

# Space Technology Applications in India with relevance to COVID-19



**Presentation by Indian delegation  
to  
58<sup>th</sup> session of STSC - UNCOPUOS  
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# COVID-19 – ISRO Contributions

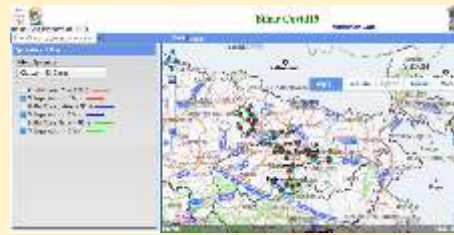
- Indian Government and State Governments have taken several steps to contain the spread of COVID-19 in the country. To support these efforts, ISRO has helped State Governments and Others, by providing geo-spatial tools:

## Tracking



- Growth Status - Spread
- State Wise Spread Count

## Hotspots



- With Buffers & Villages
- Containment Zones

## Vegetable Markets



- Services of mobile vegetable market at different places

## Food for Needy



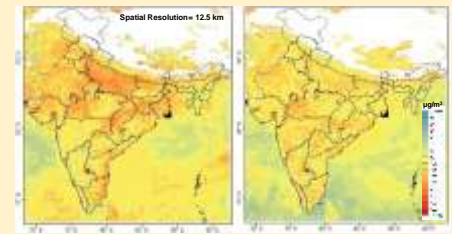
- Easy navigation to reach food to needy at various locations in Chennai.

## Home Isolation



- Round-the-clock monitoring of home isolation of patients

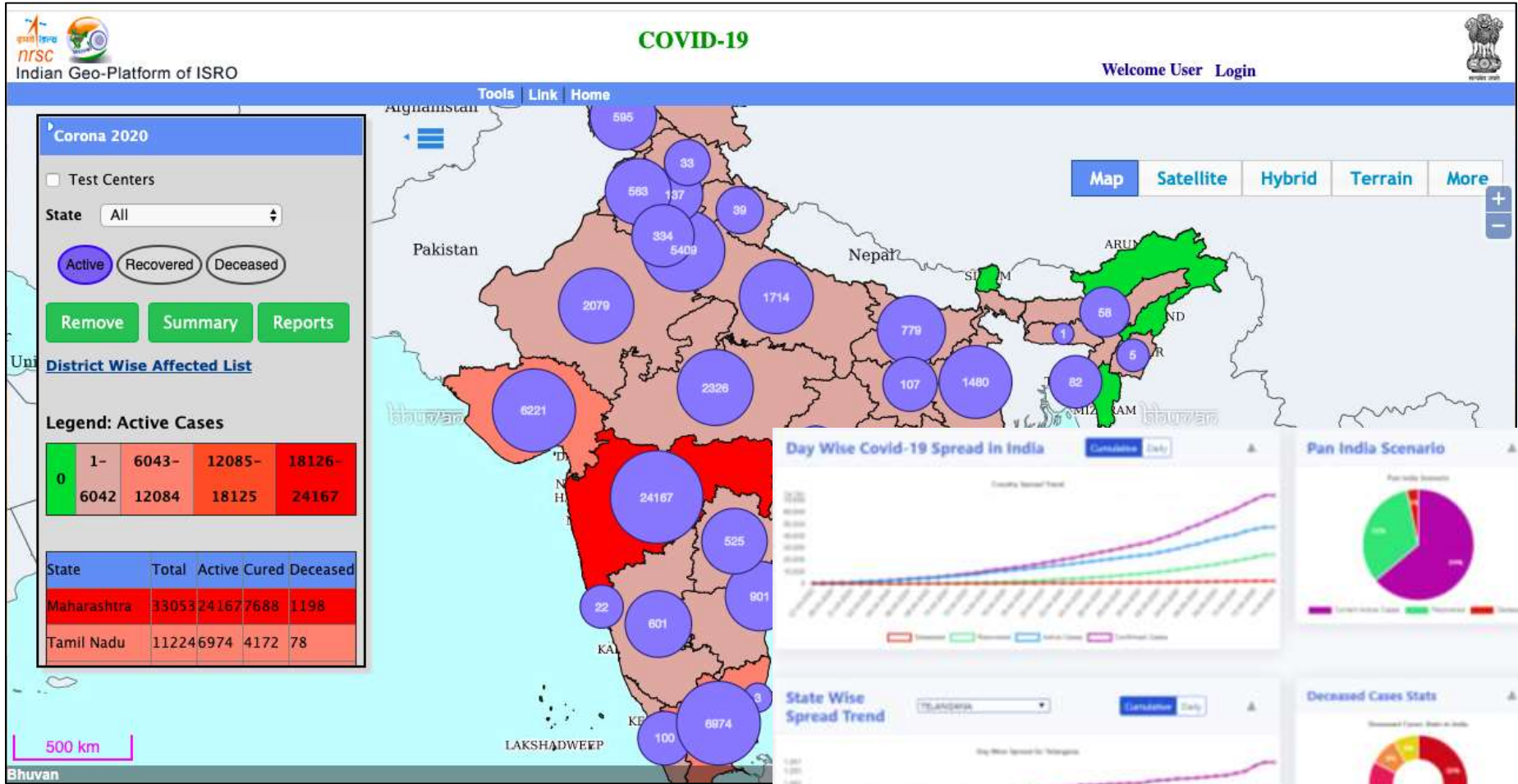
## Pollution Studies



- AOD and Particulate Matter PM2.5 & PM10,

# Bhuvan Geo-portal – Tracking COVID-19 in India

- ISRO customised Geo-portal and developed 'Bhuvan-COVID-19' at national level to track the pandemic and update common public on current situation



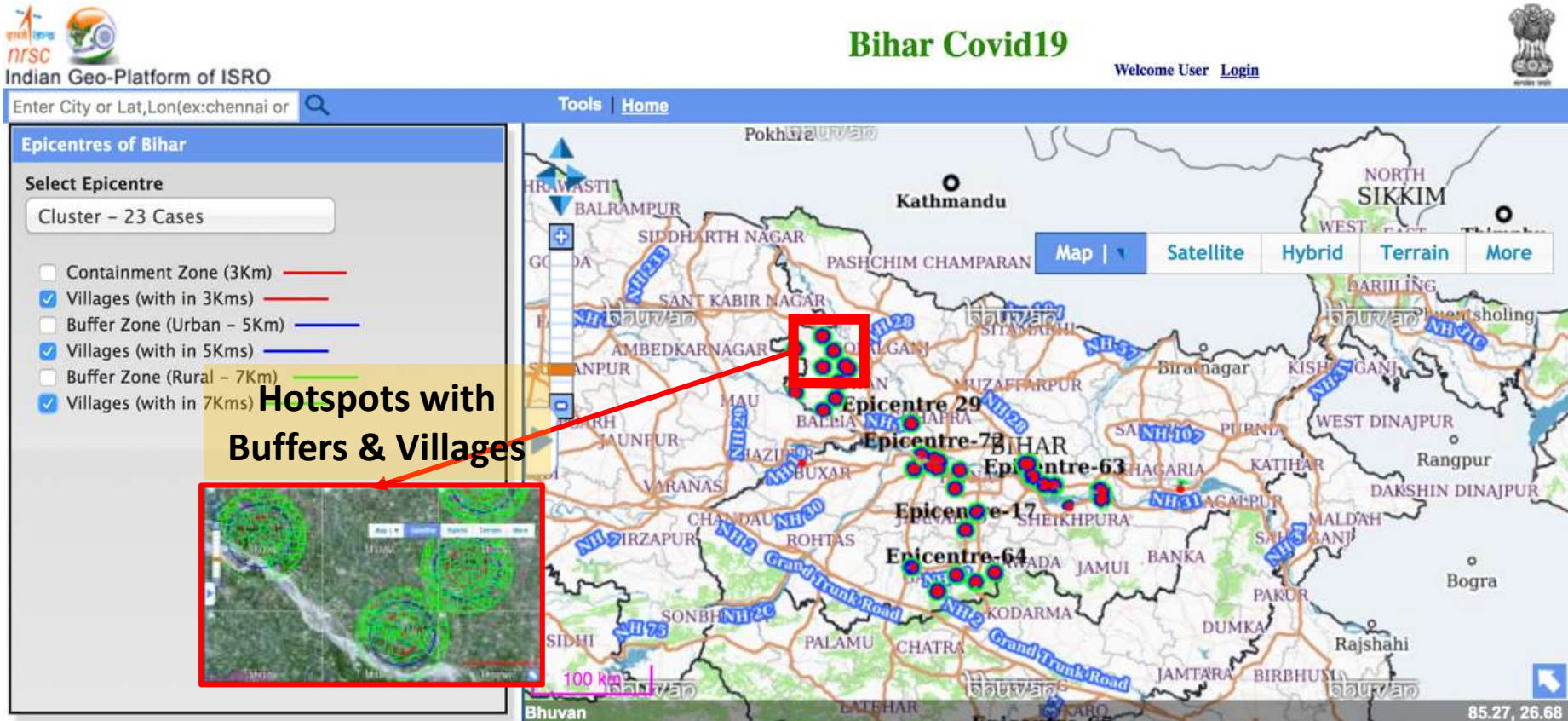
- Present Growth Status
- Day wise Spread
- State Wise Spread Count

- Pan India Scenario
- Deceased Case statistics



# Mapping hotspots & buffers - Field level Info

- To help the field level functionality in Bihar State, ISRO has enabled the health officials to map the hotspots for containment with buffer zones to manage the pandemic.
- This is an automated tool, updates its layers automatically based on the hotspot information from State and is helping various districts in the Bihar State for easily identifying the villages, their population, etc. in the containment zones.
- With very high resolution satellite images are able to provide household level information for management teams to draw strategies at local level.



# Location based Services - Mobile Vegetable Markets

- Location based services are enabled using mobile Apps linked to Geo-portal 'Bhuvan-COVID-19' that helps in services of mobile vegetable market at different places in Hyderabad.
- Helping in geotagging all the home quarantine cases and enabling in monitoring them from a simple-to-use dashboard, provision the essential services, medical facilities

### Quarantine Cases

State:

District:

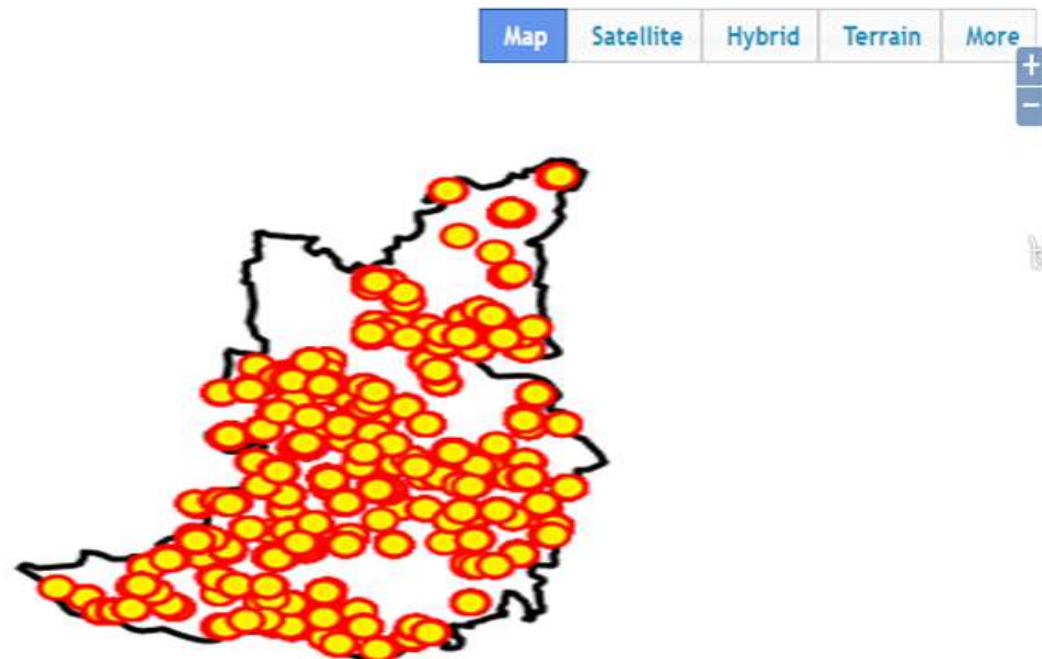
Upload Date: Mode-  Day

Period

Start Date:

End Date:

Total number of cases geo-tagged : 7989



# Location based Services - Food for the needy

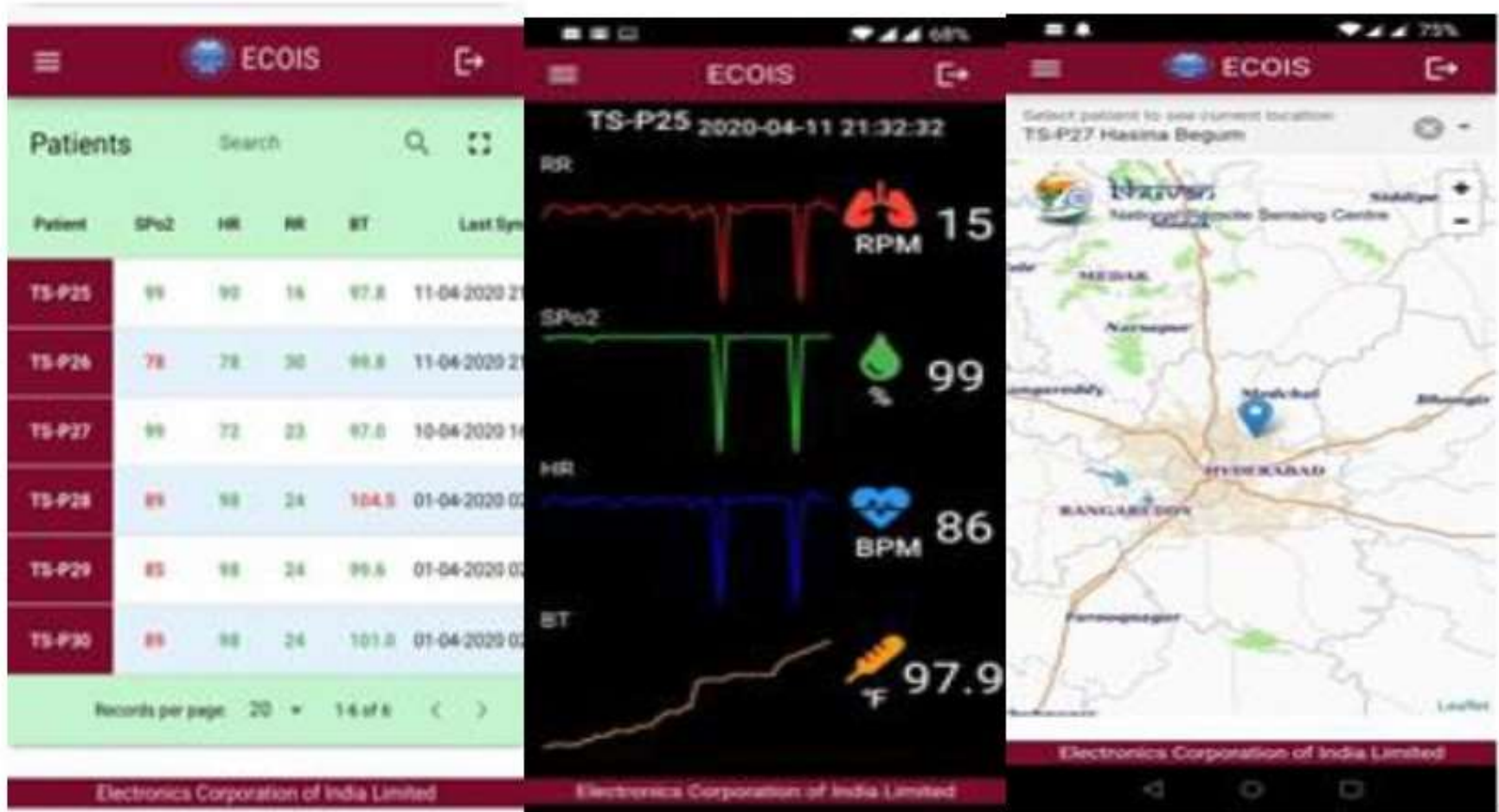
- Geospatial tool for “Anna Unavagam” (free food for the needy) with easy navigation functionality to reach food to the needy at various locations in Chennai.

The screenshot displays the Amma Unavagam web application interface. At the top, the browser address bar shows the URL: `bhuvan-app3.nrsc.gov.in/meal_center/index.php?state=TN`. The page header includes the Amma Unavagam logo and the text "Indian Geo-Platform of ISRO". The main content area features a map of Chennai with several meal centers marked by numbered blue circles (e.g., 16, 24, 25, 26, 30, 31, 32, 35, 38). The map is overlaid with a grid and labeled with major roads like NH45, NH46, NH47, NH48, NH49, NH50, NH51, NH52, NH53, NH54, NH55, NH56, NH57, NH58, NH59, NH60, NH61, NH62, NH63, NH64, NH65, NH66, NH67, NH68, NH69, NH70, NH71, NH72, NH73, NH74, NH75, NH76, NH77, NH78, NH79, NH80, NH81, NH82, NH83, NH84, NH85, NH86, NH87, NH88, NH89, NH90, NH91, NH92, NH93, NH94, NH95, NH96, NH97, NH98, NH99, NH100. The map is surrounded by a blue border with navigation controls like "Map", "Satellite", "Hybrid", "Terrain", and "More". On the left, a "Meal Centers" panel allows users to filter by State (Tamil Nadu) and City (Chennai), with a "Remove" button and a "Centers Nearby Your Current Location" section with a "Buffer" input (set to 5) and a "Find" button. A 10 km scale bar is visible at the bottom left. The browser's bookmark bar shows various folders like "Daily", "Daily1", "Daily2", "GSR1", "Others", "DRR", "Publicaitons", "Active", "International", "COVID-19", "GobaDisasterMon...", and "Other Bookmarks".



# Monitoring of Home Isolation Patients

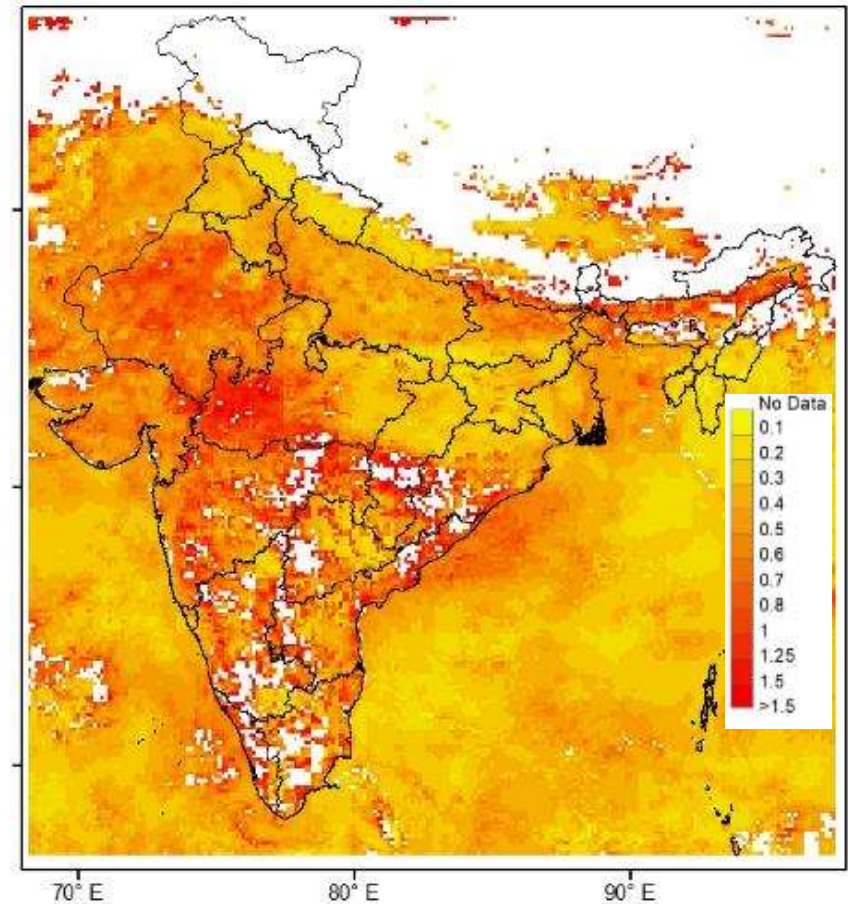
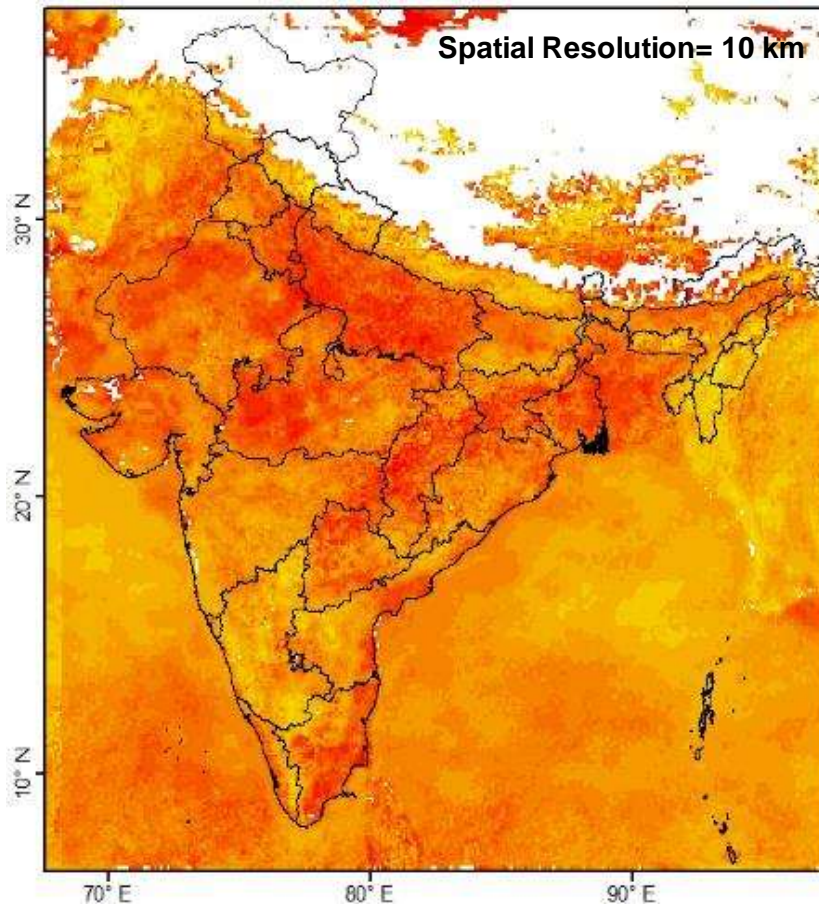
- Monal 2020 (Electronic Device) which enables round-the-clock monitoring of home isolation of COVID-19 patients uses Bhuvan Services to geolocation of Patients, different zones (like Red/Orange/Green) of a specified area (like city/district/ State)



Patient Information displays

# Air Pollution

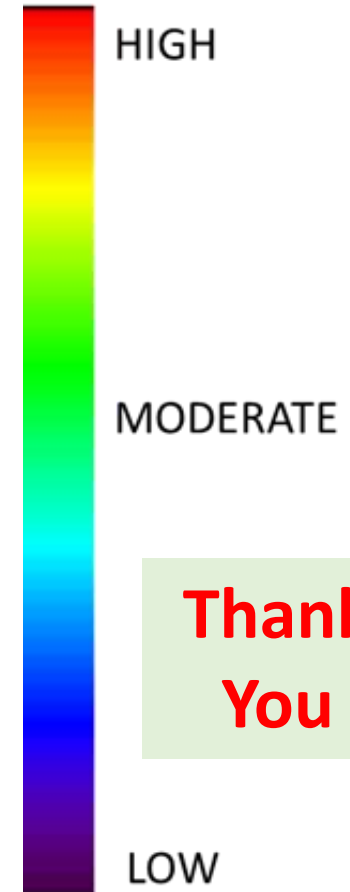
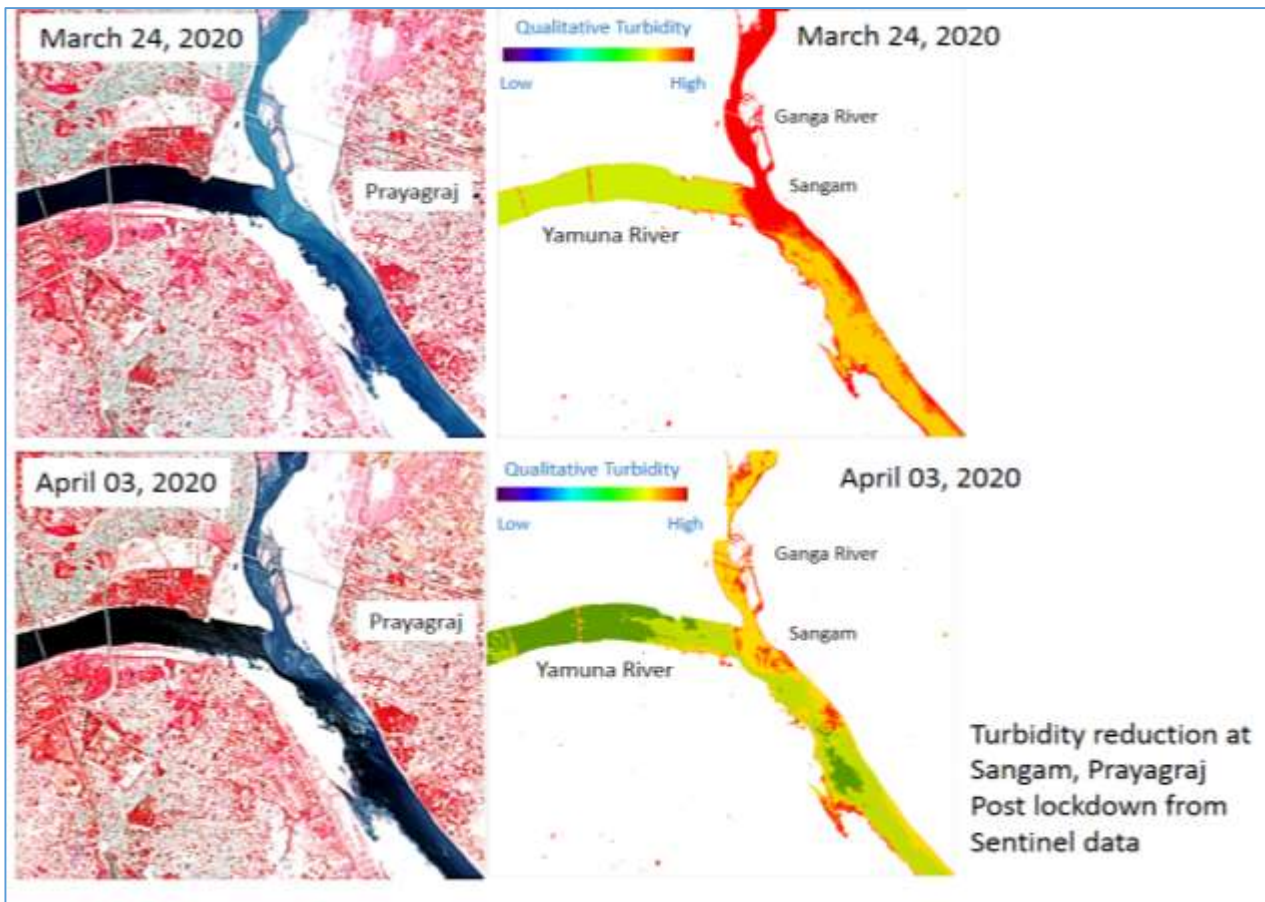
- **Spatial distribution of NO<sub>2</sub> shows significant decrease in NO<sub>2</sub>, as compared to the previous years, due to reduction in the anthropogenic activities**
- **Satellite based observations are made from INSAT-3D and MODIS to measure the AOD and also the Particulate Matter PM<sub>2.5</sub> & PM<sub>10</sub>, which could have adverse effect on human health, particularly respiratory infections, apart from climatic effects. The observations show a decrease of about 20 to 36% in AOD levels across the country**





# Water Pollution

- Satellite images are used to observe turbidity levels of river Ganga flowing across Kanpur & Prayagraj cities for two different dates. Images depict Pre-lockdown period of March 19, 2020 showing high turbidity levels, while the post-lockdown period images of April 4, 2020 shows reduced turbidity levels in the river Ganga. This is mostly attributed to reduction of outflow of industrial waste, due to lockdown and natural flushing caused by river flow.





**Thank you**