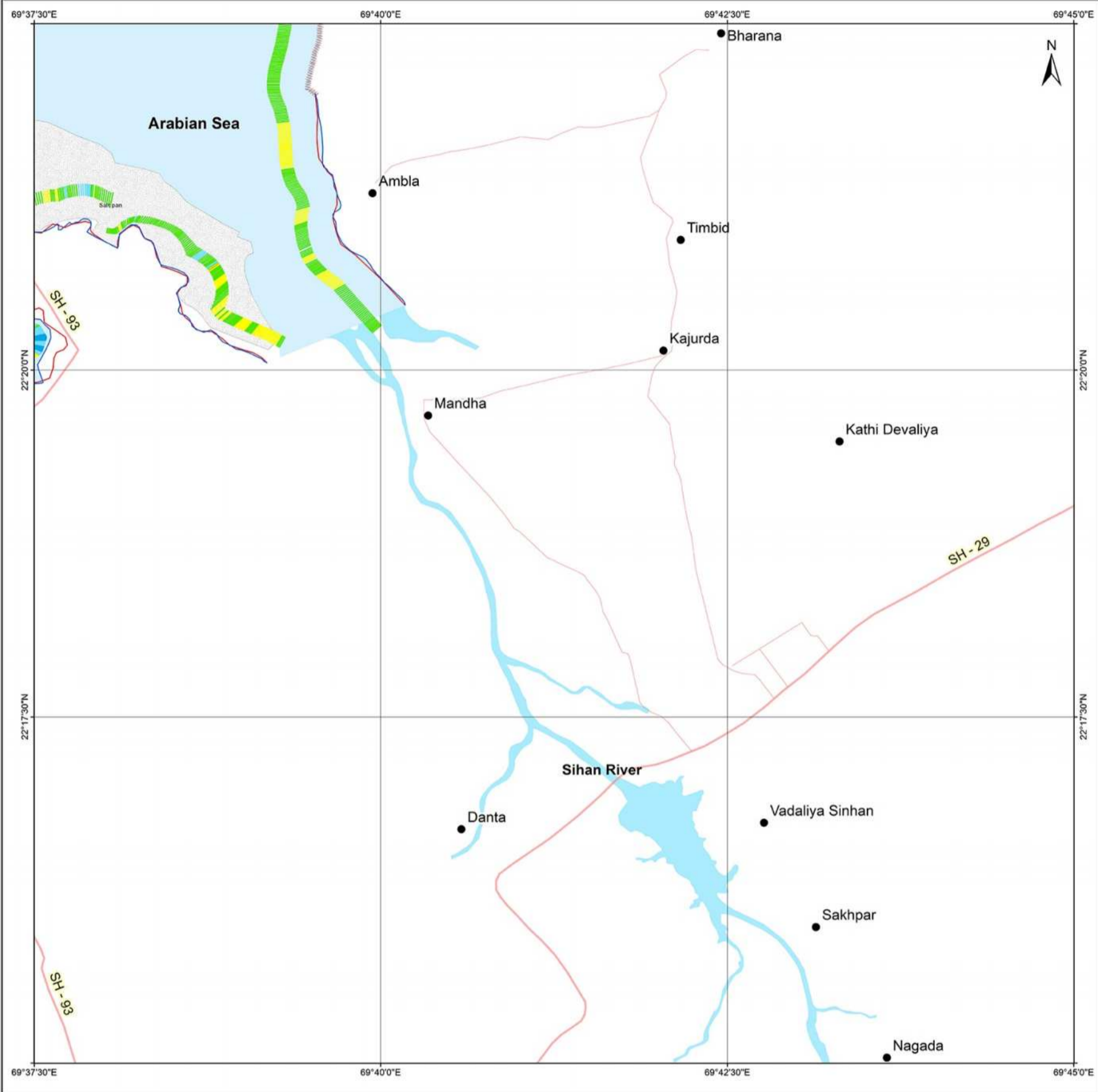
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SHORELINE CHANGE MAP GUJARAT

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41 F / 11 / SE
 Map No. : NCCR/SCM/058



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 F / 11 / NW	41 F / 11 / NE	41 F / 15 / NW
41 F / 11 / SW	41 F / 11 / SE	41 F / 15 / SW
41 F / 12 / NW	41 F / 12 / NE	41 F / 16 / NW

Incidence on 1:50,000 Sheets

41 F / 6	41 F / 10	41 F / 14
41 F / 7	41 F / 11	41 F / 15
41 F / 8	41 F / 12	41 F / 16

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

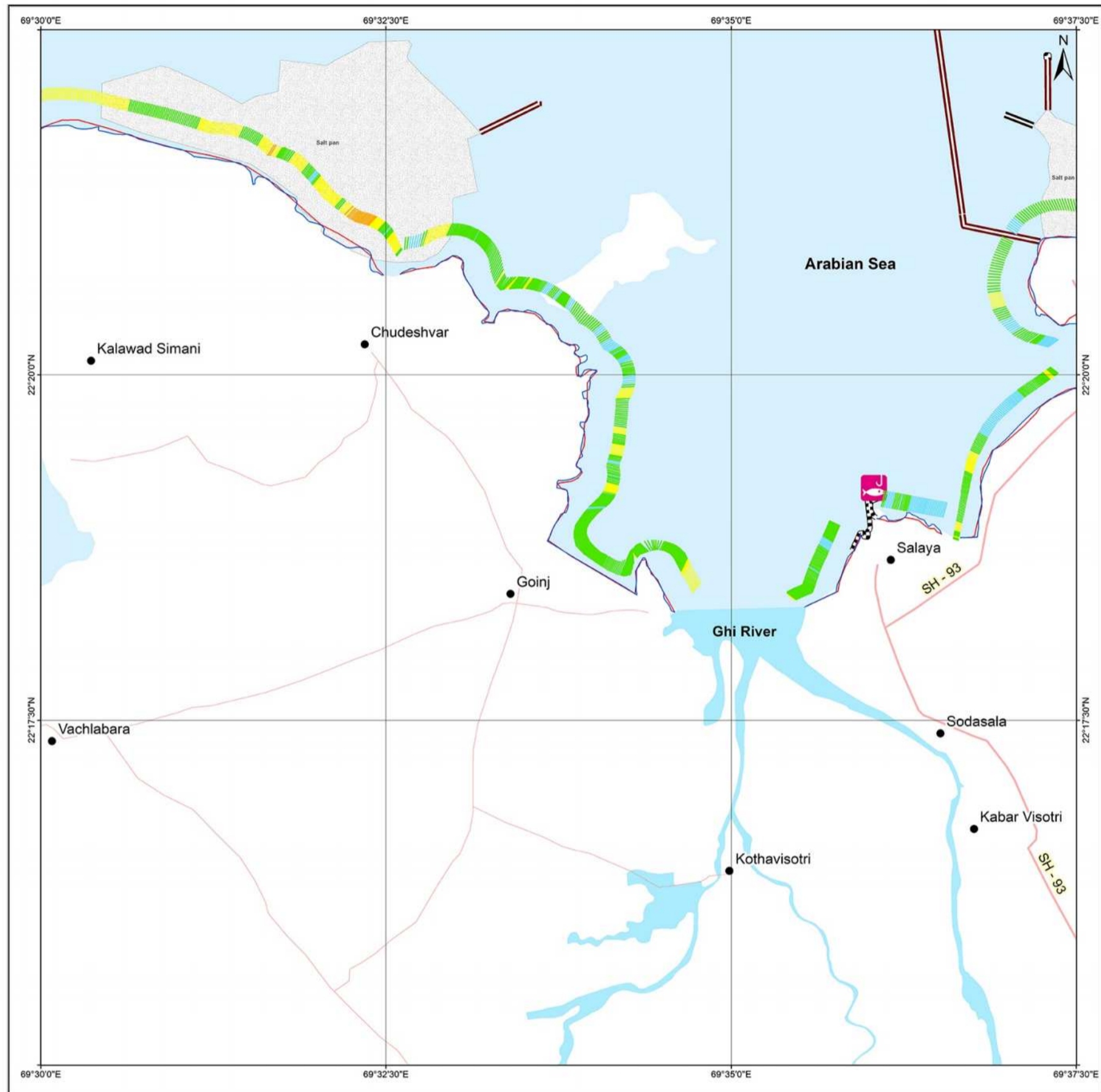
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Restricted Use
41 F / 11 / SW
Map No. : NCCR/SCM/059



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 04/24/1990
- █ 02/27/2018

Index to sheets

41 F / 7 / NE	41 F / 11 / NW	41 F / 11 / NE
41 F / 7 / SE	41 F / 11 / SW	41 F / 11 / SE
41 F / 8 / NE	41 F / 12 / NW	41 F / 12 / NE

Incidence on 1:50,000 Sheets

41 F / 6	41 F / 10	41 F / 14
41 F / 7	41 F / 11	41 F / 15
41 F / 8	41 F / 12	41 F / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	05/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

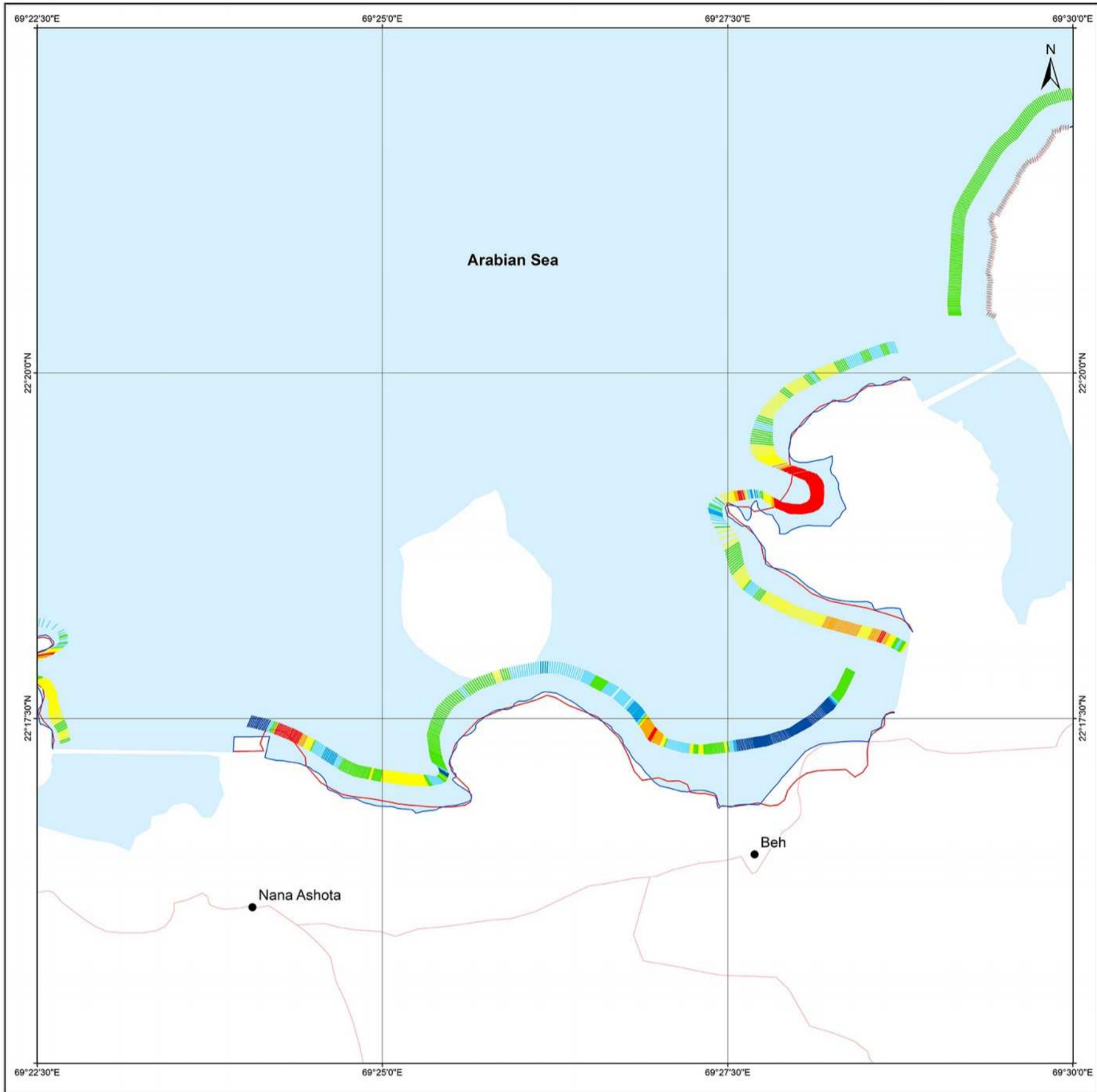
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 7 / SE
Map No. : NCCR/SCM/060



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 04/24/1990
- █ 02/03/2018 & 02/27/2018

Index to sheets

41 F / 7 / NW	41 F / 7 / NE	41 F / 11 / NW
41 F / 7 / SW	41 F / 7 / SE	41 F / 11 / SW
41 F / 8 / NW	41 F / 8 / NE	41 F / 12 / NW

Incidence on 1:50,000 Sheets

41 F / 2	41 F / 6	41 F / 10
41 F / 3	41 F / 7	41 F / 11
41 F / 4	41 F / 8	41 F / 12

Scale
1:25,000
1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018 & 02/27/2018
LISS-IV	01/15/2017 & 03/28/2017
LISS-IV	03/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

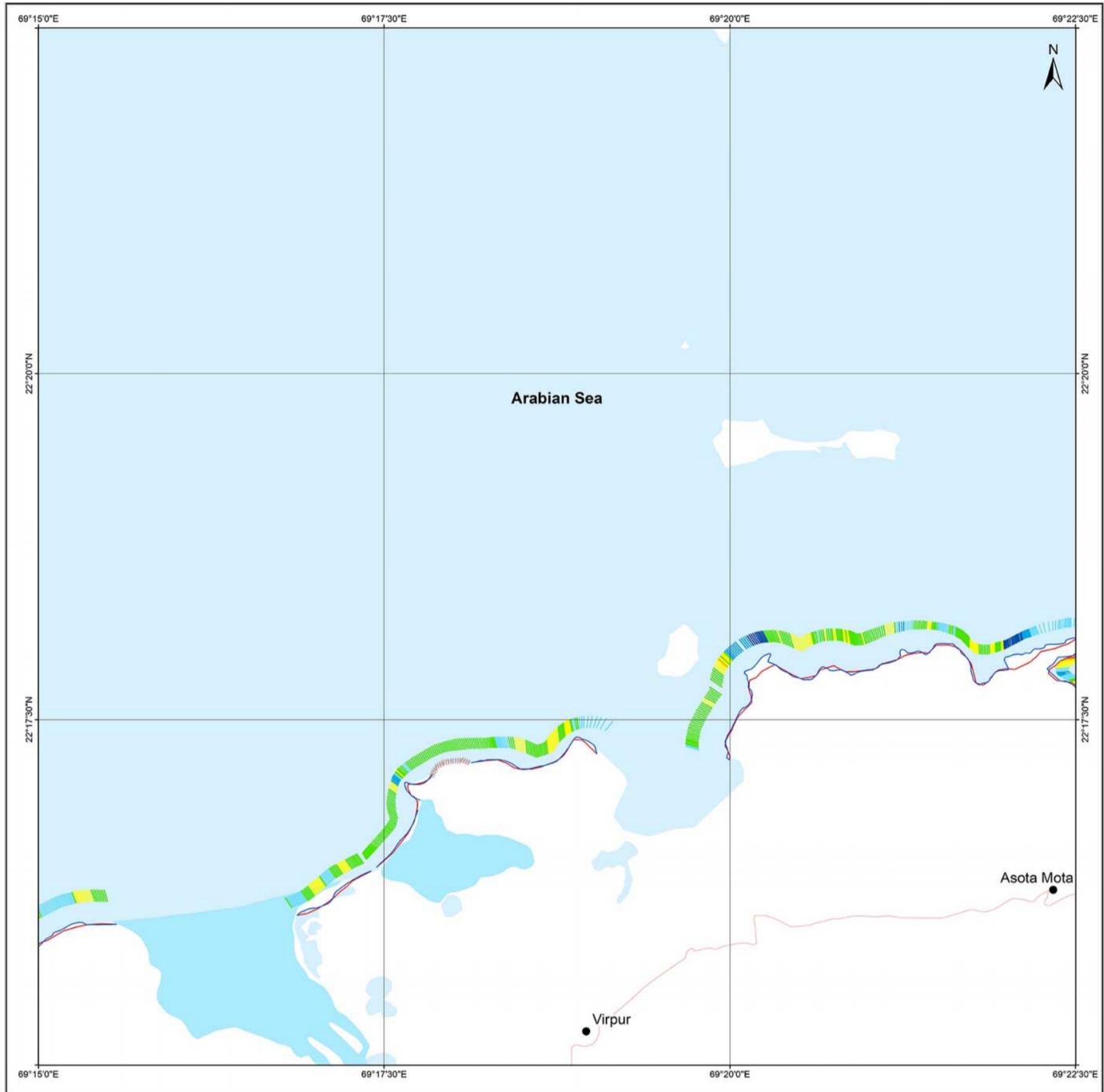
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 7 / SW
Map No. : NCCR/SCM/061



<p>Shoreline Change Trend for Period 1990 - 2018</p> <ul style="list-style-type: none"> High Erosion Moderate Erosion Low Erosion Stable Coast Low Accretion Moderate Accretion High Accretion 	<p>Index to sheets</p> <table border="1"> <tr> <td>41 F / 3 / NE</td> <td>41 F / 7 / NW</td> <td>41 F / 7 / NE</td> </tr> <tr> <td>41 F / 3 / SE</td> <td>41 F / 7 / SW</td> <td>41 F / 7 / SE</td> </tr> <tr> <td>41 F / 4 / NE</td> <td>41 F / 8 / NW</td> <td>41 F / 8 / NE</td> </tr> </table>	41 F / 3 / NE	41 F / 7 / NW	41 F / 7 / NE	41 F / 3 / SE	41 F / 7 / SW	41 F / 7 / SE	41 F / 4 / NE	41 F / 8 / NW	41 F / 8 / NE	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 42</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p>		<ul style="list-style-type: none"> Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers 																							
	41 F / 3 / NE	41 F / 7 / NW	41 F / 7 / NE																																	
41 F / 3 / SE	41 F / 7 / SW	41 F / 7 / SE																																		
41 F / 4 / NE	41 F / 8 / NW	41 F / 8 / NE																																		
<p>Shoreline date</p> <ul style="list-style-type: none"> 04/24/1990 02/03/2018 	<p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>02/03/2018</td> </tr> <tr> <td>LISS-IV</td> <td>01/15/2017</td> </tr> <tr> <td>LISS-IV</td> <td>03/14/2016</td> </tr> <tr> <td>LISS-IV</td> <td>05/02/2015</td> </tr> <tr> <td>LISS-IV</td> <td>04/13/2014</td> </tr> <tr> <td>LISS-IV</td> <td>05/12/2013</td> </tr> <tr> <td>LISS-IV</td> <td>06/10/2012</td> </tr> <tr> <td>LISS-III</td> <td>05/02/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>-</td> </tr> <tr> <td>ETM+</td> <td>05/21/2000</td> </tr> <tr> <td>TM</td> <td>04/24/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	02/03/2018	LISS-IV	01/15/2017	LISS-IV	03/14/2016	LISS-IV	05/02/2015	LISS-IV	04/13/2014	LISS-IV	05/12/2013	LISS-IV	06/10/2012	LISS-III	05/02/2008	PAN (Cartosat-1)	-	ETM+	05/21/2000	TM	04/24/1990	<p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>41 F / 2</td> <td>41 F / 6</td> <td>41 F / 10</td> </tr> <tr> <td>41 F / 3</td> <td>41 F / 7</td> <td>41 F / 11</td> </tr> <tr> <td>41 F / 4</td> <td>41 F / 8</td> <td>41 F / 12</td> </tr> </table>	41 F / 2	41 F / 6	41 F / 10	41 F / 3	41 F / 7	41 F / 11	41 F / 4	41 F / 8	41 F / 12	<p>Prepared by</p> <p>Government of India Ministry of Earth Sciences National Centre for Coastal Research (NCCR) Pallikaranai, Chennai - 600100</p>
Sensors	Date of acquisition																																			
LISS-IV	02/03/2018																																			
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LISS-IV	06/10/2012																																			
LISS-III	05/02/2008																																			
PAN (Cartosat-1)	-																																			
ETM+	05/21/2000																																			
TM	04/24/1990																																			
41 F / 2	41 F / 6	41 F / 10																																		
41 F / 3	41 F / 7	41 F / 11																																		
41 F / 4	41 F / 8	41 F / 12																																		

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SHORELINE CHANGE MAP GUJARAT

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41 F / 3 / SE
Map No. : NCCR/SCM/062



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 F / 3 / NW	41 F / 3 / NE	41 F / 7 / NW
41 F / 3 / SW	41 F / 3 / SE	41 F / 7 / SW
41 F / 4 / NW	41 F / 4 / NE	41 F / 8 / NW

Incidence on 1:50,000 Sheets

41 B / 14	41 F / 2	41 F / 6
41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

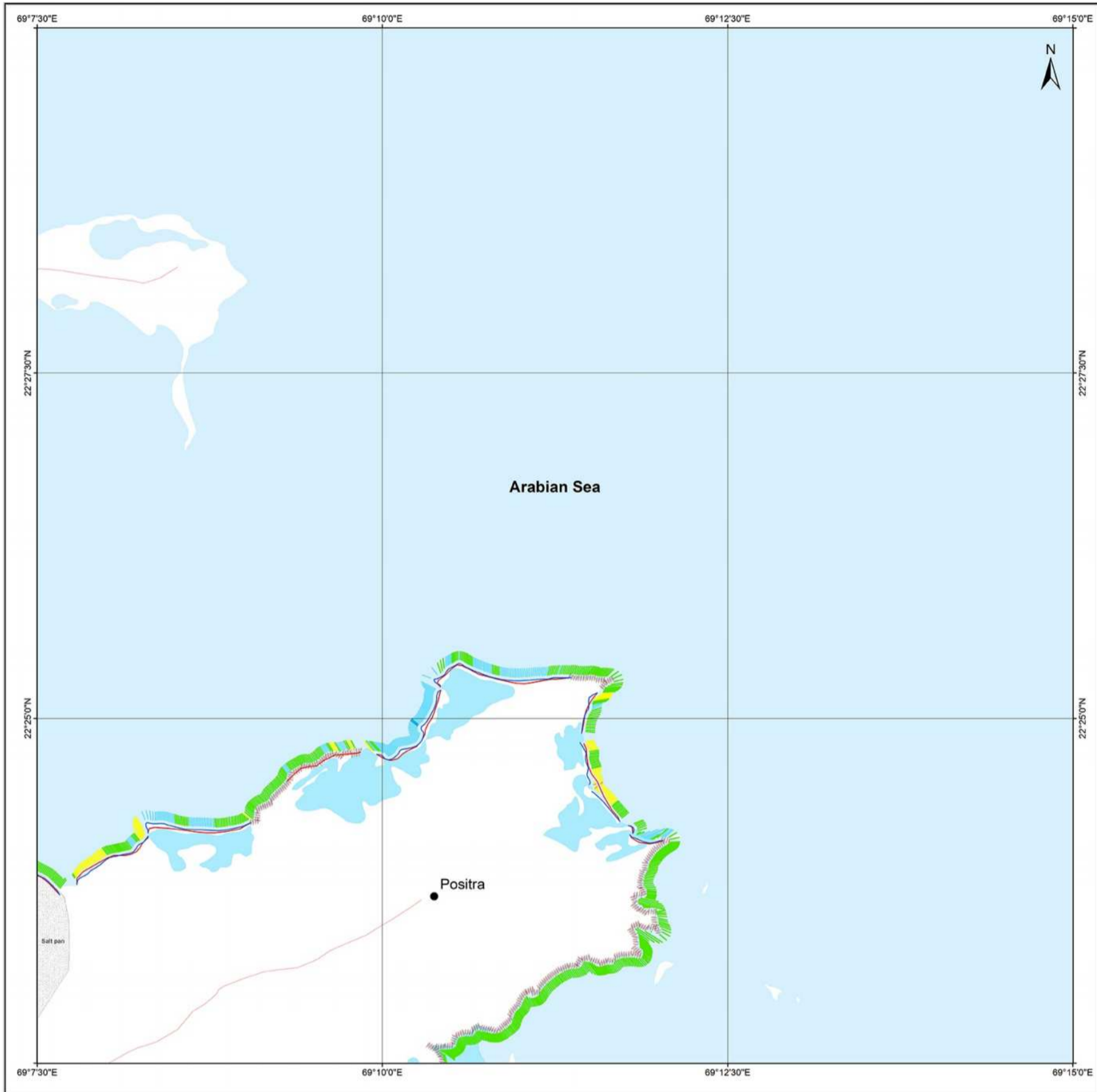
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 3 / NE
Map No. : NCCR/SCM/063



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 F / 2 / SW	41 F / 2 / SE	41 F / 6 / SW
41 F / 3 / NW	41 F / 3 / NE	41 F / 7 / NW
41 F / 3 / SW	41 F / 3 / SE	41 F / 7 / SW

Incidence on 1:50,000 Sheets

41 B / 14	41 F / 2	41 F / 6
41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
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- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

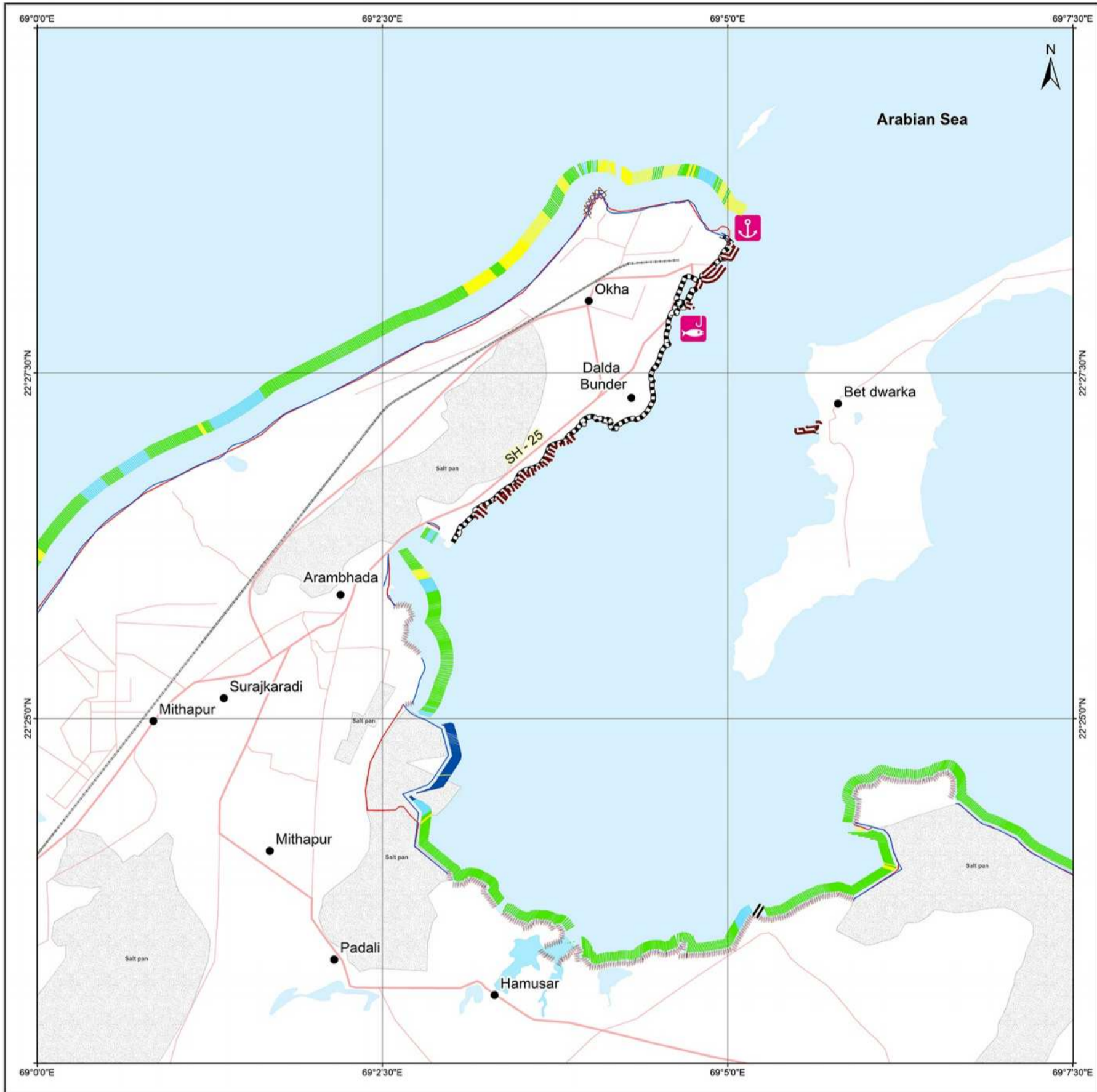
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 3 / NW
Map No. : NCCR/SCM/064



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 B / 14 / SE	41 F / 2 / SW	41 F / 2 / SE
41 B / 15 / NE	41 F / 3 / NW	41 F / 3 / NE
41 B / 15 / SE	41 F / 3 / SW	41 F / 3 / SE

Incidence on 1:50,000 Sheets

41 B / 14	41 F / 2	41 F / 6
41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+ TM	05/21/2000
	04/24/1990



- Settlements
- Port
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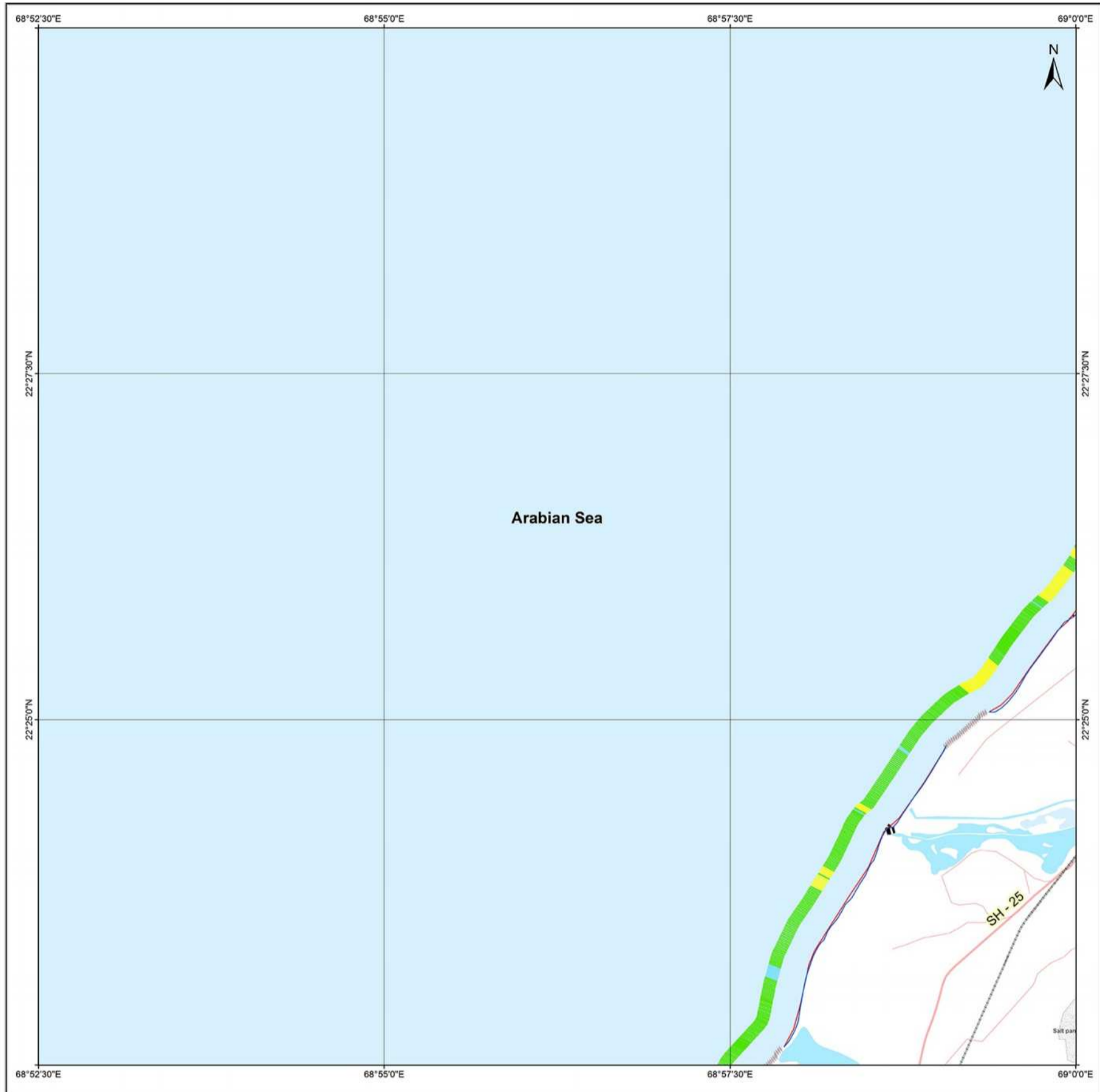
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1990 - 2018
DEV BHUMI DWARKA

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 B / 15 / NE
Map No. : NCCR/SCM/065



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 04/24/1990
- █ 02/03/2018

Index to sheets

41 B / 14 / SW	41 B / 14 / SE	41 F / 2 / SW
41 B / 15 / NW	41 B / 15 / NE	41 F / 3 / NW
41 B / 15 / SW	41 B / 15 / SE	41 F / 3 / SW

Incidence on 1:50,000 Sheets

41 B / 10	41 B / 14	41 F / 2
41 B / 11	41 B / 15	41 F / 3
41 B / 12	41 B / 16	41 F / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/11/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

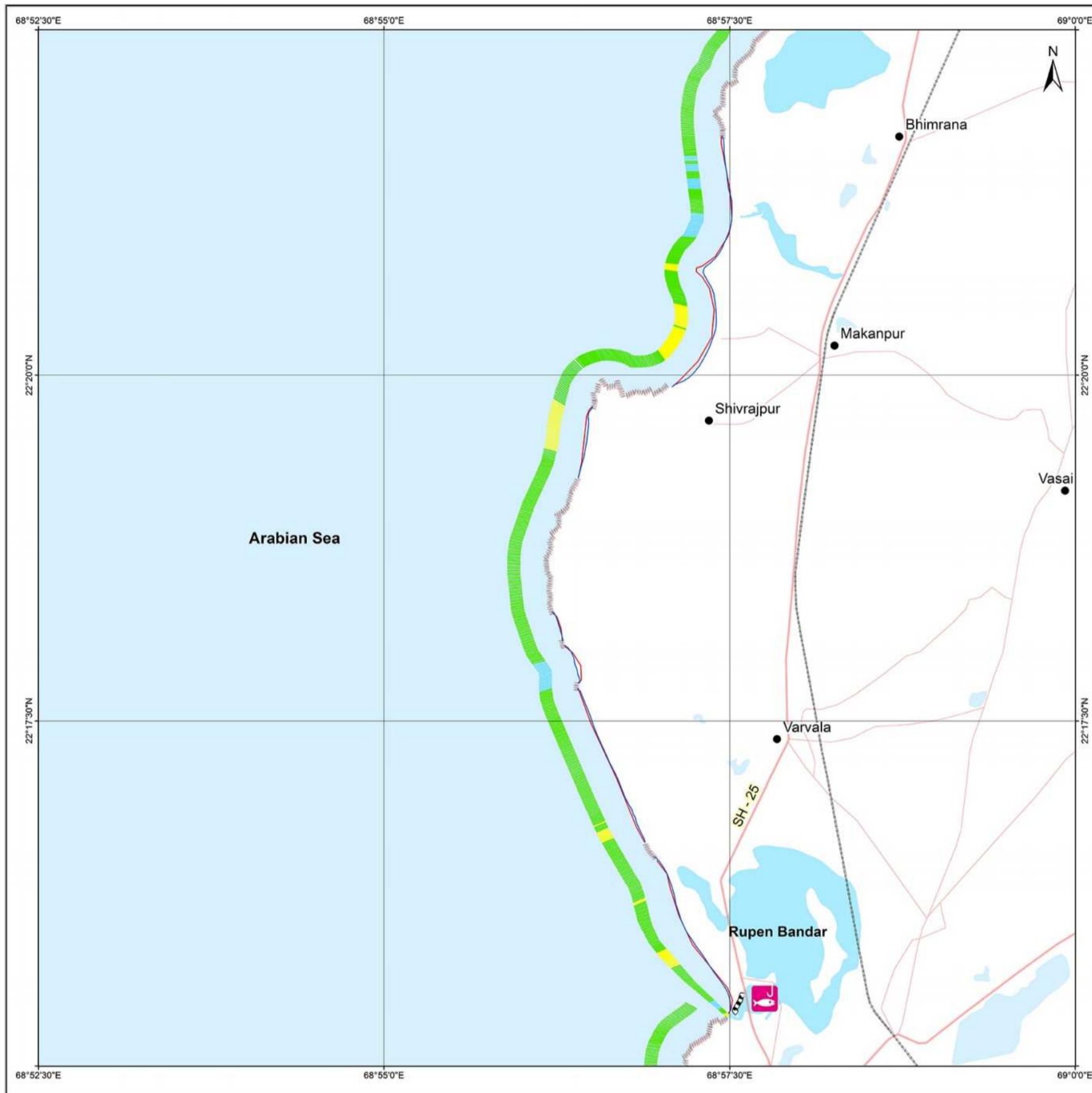
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 B / 15 / SE
Map No. : NCCR/SCM/066



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 04/24/1990
- █ 02/03/2018

Index to sheets

41 B / 15 / NW	41 B / 15 / NE	41 F / 3 / NW
41 B / 15 / SW	41 B / 15 / SE	41 F / 3 / SW
41 B / 16 / NW	41 B / 16 / NE	41 F / 4 / NW

Incidence on 1:50,000 Sheets

41 B / 10	41 B / 14	41 F / 2
41 B / 11	41 B / 15	41 F / 3
41 B / 12	41 B / 16	41 F / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/11/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

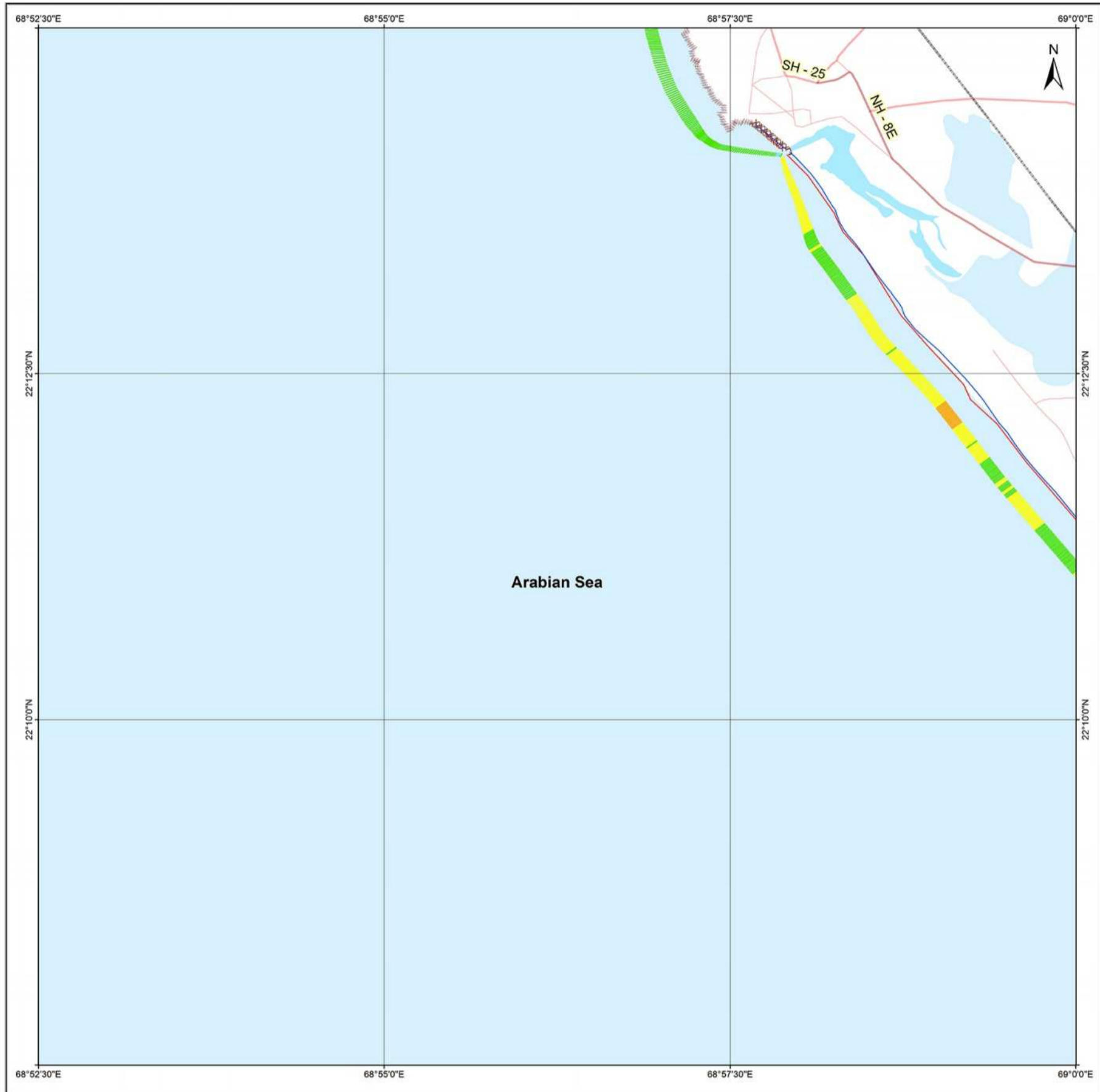
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 B / 16 / NE
Map No. : NCCR/SCM/067



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 B / 15 / SW	41 B / 15 / SE	41 F / 3 / SW
41 B / 16 / NW	41 B / 16 / NE	41 F / 4 / NW
41 B / 16 / SW	41 B / 16 / SE	41 F / 4 / SW

Incidence on 1:50,000 Sheets

41 B / 11	41 B / 15	41 F / 3
41 B / 12	41 B / 16	41 F / 4
41 C / 9	41 C / 13	41 G / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	03/11/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	06/10/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

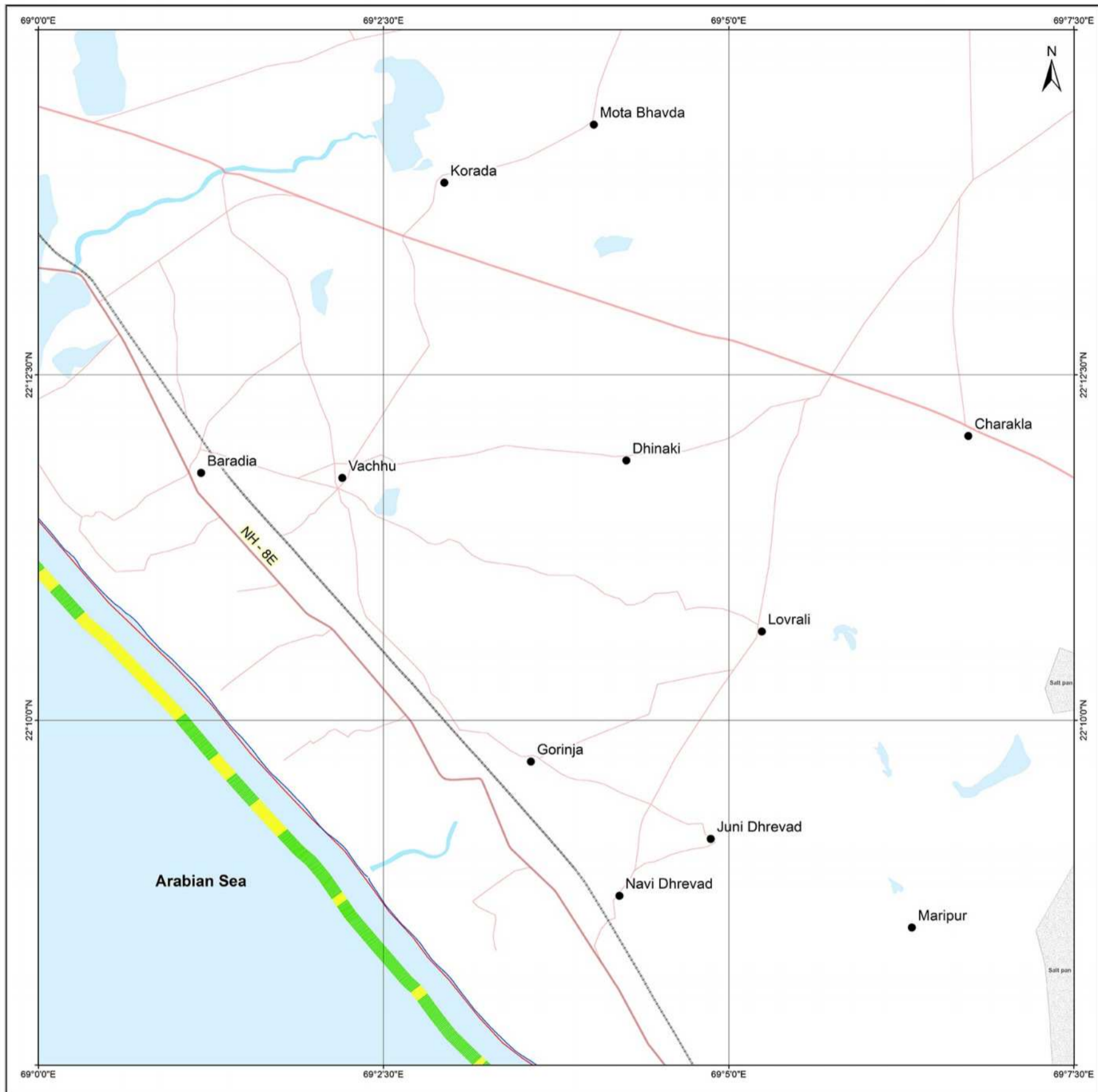
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 F / 4 / NW
Map No. : NCCR/SCM/068



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

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41 B / 15 / SE	41 F / 3 / SW	41 F / 3 / SE
41 B / 16 / NE	41 F / 4 / NW	41 F / 4 / NE
41 B / 16 / SE	41 F / 4 / SW	41 F / 4 / SE

Incidence on 1:50,000 Sheets

41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8
41 C / 13	41 G / 1	41 G / 5

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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41 F / 4 / SW
Map No. : NCCR/SCM/069



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

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41 B / 16 / NE	41 F / 4 / NW	41 F / 4 / NE
41 B / 16 / SE	41 F / 4 / SW	41 F / 4 / SE
41 C / 13 / NE	41 G / 1 / NW	41 G / 1 / NE

Incidence on 1:50,000 Sheets

41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8
41 C / 13	41 G / 1	41 G / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

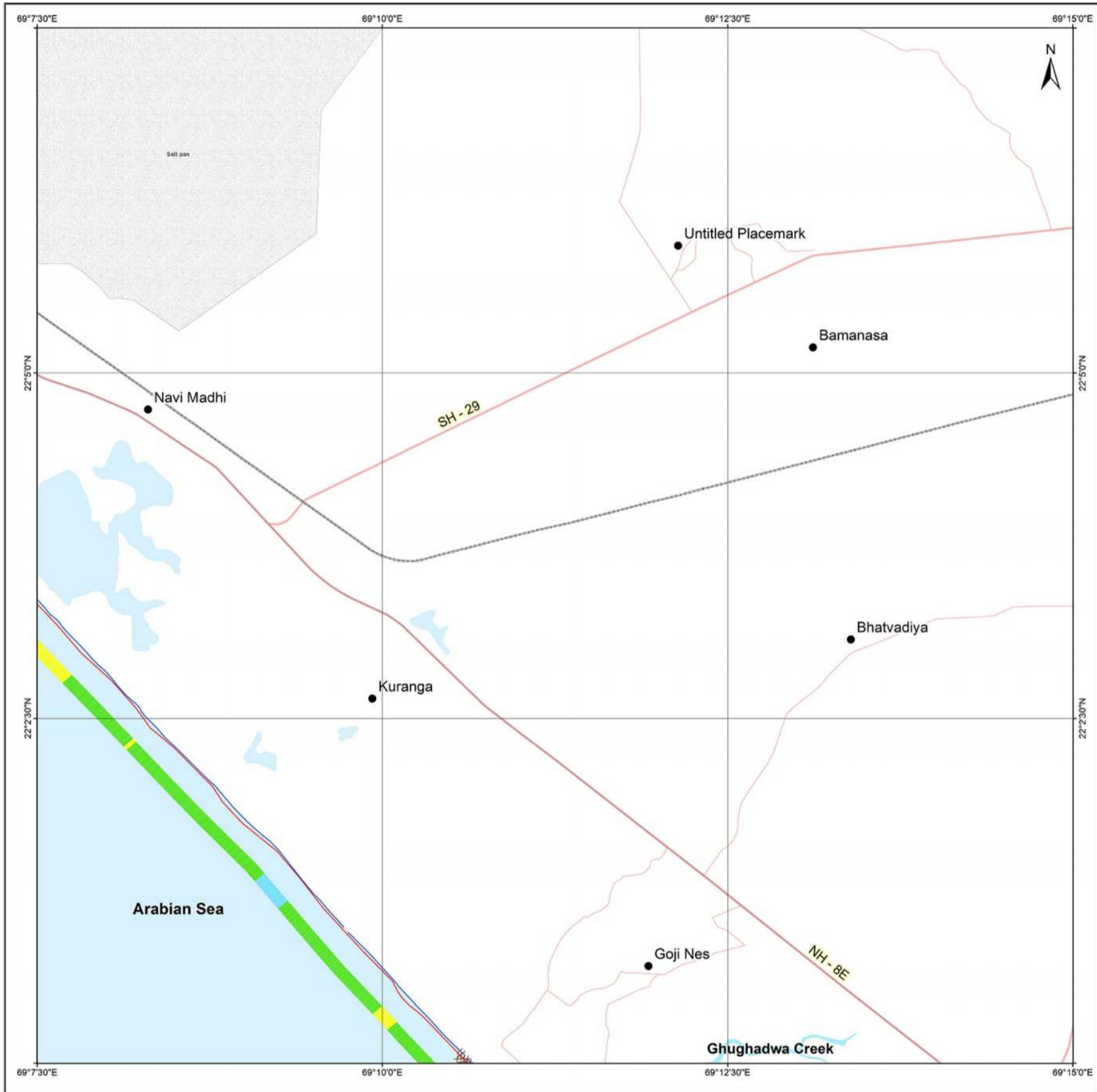
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SHORELINE CHANGE MAP GUJARAT

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41 F / 4 / SE
Map No. : NCCR/SCM/070



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

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41 F / 4 / NW	41 F / 4 / NE	41 F / 5 / NW
41 F / 4 / SW	41 F / 4 / SE	41 F / 5 / SW
41 G / 1 / NW	41 G / 1 / NE	41 G / 1 / NW

Incidence on 1:50,000 Sheets

41 B / 15	41 F / 3	41 F / 7
41 B / 16	41 F / 4	41 F / 8
41 C / 13	41 G / 1	41 G / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

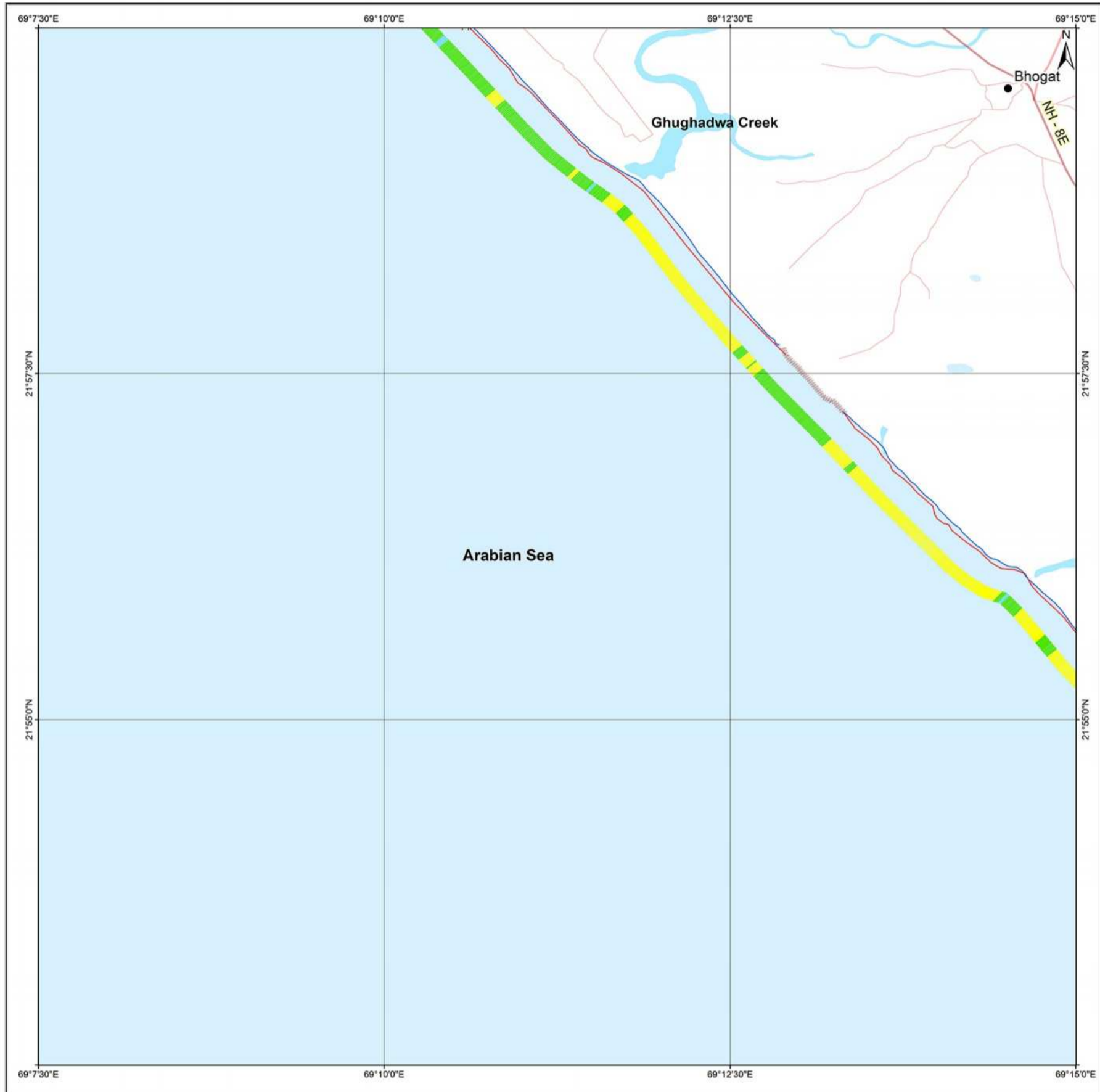
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 1 / NE
Map No. : NCCR/SCM/071



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 F / 4 / SW	41 F / 4 / SE	41 F / 8 / SW
41 G / 1 / NW	41 G / 1 / NE	41 G / 5 / NW
41 G / 1 / SW	41 G / 1 / SE	41 G / 5 / SW

Incidence on 1:50,000 Sheets

41 B / 16	41 F / 4	41 F / 8
41 C / 13	41 G / 1	41 G / 5
41 C / 14	41 G / 2	41 G / 6

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

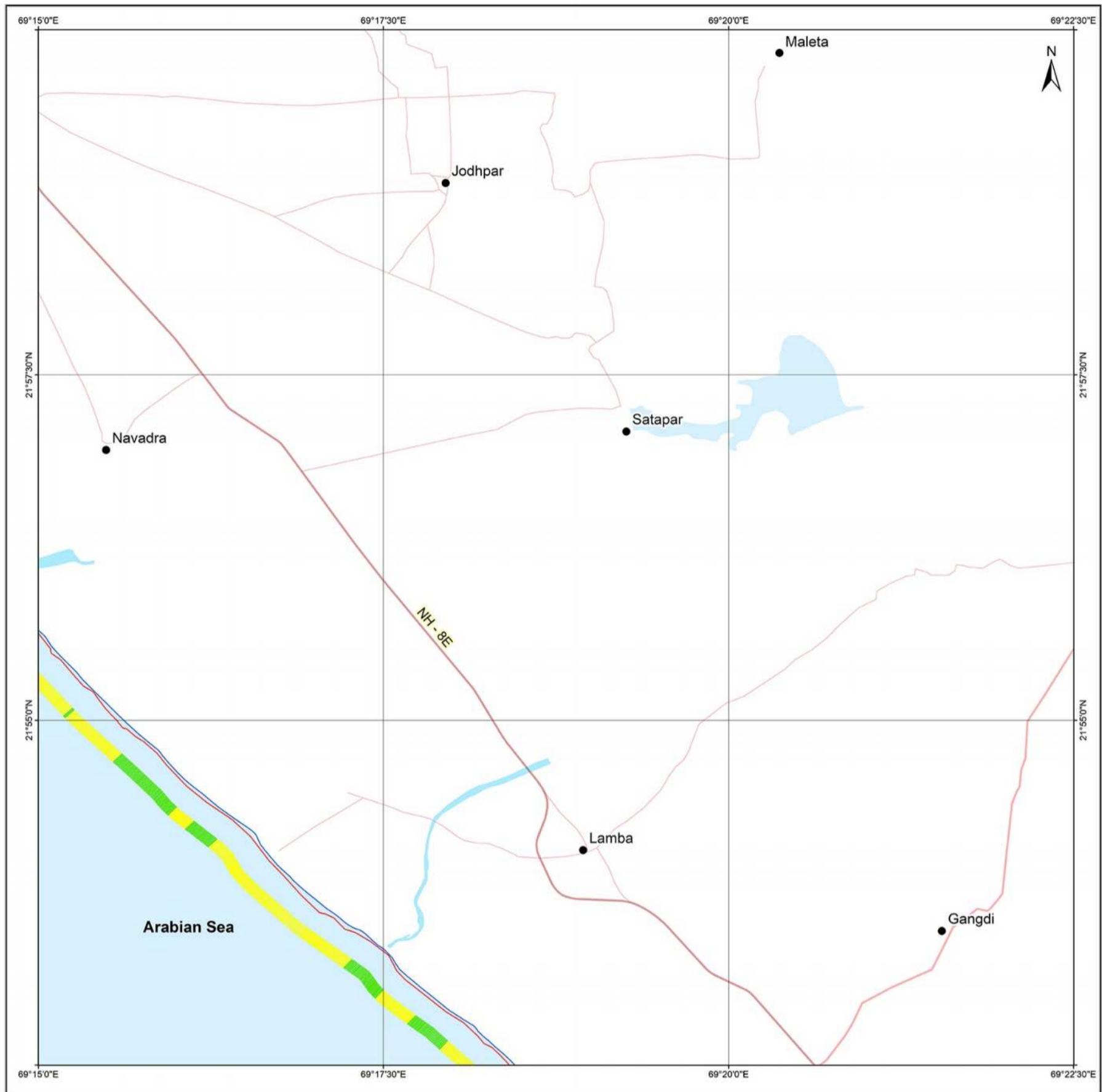
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 5 / NW
Map No. : NCCR/SCM/072



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/03/2018

Index to sheets

41 F / 4 / SE	41 F / 8 / SW	41 F / 8 / SE
41 G / 1 / NE	41 G / 5 / NW	41 G / 5 / NE
41 G / 1 / SE	41 G / 5 / SW	41 G / 5 / SE

Incidence on 1:50,000 Sheets

41 F / 4	41 F / 8	41 F / 12
41 G / 1	41 G / 5	41 G / 9
41 G / 2	41 G / 6	41 G / 10

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/03/2018
LISS-IV	01/15/2017
LISS-IV	02/14/2016
LISS-IV	05/02/2015
LISS-IV	04/13/2014
LISS-IV	05/12/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

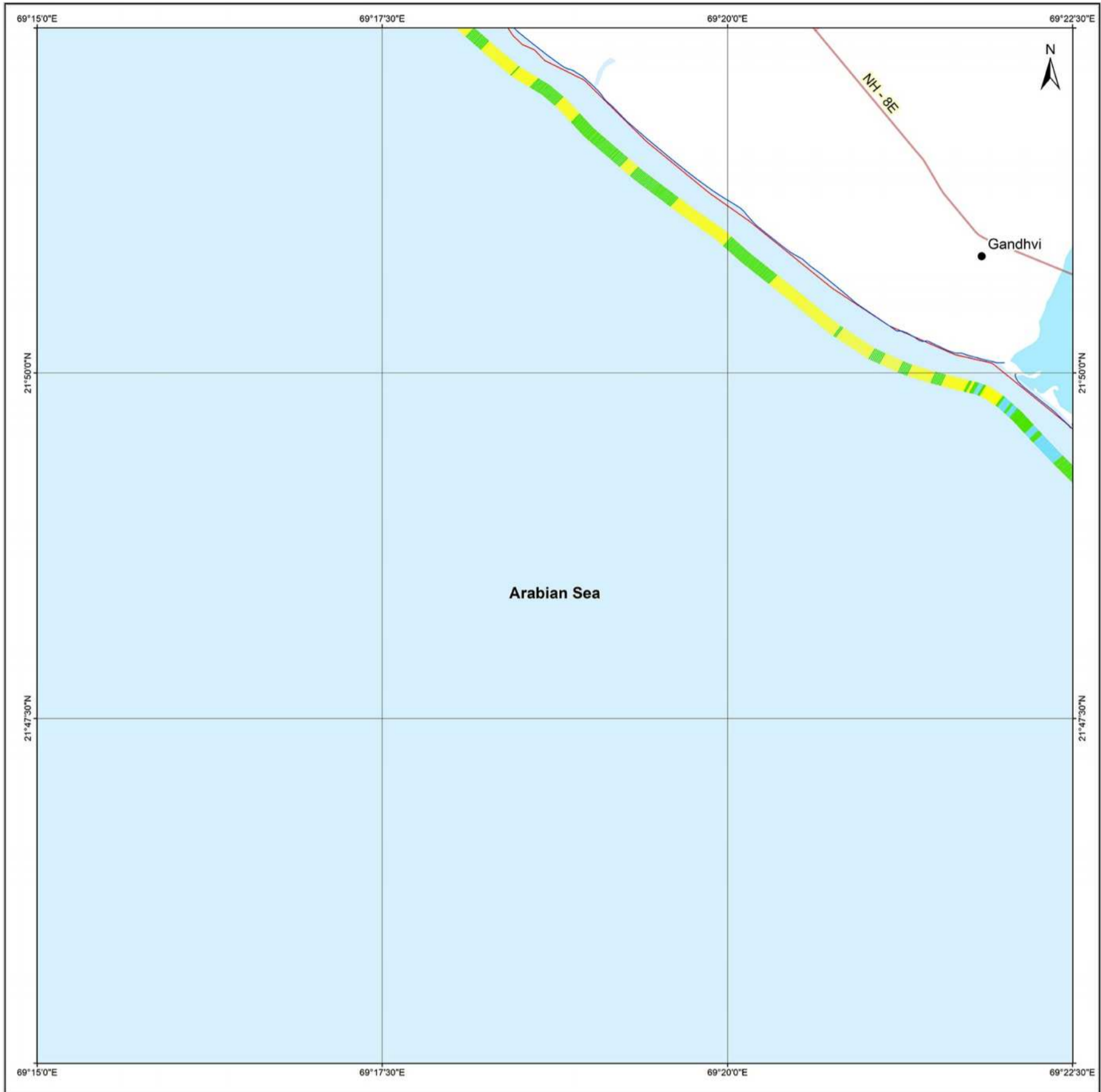
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 5 / SW
Map No. : NCCR/SCM/073



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018 & 02/03/2018

Index to sheets

41 G / 1 / NE	41 G / 5 / NW	41 G / 5 / NE
41 G / 1 / SE	41 G / 5 / SW	41 G / 5 / SE
41 G / 2 / NE	41 G / 6 / NW	41 G / 6 / NE

Incidence on 1:50,000 Sheets

41 F / 4	41 F / 8	41 F / 12
41 G / 1	41 G / 5	41 G / 9
41 G / 2	41 G / 6	41 G / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018 & 02/03/2018
LISS-IV	03/28/2017 & 01/15/2017
LISS-IV	01/21/2016
LISS-IV	05/02/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	04/23/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 5 / SE
 Map No. : NCCR/SCM/074



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 G / 5 / NW	41 G / 5 / NE	41 G / 9 / NW
41 G / 5 / SW	41 G / 5 / SE	41 G / 9 / SW
41 G / 6 / NW	41 G / 6 / NE	41 G / 10 / NW

Incidence on 1:50,000 Sheets

41 F / 4	41 F / 8	41 F / 12
41 G / 1	41 G / 5	41 G / 9
41 G / 2	41 G / 6	41 G / 10

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	03/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

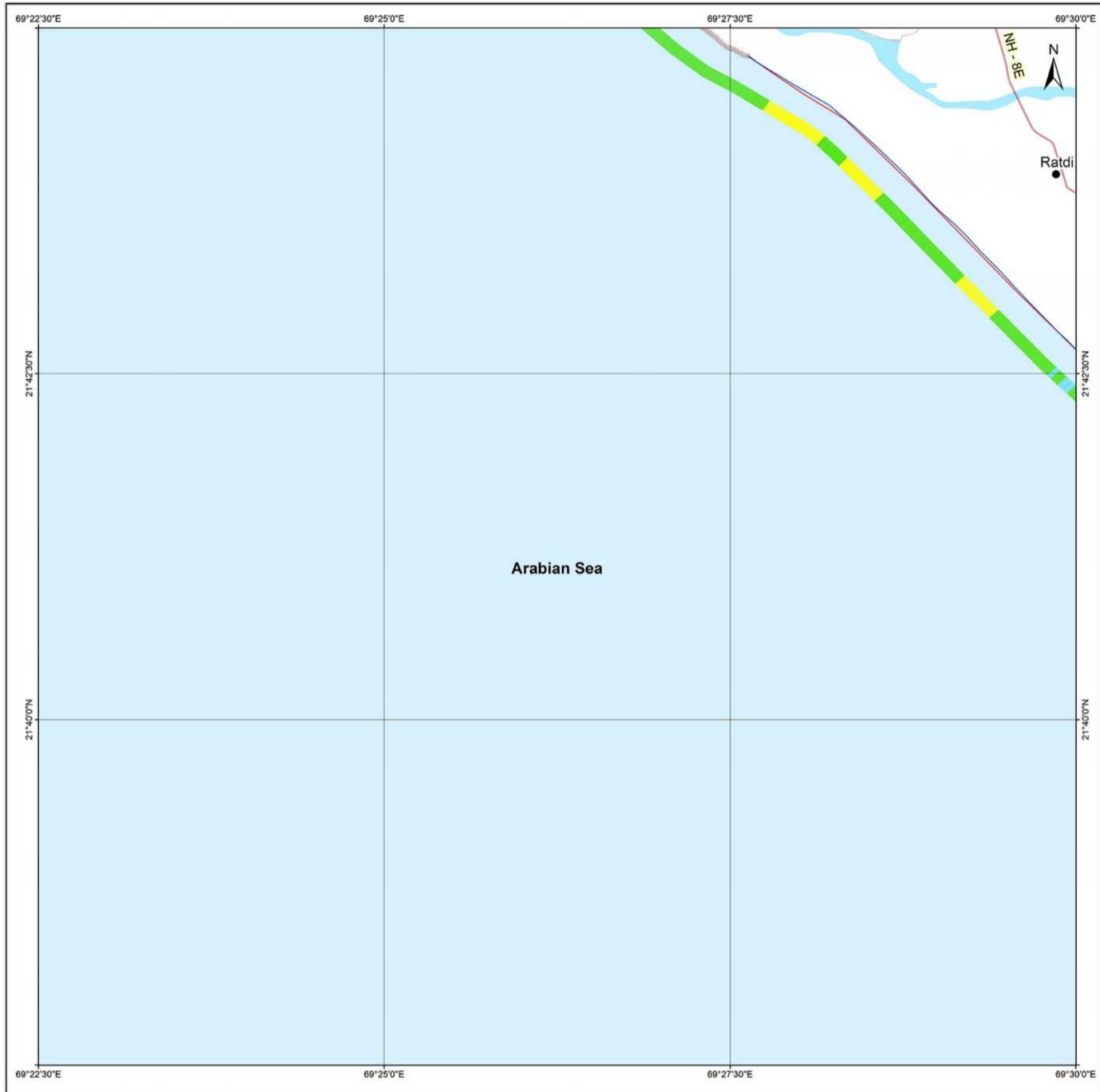
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1990 - 2018
PORBANDAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 6 / NE
Map No. : NCCR/SCM/075



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

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41 G / 5 / SW	41 G / 5 / SE	41 G / 9 / SW
41 G / 6 / NW	41 G / 6 / NE	41 G / 10 / NW
41 G / 6 / SW	41 G / 6 / SE	41 G / 10 / SW

Incidence on 1:50,000 Sheets

41 G / 1	41 G / 5	41 G / 9
41 G / 2	41 G / 6	41 G / 10
41 G / 3	41 G / 7	41 G / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	03/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

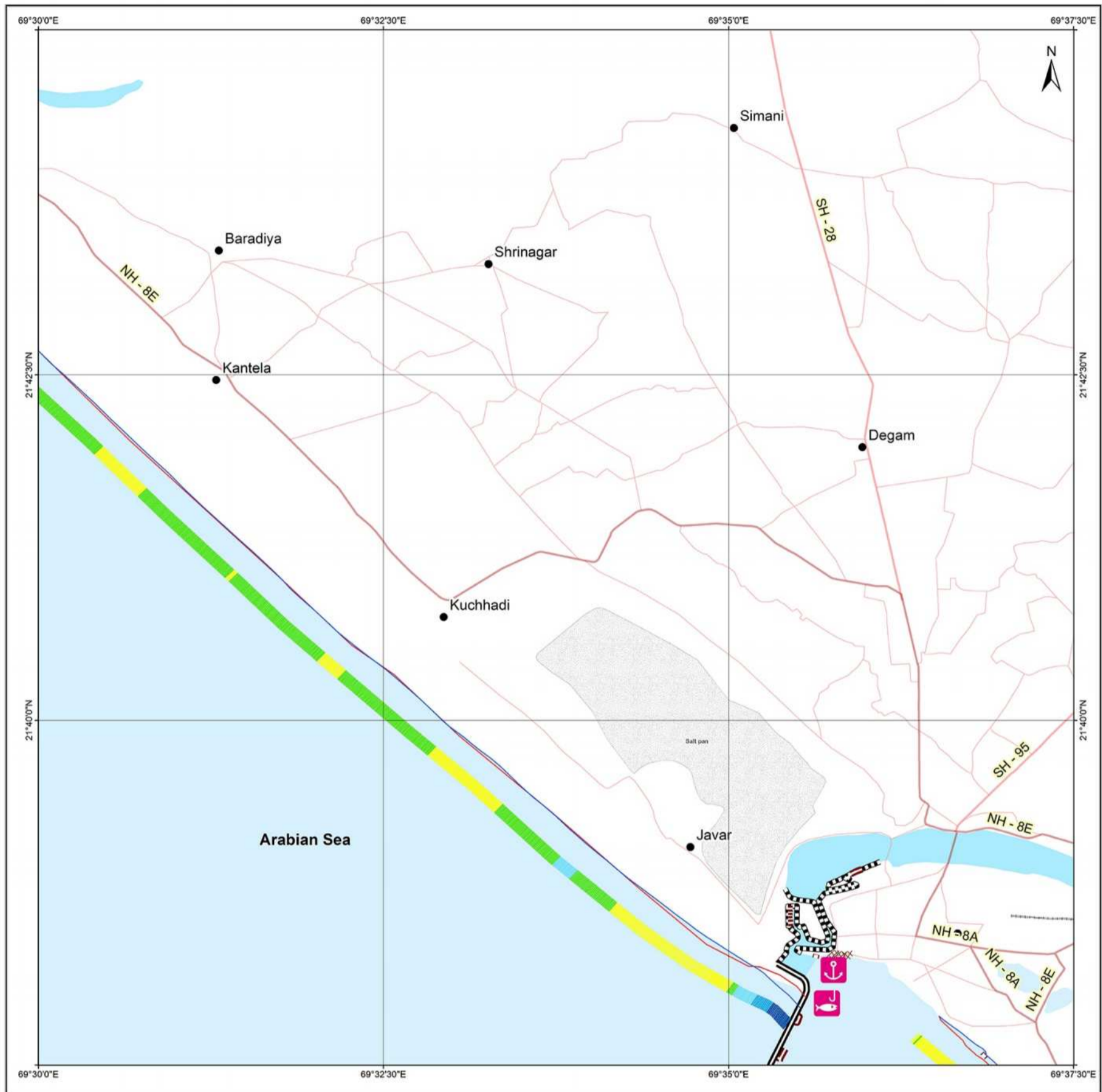
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1990 - 2018
PORBANDAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 10 / NW
Map No. : NCCR/SCM/076



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

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41 G / 5 / SE	41 G / 9 / SW	41 G / 9 / SE
41 G / 6 / NE	41 G / 10 / NW	41 G / 10 / NE
41 G / 6 / SE	41 G / 10 / SW	41 G / 10 / SE

Incidence on 1:50,000 Sheets

41 G / 5	41 G / 9	41 G / 13
41 G / 6	41 G / 10	41 G / 14
41 G / 7	41 G / 11	41 G / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	03/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

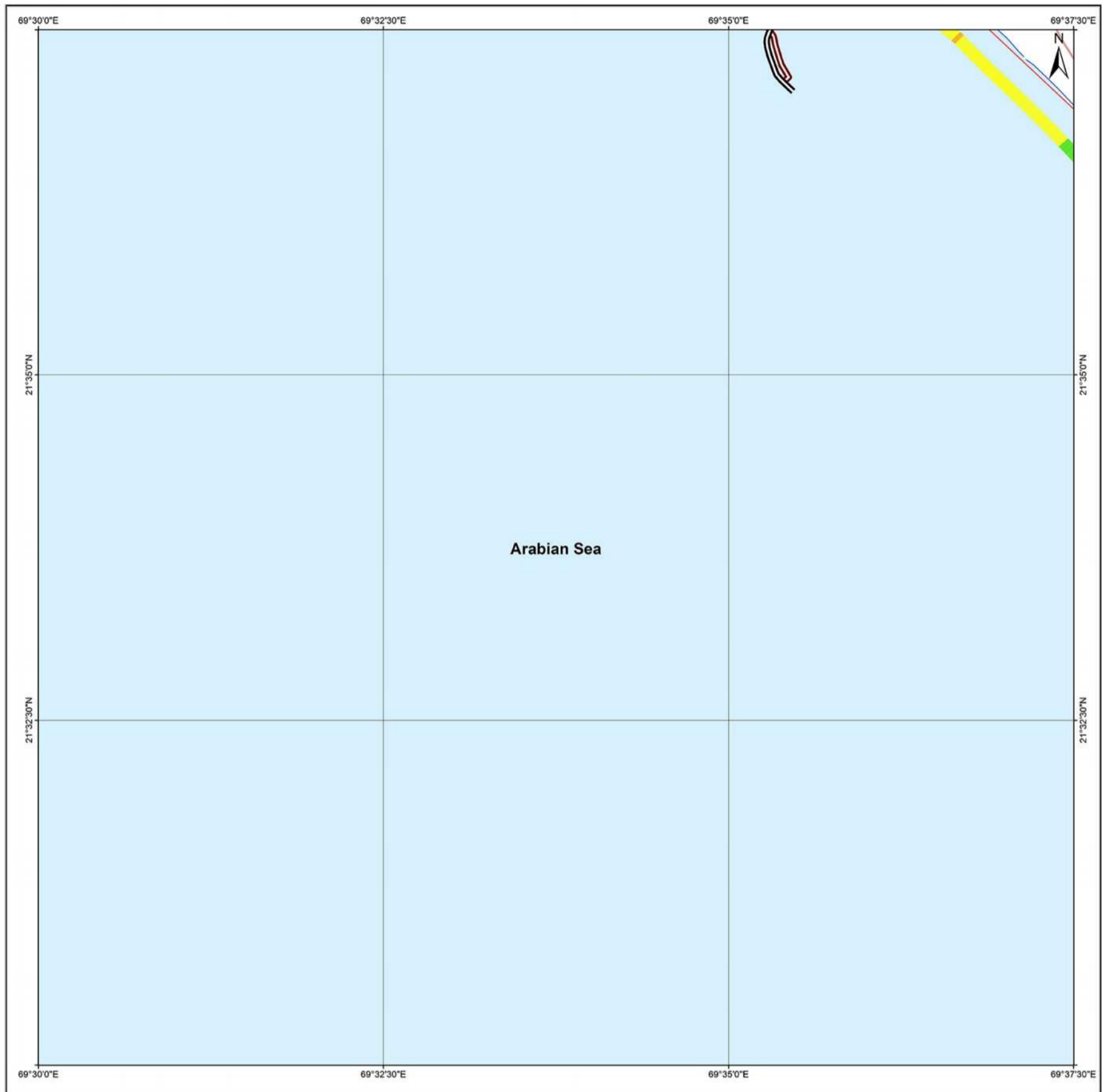
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1990 - 2018
PORBANDAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 10 / SW
Map No. : NCCR/SCM/077



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/27/2018

Index to sheets

41 G / 6 / NE	41 G / 10 / NW	41 G / 10 / NE
41 G / 6 / SE	41 G / 10 / SW	41 G / 10 / SE
41 G / 7 / NE	41 G / 11 / NW	41 G / 11 / NE

Incidence on 1:50,000 Sheets

41 G / 5	41 G / 9	41 G / 13
41 G / 6	41 G / 10	41 G / 14
41 G / 7	41 G / 11	41 G / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015
LISS-IV	05/07/2014
LISS-IV	04/18/2013
LISS-IV	03/17/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 10 / SE
Map No. : NCCR/SCM/078



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018 & 02/27/2018

Index to sheets

41 G / 10 / NW	41 G / 10 / NE	41 G / 14 / NW
41 G / 10 / SW	41 G / 10 / SE	41 G / 14 / SW
41 G / 11 / NW	41 G / 11 / NE	41 G / 15 / NW

Incidence on 1:50,000 Sheets

41 G / 5	41 G / 9	41 G / 13
41 G / 6	41 G / 10	41 G / 14
41 G / 7	41 G / 11	41 G / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018 & 02/27/2018
LISS-IV	03/28/2017
LISS-IV	01/21/2016
LISS-IV	04/08/2015 & 05/07/2015
LISS-IV	04/18/2014 & 05/07/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

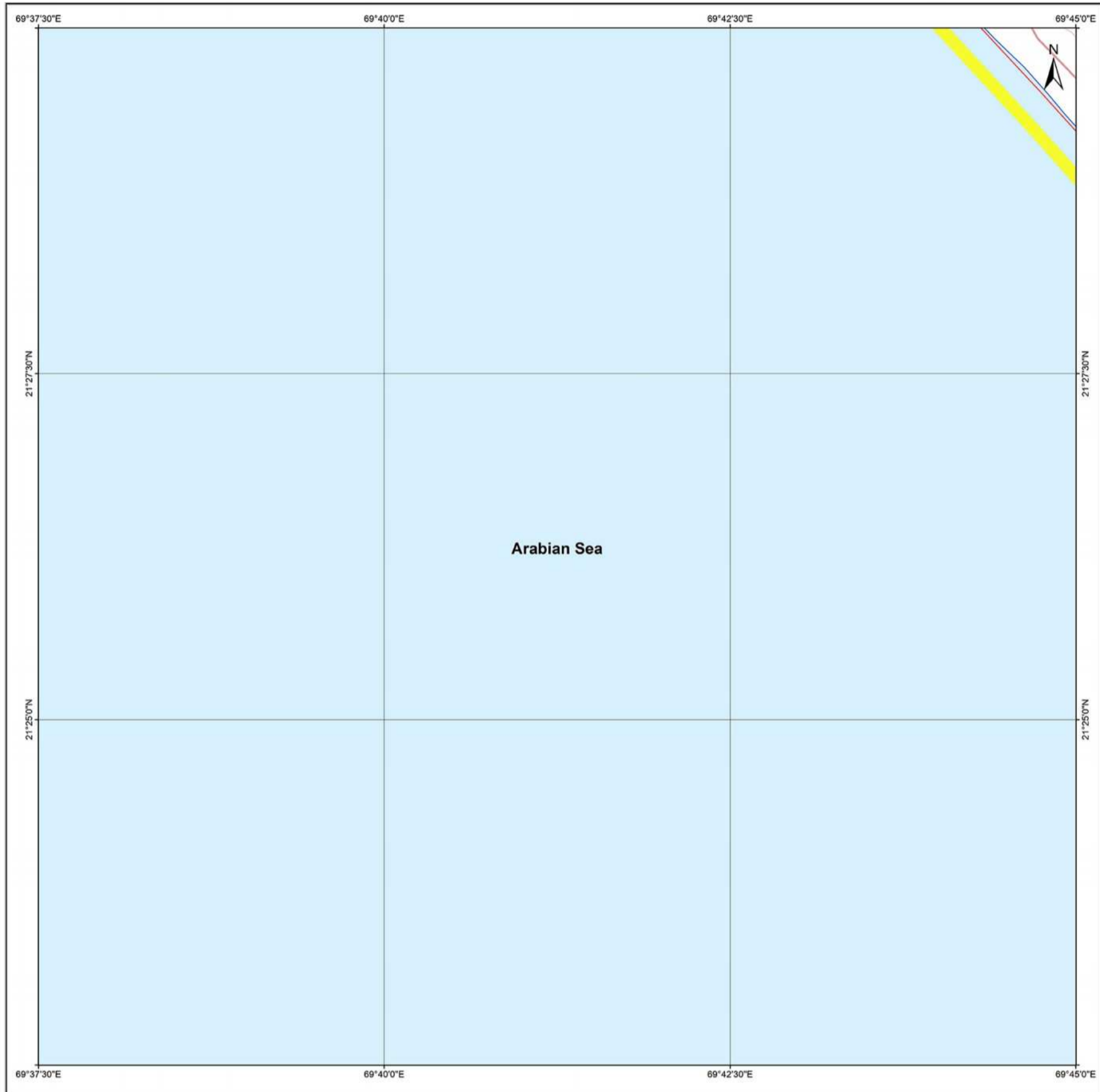
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 11 / NE
Map No. : NCCR/SCM/079



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 10 / SW	41 G / 10 / SE	41 G / 14 / SW
41 G / 11 / NW	41 G / 11 / NE	41 G / 15 / NW
41 G / 11 / SW	41 G / 11 / SE	41 G / 15 / SW

Incidence on 1:50,000 Sheets

41 G / 6	41 G / 10	41 G / 14
41 G / 7	41 G / 11	41 G / 15
41 G / 8	41 G / 12	41 G / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	03/28/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

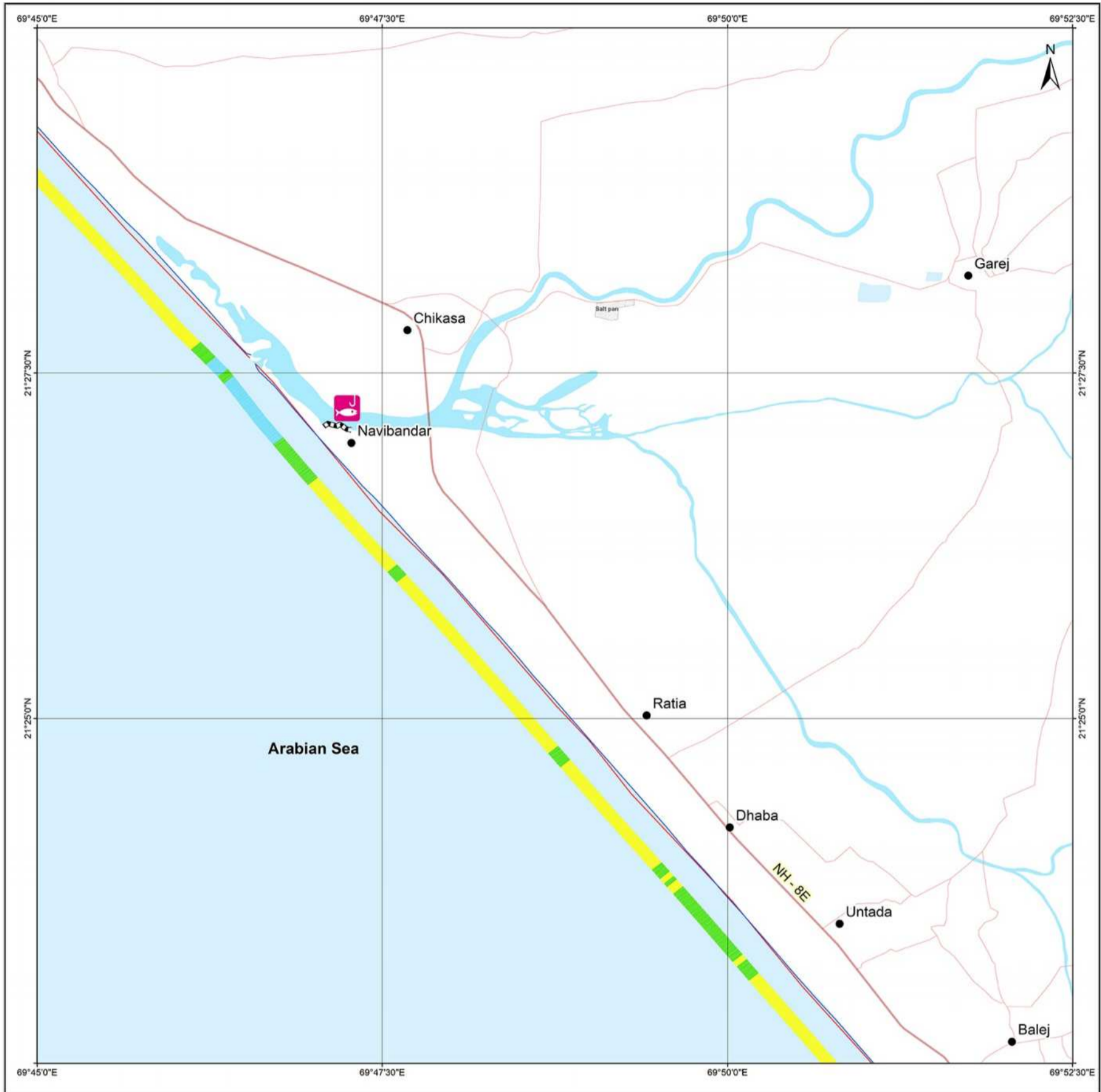
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SHORELINE CHANGE MAP GUJARAT

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41 G / 15 / NW
Map No. : NCCR/SCM/080



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 10 / SE	41 G / 14 / SW	41 G / 14 / SE
41 G / 11 / NE	41 G / 15 / NW	41 G / 15 / NE
41 G / 11 / SE	41 G / 15 / SW	41 G / 15 / SE

Incidence on 1:50,000 Sheets

41 G / 10	41 G / 14	41 K / 2
41 G / 11	41 G / 15	41 K / 3
41 G / 12	41 G / 16	41 K / 4

Scale
1:25,000
1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	03/28/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	05/02/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

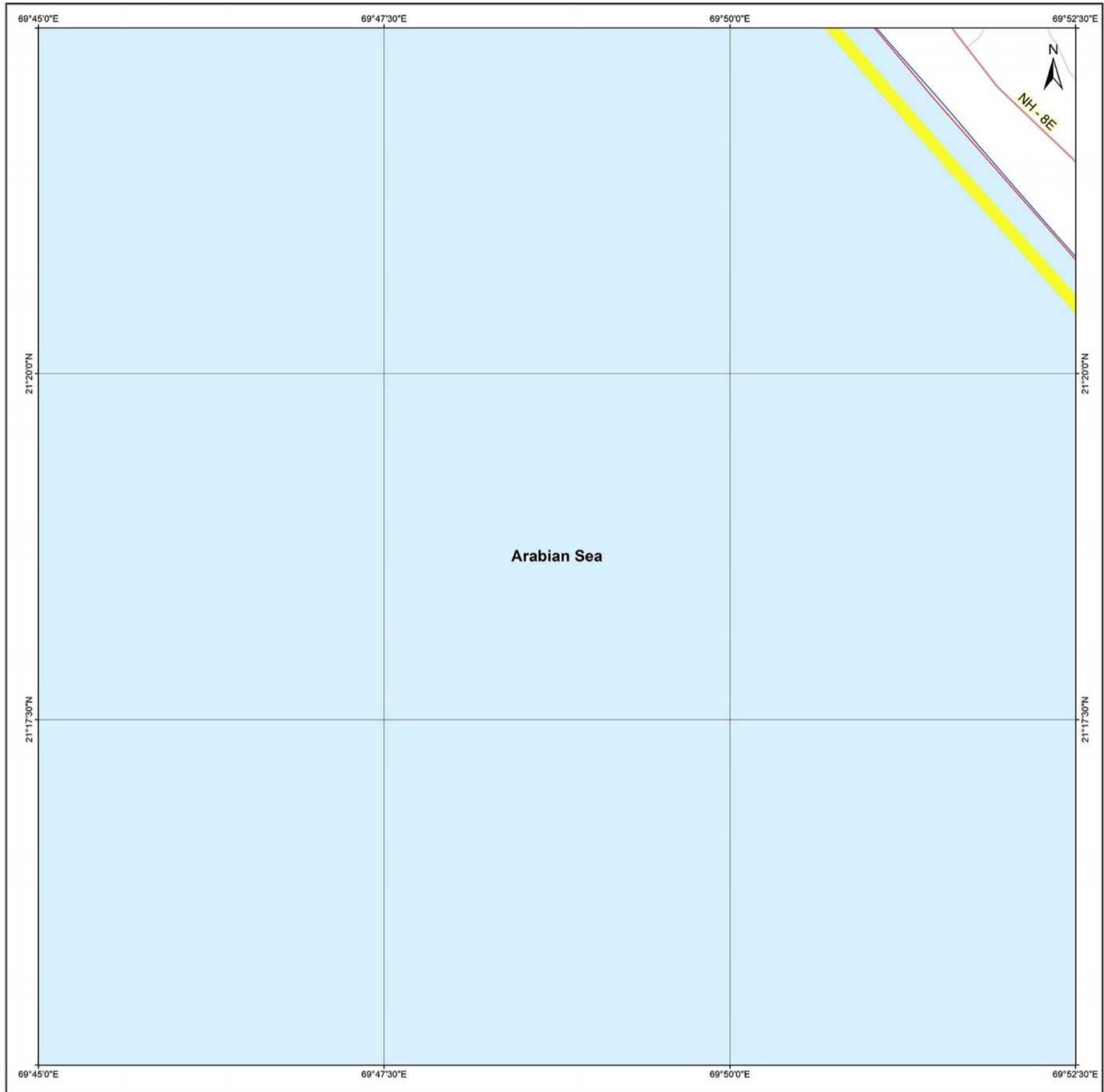
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 G / 15 / SW
Map No. : NCCR/SCM/081



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 11 / NE	41 G / 15 / NW	41 G / 15 / NE
41 G / 11 / SE	41 G / 15 / SW	41 G / 15 / SE
41 G / 12 / NE	41 G / 16 / NW	41 G / 16 / NE

Incidence on 1:50,000 Sheets

41 G / 10	41 G / 14	41 K / 2
41 G / 11	41 G / 15	41 K / 3
41 G / 12	41 G / 16	41 K / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	03/28/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	05/02/2008 & 04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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41 G / 15 / SE
 Map No. : NCCR/SCM/082



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 15 / NW	41 G / 15 / NE	41 K / 3 / NW
41 G / 15 / SW	41 G / 15 / SE	41 K / 3 / SW
41 G / 16 / NW	41 G / 16 / NE	41 K / 4 / NW

Incidence on 1:50,000 Sheets

41 G / 10	41 G / 14	41 K / 2
41 G / 11	41 G / 15	41 K / 3
41 G / 12	41 G / 16	41 K / 4

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017 & 03/28/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/21/2000
	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

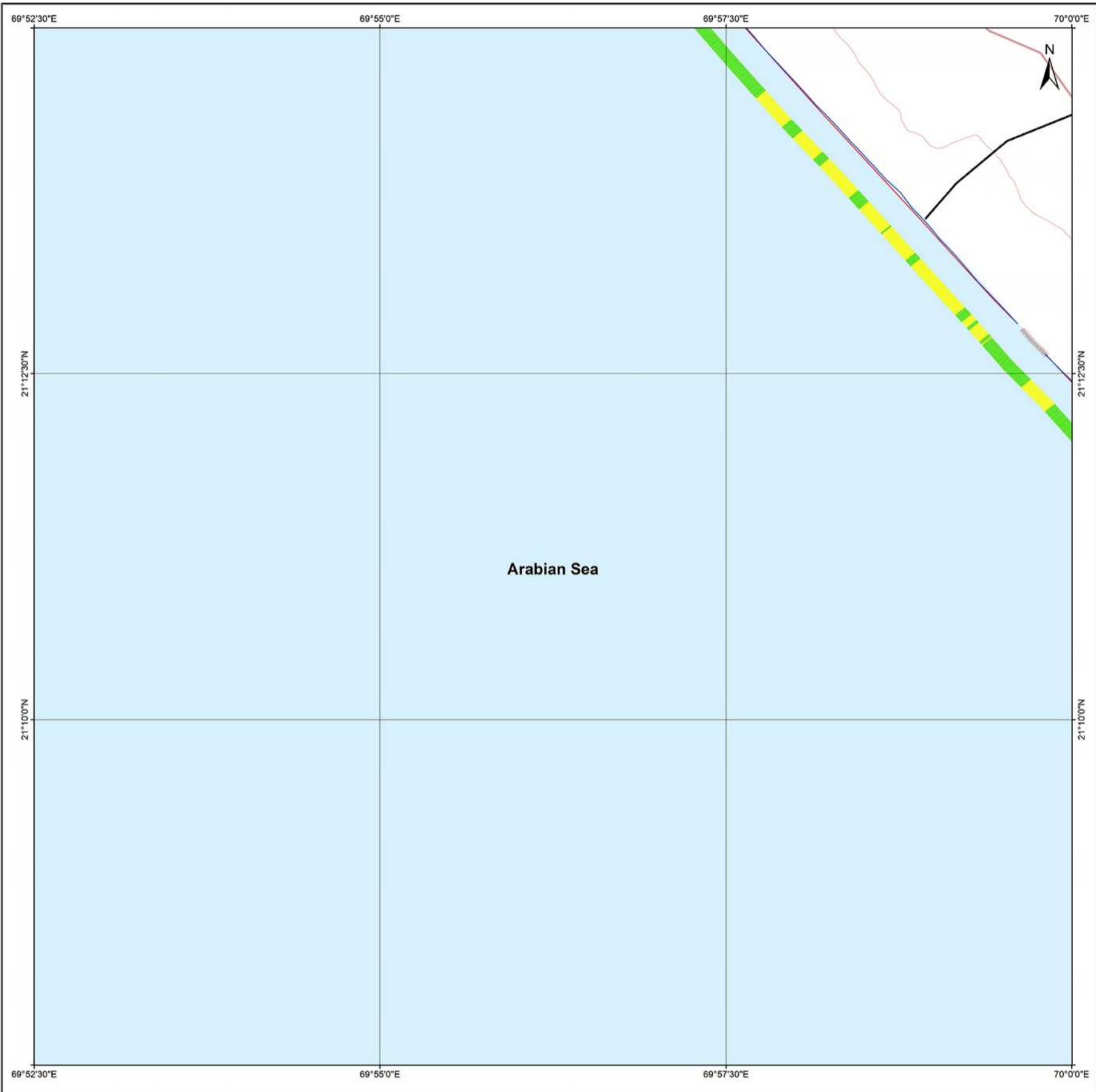
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SHORELINE CHANGE MAP GUJARAT

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41 G / 16 / NE
 Map No. : NCCR/SCM/083



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 15 / SW	41 G / 15 / SE	41 K / 3 / SW
41 G / 16 / NW	41 G / 16 / NE	41 K / 4 / NW
41 G / 16 / SW	41 G / 16 / SE	41 K / 4 / SW

Incidence on 1:50,000 Sheets

41 G / 11	41 G / 15	41 K / 3
41 G / 12	41 G / 16	41 K / 4
41 H / 9	41 H / 13	41 L / 1

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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41 K / 4 / NW
 Map No. : NCCR/SCM/084



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 15 / SE	41 K / 3 / SW	41 K / 3 / SE
41 G / 16 / NE	41 K / 4 / NW	41 K / 4 / NE
41 G / 16 / SE	41 K / 4 / SW	41 K / 4 / SE

Incidence on 1:50,000 Sheets

41 G / 15	41 K / 3	41 K / 7
41 G / 16	41 K / 4	41 K / 8
41 H / 13	41 L / 1	41 L / 5

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/21/2000
	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

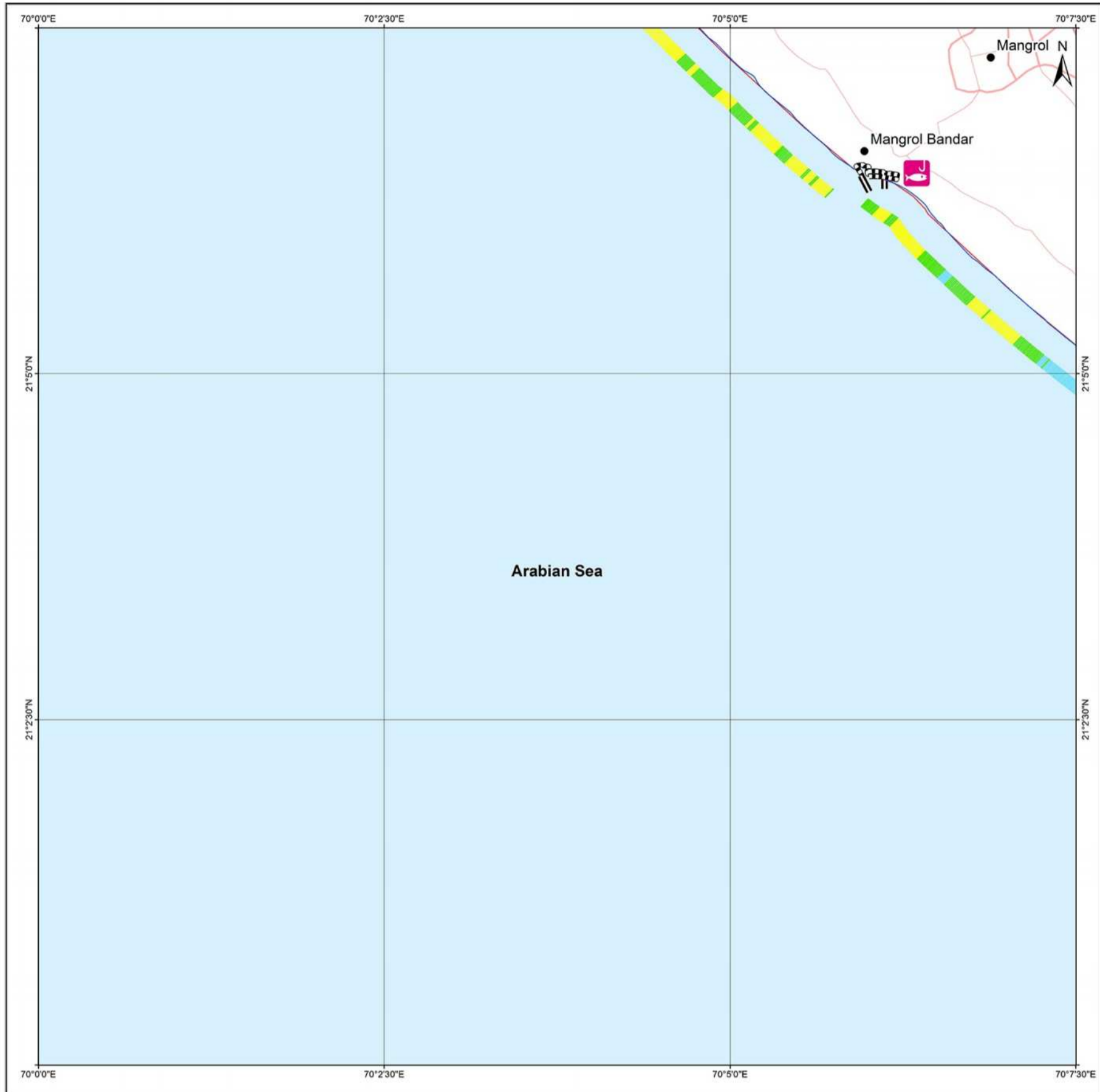
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SHORELINE CHANGE MAP GUJARAT

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41 K / 4 / SW
Map No. : NCCR/SCM/085



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 04/24/1990
- 02/08/2018

Index to sheets

41 G / 16 / NE	41 K / 4 / NW	41 K / 4 / NE
41 G / 16 / SE	41 K / 4 / SW	41 K / 4 / SE
41 H / 13 / NE	41 L / 1 / NW	41 L / 1 / NE

Incidence on 1:50,000 Sheets

41 G / 15	41 K / 3	41 K / 7
41 G / 16	41 K / 4	41 K / 8
41 H / 13	41 L / 1	41 L / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/08/2018
LISS-IV	04/26/2017
LISS-IV	04/07/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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41 K / 4 / SE
Map No. : NCCR/SCM/086



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 01/15/2018 & 02/08/2018

Index to sheets

41 K / 4 / NW	41 K / 4 / NE	41 K / 8 / NW
41 K / 4 / SW	41 K / 4 / SE	41 K / 8 / SW
41 L / 1 / NW	41 L / 1 / NE	41 L / 5 / NW

Incidence on 1:50,000 Sheets

41 G / 15	41 K / 3	41 K / 7
41 G / 16	41 K / 4	41 K / 8
41 H / 13	41 L / 1	41 L / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/02/2017 & 04/26/2017
LISS-IV	03/14/2016
LISS-IV	05/07/2015
LISS-IV	04/18/2014
LISS-IV	05/17/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

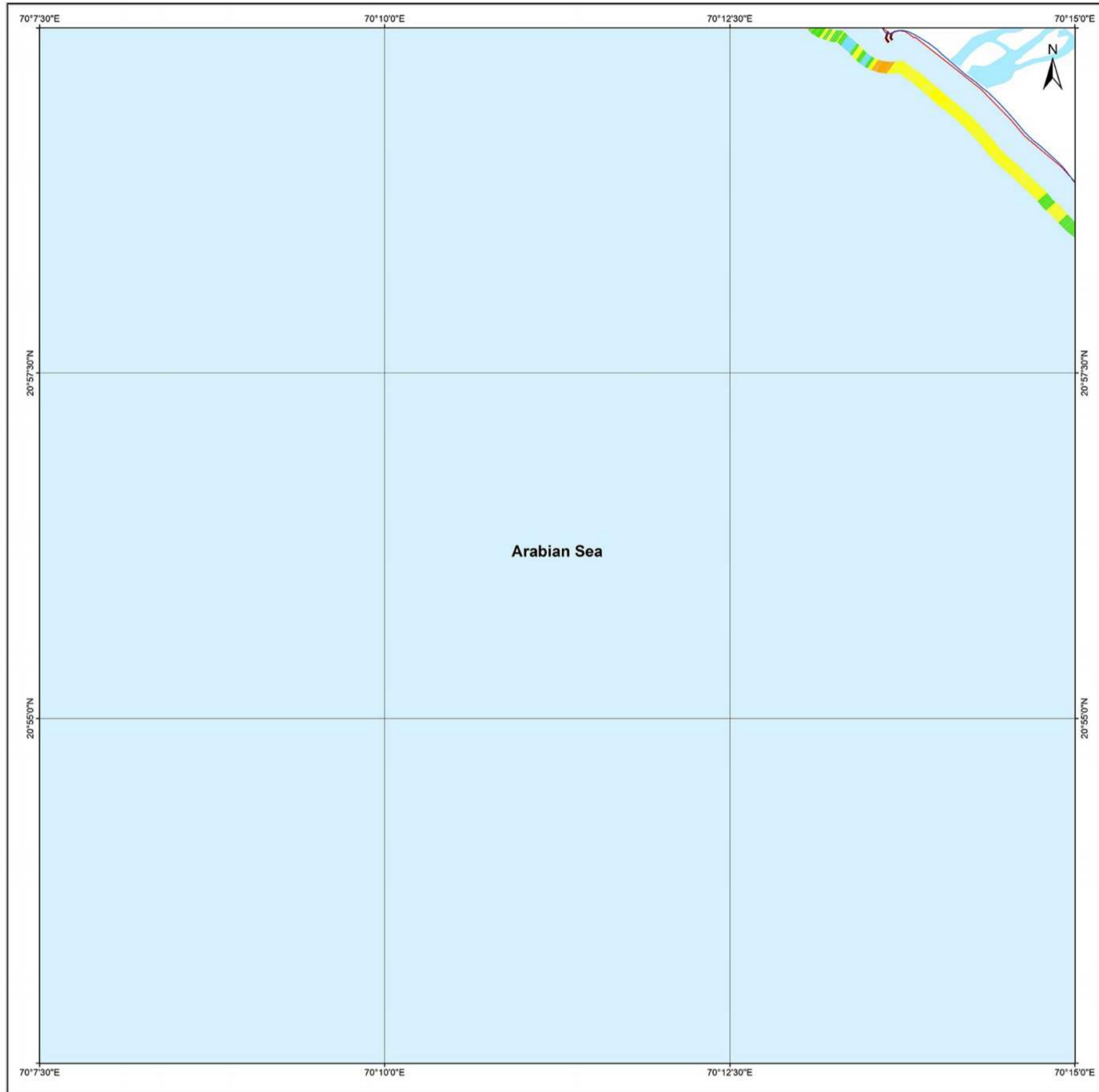
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 L / 1 / NE
Map No. : NCCR/SCM/087



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 04/24/1990
- 01/15/2018

Index to sheets

41 K / 4 / SW	41 K / 4 / SE	41 K / 8 / SW
41 L / 1 / NW	41 L / 1 / NE	41 L / 5 / NW
41 L / 1 / SW	41 L / 1 / SE	41 L / 5 / SW

Incidence on 1:50,000 Sheets

41 G / 16	41 K / 4	41 K / 8
41 H / 13	41 L / 1	41 L / 5
41 H / 14	41 L / 2	41 L / 6

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/02/2017
LISS-IV	03/14/2016
LISS-IV	01/07/2015
LISS-IV	02/05/2014
LISS-IV	03/06/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	05/21/2000
TM	04/24/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

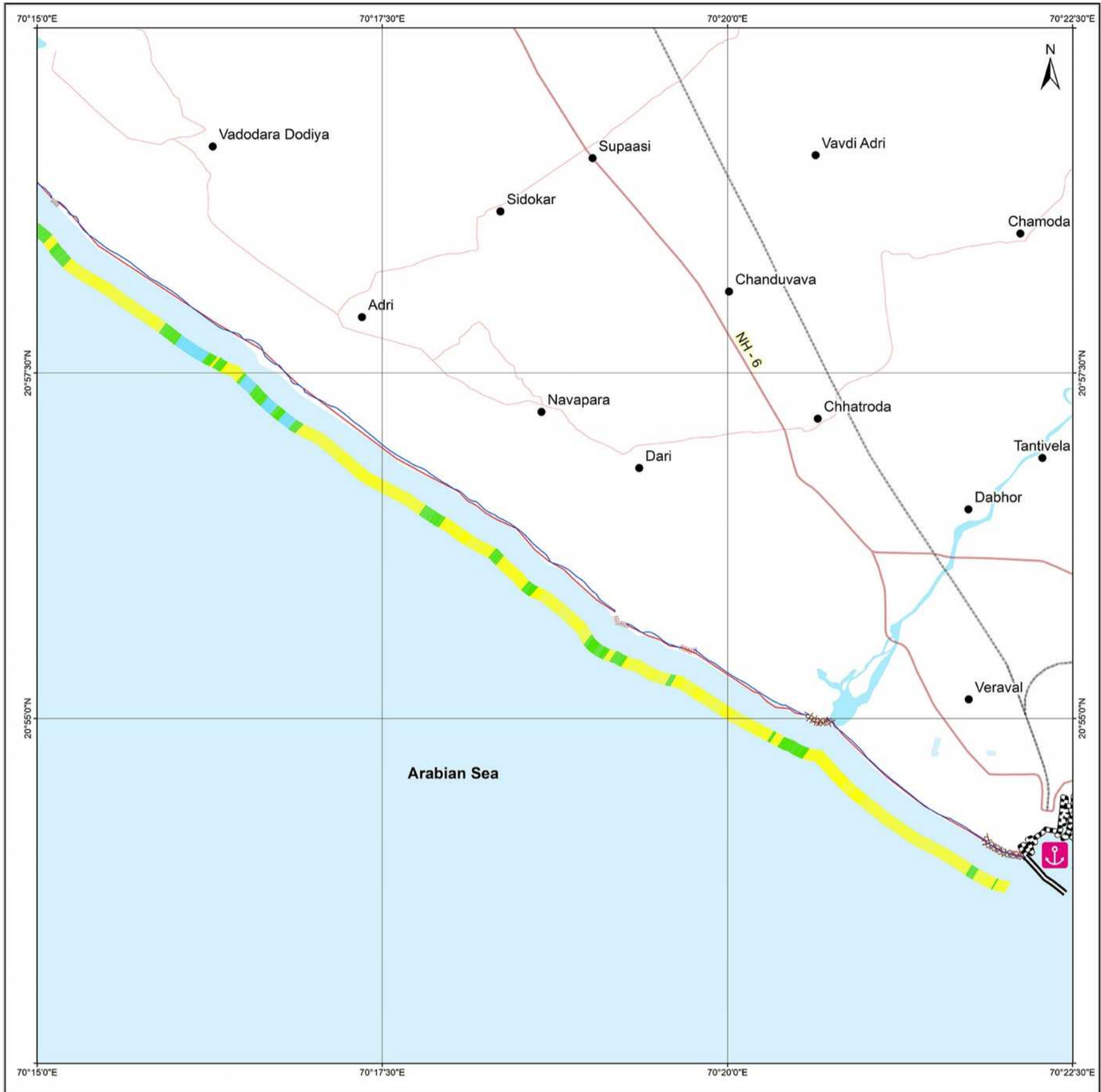
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SHORELINE CHANGE MAP GUJARAT

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41 L / 5 / NW
Map No. : NCCR/SCM/088



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/16/1990 & 04/24/1990
- 01/15/2018

Index to sheets

41 K / 4 / SE	41 K / 5 / SW	41 K / 6 / SE
41 L / 1 / NE	41 L / 5 / NW	41 L / 5 / NE
41 L / 1 / SE	41 L / 5 / SW	41 L / 5 / SE

Incidence on 1:50,000 Sheets

41 K / 4	41 K / 6	41 K / 12
41 L / 1	41 L / 5	41 L / 9
41 L / 2	41 L / 6	41 L / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/15/2018
LISS-IV	04/02/2017
LISS-IV	03/14/2016
LISS-IV	01/07/2015
LISS-IV	02/05/2014
LISS-IV	03/06/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	05/21/2000 & 03/11/2000 03/16/1990 & 04/24/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▬ Groynes
- ▬ Jetty
- ▬ Breakwater
- ▬ Seawall/Ripraps
- ▬ Rocky Coast
- ▬ Administrative Boundary
- ▬ National Highways
- ▬ State Highways
- ▬ Other Roads
- ▬ Railways
- ▬ Lakes
- ▬ Rivers

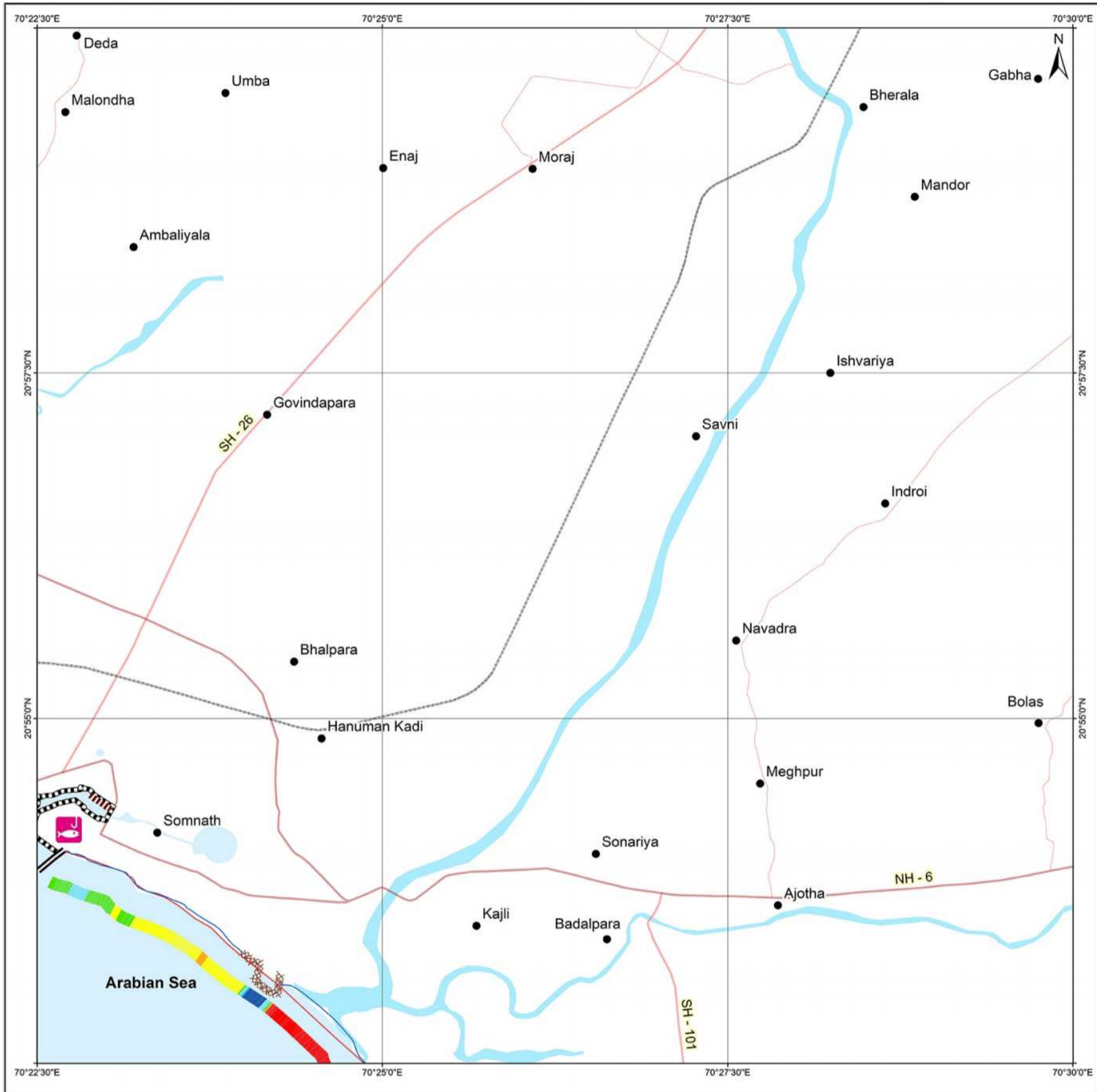
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1990 - 2018
GIR SOMNATH

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 L / 5 / NE
Map No. : NCCR/SCM/089



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/16/1990
- █ 01/15/2018

Index to sheets

41 K / 8 / SW	41 K / 8 / SE	41 K / 12 / SW
41 L / 5 / NW	41 L / 5 / NE	41 L / 9 / NW
41 L / 5 / SW	41 L / 5 / SE	41 L / 9 / SW

Incidence on 1:50,000 Sheets

41 K / 4	41 K / 8	41 K / 12
41 L / 1	41 L / 5	41 L / 9
41 L / 2	41 L / 6	41 L / 10

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/15/2018
LISS-IV	04/02/2017
LISS-IV	03/14/2016
LISS-IV	01/07/2015
LISS-IV	02/05/2014
LISS-IV	03/06/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+ TM	03/11/2000
	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

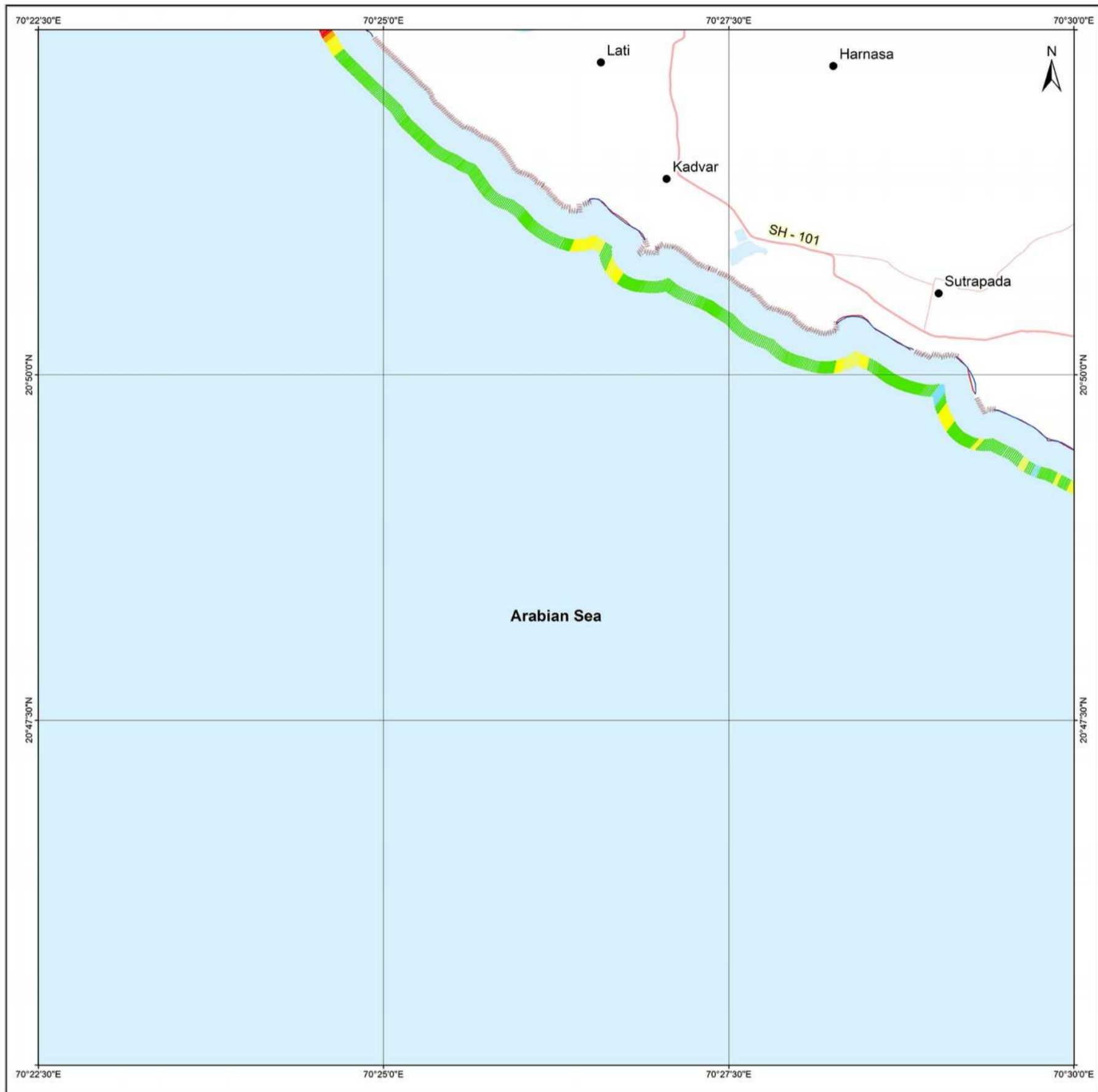
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SHORELINE CHANGE MAP GUJARAT

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41 L / 5 / SE
Map No. : NCCR/SCM/090



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/16/1990
- 01/15/2018

Index to sheets

41 L / 5 / NW	41 L / 5 / NE	41 L / 9 / NW
41 L / 5 / SW	41 L / 5 / SE	41 L / 9 / SW
41 L / 6 / NW	41 L / 6 / NE	41 L / 10 / NW

Incidence on 1:50,000 Sheets

41 K / 4	41 K / 8	41 K / 12
41 L / 1	41 L / 5	41 L / 9
41 L / 2	41 L / 6	41 L / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/02/2017
LISS-IV	03/14/2016
LISS-IV	01/07/2015
LISS-IV	04/23/2014
LISS-IV	03/06/2013
LISS-IV	03/11/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 L / 9 / SW
Map No. : NCCR/SCM/091



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018 & 01/15/2018

Index to sheets

41 L / 5 / NE	41 L / 9 / NW	41 L / 9 / NE
41 L / 5 / SE	41 L / 9 / SW	41 L / 9 / SE
41 L / 6 / NE	41 L / 10 / NW	41 L / 10 / NE

Incidence on 1:50,000 Sheets

41 K / 8	41 K / 12	41 K / 16
41 L / 5	41 L / 9	41 L / 13
41 L / 6	41 L / 10	41 L / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/13/2018 & 01/15/2018
LISS-IV	04/02/2017
LISS-IV	03/14/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

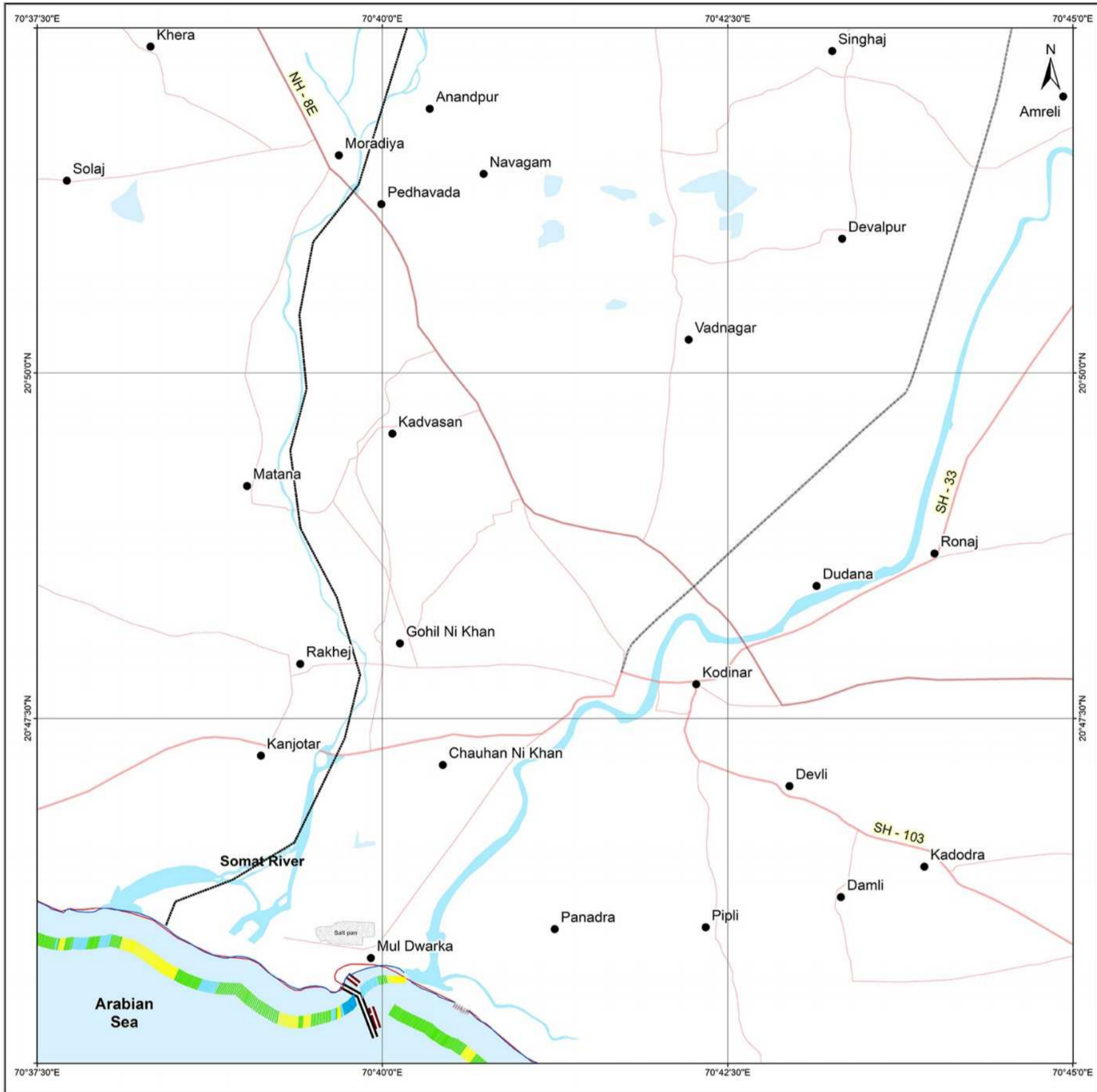
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SHORELINE CHANGE MAP GUJARAT

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41 L / 9 / SE
Map No. : NCCR/SCM/092



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 9 / NW	41 L / 9 / NE	41 L / 13 / NW
41 L / 9 / SW	41 L / 9 / SE	41 L / 13 / SW
41 L / 10 / NW	41 L / 10 / NE	41 L / 14 / NW

Incidence on 1:50,000 Sheets

41 K / 8	41 K / 12	41 K / 16
41 L / 5	41 L / 9	41 L / 13
41 L / 6	41 L / 10	41 L / 14

Scale
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/13/2018
LISS-IV	04/02/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/13/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

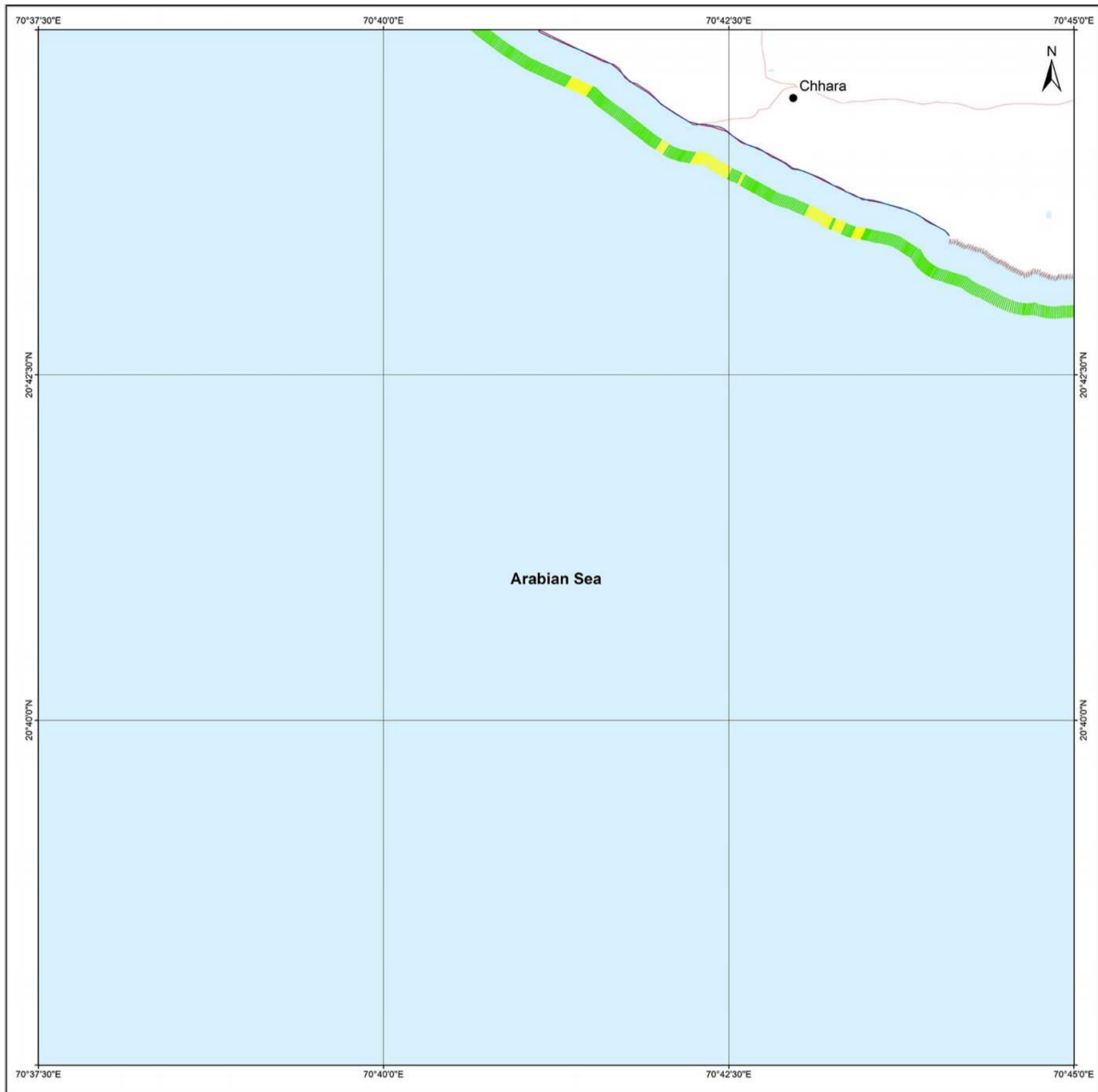
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SHORELINE CHANGE MAP GUJARAT

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41 L / 10 / NE
Map No. : NCCR/SCM/093



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 9 / SW	41 L / 9 / SE	41 L / 13 / SW
41 L / 10 / NW	41 L / 10 / NE	41 L / 14 / NW
41 L / 10 / SW	41 L / 10 / SE	41 L / 14 / SW

Incidence on 1:50,000 Sheets

41 L / 5	41 L / 9	41 L / 13
41 L / 6	41 L / 10	41 L / 14
41 L / 7	41 L / 11	41 L / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/13/2018
LISS-IV	04/02/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/18/2008 & 04/13/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

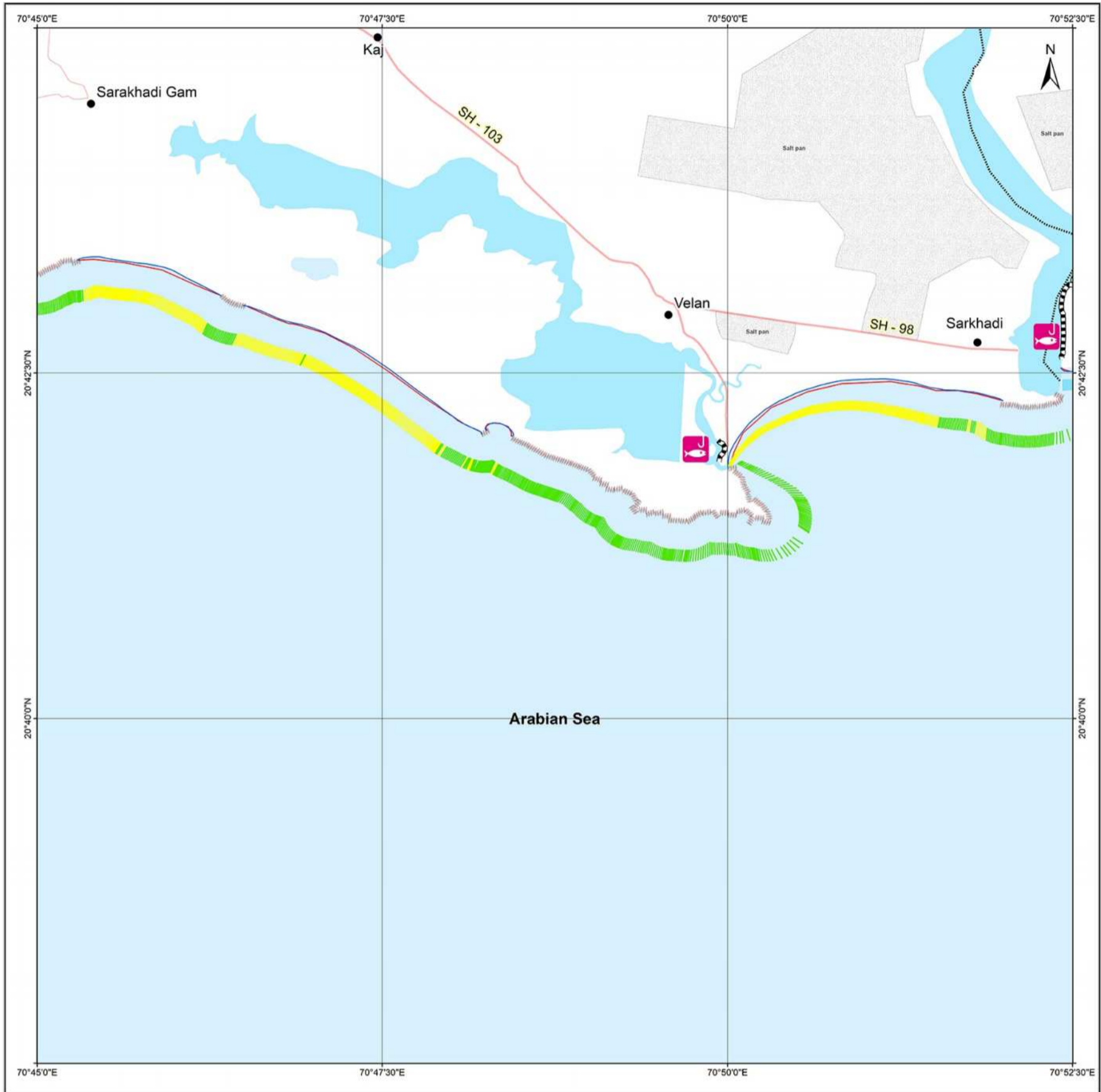
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SHORELINE CHANGE MAP GUJARAT

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41 L / 14 / NW
Map No. : NCCR/SCM/094



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 9 / SE	41 L / 13 / SW	41 L / 13 / SE
41 L / 10 / NE	41 L / 14 / NW	41 L / 14 / NE
41 L / 10 / SE	41 L / 14 / SW	41 L / 14 / SE

Incidence on 1:50,000 Sheets

41 L / 9	41 L / 13	41 P / 1
41 L / 10	41 L / 14	41 P / 2
41 L / 11	41 L / 15	41 P / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/13/2018
LISS-IV	05/01/2017 & 04/02/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

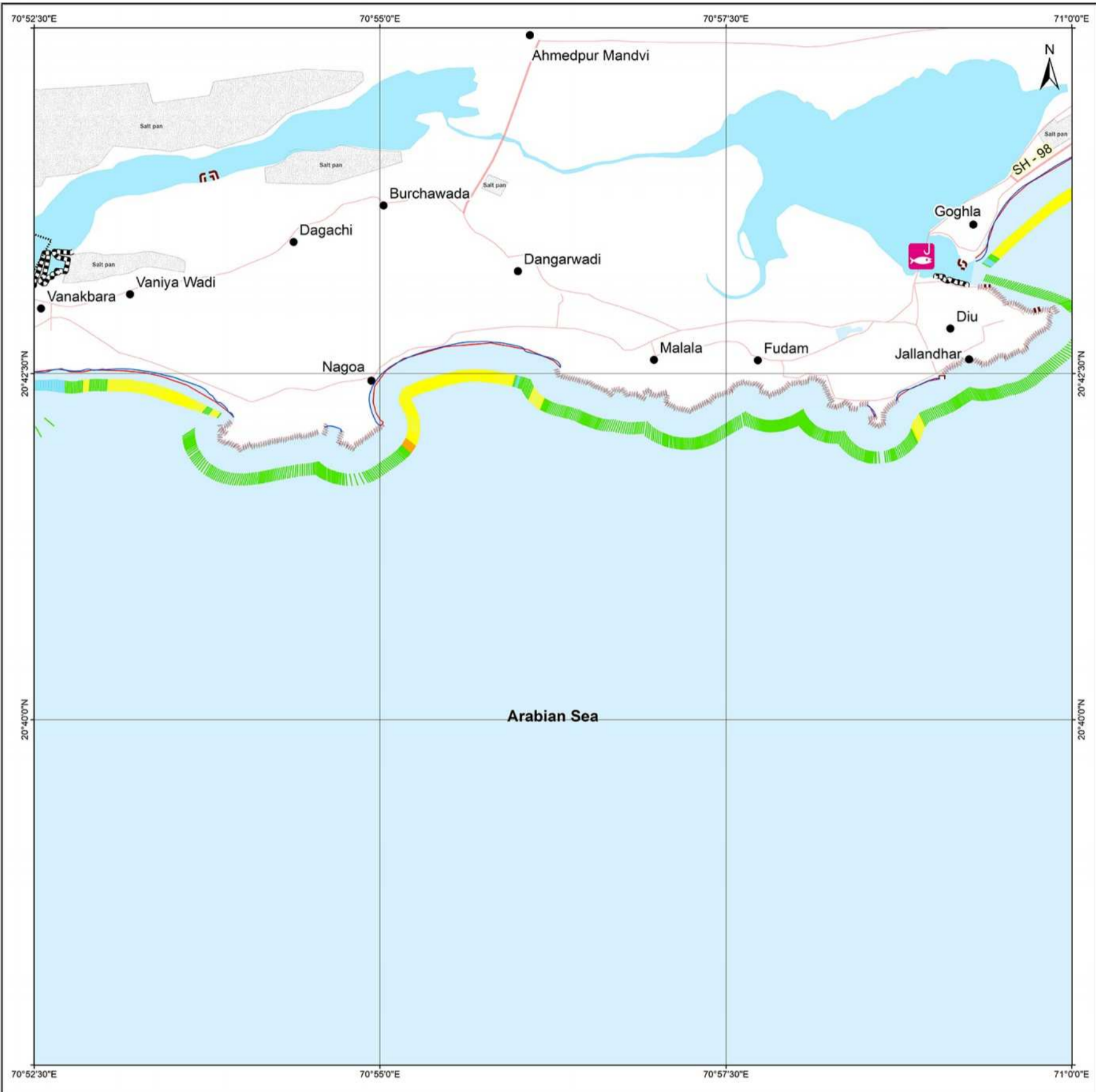
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SHORELINE CHANGE MAP DAMAN & DIU & GUJARAT

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41 L / 14 / NE
Map No. : NCCR/SCM/095



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 13 / SW	41 L / 13 / SE	41 P / 1 / SW
41 L / 14 / NW	41 L / 14 / NE	41 P / 2 / NW
41 L / 14 / SW	41 L / 14 / SE	41 P / 2 / SW

Incidence on 1:50,000 Sheets

41 L / 9	41 L / 13	41 P / 1
41 L / 10	41 L / 14	41 P / 2
41 L / 11	41 L / 15	41 P / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	05/01/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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41 P / 2 / NW
Map No. : NCCR/SCM/096



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 13 / SE	41 P / 1 / SW	41 P / 1 / SE
41 L / 14 / NE	41 P / 2 / NW	41 P / 2 / NE
41 L / 14 / SE	41 P / 2 / SW	41 P / 2 / SE

Incidence on 1:50,000 Sheets

41 L / 13	41 P / 1	41 P / 5
41 L / 14	41 P / 2	41 P / 6
41 L / 15	41 P / 3	41 P / 7

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/13/2018
LISS-IV	05/01/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

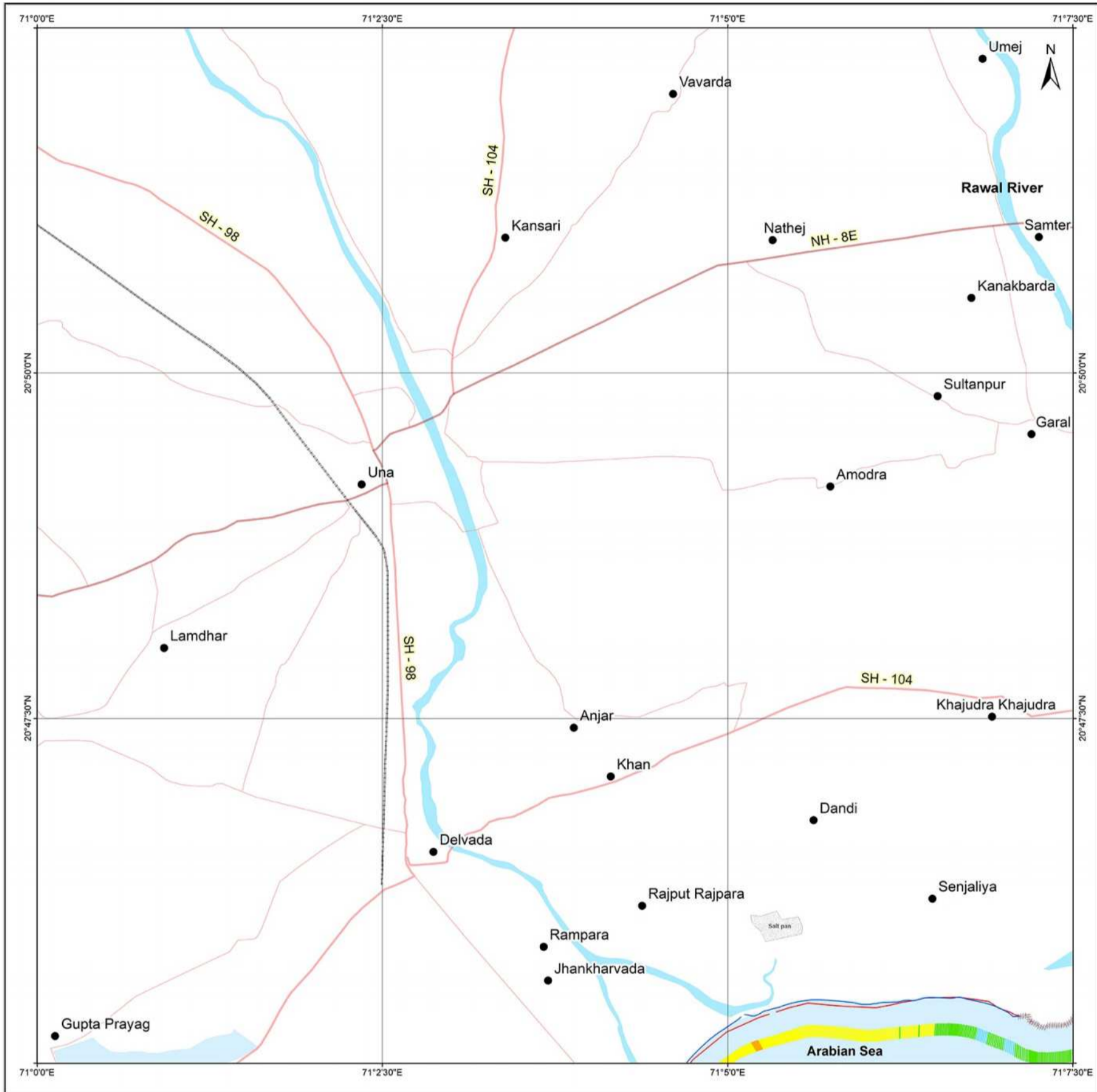
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SHORELINE CHANGE MAP GUJARAT

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41 P / 1 / SW
Map No. : NCCR/SCM/097



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/16/1990
- 02/13/2018

Index to sheets

41 L / 13 / NE	41 P / 1 / NW	41 P / 1 / NE
41 L / 13 / SE	41 P / 1 / SW	41 P / 1 / SE
41 L / 14 / NE	41 P / 2 / NW	41 P / 2 / NE

Incidence on 1:50,000 Sheets

41 K / 16	41 O / 4	41 O / 8
41 L / 13	41 P / 1	41 P / 5
41 L / 14	41 P / 2	41 P / 6

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/04/2013
LISS-IV	05/03/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

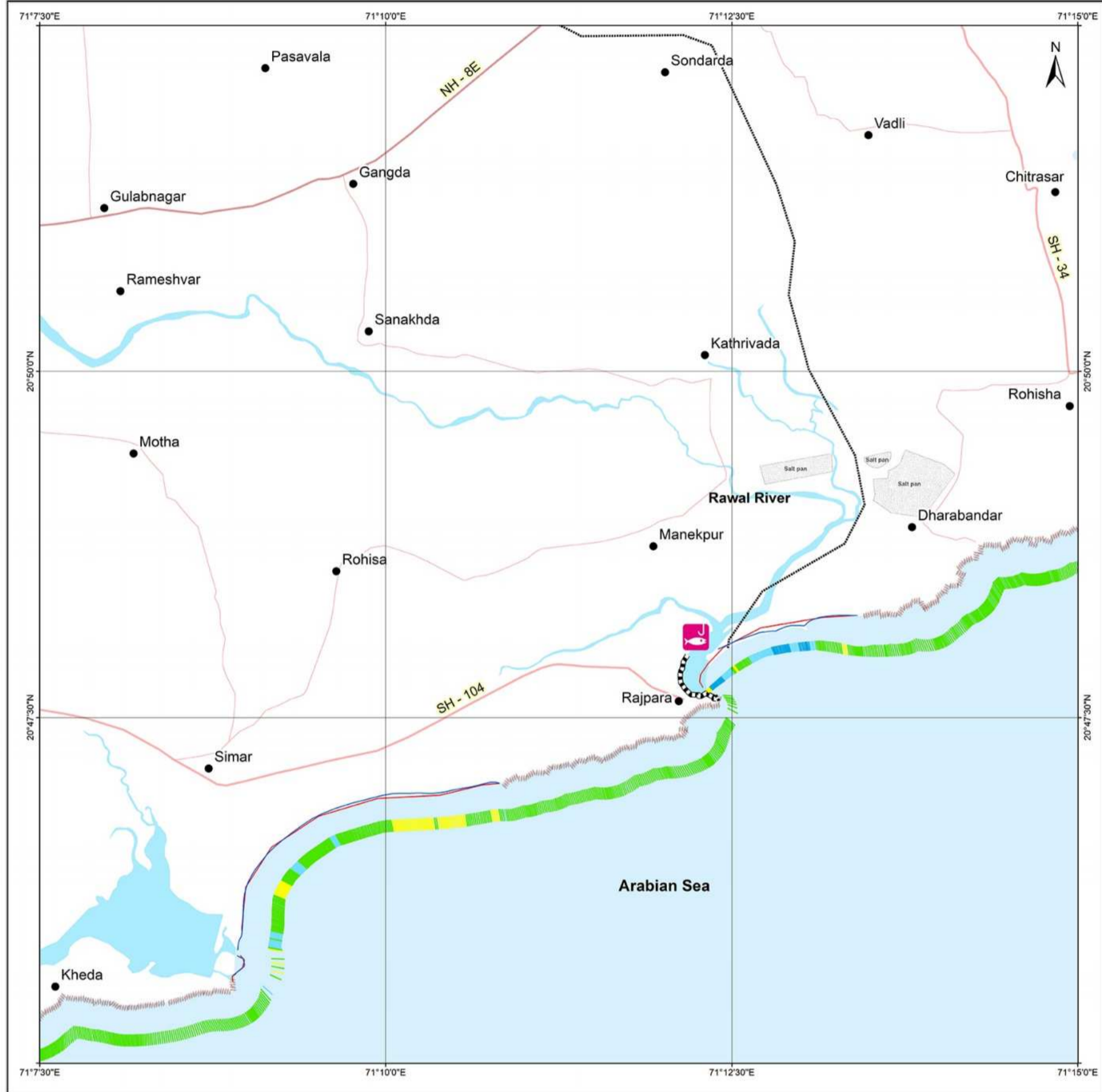
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SHORELINE CHANGE MAP DAMAN & DIU & GUJARAT

Restricted Use
41 P / 1 / SE
 Map No. : NCCR/SCM/098



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/16/1990
- █ 03/09/2018 & 02/13/2018

Index to sheets

41 P / 1 / NW	41 P / 1 / NE	41 P / 5 / NW
41 P / 1 / SW	41 P / 1 / SE	41 P / 5 / SW
41 P / 2 / NW	41 P / 2 / NE	41 P / 6 / NW

Incidence on 1:50,000 Sheets

41 K / 16	41 O / 4	41 O / 8
41 L / 13	41 P / 1	41 P / 5
41 L / 14	41 P / 2	41 P / 6

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	04/07/2017 & 05/01/2017
LISS-IV	02/24/2016
LISS-IV	04/03/2015
LISS-IV	04/23/2014
LISS-IV	04/28/2013
LISS-IV	04/09/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

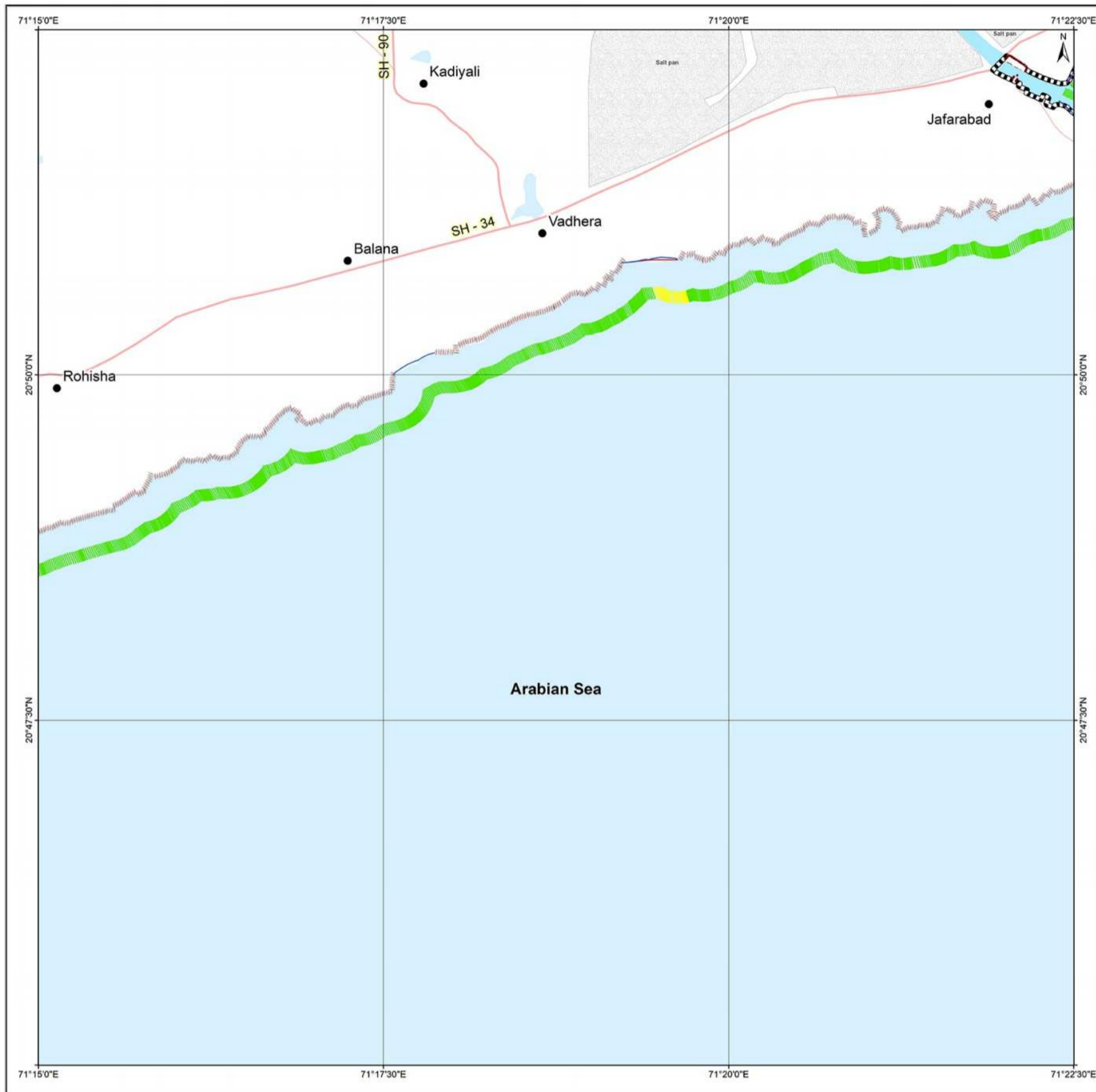
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1990 - 2018
AMRELI

SHORELINE CHANGE MAP GUJARAT

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41 P / 5 / SW
Map No. : NCCR/SCM/099



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/16/1990 & 05/03/1990
- █ 03/09/2018

Index to sheets

41 P / 1 / NE	41 P / 5 / NW	41 P / 5 / NE
41 P / 1 / SE	41 P / 5 / SW	41 P / 5 / SE
41 P / 2 / NE	41 P / 6 / NW	41 P / 6 / NE

Incidence on 1:50,000 Sheets

41 O / 4	41 O / 8	41 O / 12
41 P / 1	41 P / 5	41 P / 9
41 P / 2	41 P / 6	41 P / 10

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	04/03/2015
LISS-IV	03/30/2014
LISS-IV	04/28/2013
LISS-IV	04/09/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/11/2000
TM	03/16/1990 & 05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

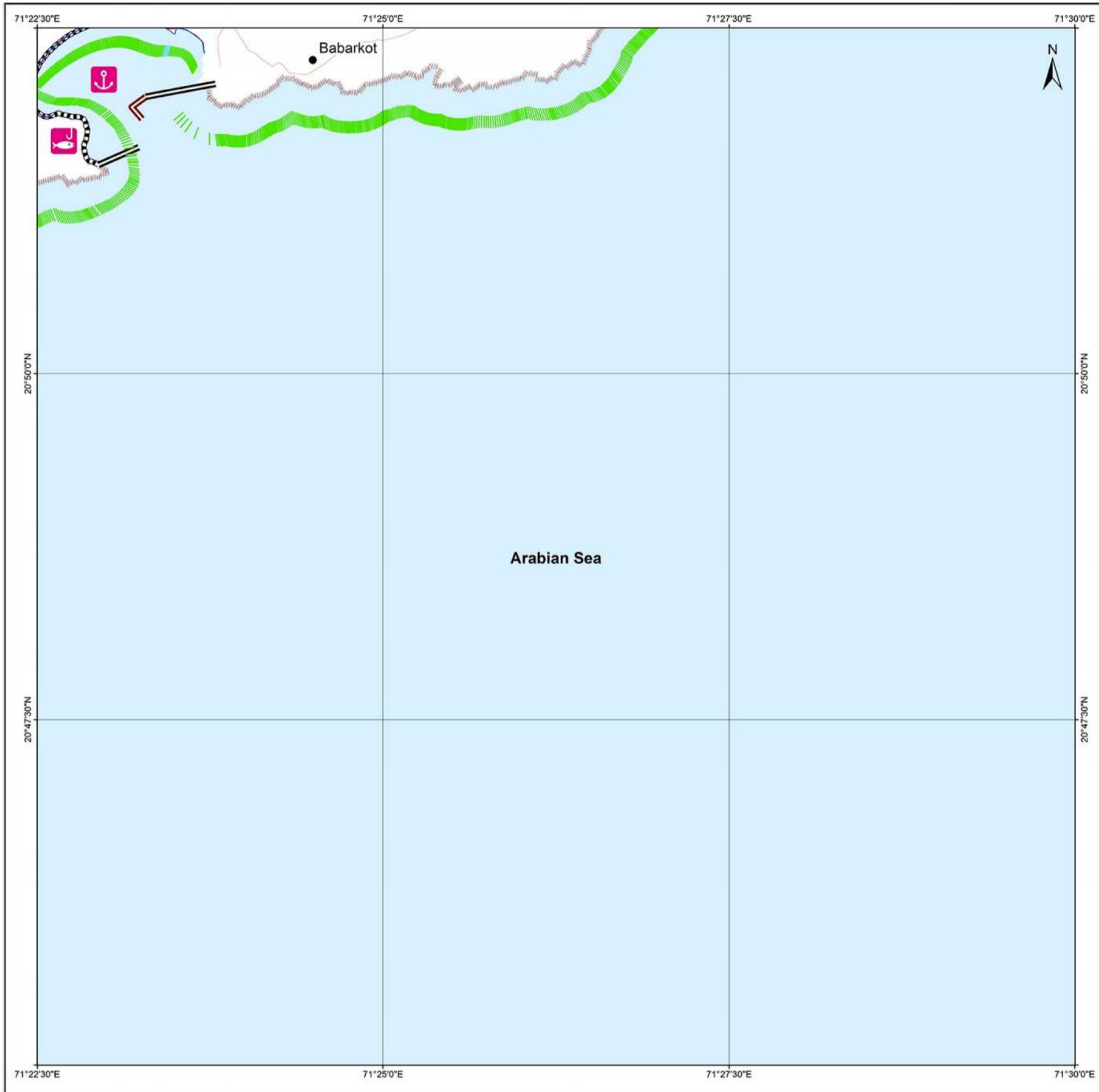
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1990 - 2018
AMRELI

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 P / 5 / SE
Map No. : NCCR/SCM/100



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 05/03/1990
- 03/09/2018

Index to sheets

41 P / 5 / NW	41 P / 5 / NE	41 P / 5 / NW
41 P / 5 / SW	41 P / 5 / SE	41 P / 5 / SW
41 P / 6 / NW	41 P / 6 / NE	41 P / 6 / NW

Incidence on 1:50,000 Sheets

41 O / 4	41 O / 8	41 O / 12
41 P / 1	41 P / 5	41 P / 9
41 P / 2	41 P / 6	41 P / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	04/28/2013
LISS-IV	04/09/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/27/2000
TM	05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 P / 5 / NE
Map No. : NCCR/SCM/101



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 05/03/1990
- █ 03/09/2018

Index to sheets

41 O / 8 / SW	41 O / 8 / SE	41 O / 12 / SW
41 P / 5 / NW	41 P / 5 / NE	41 P / 9 / NW
41 P / 5 / SW	41 P / 5 / SE	41 P / 9 / SW

Incidence on 1:50,000 Sheets

41 O / 4	41 O / 8	41 O / 12
41 P / 1	41 P / 5	41 P / 9
41 P / 2	41 P / 6	41 P / 10

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	04/28/2013
LISS-IV	04/09/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/27/2000
TM	05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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1990 - 2018
AMRELI

SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 P / 9 / NW
Map No. : NCCR/SCM/102



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 05/03/1990
- 03/09/2018

Index to sheets

41 O / 8 / SE	41 O / 12 / SW	41 O / 12 / SE
41 P / 5 / NE	41 P / 9 / NW	41 P / 9 / NE
41 P / 5 / SE	41 P / 9 / SW	41 P / 9 / SE

Incidence on 1:50,000 Sheets

41 O / 8	41 O / 12	41 O / 16
41 P / 5	41 P / 9	41 P / 13
41 P / 6	41 P / 10	41 P / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	04/28/2013
LISS-IV	04/09/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+ TM	03/27/2000
	05/03/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

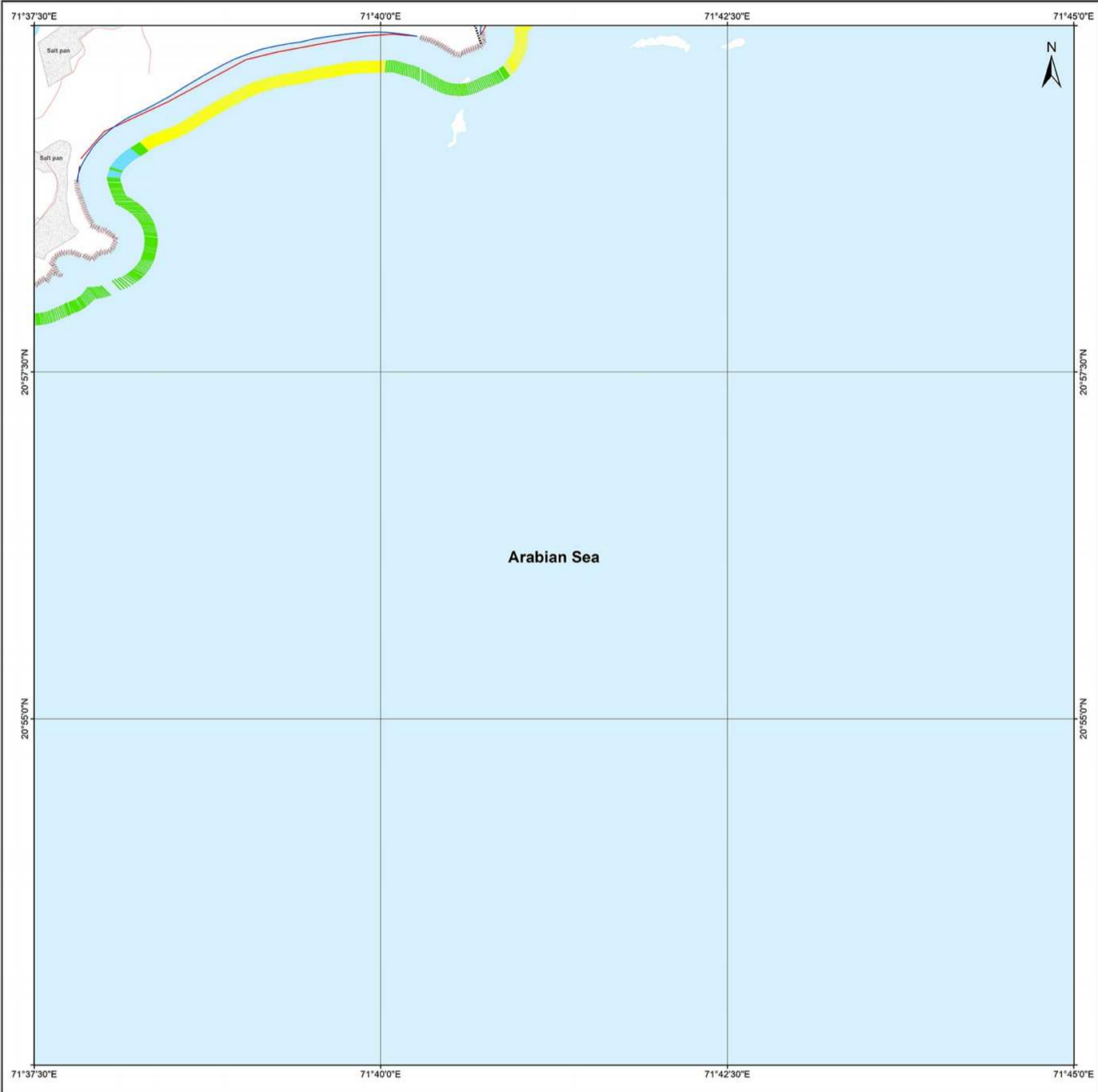
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 P / 9 / NE
 Map No. : NCCR/SCM/103



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 05/03/1990
- 03/09/2018

Index to sheets

41 O / 12 / SW	41 O / 12 / SE	41 O / 16 / SW
41 P / 9 / NW	41 P / 9 / NE	41 P / 13 / NW
41 P / 9 / SW	41 P / 9 / SE	41 P / 13 / SW

Incidence on 1:50,000 Sheets

41 O / 8	41 O / 12	41 O / 16
41 P / 5	41 P / 9	41 P / 13
41 P / 6	41 P / 10	41 P / 14

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/27/2000
TM	05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 O / 12 / SE
 Map No. : NCCR/SCM/104



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 05/03/1990
- 03/09/2018

Index to sheets

41 O / 12 / NW	41 O / 12 / NE	41 O / 16 / NW
41 O / 12 / SW	41 O / 12 / SE	41 O / 16 / SW
41 P / 9 / NW	41 P / 9 / NE	41 P / 13 / NW

Incidence on 1:50,000 Sheets

41 O / 7	41 O / 11	41 O / 15
41 O / 8	41 O / 12	41 O / 16
41 P / 5	41 P / 9	41 P / 13

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 42
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	03/19/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/27/2000
TM	05/03/1990



- Settlements
- Port
- Harbour
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 O / 16 / SW
Map No. : NCCR/SCM/105



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 05/03/1990
- 03/09/2018

Index to sheets

41 O / 12 / NE	41 O / 16 / NW	41 O / 16 / NE
41 O / 12 / SE	41 O / 16 / SW	41 O / 16 / SE
41 P / 9 / NE	41 P / 13 / NW	41 P / 13 / NE

Incidence on 1:50,000 Sheets

41 O / 11	41 O / 15	46 C / 3
41 O / 12	41 O / 16	46 C / 4
41 P / 9	41 P / 13	46 D / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/09/2018
LISS-IV	04/07/2017
LISS-IV	02/05/2016
LISS-IV	06/05/2015
LISS-IV	03/30/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+	03/27/2000
TM	05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

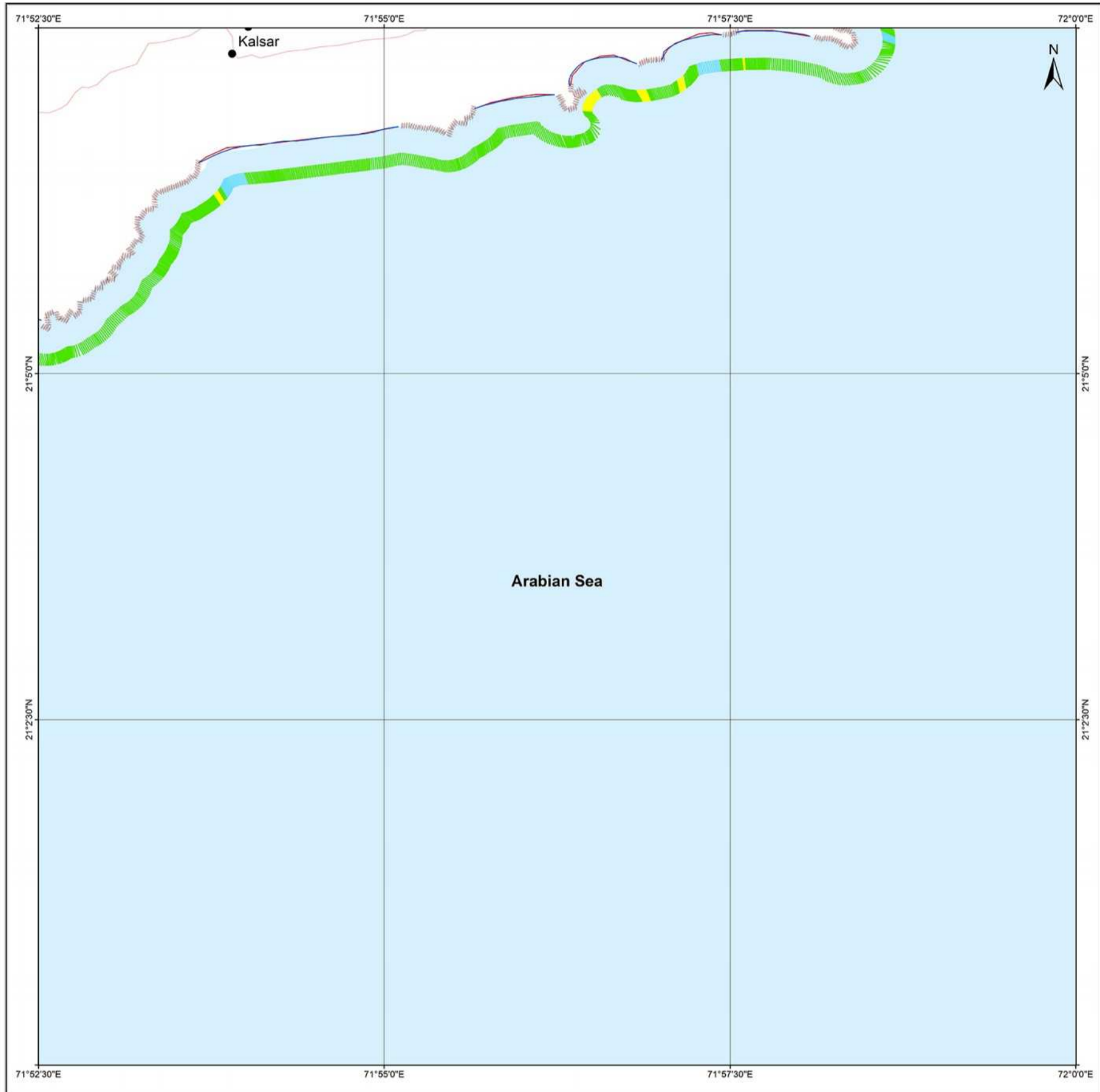
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 O / 16 / SE
Map No. : NCCR/SCM/106



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990 05/03/1990
- █ 03/14/2018 & 03/09/2018

Index to sheets

41 O / 16 / NW	41 O / 16 / NE	46 C / 4 / NW
41 O / 16 / SW	41 O / 16 / SE	46 C / 4 / SW
41 P / 13 / NW	41 P / 13 / NE	46 D / 1 / NW

Incidence on 1:50,000 Sheets

41 O / 11	41 O / 15	46 C / 3
41 O / 12	41 O / 16	46 C / 4
41 P / 9	41 P / 13	46 D / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018 & 03/09/2018
LISS-IV	01/06/2017 & 04/07/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/18/2008
PAN (Cartosat-1)	-
ETM+ TM	03/27/2000 & 04/27/2000 03/25/1990 05/03/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

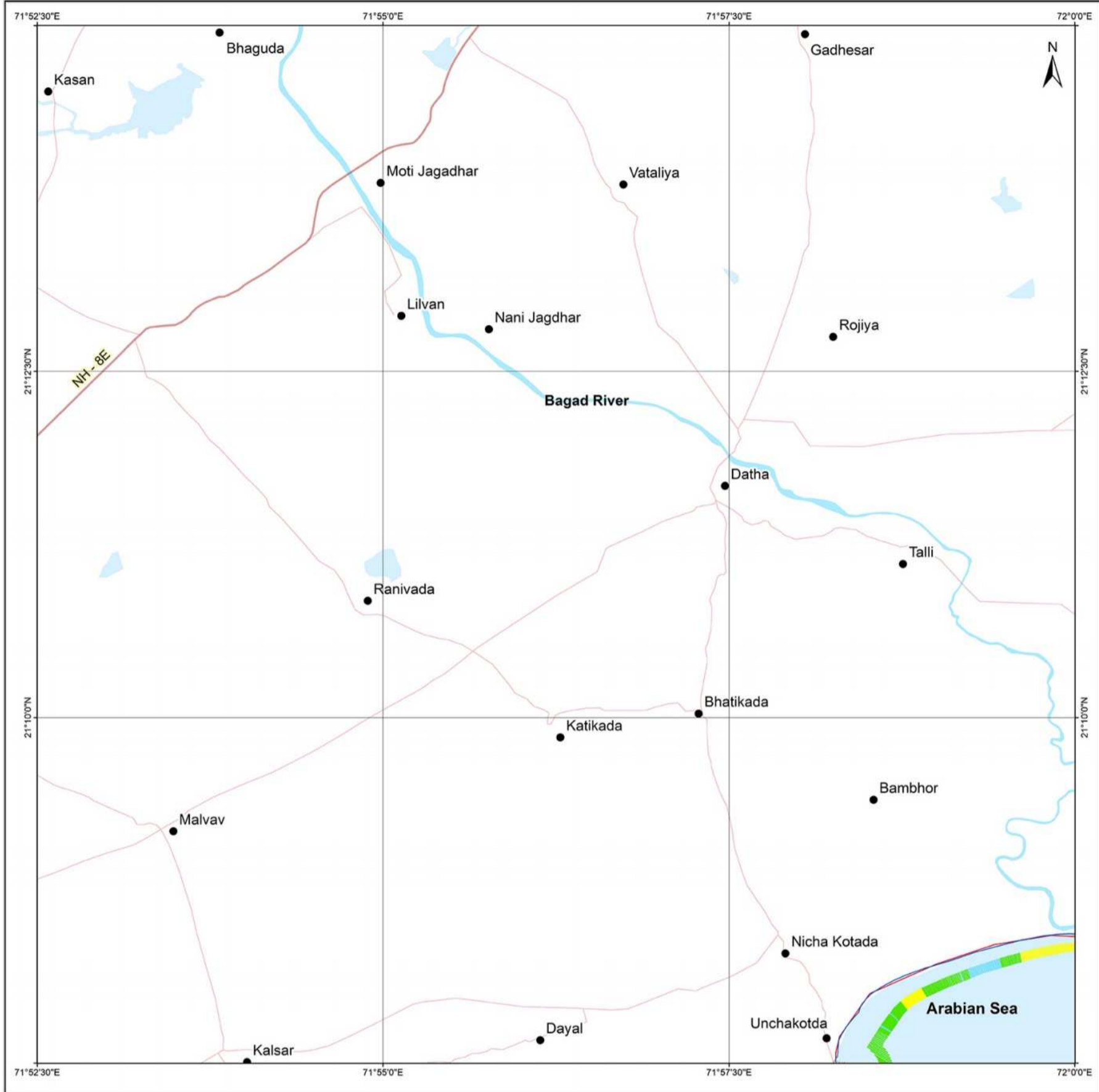
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
41 O / 16 / NE
Map No. : NCCR/SCM/107



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

41 O / 15 / SW	41 O / 15 / SE	46 C / 3 / SW
41 O / 16 / NW	41 O / 16 / NE	46 C / 4 / NW
41 O / 16 / SW	41 O / 16 / SE	46 C / 4 / SW

Incidence on 1:50,000 Sheets

41 O / 11	41 O / 15	46 C / 3
41 O / 12	41 O / 16	46 C / 4
41 P / 9	41 P / 13	46 D / 1

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 42
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

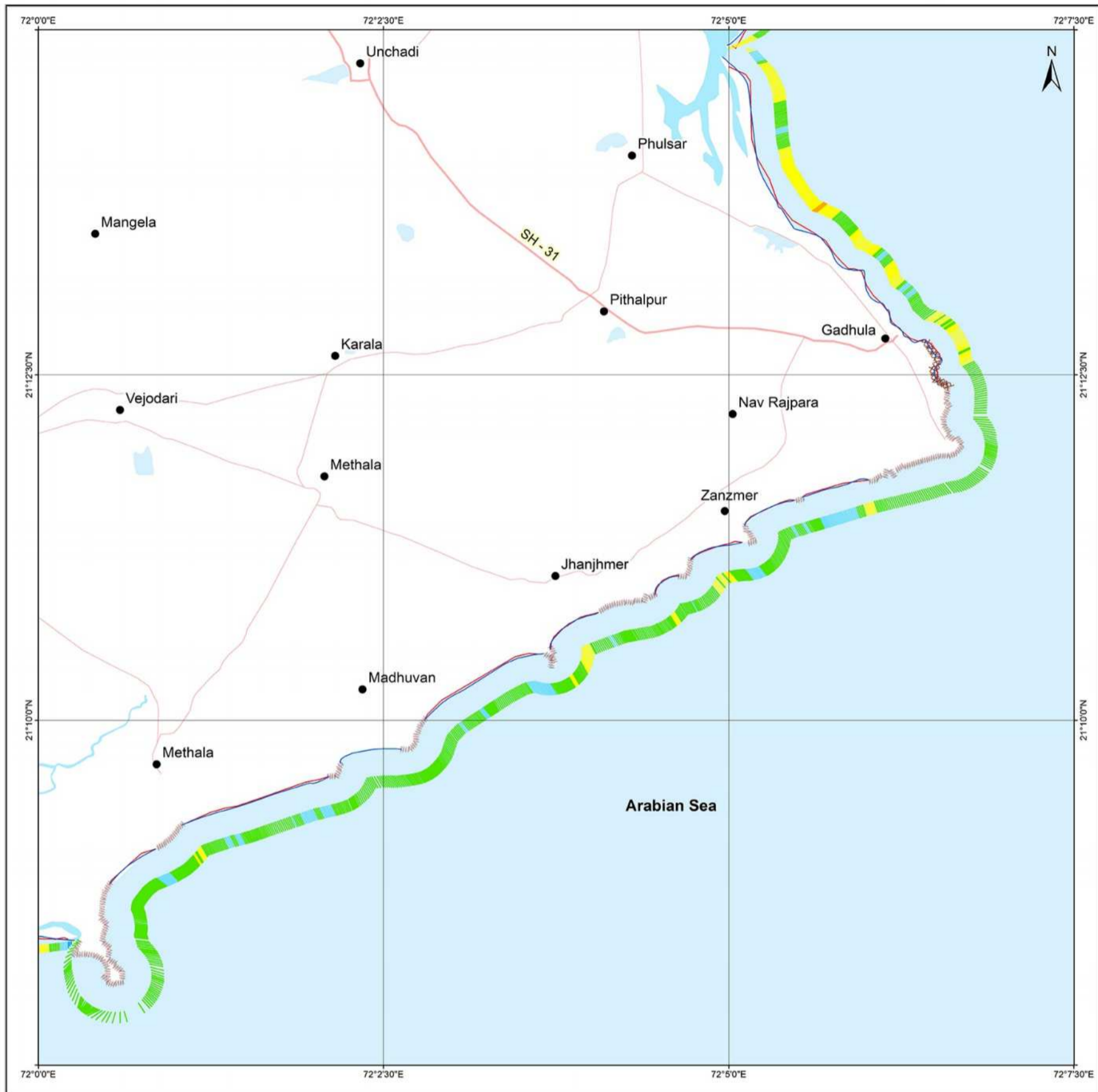
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1990 - 2018
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 4 / NW
Map No. : NCCR/SCM/108



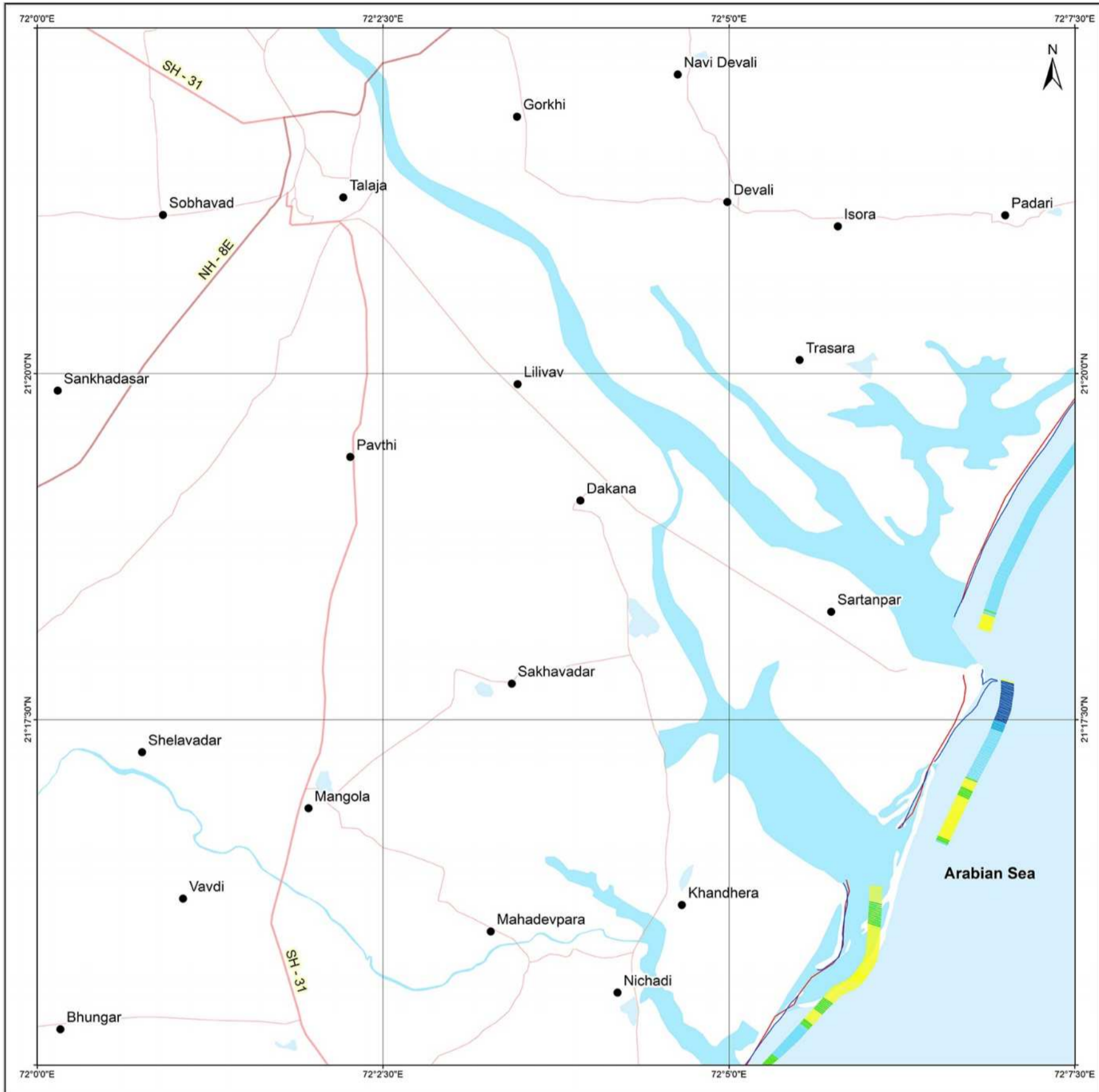
<p>Shoreline Change Trend for Period 1990 - 2018</p> <ul style="list-style-type: none"> — High Erosion — Moderate Erosion — Low Erosion — Stable Coast — Low Accretion — Moderate Accretion — High Accretion 	<p>Index to sheets</p> <table border="1"> <tr> <td>41 O / 15 / SE</td> <td>46 C / 3 / SW</td> <td>46 C / 3 / SE</td> </tr> <tr> <td>41 O / 16 / NE</td> <td style="background-color: #cccccc;">46 C / 4 / NW</td> <td>46 C / 4 / NE</td> </tr> <tr> <td>41 O / 16 / SE</td> <td>46 C / 4 / SW</td> <td>46 C / 4 / SE</td> </tr> </table>	41 O / 15 / SE	46 C / 3 / SW	46 C / 3 / SE	41 O / 16 / NE	46 C / 4 / NW	46 C / 4 / NE	41 O / 16 / SE	46 C / 4 / SW	46 C / 4 / SE	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 43</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p>		<ul style="list-style-type: none"> ● Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers 																							
	41 O / 15 / SE	46 C / 3 / SW	46 C / 3 / SE																																	
41 O / 16 / NE	46 C / 4 / NW	46 C / 4 / NE																																		
41 O / 16 / SE	46 C / 4 / SW	46 C / 4 / SE																																		
<p>Shoreline date</p> <ul style="list-style-type: none"> — 03/25/1990 — 03/14/2018 	<p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>41 O / 15</td> <td>46 C / 3</td> <td>46 C / 7</td> </tr> <tr> <td>41 O / 16</td> <td style="background-color: #cccccc;">46 C / 4</td> <td>46 C / 8</td> </tr> <tr> <td>41 P / 13</td> <td>46 D / 1</td> <td>46 D / 5</td> </tr> </table>	41 O / 15	46 C / 3	46 C / 7	41 O / 16	46 C / 4	46 C / 8	41 P / 13	46 D / 1	46 D / 5	<p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>03/14/2018</td> </tr> <tr> <td>LISS-IV</td> <td>01/06/2017</td> </tr> <tr> <td>LISS-IV</td> <td>02/05/2016</td> </tr> <tr> <td>LISS-IV</td> <td>01/17/2015</td> </tr> <tr> <td>LISS-IV</td> <td>01/17/2014</td> </tr> <tr> <td>LISS-IV</td> <td>05/03/2013</td> </tr> <tr> <td>LISS-IV</td> <td>04/14/2012</td> </tr> <tr> <td>LISS-III</td> <td>04/23/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>-</td> </tr> <tr> <td>ETM+</td> <td>04/27/2000</td> </tr> <tr> <td>TM</td> <td>03/25/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	03/14/2018	LISS-IV	01/06/2017	LISS-IV	02/05/2016	LISS-IV	01/17/2015	LISS-IV	01/17/2014	LISS-IV	05/03/2013	LISS-IV	04/14/2012	LISS-III	04/23/2008	PAN (Cartosat-1)	-	ETM+	04/27/2000	TM	03/25/1990	<p>Prepared by</p> <p>Government of India Ministry of Earth Sciences</p> <p>National Centre for Coastal Research (NCCR) Pallikaranai, Chennai - 600100</p>
41 O / 15	46 C / 3	46 C / 7																																		
41 O / 16	46 C / 4	46 C / 8																																		
41 P / 13	46 D / 1	46 D / 5																																		
Sensors	Date of acquisition																																			
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TM	03/25/1990																																			

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1990 - 2018
BHAVNAGAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 3 / SW
Map No. : NCCR/SCM/109



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

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41 O / 15 / NE	46 C / 3 / NW	46 C / 3 / NE
41 O / 15 / SE	46 C / 3 / SW	46 C / 3 / SE
41 O / 16 / NE	46 C / 4 / NW	46 C / 4 / NE

Incidence on 1:50,000 Sheets

41 O / 14	46 C / 2	46 C / 6
41 O / 15	46 C / 3	46 C / 7
41 O / 16	46 C / 4	46 C / 8

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
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- Lakes
- Rivers

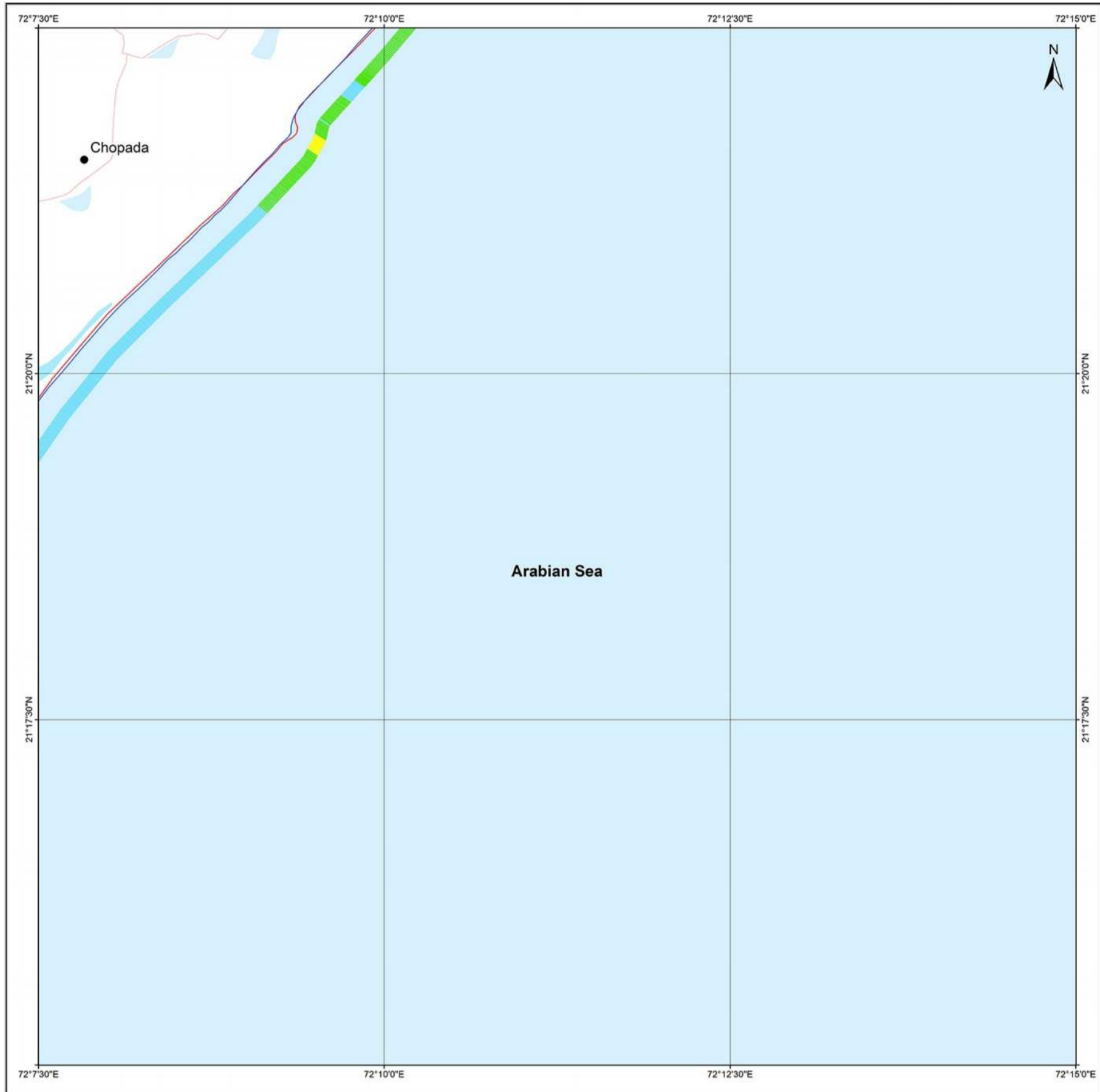
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1990 - 2018
BHAVNAGAR

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 3 / SE
Map No. : NCCR/SCM/110



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 C / 3 / NW	46 C / 3 / NE	46 C / 7 / NW
46 C / 3 / SW	46 C / 3 / SE	46 C / 7 / SW
46 C / 4 / NW	46 C / 4 / NE	46 C / 8 / NW

Incidence on 1:50,000 Sheets

41 O / 14	46 C / 2	46 C / 6
41 O / 15	46 C / 3	46 C / 7
41 O / 16	46 C / 4	46 C / 8

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

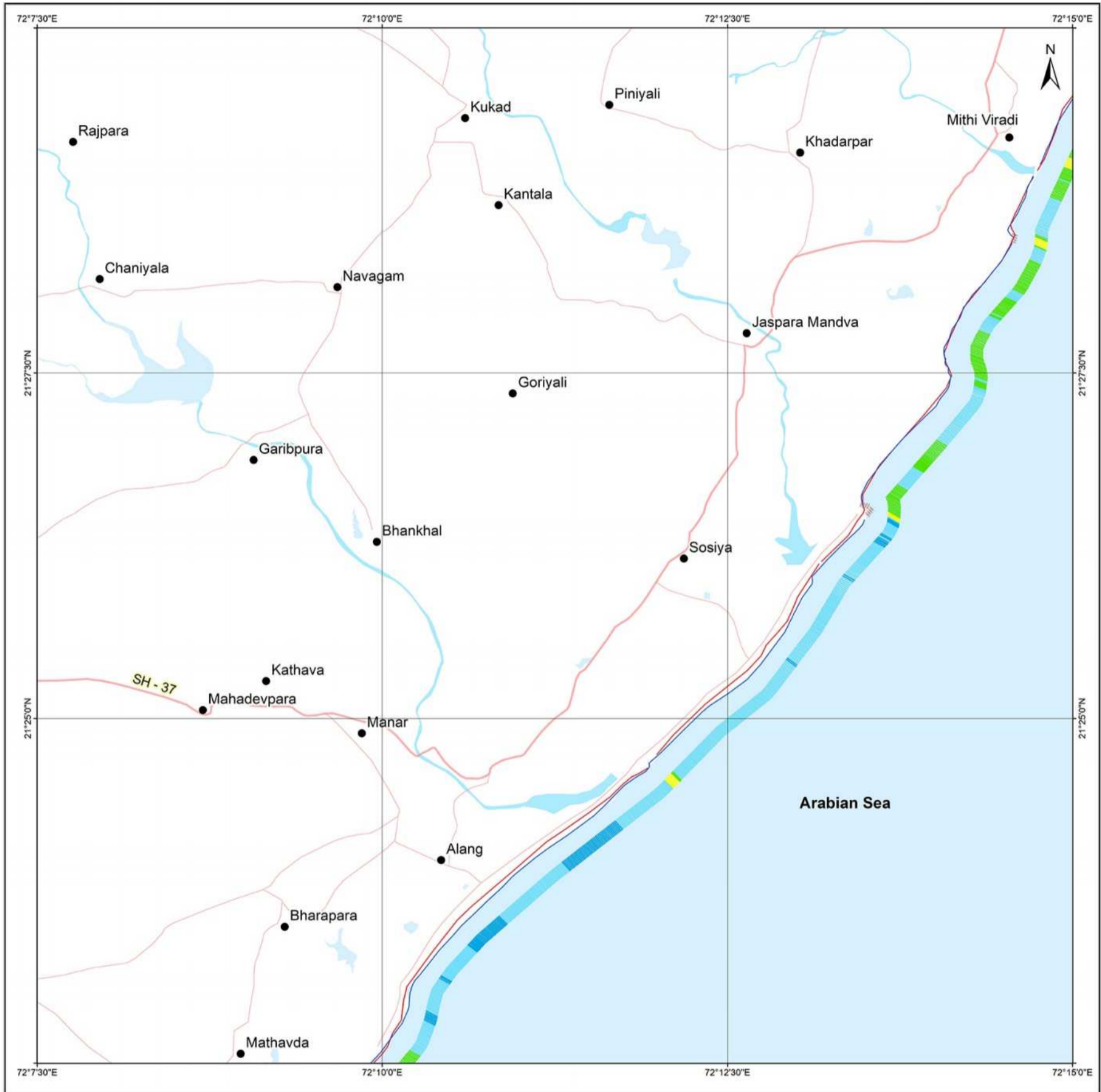
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 3 / NE
Map No. : NCCR/SCM/111



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 C / 2 / SW	46 C / 2 / SE	46 C / 6 / SW
46 C / 3 / NW	46 C / 3 / NE	46 C / 7 / NW
46 C / 3 / SW	46 C / 3 / SE	46 C / 7 / SW

Incidence on 1:50,000 Sheets

41 O / 14	46 C / 2	46 C / 6
41 O / 15	46 C / 3	46 C / 7
41 O / 16	46 C / 4	46 C / 8

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	05/03/2013
LISS-IV	04/14/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

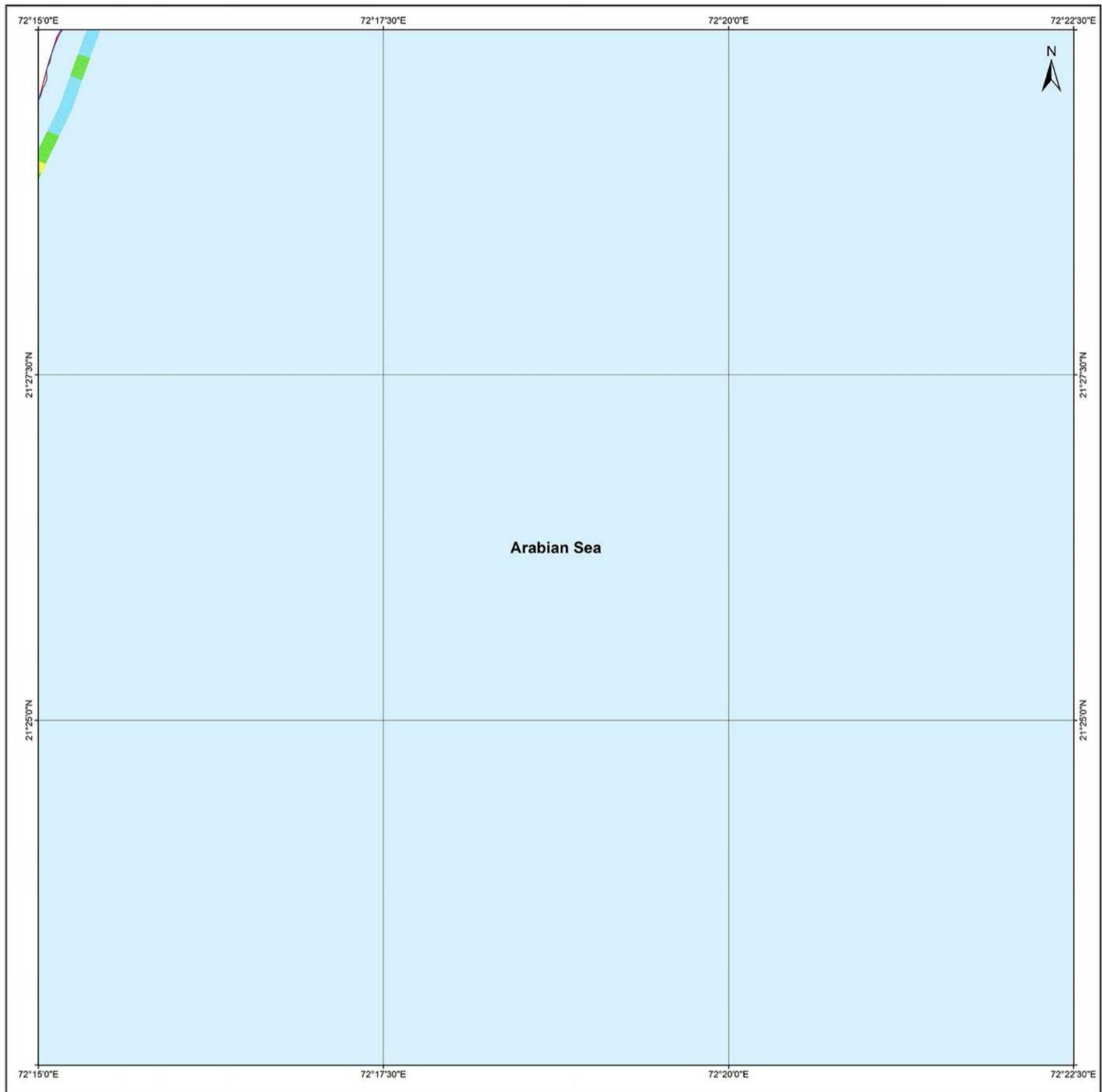
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 7 / NW
Map No. : NCCR/SCM/112



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 C / 2 / SE	46 C / 6 / SW	46 C / 8 / SE
46 C / 3 / NE	46 C / 7 / NW	46 C / 7 / NE
46 C / 3 / SE	46 C / 7 / SW	46 C / 7 / SE

Incidence on 1:50,000 Sheets

46 C / 2	46 C / 6	46 C / 10
46 C / 3	46 C / 7	46 C / 11
46 C / 4	46 C / 8	46 C / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 6 / SW
Map No. : NCCR/SCM/113



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 03/14/2018

Index to sheets

46 C / 12 / NE	46 C / 5 / NW	46 C / 6 / NE
46 C / 12 / SE	46 C / 6 / SW	46 C / 6 / SE
46 C / 13 / NE	46 C / 7 / NW	46 C / 7 / NE

Incidence on 1:50,000 Sheets

46 C / 1	46 C / 5	46 C / 9
46 C / 2	46 C / 6	46 C / 10
46 C / 3	46 C / 7	46 C / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

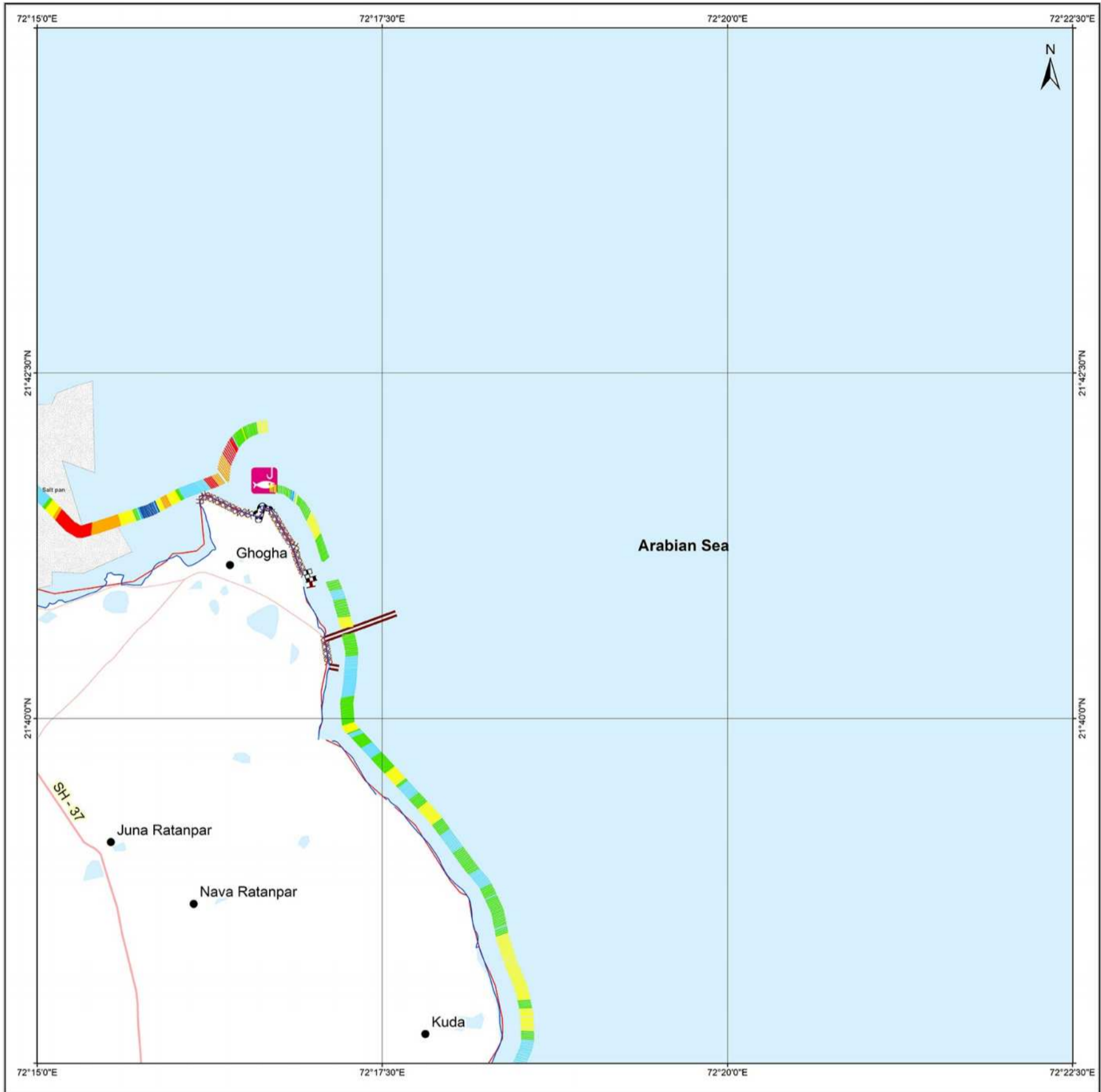
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SHORELINE CHANGE MAP GUJARAT

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46 C / 6 / NW
Map No. : NCCR/SCM/114



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 03/14/2018

Index to sheets

46 C / 1 / SE	46 C / 5 / SW	46 C / 5 / SE
46 C / 2 / NE	46 C / 6 / NW	46 C / 6 / NE
46 C / 2 / SE	46 C / 6 / SW	46 C / 6 / SE

Incidence on 1:50,000 Sheets

46 C / 1	46 C / 5	46 C / 9
46 C / 2	46 C / 6	46 C / 10
46 C / 3	46 C / 7	46 C / 11

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

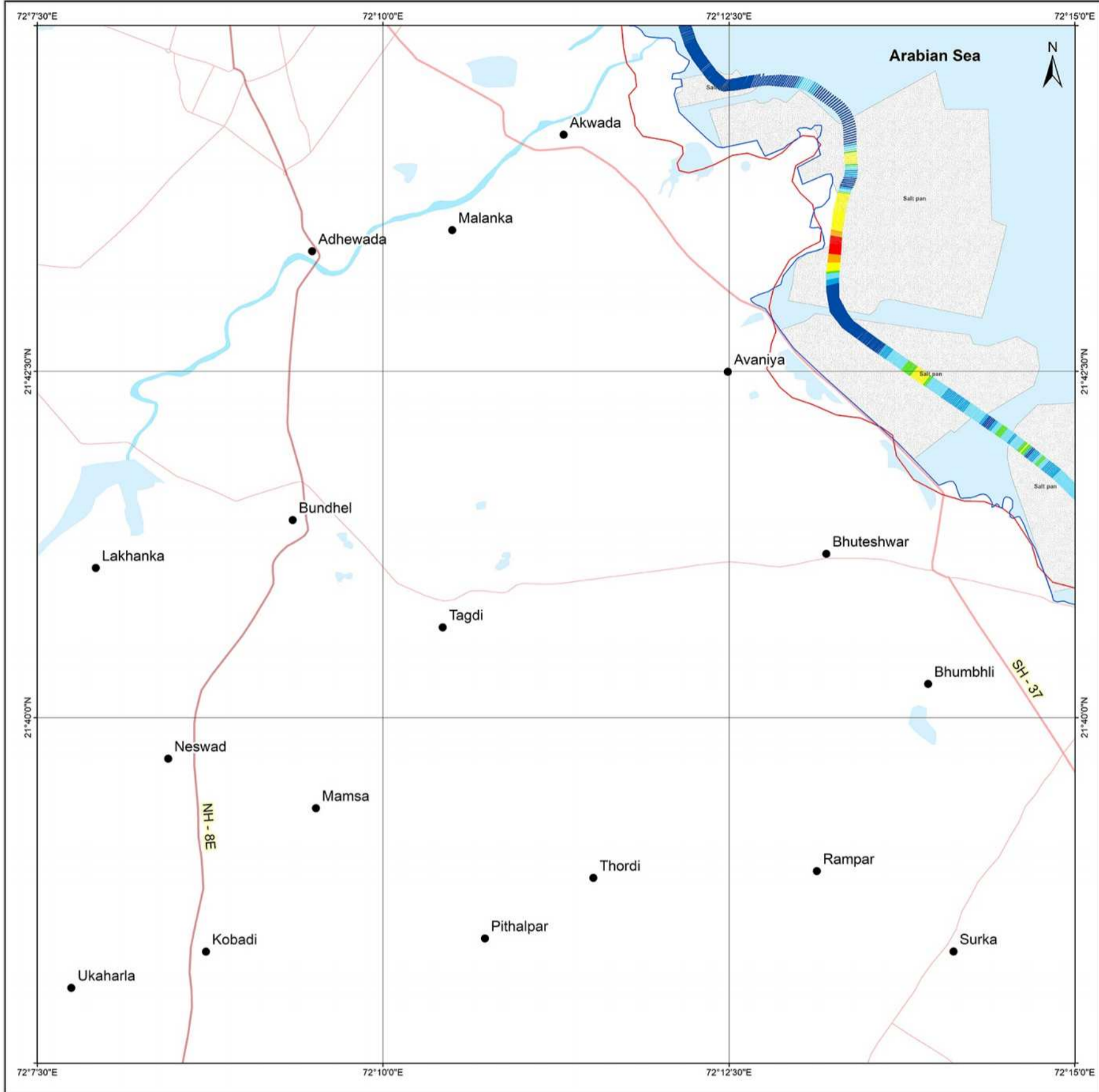
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 2 / NE
Map No. : NCCR/SCM/115



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 C / 1 / SW	46 C / 1 / SE	46 C / 5 / SW
46 C / 2 / NW	46 C / 2 / NE	46 C / 6 / NW
46 C / 2 / SW	46 C / 2 / SE	46 C / 6 / SW

Incidence on 1:50,000 Sheets

41 O / 13	46 C / 1	46 C / 5
41 O / 14	46 C / 2	46 C / 6
41 O / 15	46 C / 3	46 C / 7

Scale
1:25,000
1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

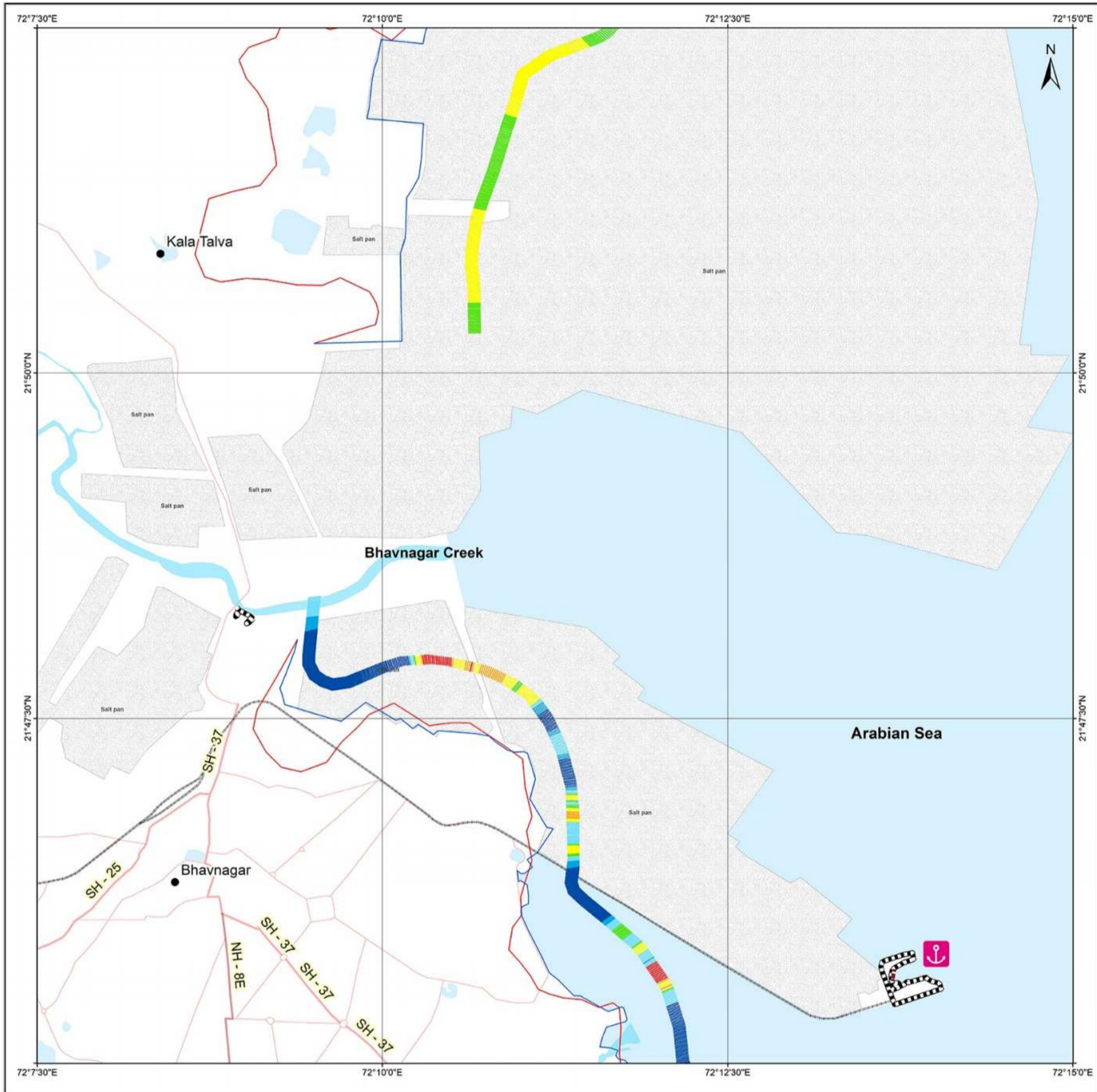
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SHORELINE CHANGE MAP GUJARAT

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46 C / 1 / SE
Map No. : NCCR/SCM/116



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 C / 1 / NW	46 C / 1 / NE	46 C / 5 / NW
46 C / 1 / SW	46 C / 1 / SE	46 C / 5 / SW
46 C / 2 / NW	46 C / 2 / NE	46 C / 6 / NW

Incidence on 1:50,000 Sheets

41 N / 16	46 B / 4	46 B / 8
41 O / 13	46 C / 1	46 C / 5
41 O / 14	46 C / 2	46 C / 6

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014 & 02/05/2014
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

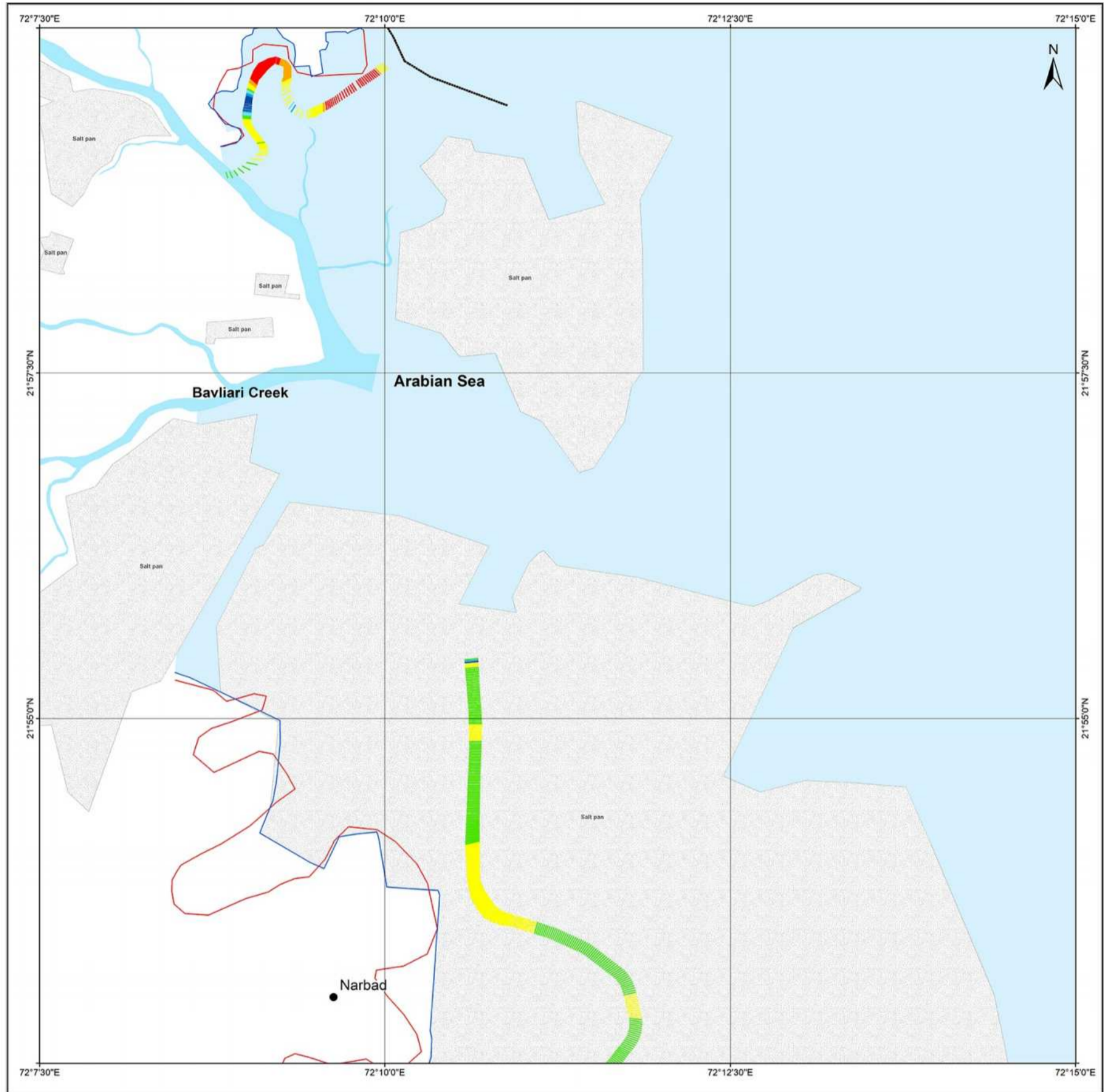
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SHORELINE CHANGE MAP GUJARAT

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46 C / 1 / NE
 Map No. : NCCR/SCM/117



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 B / 4 / SW	46 B / 4 / SE	46 B / 8 / SW
46 C / 1 / NW	46 C / 1 / NE	46 C / 5 / NW
46 C / 1 / SW	46 C / 1 / SE	46 C / 5 / SW

Incidence on 1:50,000 Sheets

41 N / 16	46 B / 4	46 B / 8
41 O / 13	46 C / 1	46 C / 5
41 O / 14	46 C / 2	46 C / 6

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	02/05/2016
LISS-IV	02/05/2013
LISS-IV	06/01/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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46 B / 4 / SE
 Map No. : NCCR/SCM/118



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 B / 4 / NW	46 B / 4 / NE	46 B / 8 / NW
46 B / 4 / SW	46 B / 4 / SE	46 B / 8 / SW
46 C / 1 / NW	46 C / 1 / NE	46 C / 5 / NW

Incidence on 1:50,000 Sheets

41 N / 15	46 B / 3	46 B / 7
41 N / 16	46 B / 4	46 B / 8
41 O / 13	46 C / 1	46 C / 5

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	02/05/2014
LISS-IV	02/05/2013
LISS-III	14/04/2012
PAN (Cartosat-1)	04/23/2008
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 8 / SW
Map No. : NCCR/SCM/119



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 B 14 / NE	46 B 15 / NW	46 B 16 / NE
46 B 14 / SE	46 B 15 / SW	46 B 16 / SE
46 C 15 / NE	46 C 16 / NW	46 C 17 / NE

Incidence on 1:50,000 Sheets

46 B / 3	46 B / 7	46 B / 11
46 B / 4	46 B / 8	46 B / 12
46 C / 1	46 C / 5	46 C / 9

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	01/17/2014
LISS-IV	02/05/2013
LISS-IV	14/04/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 8 / NW
Map No. : NCCR/SCM/120



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 B / 3 / SE	46 B / 7 / SW	46 B / 7 / SE
46 B / 4 / NE	46 B / 8 / NW	46 B / 8 / NE
46 B / 4 / SE	46 B / 8 / SW	46 B / 8 / SE

Incidence on 1:50,000 Sheets

46 B / 3	46 B / 7	46 B / 11
46 B / 4	46 B / 8	46 B / 12
46 C / 1	46 C / 5	46 C / 9

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	02/05/2013
LISS-IV	14/04/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

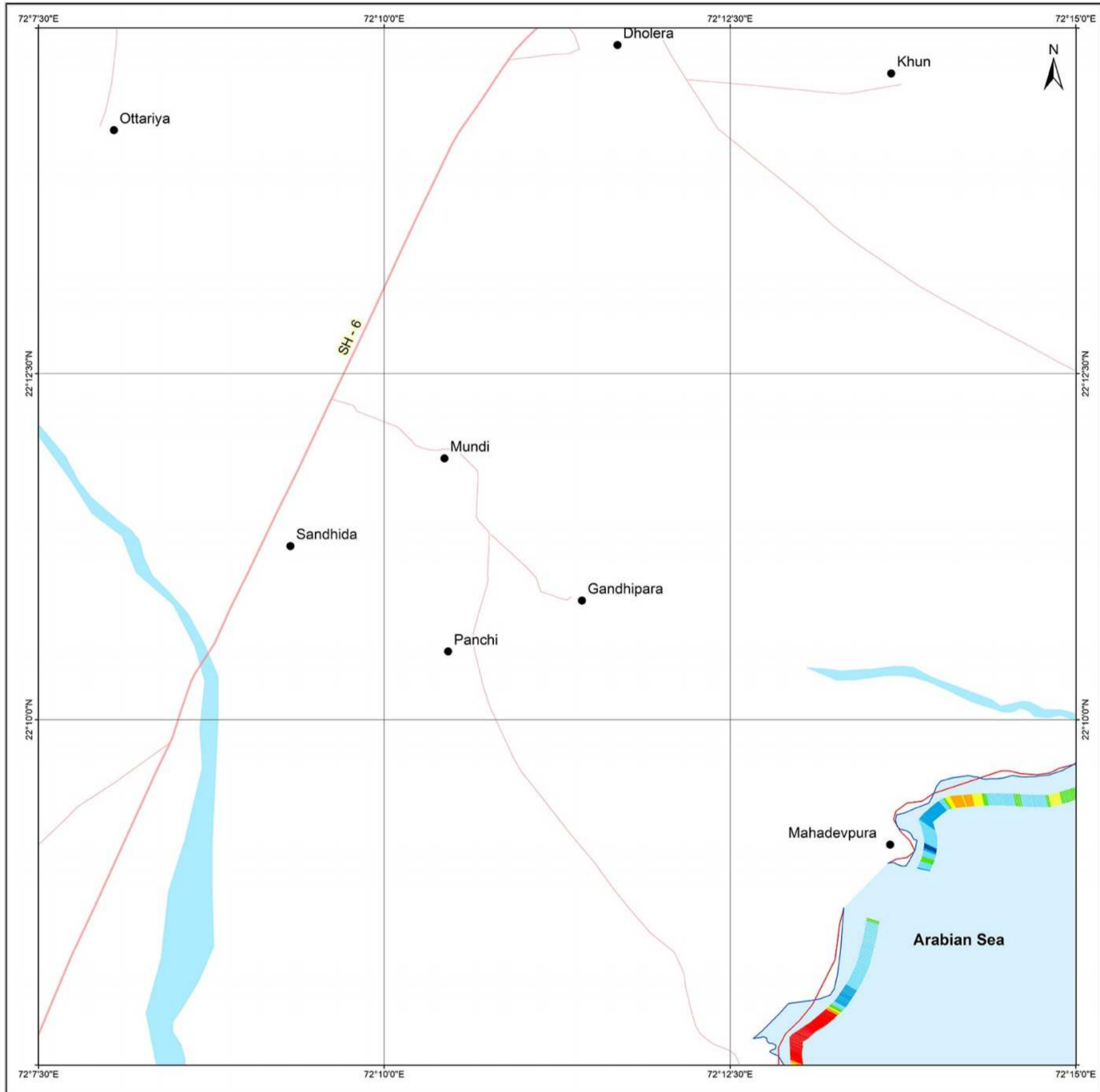
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 4 / NE
Map No. : NCCR/SCM/121



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 03/14/2018

Index to sheets

46 B / 3 / SW	46 B / 3 / SE	46 B / 7 / SW
46 B / 4 / NW	46 B / 4 / NE	46 B / 8 / NW
46 B / 4 / SW	46 B / 4 / SE	46 B / 8 / SW

Incidence on 1:50,000 Sheets

41 N / 15	46 B / 3	46 B / 7
41 N / 16	46 B / 4	46 B / 8
41 O / 13	46 C / 1	46 C / 5

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	02/05/2013
LISS-IV	14/04/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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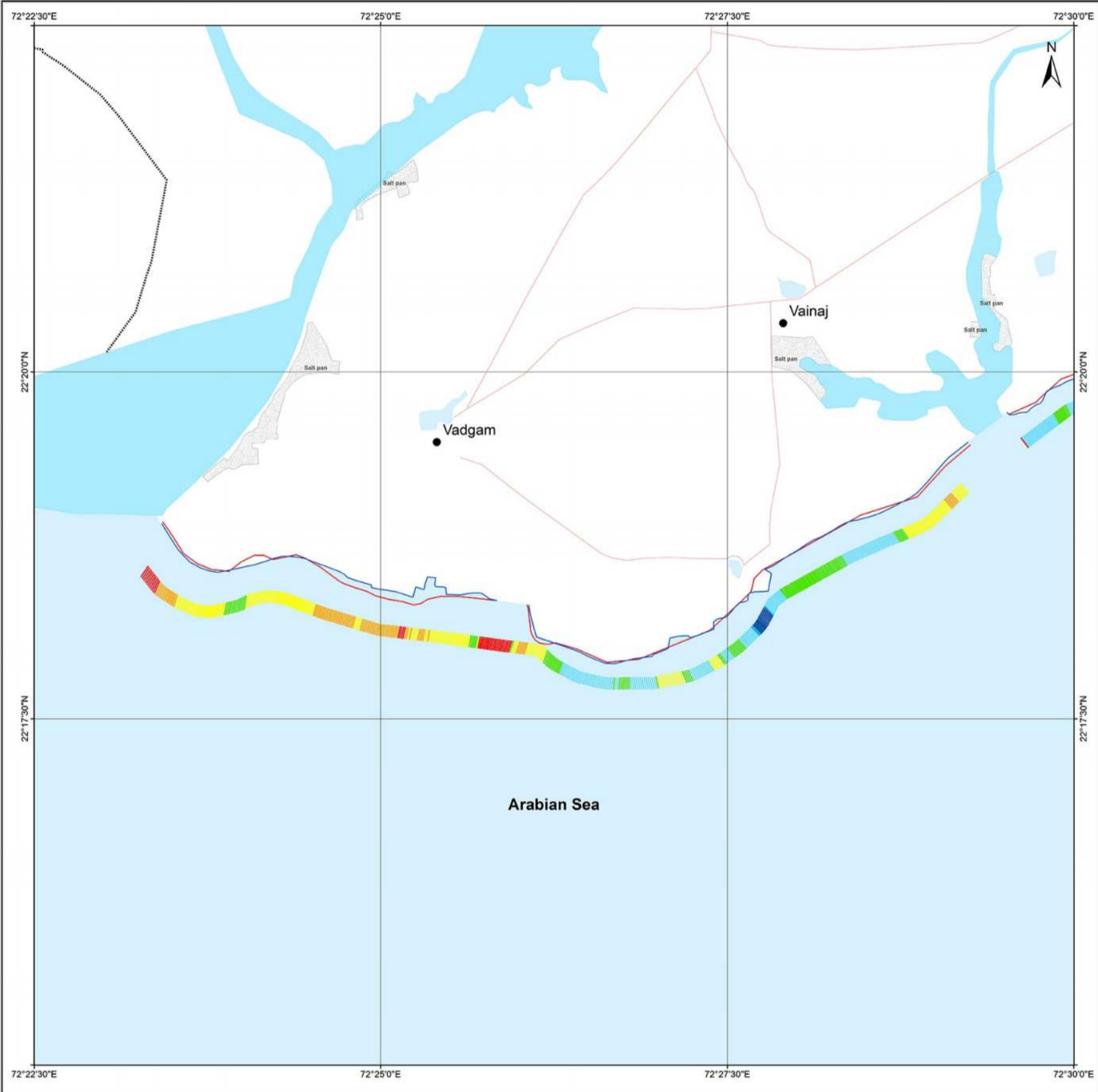
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 7 / SE
Map No. : NCCR/SCM/123



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/25/1990
- 03/14/2018

Index to sheets

46 B / 7 / NW	46 B / 7 / NE	46 B / 11 / NW
46 B / 7 / SW	46 B / 7 / SE	46 B / 11 / SW
46 B / 8 / NW	46 B / 8 / NE	46 B / 12 / NW

Incidence on 1:50,000 Sheets

46 B / 2	46 B / 6	46 B / 10
46 B / 3	46 B / 7	46 B / 11
46 B / 4	46 B / 8	46 B / 12

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	03/14/2018
LISS-IV	01/06/2017
LISS-IV	02/05/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	02/05/2013
LISS-IV	14/04/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

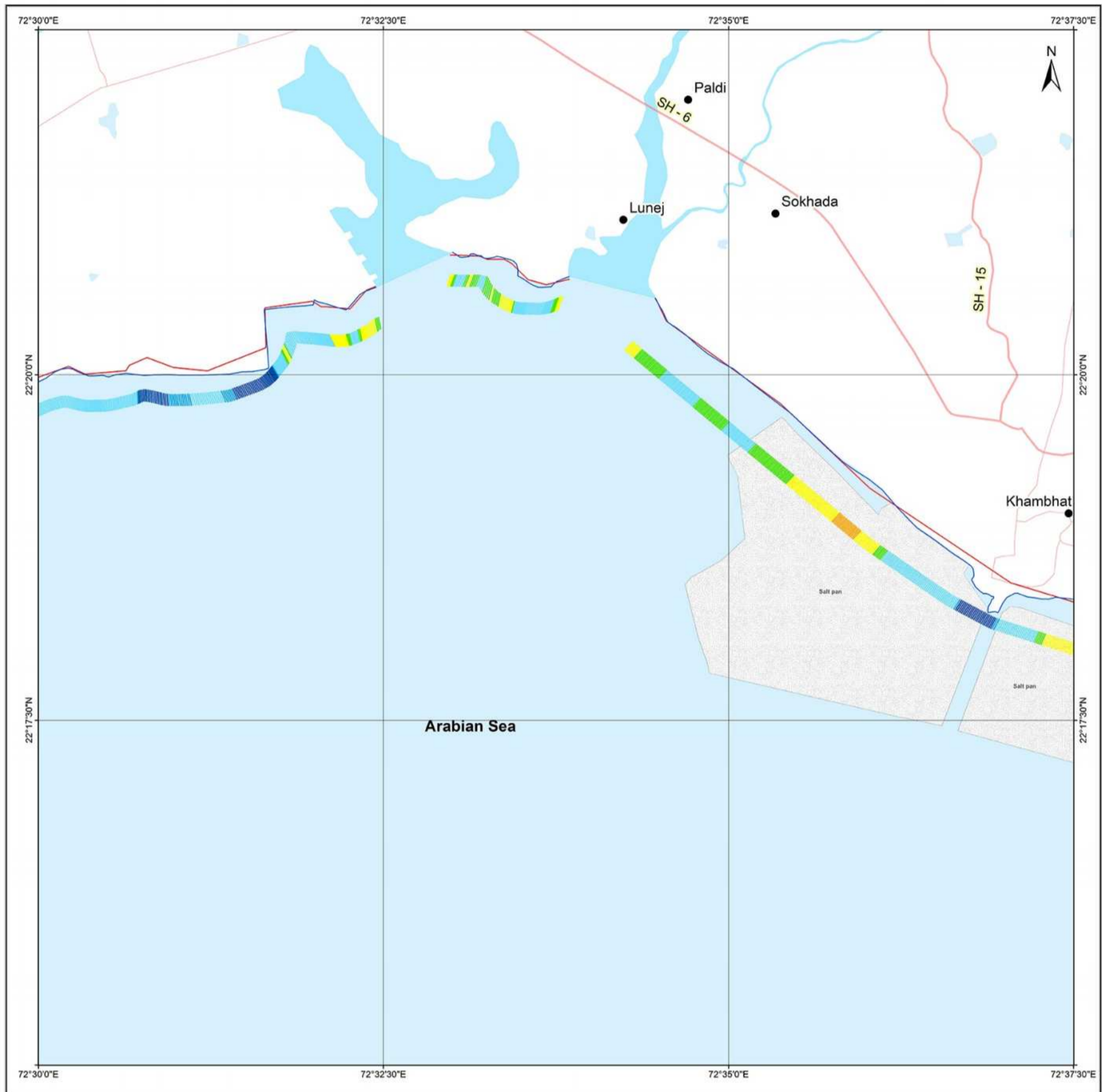
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 11 / SW
Map No. : NCCR/SCM/124



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018 & 03/14/2018

Index to sheets

46 B / 7 / NE	46 B / 11 / NW	46 B / 11 / NE
46 B / 7 / SE	46 B / 11 / SW	46 B / 11 / SE
46 B / 8 / NE	46 B / 12 / NW	46 B / 12 / NE

Incidence on 1:50,000 Sheets

46 B / 6	46 B / 10	46 B / 14
46 B / 7	46 B / 11	46 B / 15
46 B / 8	46 B / 12	46 B / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018 & 03/14/2018
LISS-IV	03/19/2017 & 01/06/2017
LISS-IV	02/29/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	02/05/2013
LISS-IV	14/04/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

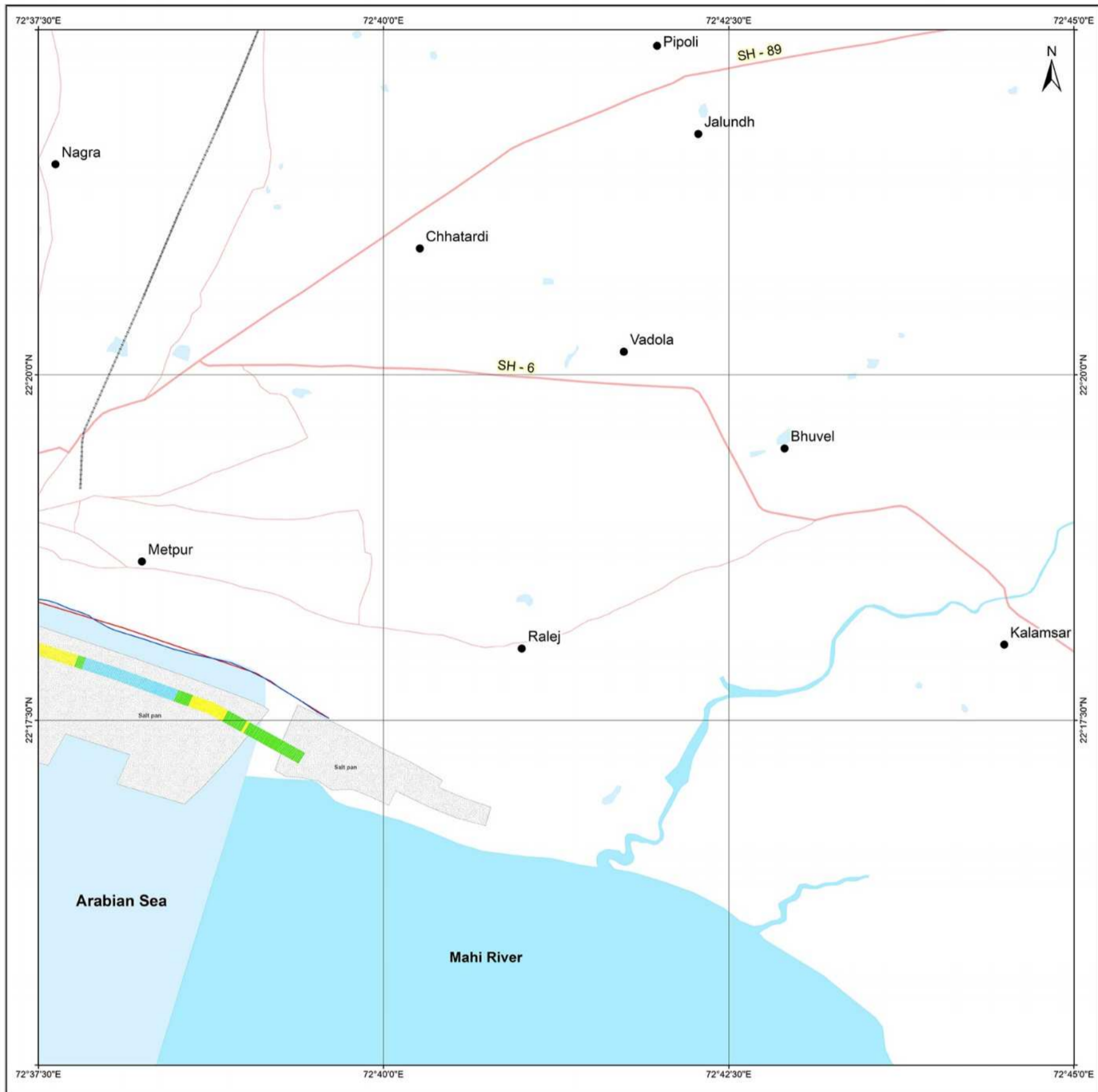
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SHORELINE CHANGE MAP GUJARAT

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46 B / 11 / SE
Map No. : NCCR/SCM/125



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 B / 11 / NW	46 B / 11 / NE	46 B / 15 / NW
46 B / 11 / SW	46 B / 11 / SE	46 B / 15 / SW
46 B / 12 / NW	46 B / 12 / NE	46 B / 16 / NW

Incidence on 1:50,000 Sheets

46 B / 6	46 B / 10	46 B / 14
46 B / 7	46 B / 11	46 B / 15
46 B / 8	46 B / 12	46 B / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	01/17/2015
LISS-IV	02/29/2014 & 04/04/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

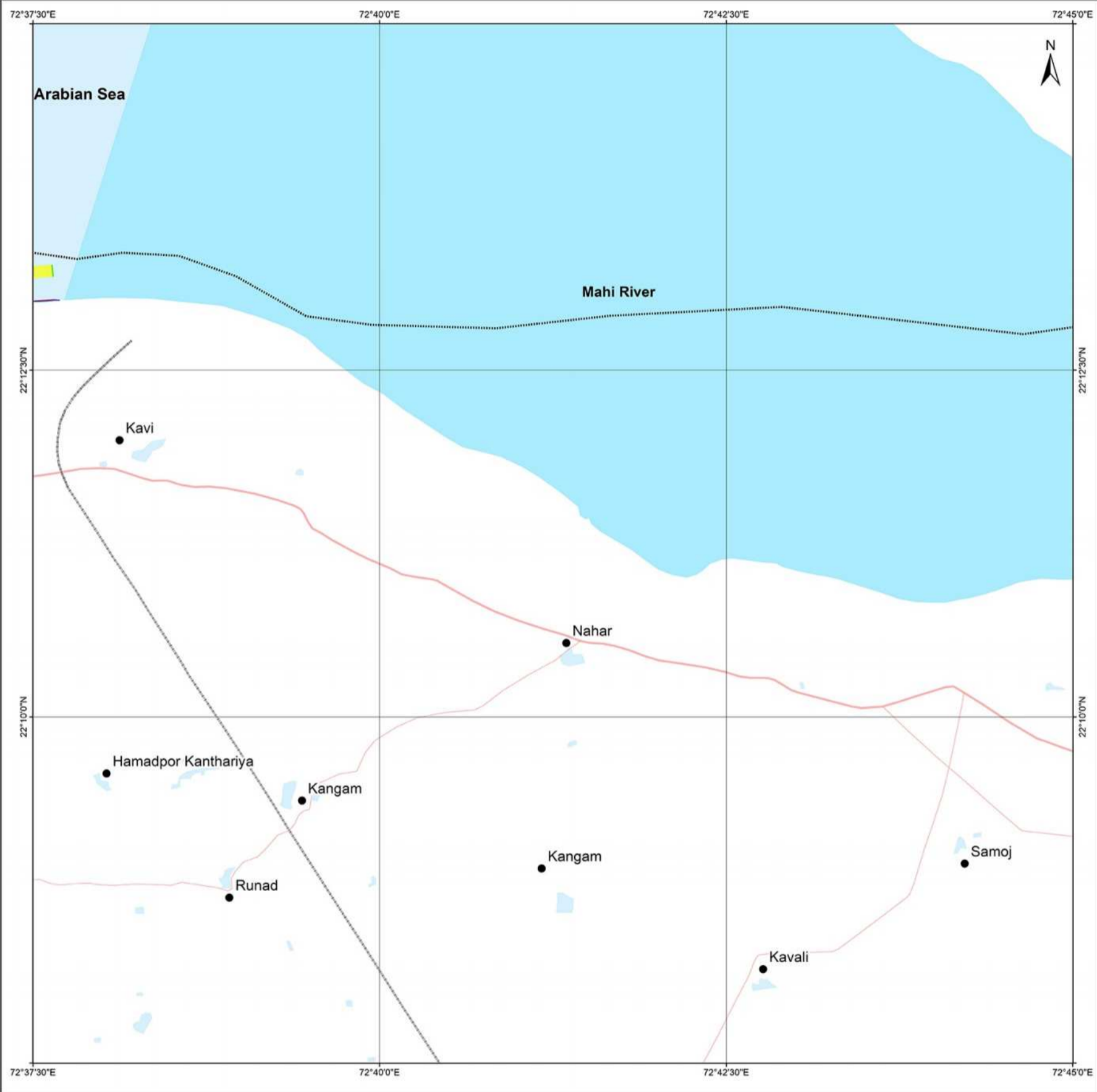
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 12 / NE
 Map No. : NCCR/SCM/126



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 B / 11 / SW	46 B / 11 / SE	46 B / 15 / SW
46 B / 12 / NW	46 B / 12 / NE	46 B / 16 / NW
46 B / 12 / SW	46 B / 12 / SE	46 B / 16 / SW

Incidence on 1:50,000 Sheets

46 B / 7	46 B / 11	46 B / 15
46 B / 8	46 B / 12	46 B / 16
46 C / 5	46 C / 9	46 C / 13

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	01/17/2015
LISS-IV	02/29/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

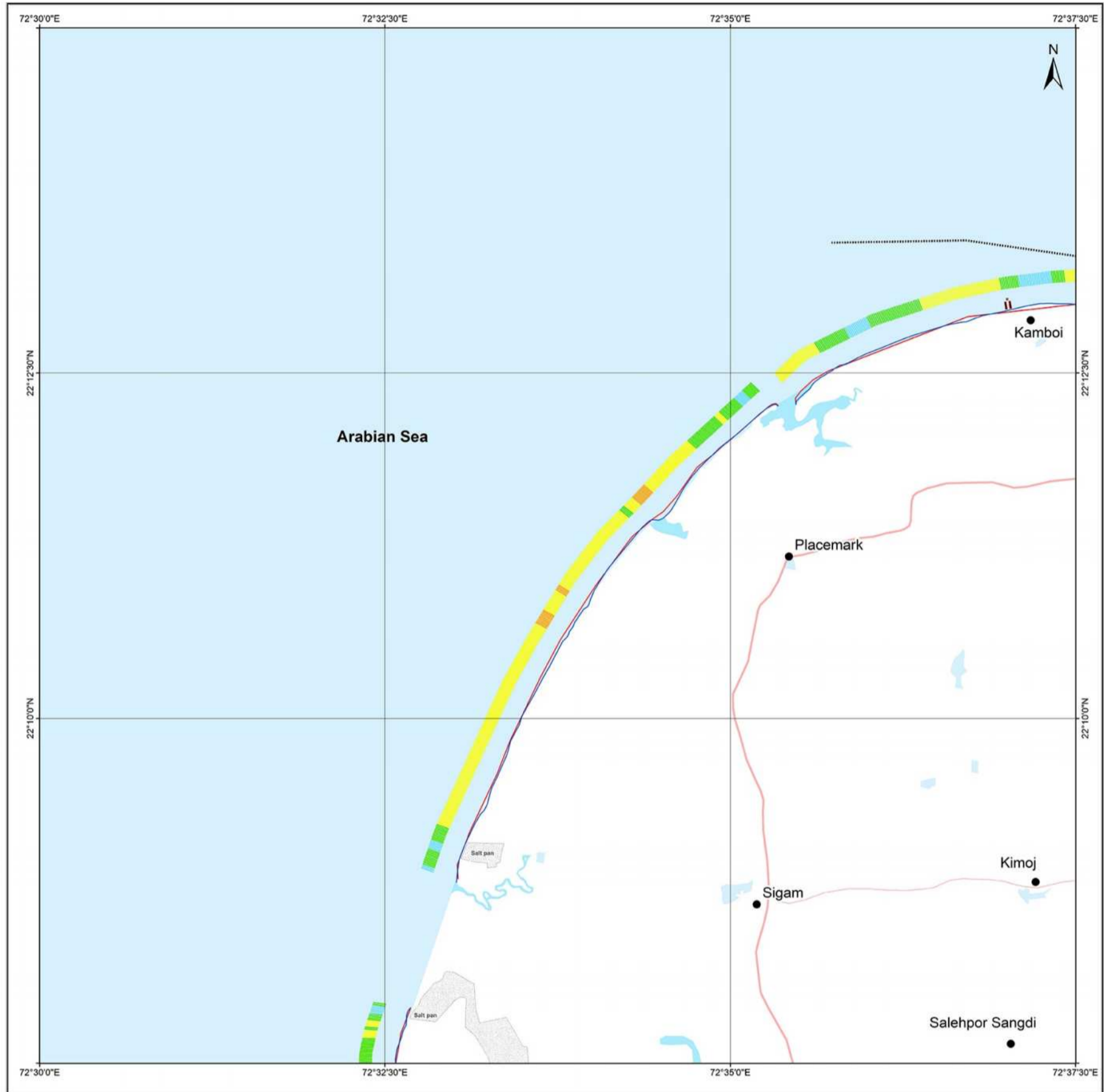
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 12 / NW
 Map No. : NCCR/SCM/127



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018 & 03/14/2018

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46 B / 7 / SE	46 B / 11 / SW	46 B / 11 / SE
46 B / 8 / NE	46 B / 12 / NW	46 B / 12 / NE
46 B / 8 / SE	46 B / 12 / SW	46 B / 12 / SE

Incidence on 1:50,000 Sheets

46 B / 7	46 B / 11	46 B / 15
46 B / 8	46 B / 12	46 B / 16
46 C / 5	46 C / 9	46 C / 13

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018 & 03/14/2018
LISS-IV	03/19/2017 & 01/06/2017
LISS-IV	02/29/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 B / 12 / SW
Map No. : NCCR/SCM/128



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018 & 03/14/2018

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46 B / 8 / NE	46 B / 12 / NW	46 B / 12 / NE
46 B / 8 / SE	46 B / 12 / SW	46 B / 12 / SE
46 C / 5 / NE	46 C / 9 / NW	46 C / 9 / NE

Incidence on 1:50,000 Sheets

46 B / 7	46 B / 11	46 B / 15
46 B / 8	46 B / 12	46 B / 16
46 C / 5	46 C / 9	46 C / 13

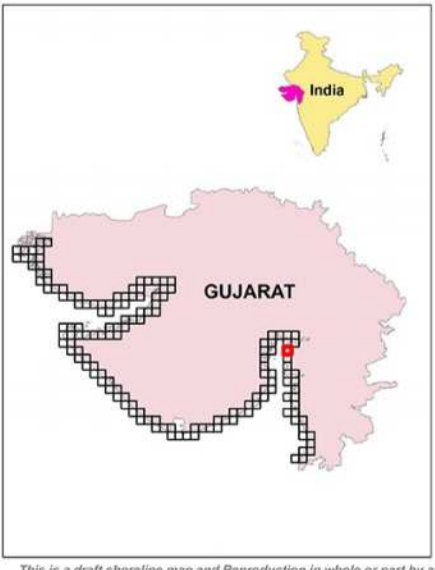
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UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	02/29/2016
LISS-IV	01/17/2015
LISS-IV	04/04/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

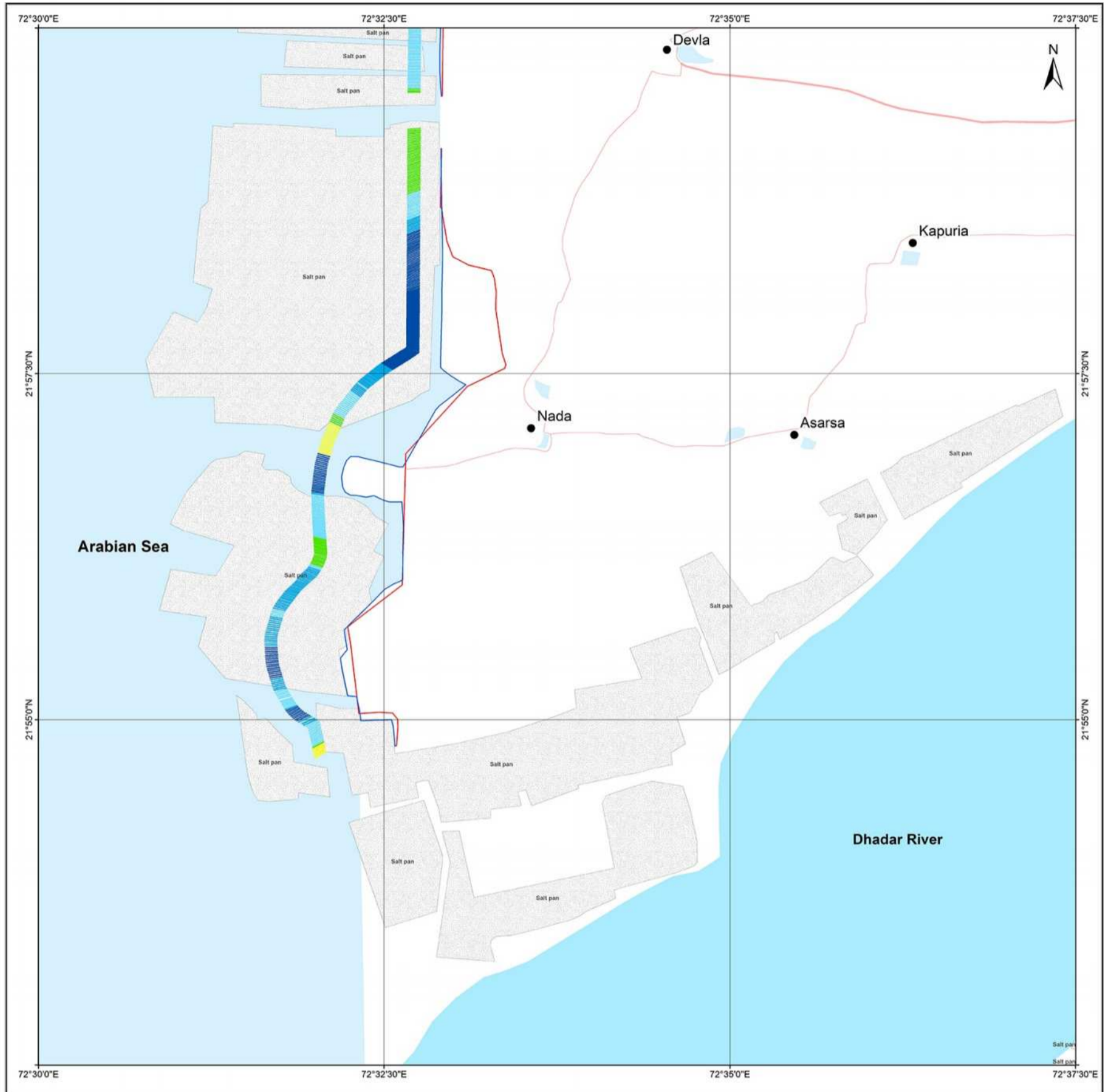
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 9 / NW
Map No. : NCCR/SCM/129



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

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46 B / 8 / SE	46 B / 12 / SW	46 B / 12 / SE
46 C / 5 / NE	46 C / 9 / NW	46 C / 9 / NE
46 C / 5 / SE	46 C / 9 / SW	46 C / 9 / SE

Incidence on 1:50,000 Sheets

46 B / 8	46 B / 12	46 B / 16
46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 9 / SW
Map No. : NCCR/SCM/130



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 5 / NE	46 C / 9 / NW	46 C / 9 / NE
46 C / 5 / SE	46 C / 9 / SW	46 C / 9 / SE
46 C / 6 / NE	46 C / 10 / NW	46 C / 10 / NE

Incidence on 1:50,000 Sheets

46 B / 8	46 B / 12	46 B / 16
46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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46 C / 10 / NE
Map No. : NCCR/SCM/131



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 9 / SW	46 C / 9 / SE	46 C / 13 / SW
46 C / 10 / NW	46 C / 10 / NE	46 C / 14 / NW
46 C / 10 / SW	46 C / 10 / SE	46 C / 14 / SW

Incidence on 1:50,000 Sheets

46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

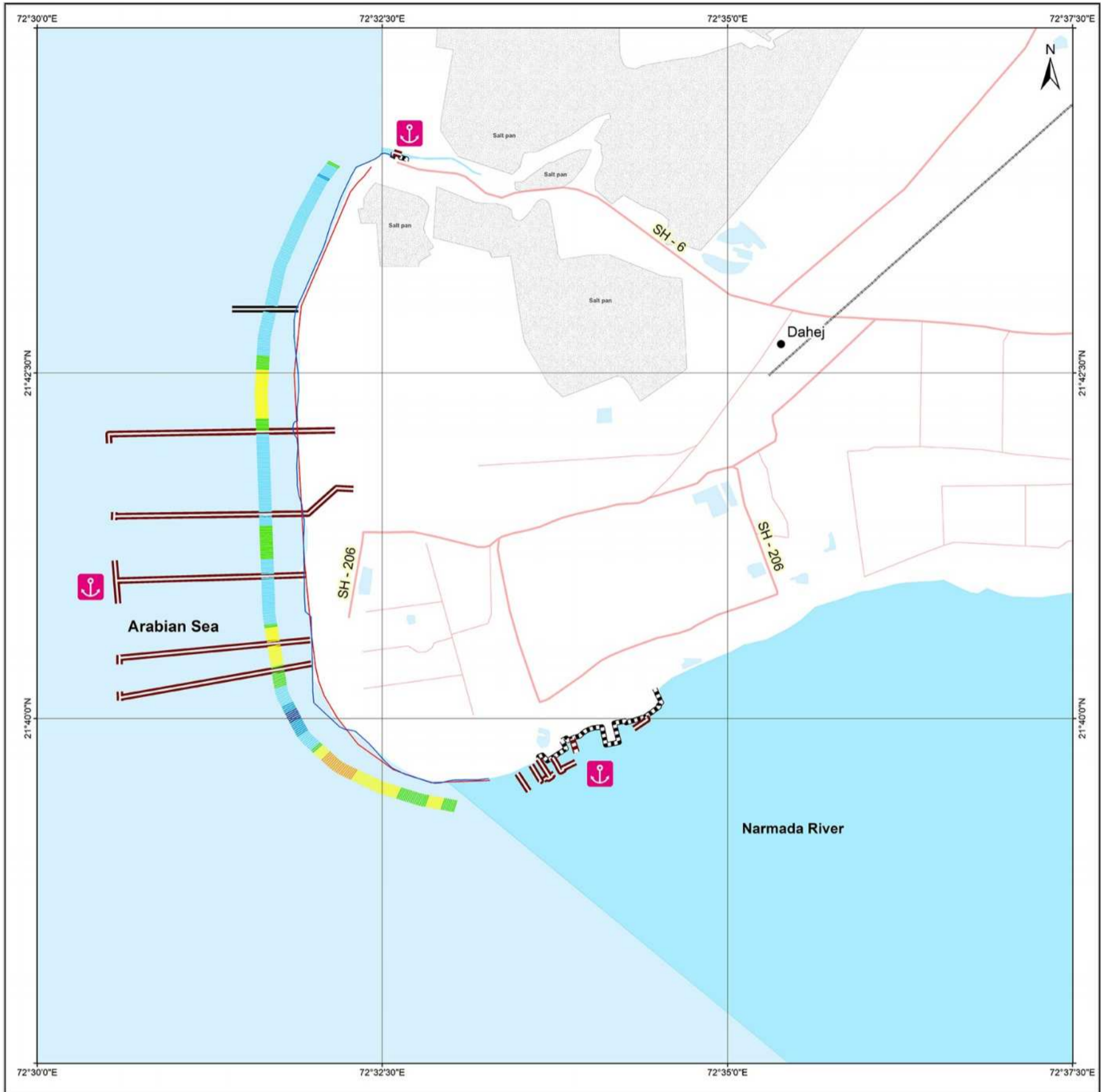
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SHORELINE CHANGE MAP GUJARAT

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46 C / 10 / NW
Map No. : NCCR/SCM/132



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 02/18/2018

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46 C / 5 / SE	46 C / 9 / SW	46 C / 9 / SE
46 C / 6 / NE	46 C / 10 / NW	46 C / 10 / NE
46 C / 6 / SE	46 C / 10 / SW	46 C / 10 / SE

Incidence on 1:50,000 Sheets

46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014 & 02/29/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

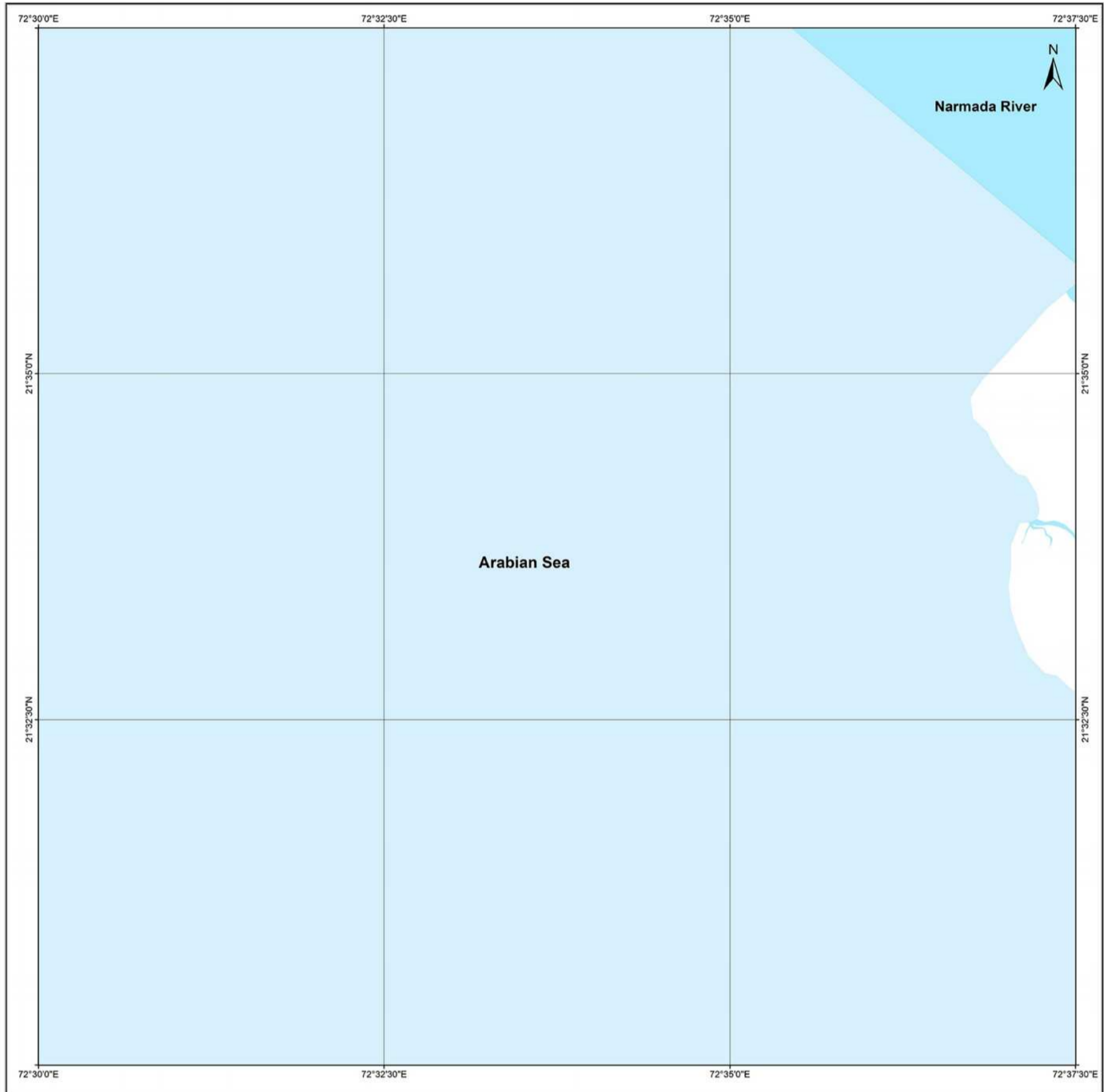
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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 10 / SW
Map No. : NCCR/SCM/133



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

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46 C / 6 / NE	46 C / 10 / NW	46 C / 10 / NE
46 C / 6 / SE	46 C / 10 / SW	46 C / 10 / SE
46 C / 7 / NE	46 C / 11 / NW	46 C / 11 / NE

Incidence on 1:50,000 Sheets

46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	02/29/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

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46 C / 10 / SE
Map No. : NCCR/SCM/134



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 10 / NW	46 C / 10 / NE	46 C / 14 / NW
46 C / 10 / SW	46 C / 10 / SE	46 C / 14 / SW
46 C / 11 / NW	46 C / 11 / NE	46 C / 15 / NW

Incidence on 1:50,000 Sheets

46 C / 5	46 C / 9	46 C / 13
46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	02/29/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014 & 02/29/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

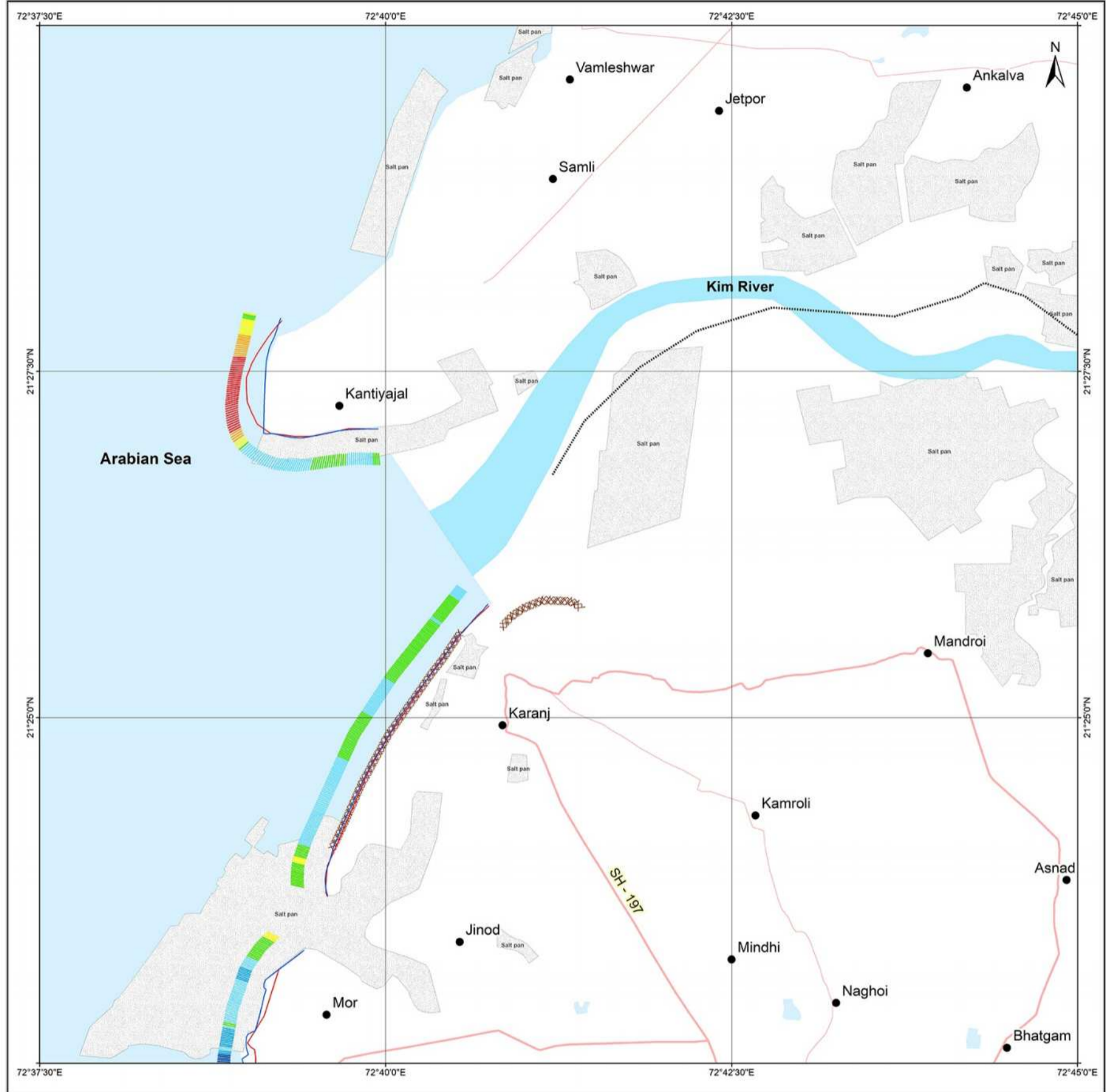
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1990 - 2018
SURAT
& BHARUCH

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 11 / NE
Map No. : NCCR/SCM/135



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 10 / SW	46 C / 10 / SE	46 C / 14 / SW
46 C / 11 / NW	46 C / 11 / NE	46 C / 15 / NW
46 C / 11 / SW	46 C / 11 / SE	46 C / 15 / SW

Incidence on 1:50,000 Sheets

46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15
46 C / 8	46 C / 12	46 C / 16

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	05/08/2016
LISS-IV	05/17/2015
LISS-IV	01/17/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

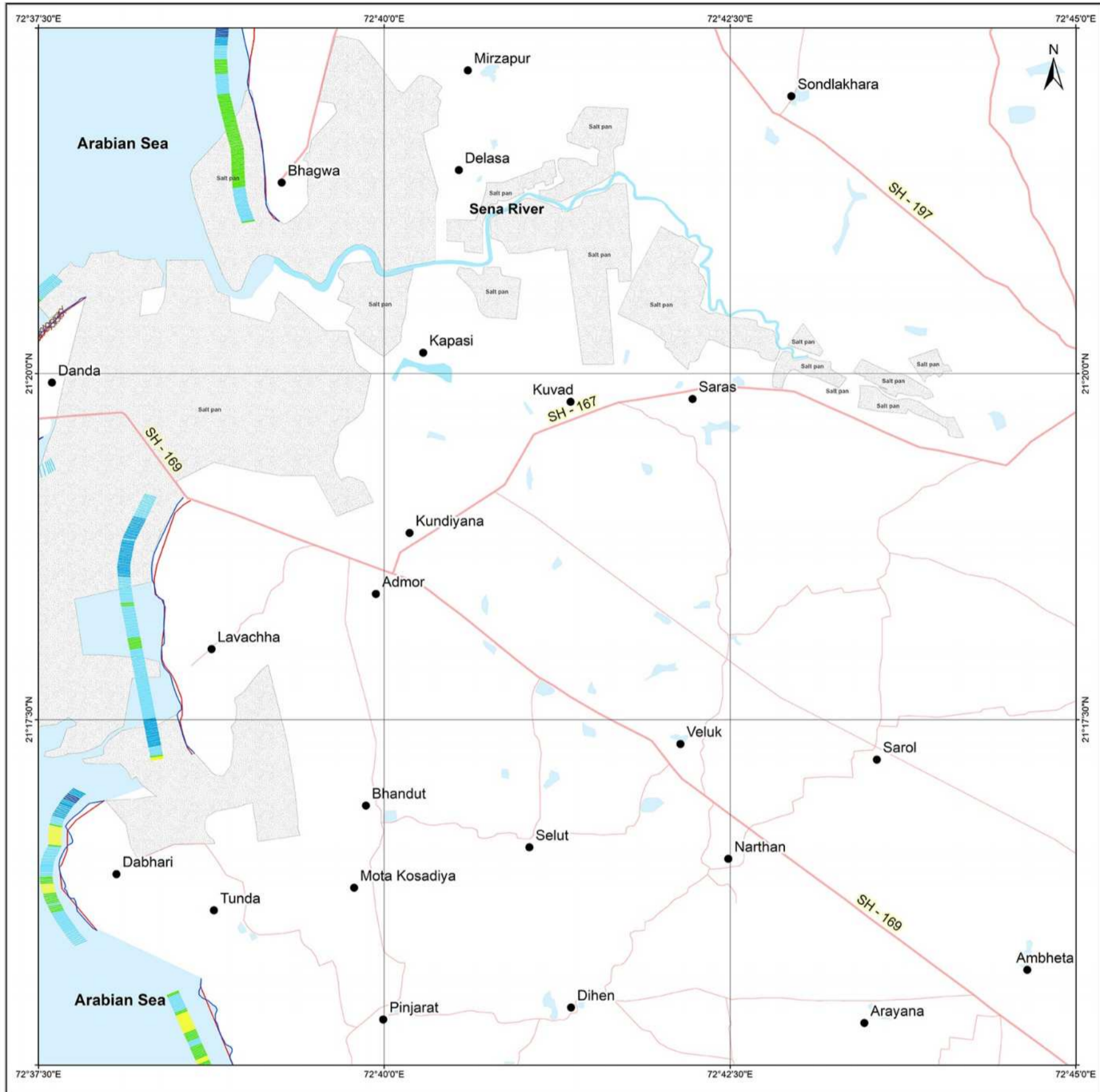
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1990 - 2018
SURAT

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 11 / SE
Map No. : NCCR/SCM/136



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 11 / NW	46 C / 11 / NE	46 C / 15 / NW
46 C / 11 / SW	46 C / 11 / SE	46 C / 15 / SW
46 C / 12 / NW	46 C / 12 / NE	46 C / 16 / NW

Incidence on 1:50,000 Sheets

46 C / 6	46 C / 10	46 C / 14
46 C / 7	46 C / 11	46 C / 15
46 C / 8	46 C / 12	46 C / 16

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	05/08/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

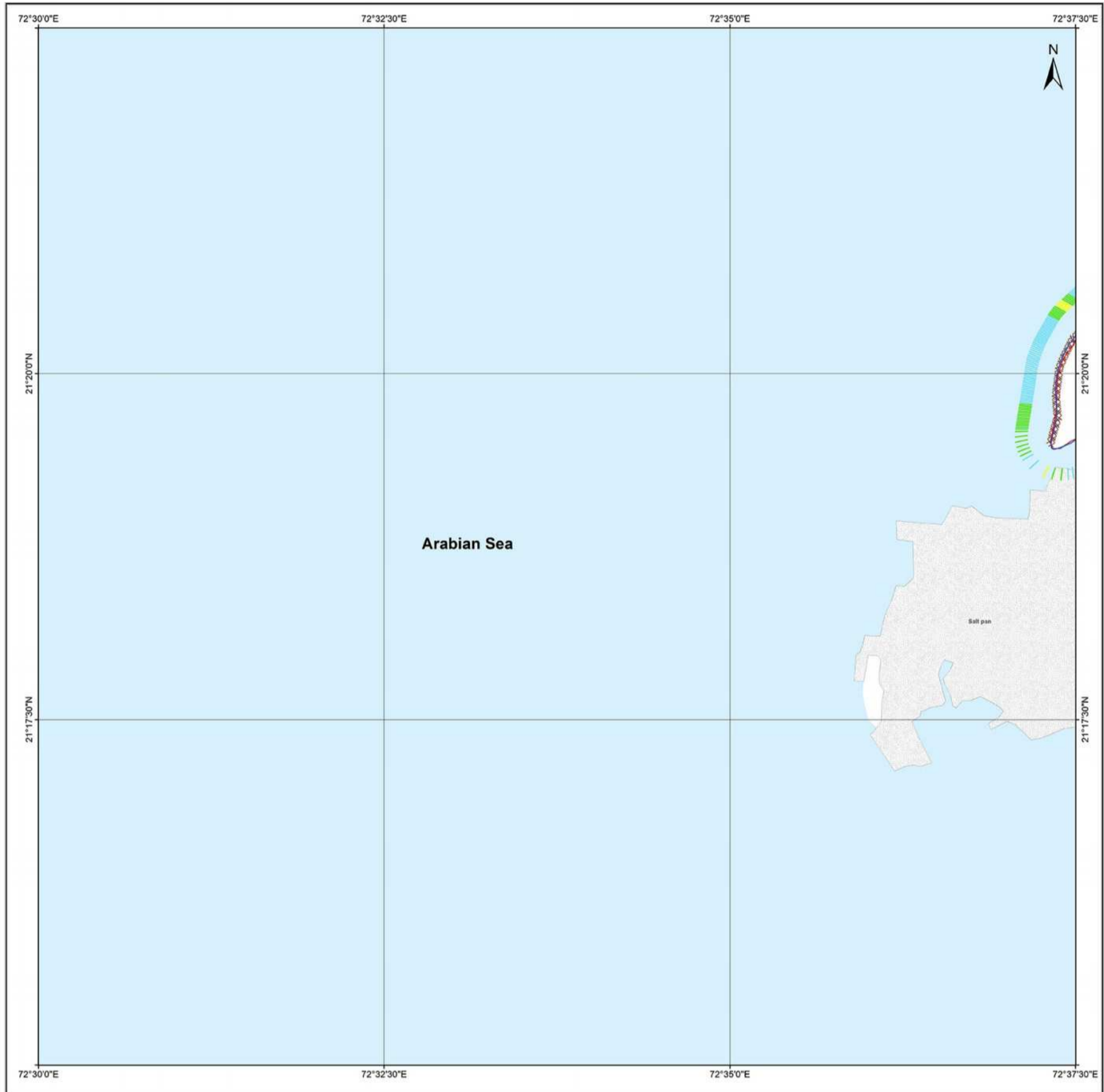
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1990 - 2018
SURAT

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 11 / SW
Map No. : NCCR/SCM/137



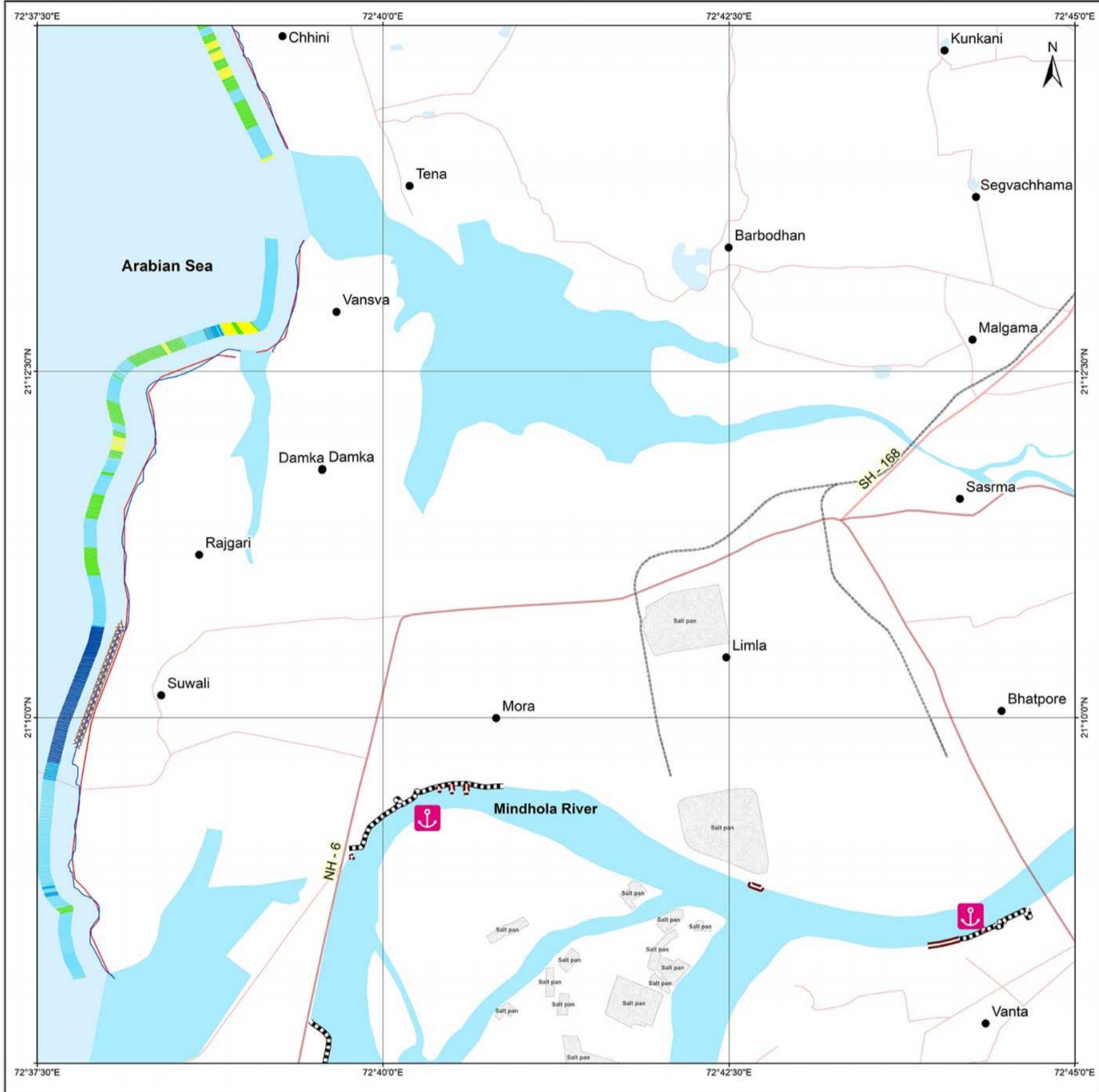
<p>Shoreline Change Trend for Period 1990 - 2018</p> <ul style="list-style-type: none"> — High Erosion — Moderate Erosion — Low Erosion — Stable Coast — Low Accretion — Moderate Accretion — High Accretion 	<p>Index to sheets</p> <table border="1"> <tr> <td>46 C / 7 / NE</td> <td>46 C / 11 / NW</td> <td>46 C / 11 / NE</td> </tr> <tr> <td>46 C / 7 / SE</td> <td style="background-color: #cccccc;">46 C / 11 / SW</td> <td>46 C / 11 / SE</td> </tr> <tr> <td>46 C / 8 / NE</td> <td>46 C / 12 / NW</td> <td>46 C / 12 / NE</td> </tr> </table>	46 C / 7 / NE	46 C / 11 / NW	46 C / 11 / NE	46 C / 7 / SE	46 C / 11 / SW	46 C / 11 / SE	46 C / 8 / NE	46 C / 12 / NW	46 C / 12 / NE	<p>Scale</p> <p>1000 m 500 0 1 2 km</p> <p>1:25,000</p> <p>UTM Coordinates Zone 43</p> <p>Datum : The World Geodetic System 1984 (WGS84)</p> <p>Spheroid : The World Geodetic System 1984 (WGS84)</p> <p>Data Sources: Satellite Data</p> <table border="1"> <thead> <tr> <th>Sensors</th> <th>Date of acquisition</th> </tr> </thead> <tbody> <tr> <td>LISS-IV</td> <td>02/18/2018</td> </tr> <tr> <td>LISS-IV</td> <td>03/19/2017</td> </tr> <tr> <td>LISS-IV</td> <td>05/08/2016</td> </tr> <tr> <td>LISS-IV</td> <td>05/17/2015</td> </tr> <tr> <td>LISS-IV</td> <td>05/08/2014</td> </tr> <tr> <td>LISS-IV</td> <td>04/09/2013</td> </tr> <tr> <td>LISS-IV</td> <td>05/08/2012</td> </tr> <tr> <td>LISS-III</td> <td>04/23/2008</td> </tr> <tr> <td>PAN (Cartosat-1)</td> <td>-</td> </tr> <tr> <td>ETM+</td> <td>04/27/2000</td> </tr> <tr> <td>TM</td> <td>03/25/1990</td> </tr> </tbody> </table>	Sensors	Date of acquisition	LISS-IV	02/18/2018	LISS-IV	03/19/2017	LISS-IV	05/08/2016	LISS-IV	05/17/2015	LISS-IV	05/08/2014	LISS-IV	04/09/2013	LISS-IV	05/08/2012	LISS-III	04/23/2008	PAN (Cartosat-1)	-	ETM+	04/27/2000	TM	03/25/1990		<ul style="list-style-type: none"> ● Settlements Port Harbour Groynes Jetty Breakwater Seawall/Ripraps Rocky Coast Administrative Boundary National Highways State Highways Other Roads Railways Lakes Rivers
	46 C / 7 / NE	46 C / 11 / NW	46 C / 11 / NE																																		
46 C / 7 / SE	46 C / 11 / SW	46 C / 11 / SE																																			
46 C / 8 / NE	46 C / 12 / NW	46 C / 12 / NE																																			
Sensors	Date of acquisition																																				
LISS-IV	02/18/2018																																				
LISS-IV	03/19/2017																																				
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LISS-IV	05/17/2015																																				
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LISS-IV	05/08/2012																																				
LISS-III	04/23/2008																																				
PAN (Cartosat-1)	-																																				
ETM+	04/27/2000																																				
TM	03/25/1990																																				
<p>Shoreline date</p> <ul style="list-style-type: none"> — 03/25/1990 — 02/18/2018 	<p>Incidence on 1:50,000 Sheets</p> <table border="1"> <tr> <td>46 C / 6</td> <td>46 C / 10</td> <td>46 C / 14</td> </tr> <tr> <td>46 C / 7</td> <td style="background-color: #cccccc;">46 C / 11</td> <td>46 C / 15</td> </tr> <tr> <td>46 C / 8</td> <td>46 C / 12</td> <td>46 C / 16</td> </tr> </table>	46 C / 6	46 C / 10	46 C / 14	46 C / 7	46 C / 11	46 C / 15	46 C / 8	46 C / 12	46 C / 16	<p>Prepared by</p> <p>Government of India Ministry of Earth Sciences</p> <p>National Centre for Coastal Research (NCCR) Pallikaranai, Chennai - 600100</p>																										
46 C / 6	46 C / 10	46 C / 14																																			
46 C / 7	46 C / 11	46 C / 15																																			
46 C / 8	46 C / 12	46 C / 16																																			

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1990 - 2018
SURAT

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 12 / NE
Map No. : NCCR/SCM/138



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 11 / SW	46 C / 11 / SE	46 C / 15 / SW
46 C / 12 / NW	46 C / 12 / NE	46 C / 16 / NW
46 C / 12 / SW	46 C / 12 / SE	46 C / 16 / SW

Incidence on 1:50,000 Sheets

46 C / 7	46 C / 11	46 C / 15
46 C / 8	46 C / 12	46 C / 16
46 D / 5	46 D / 9	46 D / 13

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	05/08/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	04/27/2000
	03/25/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

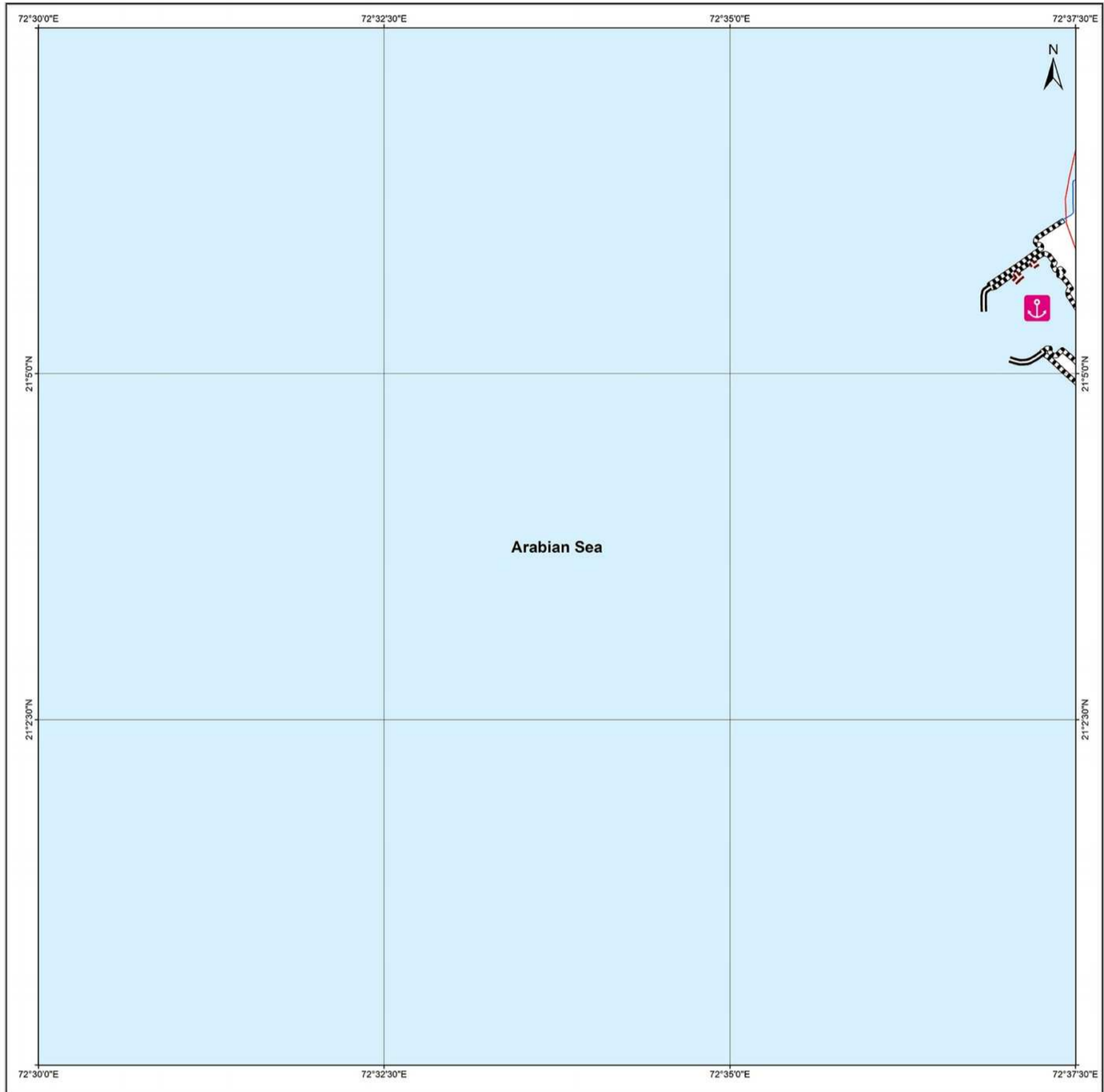
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1990 - 2018
SURAT

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 12 / SW
Map No. : NCCR/SCM/139



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 8 / NE	46 C / 12 / NW	46 C / 12 / NE
46 C / 8 / SE	46 C / 12 / SW	46 C / 12 / SE
46 D / 5 / NE	46 D / 9 / NW	46 D / 9 / NE

Incidence on 1:50,000 Sheets

46 C / 7	46 C / 11	46 C / 15
46 C / 8	46 C / 12	46 C / 16
46 D / 5	46 D / 9	46 D / 13

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	03/19/2017
LISS-IV	05/08/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	04/27/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

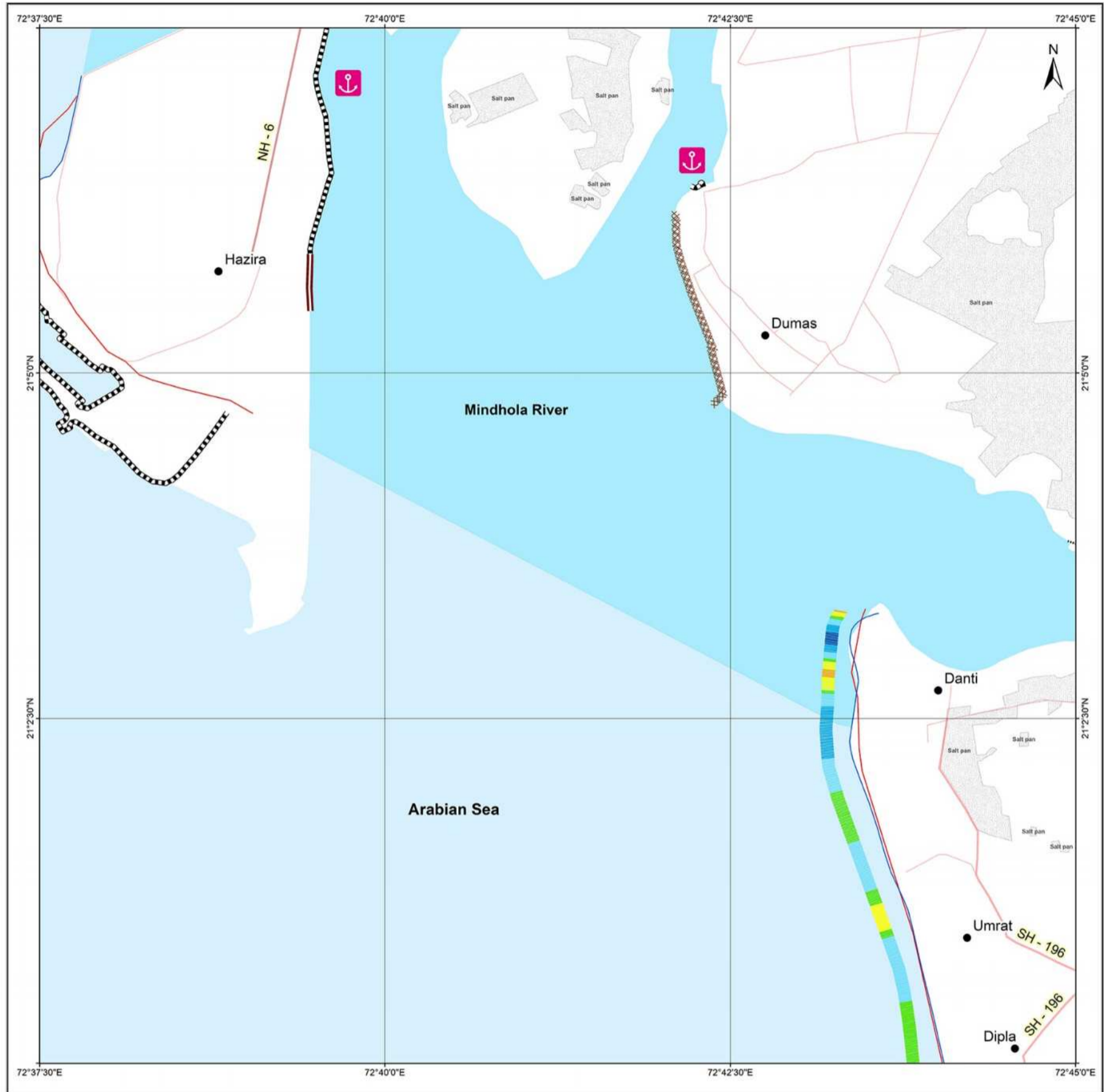
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1990 - 2018
**NAVSARI
 & SURAT**

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 C / 12 / SE
 Map No. : NCCR/SCM/140



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 02/18/2018

Index to sheets

46 C / 12 / NW	46 C / 12 / NE	46 C / 16 / NW
46 C / 12 / SW	46 C / 12 / SE	46 C / 16 / SW
46 D / 9 / NW	46 D / 9 / NE	46 D / 13 / NW

Incidence on 1:50,000 Sheets

46 C / 7	46 C / 11	46 C / 15
46 C / 8	46 C / 12	46 C / 16
46 D / 5	46 D / 9	46 D / 13

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	01/11/2017 & 03/19/2017
LISS-IV	02/10/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	04/09/2013
LISS-IV	05/08/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+ TM	10/25/2000 & 04/27/2000
	03/25/1990



- Settlements
- ⚓ Port
- ⚓ Harbour
- ▤ Groynes
- ▤ Jetty
- ▤ Breakwater
- ▤ Seawall/Ripraps
- ▤ Rocky Coast
- ▤ Administrative Boundary
- ▤ National Highways
- ▤ State Highways
- ▤ Other Roads
- ▤ Railways
- ▤ Lakes
- ▤ Rivers

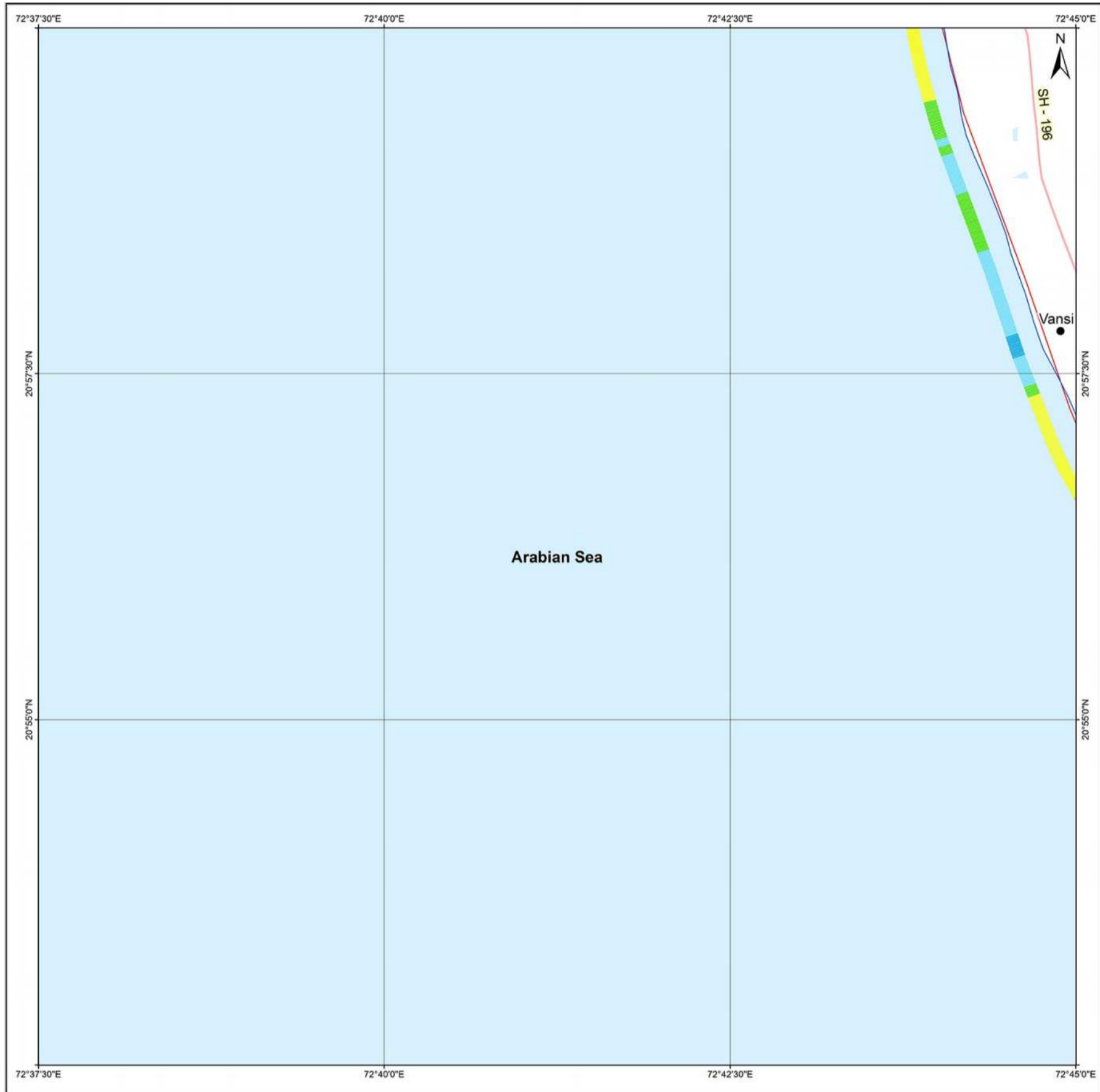
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1990 - 2018
NAVSARI

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 9 / NE
Map No. : NCCR/SCM/141



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 02/18/2018

Index to sheets

46 C / 12 / SW	46 C / 12 / SE	46 C / 16 / SW
46 D / 9 / NW	46 D / 9 / NE	46 D / 13 / NW
46 D / 9 / SW	46 D / 9 / SE	46 D / 13 / SW

Incidence on 1:50,000 Sheets

46 C / 8	46 C / 12	46 C / 16
46 D / 5	46 D / 9	46 D / 13
46 D / 6	46 D / 10	46 D / 14

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	02/18/2018
LISS-IV	01/11/2017
LISS-IV	02/10/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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NAVSARI

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 13 / NW
Map No. : NCCR/SCM/142



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 01/30/2018 & 02/18/2018

Index to sheets

46 C / 12 / SE	46 C / 16 / SW	46 C / 16 / SE
46 D / 9 / NE	46 D / 13 / NW	46 D / 13 / NE
46 D / 9 / SE	46 D / 13 / SW	46 D / 13 / SE

Incidence on 1:50,000 Sheets

46 C / 12	46 C / 16	46 G / 4
46 D / 9	46 D / 13	46 H / 1
46 D / 10	46 D / 14	46 H / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018 & 02/18/2018
LISS-IV	01/11/2017
LISS-IV	02/10/2016
LISS-IV	05/17/2015
LISS-IV	05/08/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
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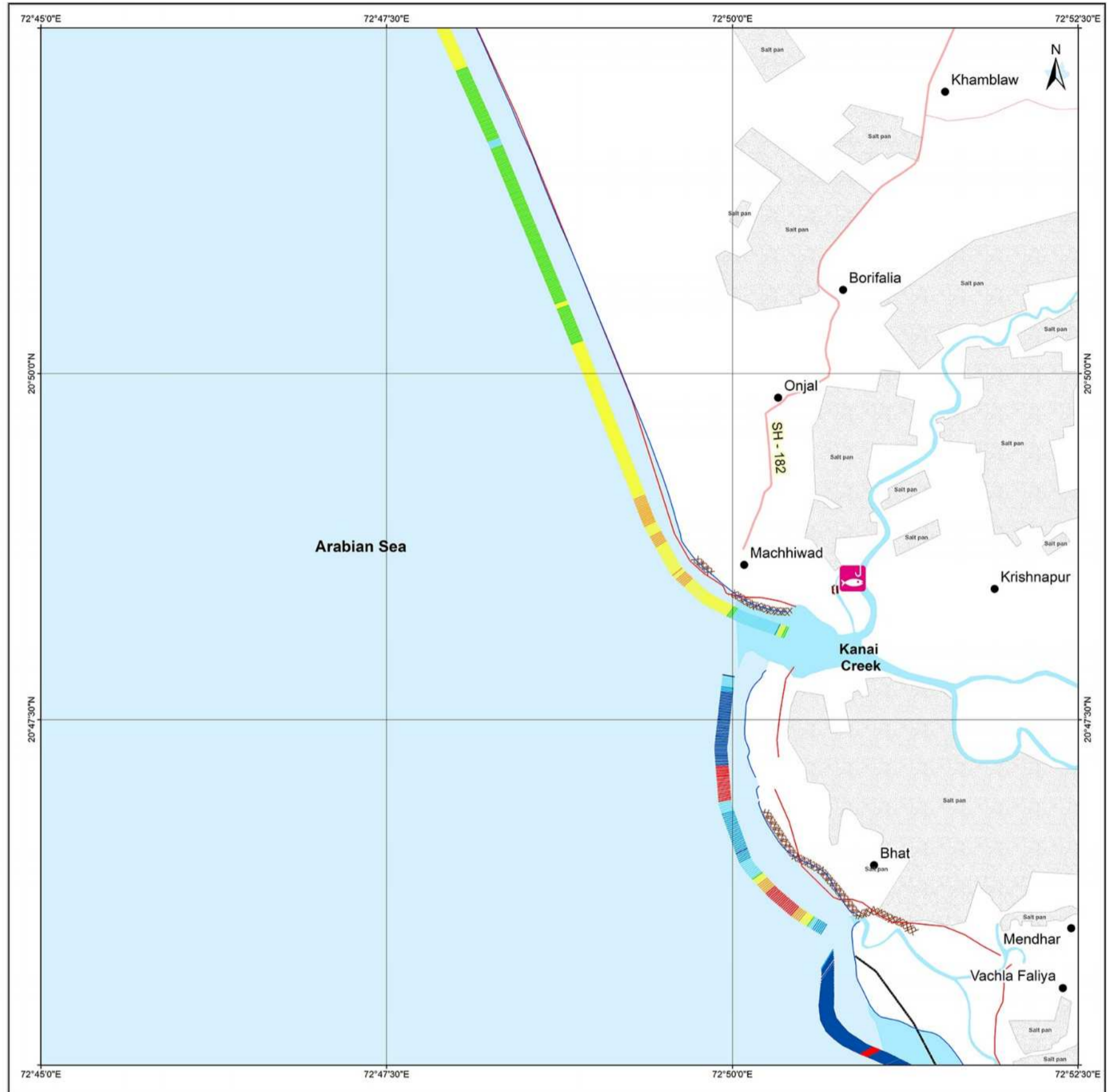
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1990 - 2018
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& NAVSARI

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 13 / SW
Map No. : NCCR/SCM/143



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 01/30/2018

Index to sheets

46 D / 9 / NE	46 D / 13 / NW	46 D / 13 / NE
46 D / 9 / SE	46 D / 13 / SW	46 D / 13 / SE
46 D / 10 / NE	46 D / 14 / NW	46 D / 14 / NE

Incidence on 1:50,000 Sheets

46 C / 12	46 C / 16	46 G / 4
46 D / 9	46 D / 13	46 H / 1
46 D / 10	46 D / 14	46 H / 2

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	01/11/2017
LISS-IV	02/10/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/23/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

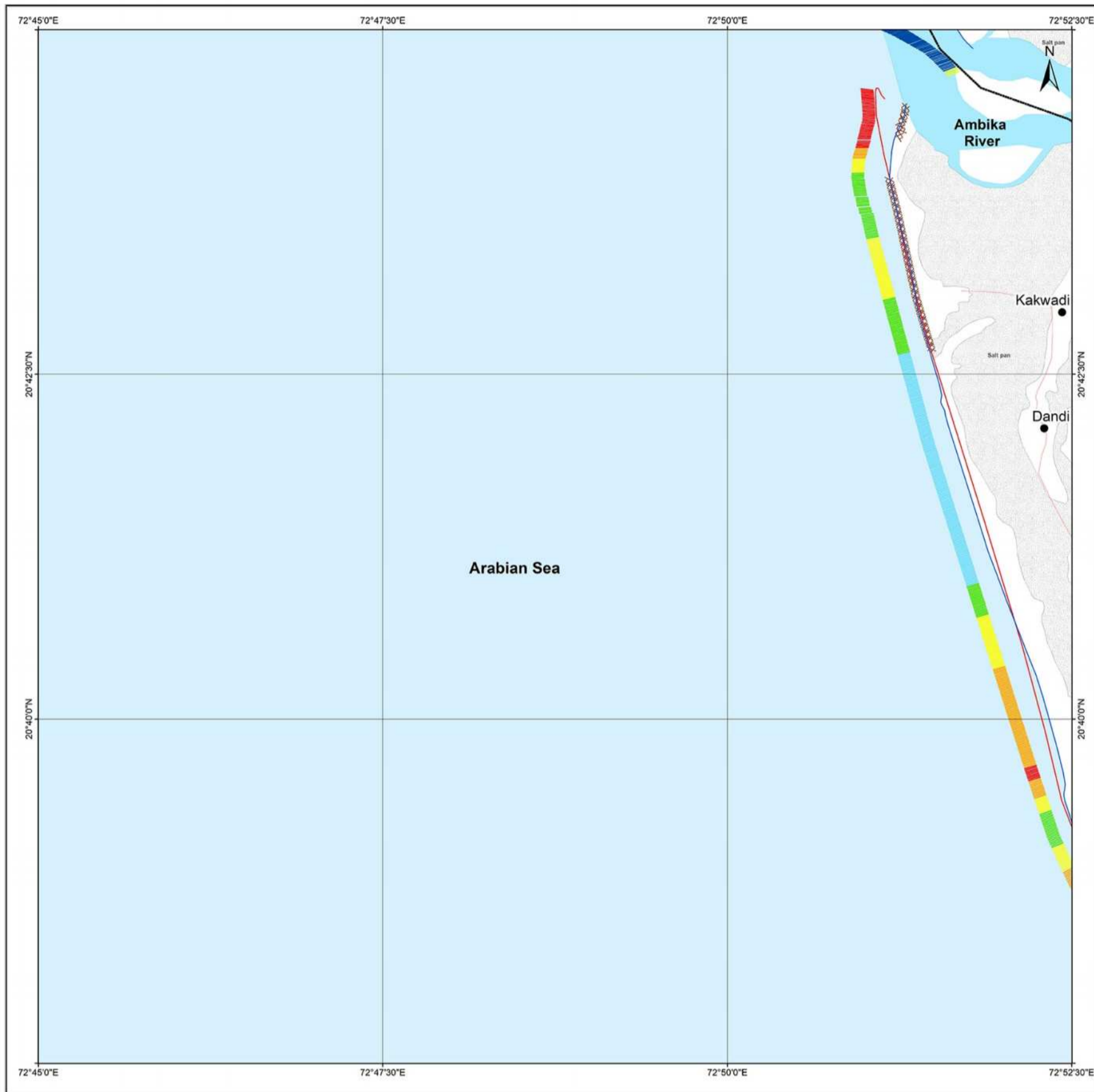
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1990 - 2018
VALSAD

SHORELINE CHANGE MAP GUJARAT

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46 D / 14 / NW
Map No. : NCCR/SCM/144



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- 03/25/1990
- 01/30/2018

Index to sheets

46 D / 9 / SE	46 D / 13 / SW	46 D / 13 / SE
46 D / 10 / NE	46 D / 14 / NW	46 D / 14 / NE
46 D / 10 / SE	46 D / 14 / SW	46 D / 14 / SE

Incidence on 1:50,000 Sheets

46 D / 9	46 D / 13	46 H / 1
46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	01/11/2017
LISS-IV	02/10/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008 & 04/23/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- █ Port
- █ Harbour
- █ Groynes
- █ Jetty
- █ Breakwater
- █ Seawall/Ripraps
- █ Rocky Coast
- █ Administrative Boundary
- █ National Highways
- █ State Highways
- █ Other Roads
- █ Railways
- █ Lakes
- █ Rivers

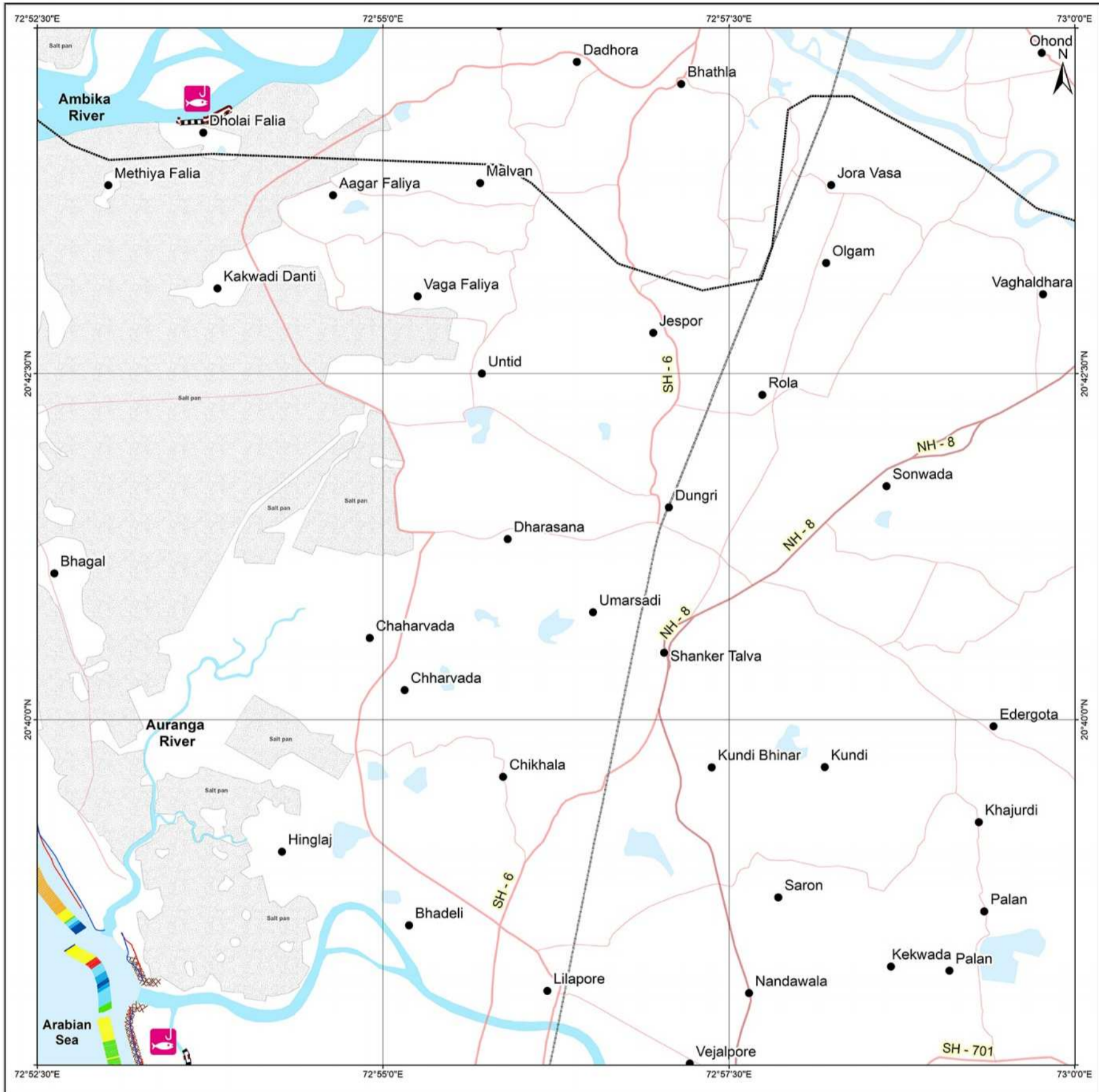
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1990 - 2018
VALSAD

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 14 / NE
Map No. : NCCR/SCM/145



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 01/30/2018

Index to sheets

46 D / 13 / SW	46 D / 13 / SE	46 H / 1 / SW
46 D / 14 / NW	46 D / 14 / NE	46 H / 2 / NW
46 D / 14 / SW	46 D / 14 / SE	46 H / 2 / SW

Incidence on 1:50,000 Sheets

46 D / 9	46 D / 13	46 H / 1
46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	01/11/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 14 / SE
Map No. : NCCR/SCM/146



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 01/30/2018

Index to sheets

46 D / 14 / NW	46 D / 14 / NE	46 H / 2 / NW
46 D / 14 / SW	46 D / 14 / SE	46 H / 2 / SW
46 D / 15 / NW	46 D / 15 / NE	46 H / 3 / NW

Incidence on 1:50,000 Sheets

46 D / 9	46 D / 13	46 H / 1
46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3

Scale
1:25,000

1000 m 500 0 1 2 km

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	01/11/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

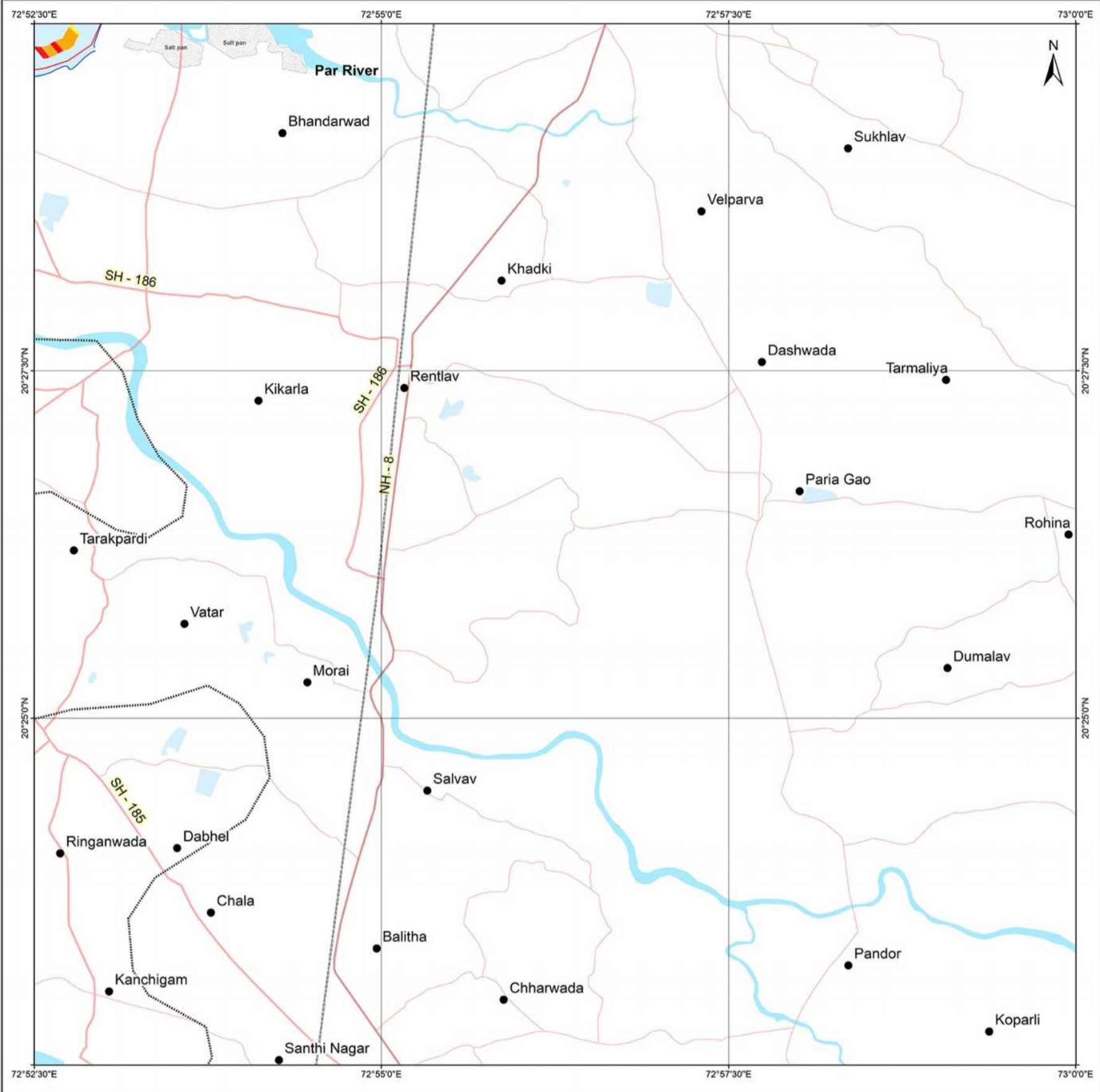
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1990 - 2018
DAMAN & VALSAD

SHORELINE CHANGE MAP DAMAN & DIU & GUJARAT

Restricted Use
46 D / 15 / NE
 Map No. : NCCR/SCM/147



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 01/30/2018

Index to sheets

46 D / 14 / SW	46 D / 14 / SE	46 H / 2 / SW
46 D / 15 / NW	46 D / 15 / NE	46 H / 3 / NW
46 D / 15 / SW	46 D / 15 / SE	46 H / 3 / SW

Incidence on 1:50,000 Sheets

46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3
46 D / 12	46 D / 16	46 H / 4

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	01/11/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
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**DAMAN
 & VALSAD**

SHORELINE CHANGE MAP DAMAN & DIU & GUJARAT

Restricted Use
46 D / 15 / NW
 Map No. : NCCR/SCM/148



Shoreline Change Trend for Period 1990 - 2018

- █ High Erosion
- █ Moderate Erosion
- █ Low Erosion
- █ Stable Coast
- █ Low Accretion
- █ Moderate Accretion
- █ High Accretion

Shoreline date

- █ 03/25/1990
- █ 01/30/2018

Index to sheets

46 D / 19 / SE	46 D / 14 / SW	46 D / 14 / SE
46 D / 11 / NE	46 D / 15 / NW	46 D / 15 / NE
46 D / 11 / SE	46 D / 15 / SW	46 D / 15 / SE

Incidence on 1:50,000 Sheets

46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3
46 D / 12	46 D / 16	46 H / 4

Scale
 1000 m 500 0 1 2 km
 1:25,000

UTM Coordinates Zone 43
 Datum : The World Geodetic System 1984 (WGS84)
 Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017 & 01/11/2017
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LISS-IV	04/09/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
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- Breakwater
- Seawall/Ripraps
- Rocky Coast
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- National Highways
- State Highways
- Other Roads
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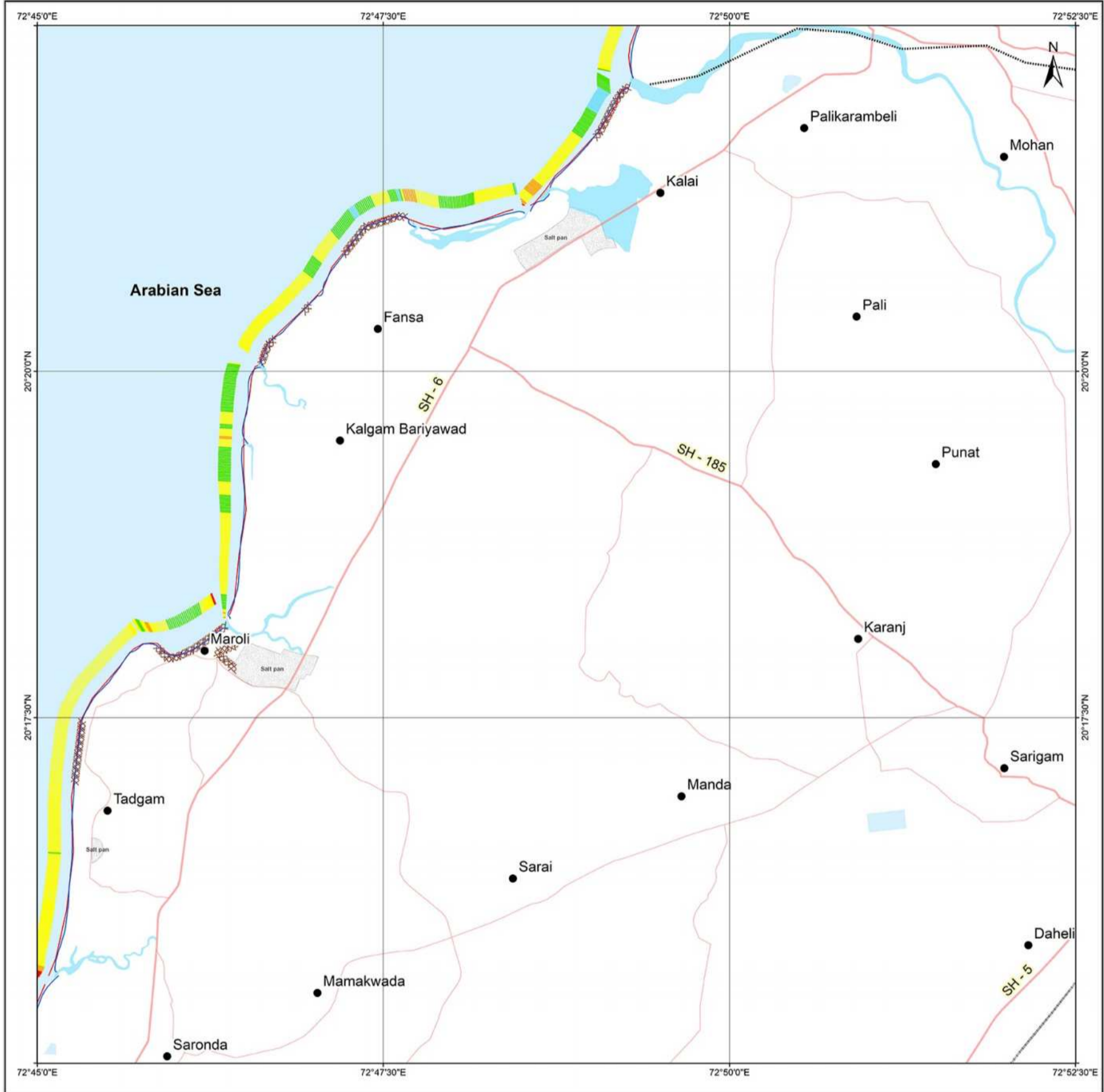
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1990 - 2018
VALSAD

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 15 / SW
Map No. : NCCR/SCM/149



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 01/30/2018

Index to sheets

46 D / 11 / NE	46 D / 15 / NW	46 D / 15 / NE
46 D / 11 / SE	46 D / 15 / SW	46 D / 15 / SE
46 D / 12 / NE	46 D / 16 / NW	46 D / 16 / NE

Incidence on 1:50,000 Sheets

46 D / 10	46 D / 14	46 H / 2
46 D / 11	46 D / 15	46 H / 3
46 D / 12	46 D / 16	46 H / 4

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
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LISS-IV	03/11/2015
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LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
- Port
- Harbour
- Groynes
- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
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- Railways
- Lakes
- Rivers

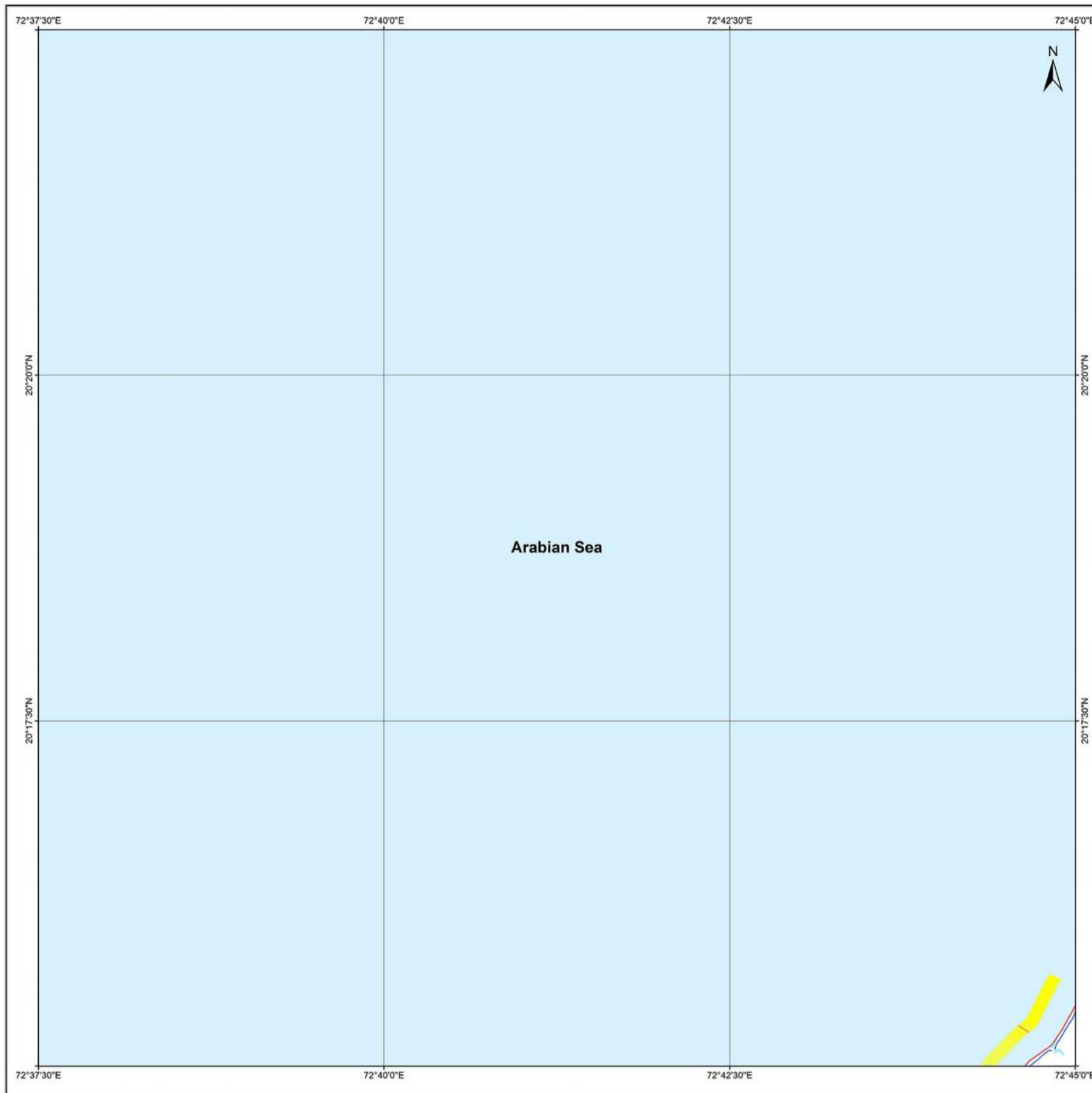
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1990 - 2018
VALSAD

SHORELINE CHANGE MAP GUJARAT

Restricted Use
46 D / 11 / SE
Map No. : NCCR/SCM/150



Shoreline Change Trend for Period 1990 - 2018

- High Erosion
- Moderate Erosion
- Low Erosion
- Stable Coast
- Low Accretion
- Moderate Accretion
- High Accretion

Shoreline date

- 03/25/1990
- 01/30/2018

Index to sheets

46 D / 11 / NW	46 D / 11 / NE	46 D / 15 / NW
46 D / 11 / SW	46 D / 11 / SE	46 D / 15 / SW
46 D / 12 / NW	46 D / 12 / NE	46 D / 16 / NW

Incidence on 1:50,000 Sheets

46 D / 6	46 D / 10	46 D / 14
46 D / 7	46 D / 11	46 D / 15
46 D / 8	46 D / 12	46 D / 16

Scale
1000 m 500 0 1 2 km
1:25,000

UTM Coordinates Zone 43
Datum : The World Geodetic System 1984 (WGS84)
Spheroid : The World Geodetic System 1984 (WGS84)

Data Sources: Satellite Data

Sensors	Date of acquisition
LISS-IV	01/30/2018
LISS-IV	02/28/2017
LISS-IV	03/29/2016
LISS-IV	03/11/2015
LISS-IV	03/11/2014
LISS-IV	05/08/2013
LISS-IV	03/02/2012
LISS-III	04/28/2008
PAN (Cartosat-1)	-
ETM+	10/25/2000
TM	03/25/1990



- Settlements
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- Jetty
- Breakwater
- Seawall/Ripraps
- Rocky Coast
- Administrative Boundary
- National Highways
- State Highways
- Other Roads
- Railways
- Lakes
- Rivers

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ANNEXURE

Grid Details - For Shoreline Change Maps (1990-2018) in 1:25000

West Coast of India

Kerala

SL NO	TOPO NO	GRID NO	DISTRICT	PAGE NO
1	48 L/13/SW	228	Dakshina Kannada & Kasargod	25
2	48 L/ 14/ NW	229	Kasaragod	26
3	48 L/ 14/ NE	230	Kasaragod	27
4	48 L/ 14/ SE	231	Kasaragod	28
5	48 L/ 15/ NE	232	Kasaragod	29
6	48 P/3/ NW	233	Kasaragod	30
7	48 P/3/ SW	234	Kasaragod	31
8	48 P /4/NW	235	Kasaragod	32
9	48 P/4/ NE	236	Kannur & Kasaragod	33
10	48 P/4/ SE	237	Kannur & Kasaragod	34
11	48 P/8 /SW	238	Kannur	35
12	49 M /5/ NW	239	Kannur	36
13	49 M /5/ SW	240	Kannur	37
14	49 M/5/ SE	241	Kannur	38
15	49 M /6/ NE	242	Kannur	39
16	49 M/10/ NW	243	Kannur & Kozhikode & Mahe	40
17	49 M /10/ SW	244	Kozhikode	41
18	49 M /11/ NW	245	Kozhikode	42
19	49 M /11/ NE	246	Kozhikode	43
20	49 M/11/SE	247	Kozhikode	44
21	49 M/15/SW	248	Kozhikode	45
22	49 M /16/ NW	249	Malappuram & Kozhikode	46
23	49 M/16/ SW	250	Malappuram	47
24	49 N/13/ NW	251	Malappuram	48
25	49 N /13/ NE	252	Malappuram	49
26	49 N /13/ SE	253	Malappuram	50
27	49 N/14/ NE	254	Malappuram & Thrissur	51
28	49 N /14/ SE	255	Thrissur	52
29	58 B/2/ SW	256	Thrissur	53
30	58 B/3/NW	257	Thrissur	54
31	58 B/3/SW	258	Thrissur	55
32	58 B/3/SE	259	Thrissur	56
33	58 B/4/NE	260	Thrissur & Ernakulam	57
34	58 B/4/SE	261	Ernakulam	58
35	58 C/1/NE	262	Ernakulam	59
36	58 C/5/NW	263	Ernakulam & Alappuzha	60
37	58 C/5/ SW	264	Ernakulam & Alappuzha & Kottayam	61
38	58 C/6 /NW	265	Alappuzha	62
39	58 C/6/ SW	266	Alappuzha	63
40	58C/7/NW	267	Alappuzha	64
41	58 C/7/SW	268	Alappuzha	65
42	58 C/7/ SE	269	Alappuzha & Pathanamthitta	66
43	58 C/8/NE	270	Alappuzha	67
44	58 C/8/SE	271	Alappuzha & Kollam	68
45	58 C/12/SW	272	Alappuzha & Kollam	69
46	58 D/9/NW	273	Kollam	70
47	58 D/9/SW	274	Kollam	71
48	58 D/9/SE	275	Kollam & Thiruvananthapuram	72

49	58 D/10/NE	276	Thiruvananthapuram	73
50	58 D/14/NW	277	Thiruvananthapuram	74
51	58 D/14/SW	278	Thiruvananthapuram	75
52	58 D/14/SE	279	Thiruvananthapuram	76
53	58 D /15/NE	280	Thiruvananthapuram	77
54	58 D/15/SE	281	Thiruvananthapuram	78
55	58 H/3/ SW	282	Thiruvananthapuram	79

Karnataka

SL NO	TOPO NO	GRID NO	DISTRICT	PAGE NO
1	48 J/1/SW	206	Uttara Kannada	80
2	48 J /1/ SE	207	Uttara Kannada	81
3	48 J/2/NE	208	Uttara Kannada	82
4	48 J/6/NW	209	Uttara Kannada	83
5	48 J/6/SW	210	Uttara Kannada	84
6	48 J /7/ NW	211	Uttara Kannada	85
7	48 J/7/NE	212	Uttara Kannada	86
8	48 J/7/ SE	213	Uttara Kannada	87
9	48 J/8/NE	214	Uttara Kannada	88
10	48 J/8/SE	215	Uttara Kannada	89
11	48 J/12/SW	216	Uttara Kannada	90
12	48 K/9/NW	217	Udupi & Uttara Kannada	91
13	48 K/9/SW	218	Udupi	92
14	48 K/9/SE	219	Udupi	93
15	48 K/10/NE	220	Udupi	94
16	48 K/10/SE	221	Udupi	95
17	48 K/11/NE	222	Udupi	96
18	48 K /11/ SE	223	Udupi	97
19	48 K /12/ NE	224	Udupi	98
20	48 K/16/NW	225	Udupi	99
21	48 K /16/ SW	226	Dakshina Kannada & Udupi	100
22	48 L/13/NW	227	Dakshina Kannada	101

Goa

SL NO	TOPO NO	GRID NO	DISTRICT	PAGE NO
1	48 E/10/NE	196	Sindhudurg & North Goa	102
2	48 E/10/SE	197	North Goa	103
3	48 E/14/SW	198	North Goa	104
4	48 E/15/NW	199	South Goa & North Goa	105
5	48 E/15/SW	200	South Goa	106
6	48 E/15/SE	201	South Goa	107
7	48 E/16/NE	202	South Goa	108
8	48 E/16/SE	203	South Goa	109
9	48 I/4/SW	204	South Goa	110
10	48 J/1/NW	205	South Goa & Uttara Kannada	111

Maharashtra

SL NO	TOPO NO	GRID NO	DISTRICT	PAGE NO
1	46 D/12/NE	151	Valsad & Palghar	112
2	46 D/12/SE	152	Palghar	113
3	47 A/9/NE	153	Palghar	114
4	47 A/9/SE	154	Palghar	115
5	47 A/10/NE	155	Palghar	116
6	47 A/10/SE	156	Palghar	117
7	47 A/14/SW	157	Palghar	118
8	47 A/11/NE	158	Palghar	119
9	47 A/15/NW	159	Palghar	120
10	47 A/15/SW	160	Palghar & Thane	121
11	47 A/16/NW	161	Mumbai Sub Urban & Thane	122
12	47 A/16/SW	162	Mumbai & Mumbai Sub Urban	123
13	47 B/13/NW	163	Mumbai	124
14	47 B/13/SW	164	Raigad	125
15	47 B/14/NW	165	Raigad	126
16	47 B/14/NE	166	Raigad	127
17	47 B/14/SE	167	Raigad	128
18	47 B/15/NE	168	Raigad	129
19	47 B/15/SE	169	Raigad	130
20	47 B/16/NE	170	Raigad	131
21	47 B/16/SE	171	Raigad	132
22	47 F/4/SW	172	Raigad	133
23	47 G/1/NW	173	Raigad & Ratnagiri	134
24	47 G/1/SW	174	Ratnagiri	135
25	47 G/2/NW	175	Ratnagiri	136
26	47 G/2/NE	176	Ratnagiri	137
27	47 G/2/SE	177	Ratnagiri	138
28	47 G/3/NE	178	Ratnagiri	139
29	47 G/3/SE	179	Ratnagiri	140
30	47 G/4/NE	180	Ratnagiri	141
31	47 G/8/NW	181	Ratnagiri	142
32	47 G/8/SW	182	Ratnagiri	143
33	47 H/5/NW	183	Ratnagiri	144
34	47 H/5/SW	184	Ratnagiri	145
35	47 H/6/NW	185	Ratnagiri	146
36	47 H/6/SW	186	Sindhudurg & Ratnagiri	147
37	47 H/7/NW	187	Sindhudurg	148
38	47 H/7/SE	188	Sindhudurg	149
39	47 H/7/SW	189	Sindhudurg	150
40	47 H/8/NE	190	Sindhudurg	151
41	47 H/8/SE	191	Sindhudurg	152
42	48 E/5/NE	192	Sindhudurg	153
43	48 E/9/NW	193	Sindhudurg	154
44	48 E/9/SW	194	Sindhudurg	155
45	48 E/9/SE	195	Sindhudurg	156

Gujarat

SL NO	TOPO NO	GRID NO	DISTRICT	PAGE NO
1	41 A/2/NE	1	Kachchh	157
2	41 A/2/SE	2	Kachchh	158
3	41 A/6/SW	3	Kachchh	159
4	41 A/6/NW	4	Kachchh	160
5	41 A/6/NE	5	Kachchh	161
6	41 A/9/SW	6	Kachchh	162
7	41 A/9/SE	7	Kachchh	163
8	41 A/10/NW	8	Kachchh	164
9	41 A/10/SW	9	Kachchh	165
10	41 A/6/SE	10	Kachchh	166
11	41 A/7/NE	11	Kachchh	167
12	41 A/11/NW	12	Kachchh	168
13	41 A/11/SW	13	Kachchh	169
14	41 A/11/SE	14	Kachchh	170
15	41 A/12/NW	15	Kachchh	171
16	41 A/12/NE	16	Kachchh	172
17	41 A / 12 / SE	17	Kachchh	173
18	41 A/16/SW	18	Kachchh	174
19	41 A/16/SE	19	Kachchh	175
20	41 B/13/NE	20	Kachchh	176
21	41 F/1/NW	21	Kachchh	177
22	41 F/1/NE	22	Kachchh	178
23	41 F/1/SE	23	Kachchh	179
24	41 F/5/SW	24	Kachchh	180
25	41 F/5/SE	25	Kachchh	181
26	41 F/9/SW	26	Kachchh	182
27	41 F/10/NW	27	Kachchh	183
28	41 F/10/NE	28	Kachchh	184
29	41 F/9/SE	29	Kachchh	185
30	41 F/13/NW	30	Kachchh	186
31	41 F/13/SW	31	Kachchh	187
32	41 F/13/SE	32	Kachchh	188
33	41 F/13/NE	33	Kachchh	189
34	41 J/1/NW	34	Kachchh	190
35	41 I/4/SW	35	Kachchh	191
36	41 J/1/NE	36	Kachchh	192
37	41 I/4/SE	37	Kachchh	193
38	41 I / 4/ NE	38	Kachchh	194
39	41 I/8/NW	39	Kachchh	195
40	41 I/ 8/NE	40	Kachchh	196
41	41 I/12/NW	41	Kachchh	197
42	41 I /12/NE	42	Morvi & Kachchh	198
43	41 I/12/SE	43	Morvi	199
44	41 I/12/SW	44	Morvi	200
45	41 J/9/NW	45	Jamnagar & Morvi	201
46	41 J/5/NE	46	Jamnagar & Morvi	202
47	41 J/5/SE	47	Jamnagar	203
48	41 J/6/NE	48	Jamnagar	204

49	41 J/6/NW	49	Jamnagar	205
50	41 J/2/NE	50	Jamnagar	206
51	41 J/2/SE	51	Jamnagar	207
52	41 J / 2 / SW	52	Jamnagar	208
53	41 F/14/SE	53	Jamnagar	209
54	41 F/15/NE	54	Jamnagar	210
55	41 F/15/SW	55	Jamnagar	211
56	41 F/15/NW	56	Jamnagar	212
57	41 F/11/NE	57	Dev Bhumi Dwarka & Jamnagar	213
58	41 F/11/SE	58	Dev Bhumi Dwarka & Jamnagar	214
59	41 F/11/SW	59	Dev Bhumi Dwarka	215
60	41 F/7/SE	60	Dev Bhumi Dwarka	216
61	41 F/7/SW	61	Dev Bhumi Dwarka	217
62	41 F/3/SE	62	Dev Bhumi Dwarka	218
63	41 F/3/NE	63	Dev Bhumi Dwarka	219
64	41 F/3/NW	64	Dev Bhumi Dwarka	220
65	41 B/15/NE	65	Dev Bhumi Dwarka	221
66	41 B/15/SE	66	Dev Bhumi Dwarka	222
67	41 B/16/NE	67	Dev Bhumi Dwarka	223
68	41 F/4/NW	68	Dev Bhumi Dwarka	224
69	41 F/4/SW	69	Dev Bhumi Dwarka	225
70	41 F/4/SE	70	Dev Bhumi Dwarka	226
71	41 G/1/NE	71	Dev Bhumi Dwarka	227
72	41 G/5/NW	72	Dev Bhumi Dwarka	228
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74	41 G/5/SE	74	Porbandar & Dev Bhumi Dwarka	230
75	41 G/6/NE	75	Porbandar	231
76	41 G/10/NW	76	Porbandar	232
77	41 G/10/SW	77	Porbandar	233
78	41 G/10/SE	78	Porbandar	234
79	41 G/11/NE	79	Porbandar	235
80	41 G /15/NW	80	Porbandar	236
81	41 G/15/SW	81	Porbandar	237
82	41 G/15/SE	82	Junagadh & Porbandar	238
83	41 G/16/NE	83	Junagadh & Porbandar	239
84	41 K/4/NW	84	Junagadh & Porbandar	240
85	41 K/4/SW	85	Junagadh	241
86	41 K/4/SE	86	Junagadh	242
87	41 L/1/NE	87	Gir Somnath & Junagadh	243
88	41 L/5/NW	88	Gir Somnath	244
89	41 L/5/NE	89	Gir Somnath	245
90	41 L/5/SE	90	Gir Somnath	246
91	41 L/9/SW	91	Gir Somnath	247
92	41 L/9/SE	92	Gir Somnath	248
93	41 L/10/NE	93	Gir Somnath	249
94	41 L/14/NW	94	Gir Somnath	250
95	41 L/14/NE	95	Diu & Gir Somnath	251
96	41 P/2/NW	96	Diu & Gir Somnath	252
97	41 P/1/SW	97	Gir Somnath	253

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99	41 P/5/SW	99	Amreli	255
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103	41 P/9/NE	103	Amreli & Bhavnagar	259
104	41 O/12/SE	104	Amreli & Bhavnagar	260
105	41 O/16/SW	105	Bhavnagar	261
106	41 O/16/SE	106	Bhavnagar	262
107	41 O/16 /NE	107	Bhavnagar	263
108	46 C /4/ NW	108	Bhavnagar	264
109	46 C/3/SW	109	Bhavnagar	265
110	46 C/3/SE	110	Bhavnagar	266
111	46 C/3/ NE	111	Bhavnagar	267
112	46 C /7/ NW	112	Bhavnagar	268
113	46 C/6/ SW	113	Bhavnagar	269
114	46 C/6/NW	114	Bhavnagar	270
115	46 C/2/NE	115	Bhavnagar	271
116	46 C/1/SE	116	Bhavnagar	272
117	46 C/1/NE	117	Bhavnagar & Ahmedabad	273
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119	46 B /8/ SW	119	Ahmedabad	275
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122	46 B/7/SW	122	Anand & Ahmedabad	278
123	46 B /7/ SE	123	Anand & Ahmedabad	279
124	46 B/11/SW	124	Anand	280
125	46 B/11/SE	125	Anand	281
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127	46 B /12/ NW	127	Bharuch & Anand	283
128	46 C/12/SW	128	Bharuch	284
129	46 C /9/ NW	129	Bharuch	285
130	46 C/9/SW	130	Bharuch	286
131	46 C/10/NE	131	Bharuch	287
132	46 C/10/NW	132	Bharuch	288
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134	46 C/10/SE	134	Bharuch	290
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