

## CoastSnap India initiative by National Centre for Earth Science Studies (NCESS)

NCESS is currently involved in establishing a network of cost-effective beach monitoring systems applying remote sensing methods utilizing land-based camera systems which can provide real time data along the Indian coast. The monitoring systems once fully established can generate valuable data sets for understanding coastal erosion, sediment transportation, surfzone characteristics, temporal changes in shoreline (both short-term and long-term) due to natural and anthropogenic activities. Apart from the contribution towards scientific knowledge which helps in understanding the complex coastal processes, the wealth of data collected, can be used as primary data for the planning and design of site-specific coastal management projects. In addition, response of beaches to ephemeral events like cyclonic storms, localized coastal flooding, wind setup, etc., can also be studied to get an overall picture of the impact of the event. Based on this, proper planning can be done for data collection in the event of a similar occurrence in the future. This will give vital information on how beaches respond to changing wave and weather conditions.

The remote sensing techniques which are being adopted by NCESS includes use of land-based Video Beach Monitoring Systems (VBMS), photographs from CoastSnap, Satellite images and CoastSat technologies.

NCESS for the first time in India, has introduced CoastSnap for the Indian coast. According to Dr. Mitchell Harley from UNSW's School of Civil and Environmental Engineering, who pioneered the CoastSnap technique, it is a network of simple camera mounts at beaches that invite the public to take a photo and upload it to social media, using a specific hashtag.

The CoastSnap is essentially a community-based program founded in 2017 wherein an average community member is elevated to a coastal scientist by encouraging them to use their own smartphones to take pictures of the coastline. It works on the principle of citizen-science approach by which the daily shoreline data is collected by tapping into the large volume of social media images taken at the coast and shared by the citizen every day.

The photographs which are shared through social media are then used by the scientific community/researchers to track the changes in shoreline position on a day to day basis. Algorithms for processing the images are available and the performance of these softwares for a particular site is tested and validated before analysing the recorded images. It has been already proven that in spite of the inherent technical challenges in adopting this method of data collection, which include the low resolution of social media images and the involvement of layman in the gathering of the data, the technique does not need the use of expensive equipment to collect reliable data.



*Fig. 1 View of the CoastSnap mobile phone cradle at Adimalathura*



# Be a contributor to **CoastSnap India** *Community beach monitoring*

CoastSnap is a network of simple camera mounts at beaches that invite the public to take a photo and upload it to social media.

## Become a Citizen Scientist

We value your contributions as the coastsnap shots have the potential to give vital scientific information to unravel some of the less understood complex coastal processes and also for studying the short-term and long-term shoreline changes for efficient shoreline management of the coast.

**ONE SHOT IS ALL THAT IT TAKES  
TO BE A CITIZEN RESEARCHER  
JOIN US**

Help us to record our changing coastline: Snap it + share it !



## Snap

\* Place your mobile device in the CoastSnap cradle, with the camera facing through the gap in the cradle and the screen facing you. This is important: If you don't place your phone in the cradle we can't use your snap

\*Take a standard photo with your mobile device camera, **without using zoom or filters**

## Share

Hashtag #CoastSnapIndia and share using social media or email

[www.facebook.com/coastsnapindia](http://www.facebook.com/coastsnapindia)  
post directly to CoastSnapIndia page

[www.instagram.com/coastsnapindia](http://www.instagram.com/coastsnapindia)  
use original photo ratio(not square) and no filter

[www.twitter.com/coastsnapl](http://www.twitter.com/coastsnapl)  
no adjustments required

[coastsnapindia@gmail.com](mailto:coastsnapindia@gmail.com)

Please mention photo date and time if not sharing directly



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*Fig. 2 Instructions to CoastSnap users*

The database of photographs collected from all the different stations can be used for studying both short-term and long-term changes to the coastline and for identifying the spatial changes along the Indian coast and the causative factors responsible for these changes. This data can be integrated with the offshore and nearshore measurements at available locations to study the temporal and spatial changes in coastal processes and their influence on the local beach morphology. This information will be particularly useful to the coastal managers in planning and adopting appropriate site-specific coastal erosion mitigation and protection measures. Proper identification of coastal erosion hotspots based on a scientific study (understanding the underlying causes) will help to reduce the coastal erosion risk and assess the performance of the existing coastal protection/mitigation measures if any. Appropriate remedial measures can be taken if needed.

This simple technique with citizen participation (community programme) has the potential to revolutionise the methods adopted for shoreline monitoring in India, especially in coastal areas where the previous data coverage is scarce and this is particularly suitable for countries with limited resources. In fact, the CoastSnap technique which was first introduced in Australia (2017) is expanding globally with stations located in 9 different countries viz. Brazil, England, Fiji, France, The Netherlands, Portugal, Spain, USA and Australia and now India has also joined the list.

### CoastSnap Stations in India

At present India has established 4 beach stations viz. **Adimalathura**, world famous **Kovalam beach**, **Shankumugham beach** (near Trivandrum airport), **Varkala cliff beach** (declared as a national geological heritage site and the process for declaring this as a world heritage site by UNESCO has been initiated). Photographs of the CoastSnap Cradle for mounting mobile camera, instructions to users and some of the CoastSnap shots shared by the people are given below:



*Fig.3 CoastSnap photograph of the Adimalathura beach taken on 20<sup>th</sup> February, 2019*



*Fig.4 CoastSnap photo of the Shankhumaugham beach shared on 26<sup>th</sup> February, 2019*



*Fig.5 CoastSnap photo of the Varkala cliff (helipad) pocket beach shared on 26<sup>th</sup> February, 2019*



*Fig.6 CoastSnap photo of the northern part of Varkala cliff pocket beach shared on 25<sup>th</sup> Feb., 2019*

News Courtesy: Dr. D.S. Suresh Babu, Scientist-F  
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