

ISRO Contributions to Tackle COVID-19

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India

BHUVAN – Indian Geo-Platform of ISRO

Visualization (40 TB)
and Free Download
(150 GB)

Maps & OGC
Services (~9000+)

Applications (170+)

State Portals (30)

Crowd Sourcing
(90 M)

The screenshot displays the Bhuvan Indian Geo-Platform of ISRO website. The header includes the Bhuvan logo, the text "Indian Geo-Platform of ISRO", and the National Remote Sensing Centre logo. Navigation links for "NRSC | Search | Bhuvan Store | Bhuvan Collaborators" are present. The main content area is organized into several sections:

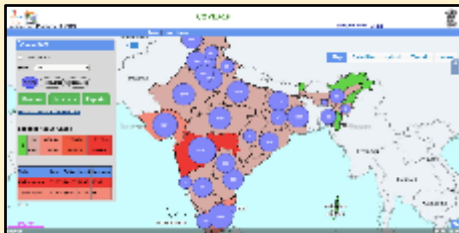
- Visualisation & Free Download:** Includes links for Bhuvan-2D, Bhuvan-3D (with "Plugin Free" and "Plugin" options), Open Data Archive (Free Download), and Climate & Environment (EO derived Products).
- Maps & OGC services:** Includes Thematic Services, Disaster Services, Ocean Services, and Create a Map / GIS (with "My Map" and "My GIS" options).
- Governance/Central Ministries:** Features a "g-Governance Dashboard" with icons for IKSY, Clean Ganga, Sat-AIBP, Flood Warning, Flood Vulnerability Index - India, Census data, Deltas of India, and Environment & Forest.
- Application Sectors:** A section for "Collaborative applications - Platform to share your data and create governance applications" with categories: Agriculture, Forestry, E-Governance, Water, Tourism, Urban, and Rural. Each category has a corresponding icon and a list of specific applications (e.g., Ground Water, Watersheds, Data Discovery, Hydrological Products, International Disasters, IRS Pass Quick Looks, Locate Satellites, MANU, Multilingual Translation, Online Shapefile Creation, OSCAT-3D, Smart Tracking).
- State Portals/Applications:** A section for "State Portals/Applications (Click on any State)" with a map of India and a dropdown menu for "State" (currently set to "ANDHRA PRADESH"). It includes links for "Andhra Pradesh" and "Asset Mapping" and a list of "Updates" and "Download" links.

The right sidebar shows a map of India with a dropdown menu for "State" (currently set to "ANDHRA PRADESH"). Below this, there are links for "Andhra Pradesh" and "Asset Mapping". A section titled "Visit Applications available for State ANDHRA PRADESH" lists updates and downloads. The bottom right corner features a satellite map view with a search bar and a legend.

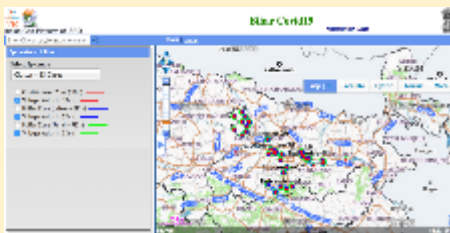
COVID-19 – ISRO Contributions

- It's a gigantic task to control COVID-19 spread in India with about 1.3 billion population. Indian Government and State Govts have taken several steps to contain the spread of COVID-19 in the country.
- To support these efforts, ISRO has helped these State Govts and Others, by providing geo-spatial tools for

Tracking



Hotspots



Vegetable Markets



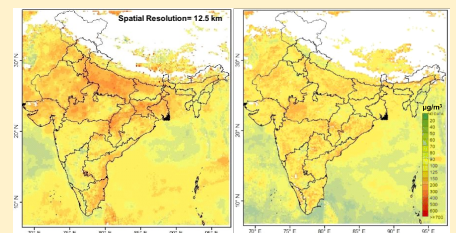
Food for Needy



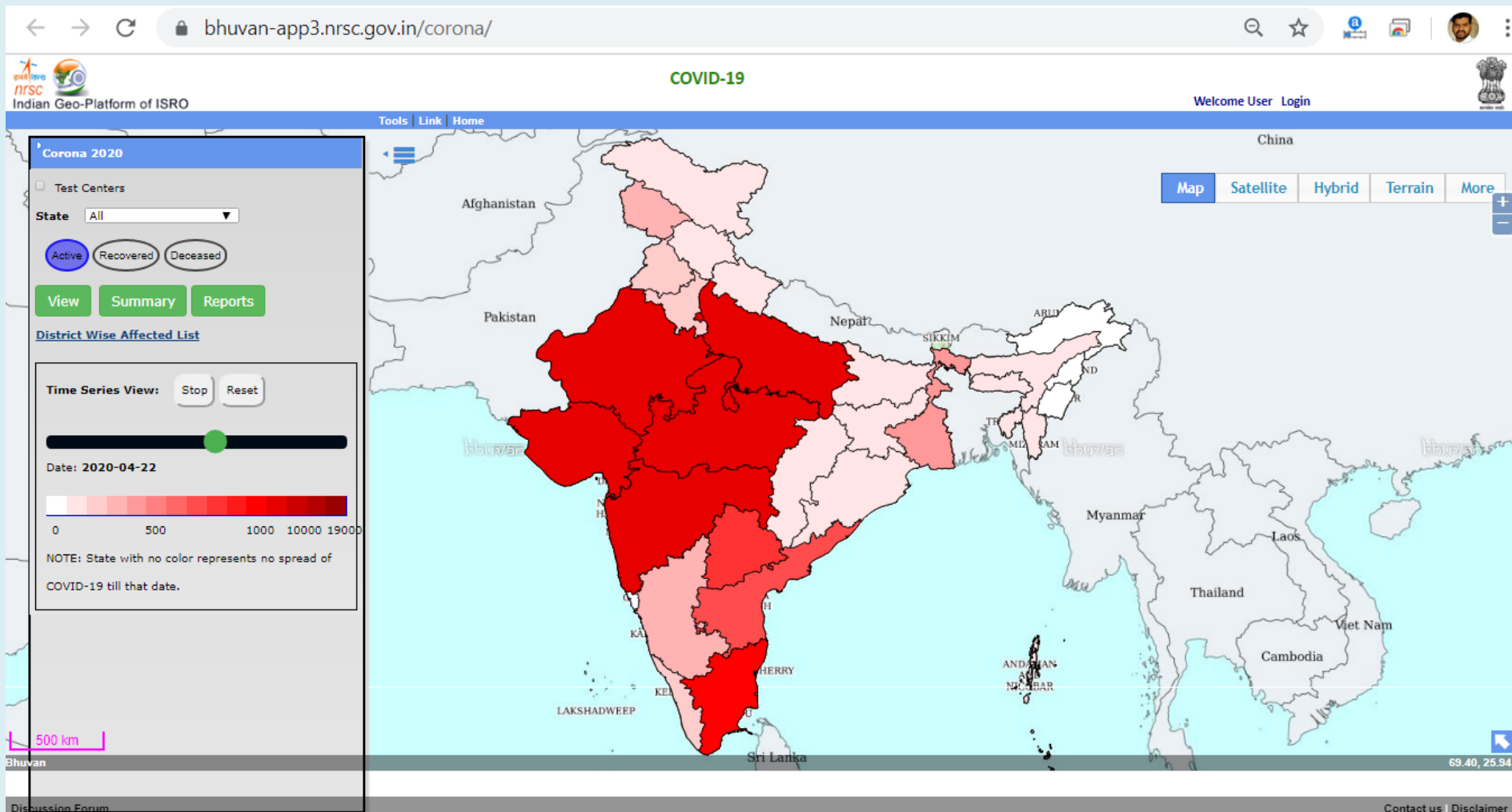
Home Isolation



Pollution Studies



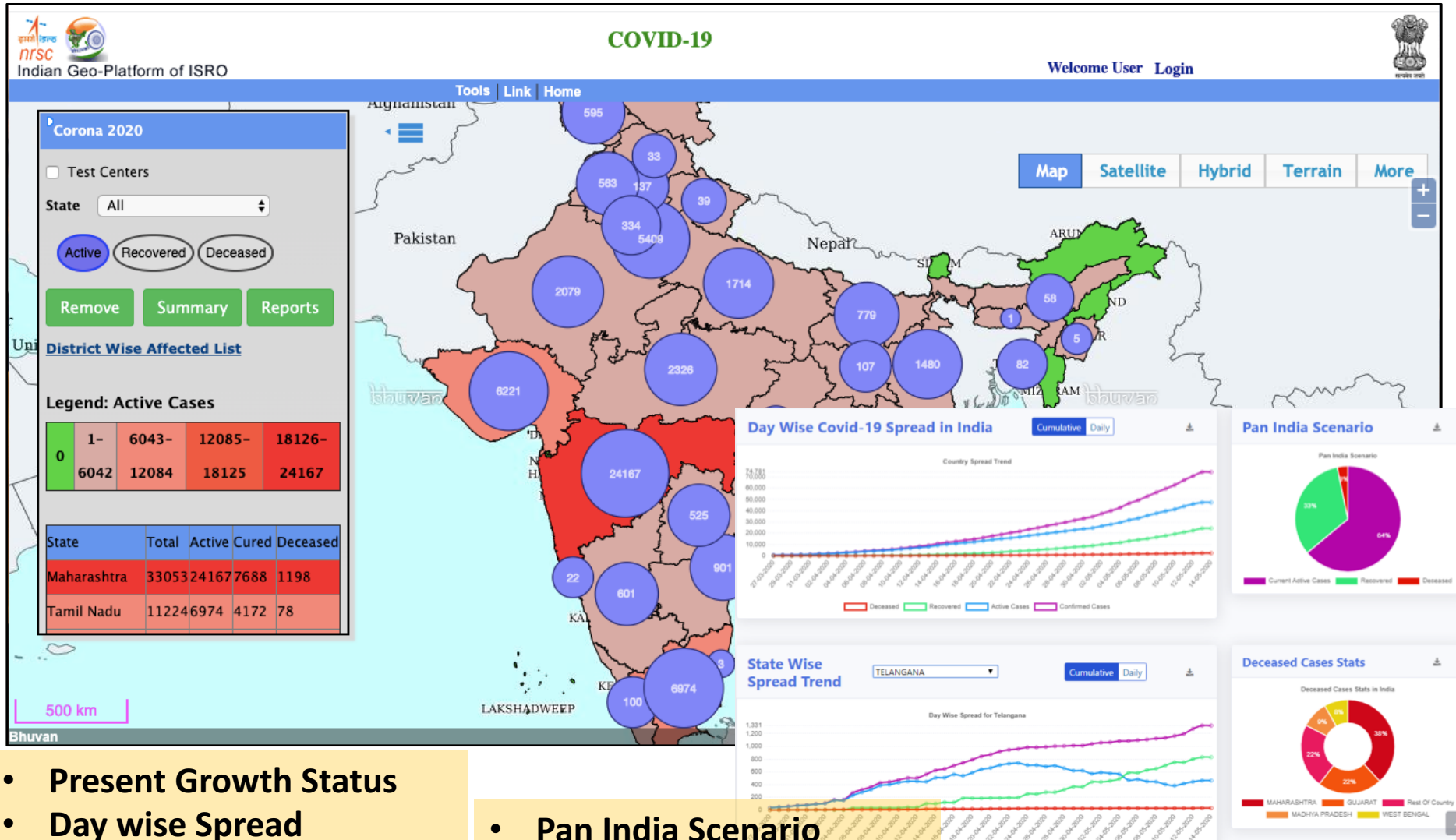
COVID-19: Geo Visualisation



- View Based on Active, Recovered, Deceased Cases
- Time Series Visualisation
- District Level Details
- Mouse Hover Information with Test Centres

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

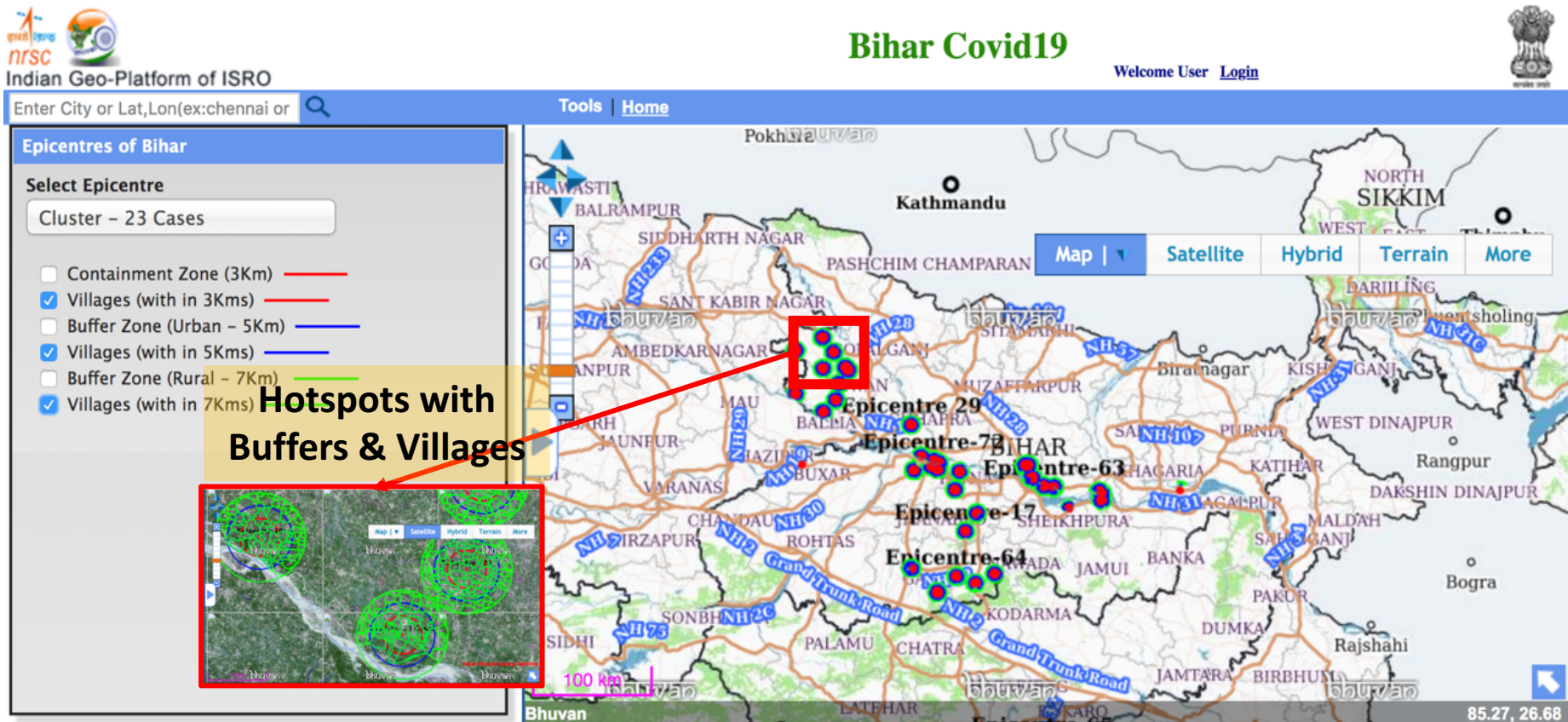


- Present Growth Status
- Day wise Spread
- State Wise Spread Count

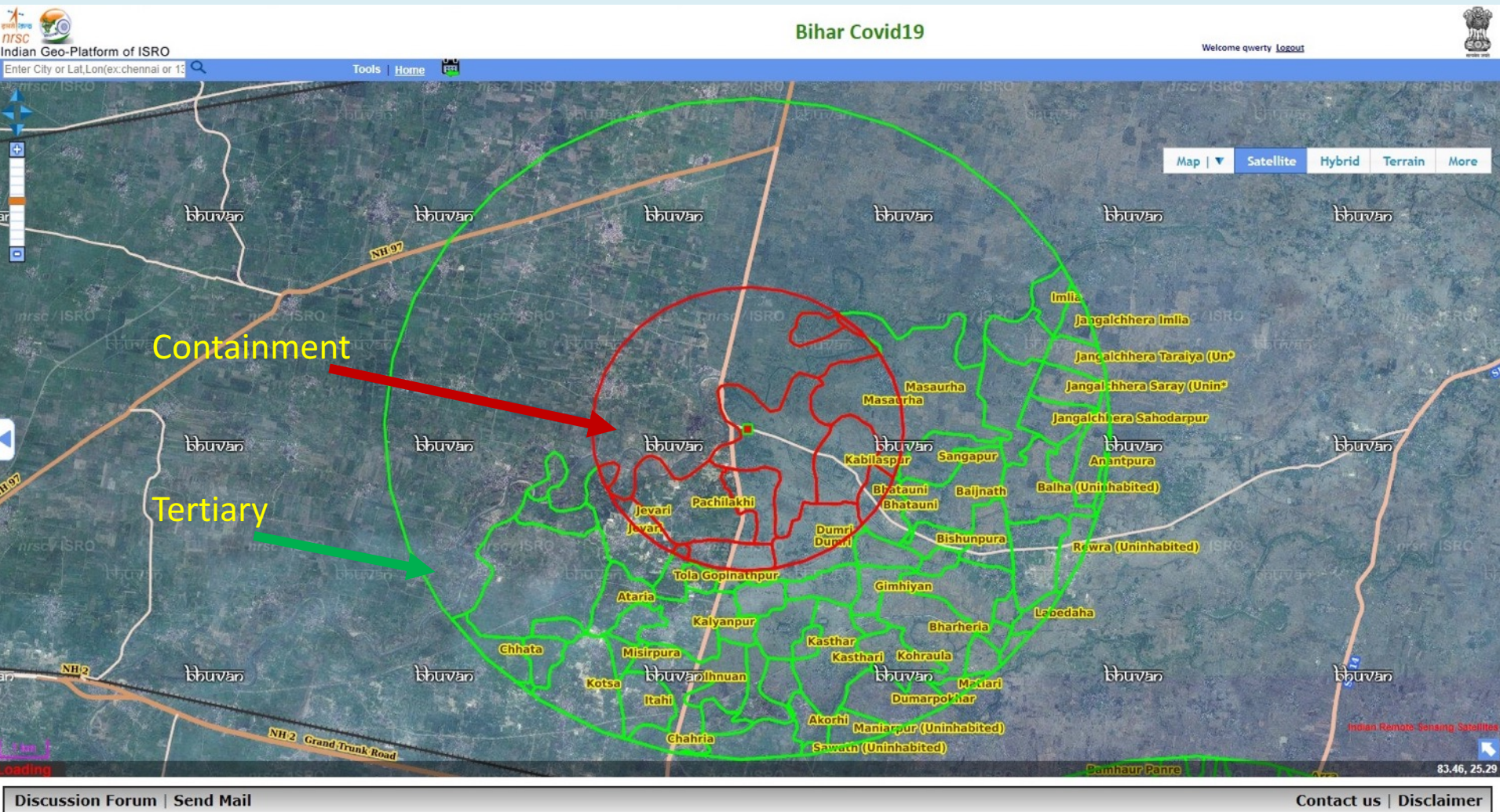
- Pan India Scenario
- Deceased Case statistics

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.



Bihar Health Emergency Operation Centre



geoportal for highlighting COVID-19 locations, Containment Zones, tertiary buffer zones for both urban and rural areas with Village boundaries and census data details on number of households, population details etc., for effective planning and monitoring of containment zones.

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



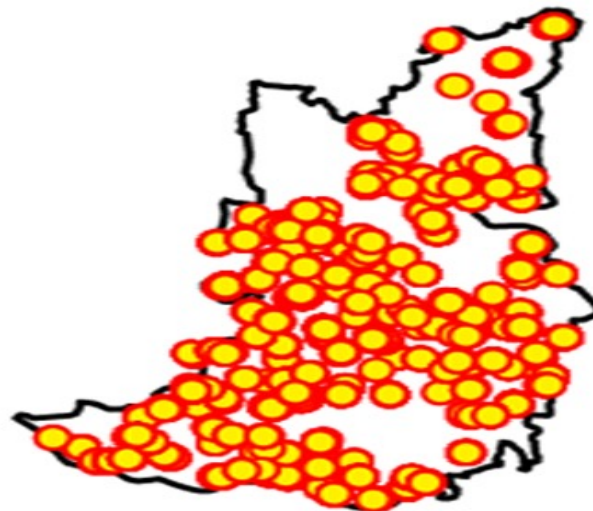
Map

Satellite

Hybrid

Terrain

More



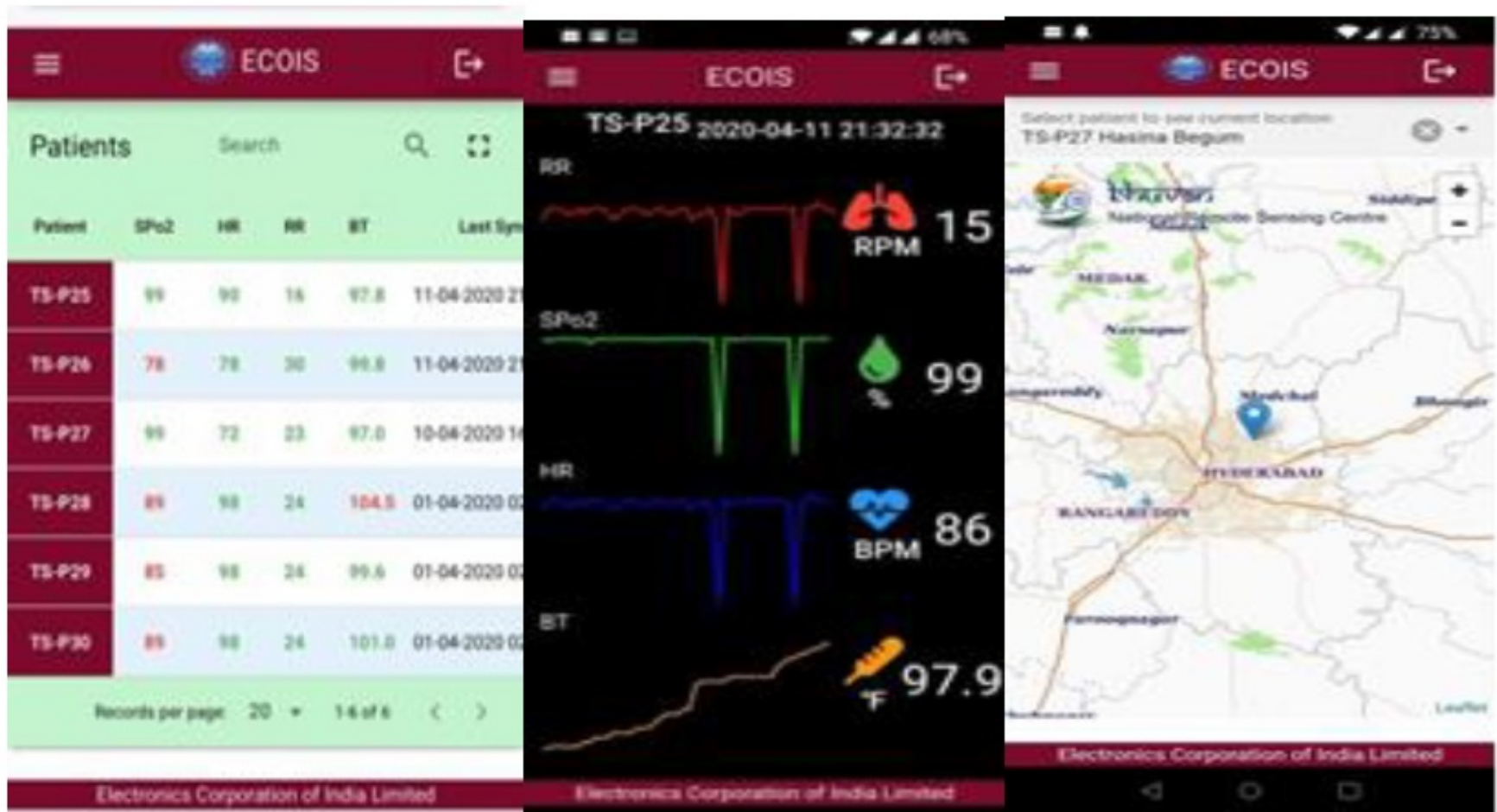
Location based Services - Food for the needy

- 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. The browser address bar shows the URL: `bhuvan-app3.nrsc.gov.in/meal_center/index.php?state=TN`. The page header includes the 'nrsc' logo, the text 'Indian Geo-Platform of ISRO', and the title 'Amma Unavagam'. A navigation bar contains links for 'Tools', 'Link', and 'Home'. On the left, a 'Meal Centers' sidebar allows users to select the 'State' (Tamil Nadu) and 'City' (Chennai), with a 'Remove' button. Below this, a section titled 'Centers Nearby Your Current Location:' includes a 'Buffer' input set to 5 and a 'Find' button. The main map area shows a map of Chennai with numerous meal centers marked by blue circles containing numbers (e.g., 16, 24, 25, 30, 31, 32, 35, 38, 26, 22, 18). Major roads like NH4, NH45, and the Outer Ring Road are visible. On the right, map controls include buttons for 'Map', 'Satellite', 'Hybrid', 'Terrain', and 'More', along with a scale bar (10 km) and a compass.

Monitoring of Home Isolation Patients

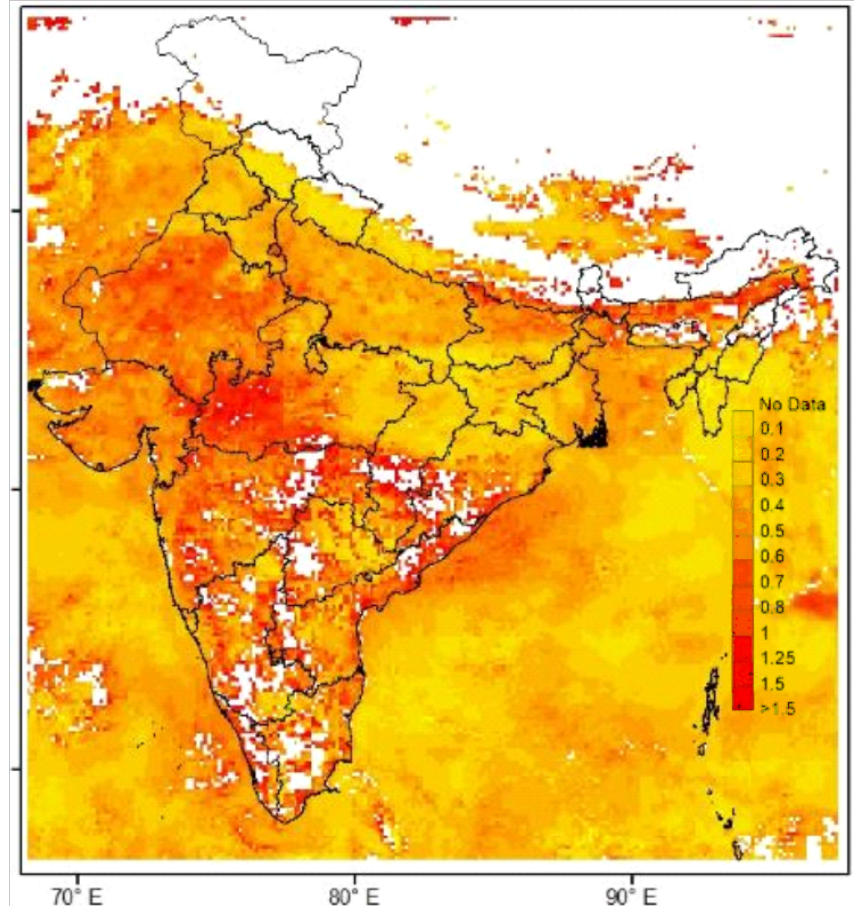
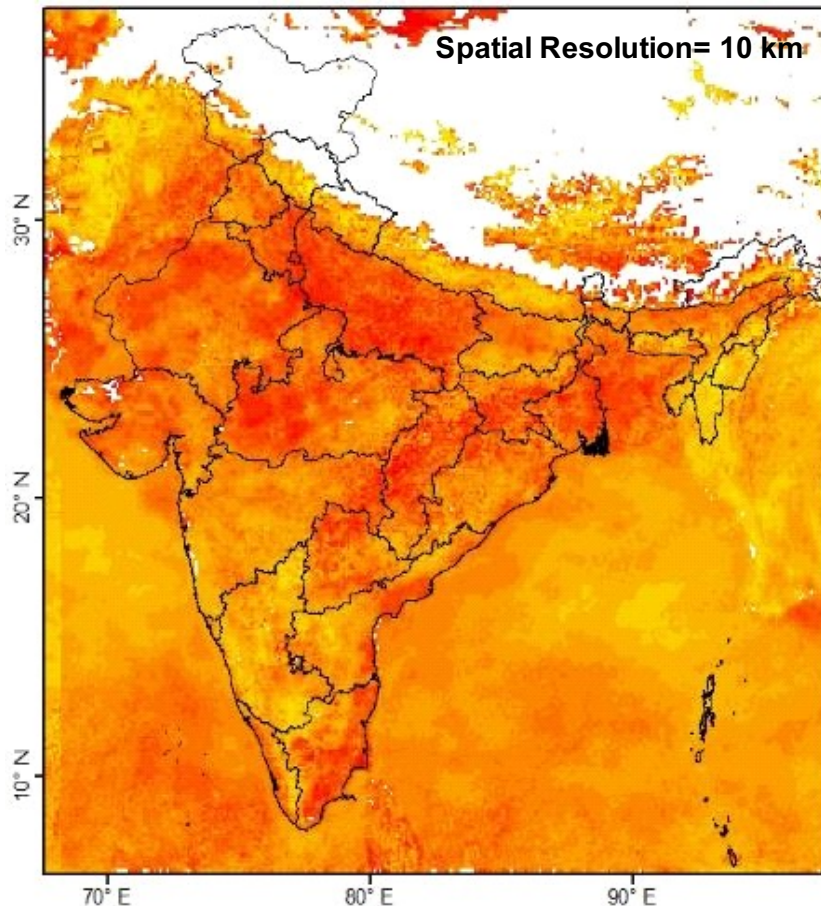
- Monal 2020 (Electronic Device) which enables round-the-clock monitoring of home isolation of COVID-19 patients uses Bhuvan Services to geolocation of Patients, different zones (like Red/Orange/Green) of a specified area (like city/district/ State)



Patient Information displays

Air Pollution

- Spatial distribution of NO₂ shows significant decrease in NO₂, 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_{2.5} & PM₁₀, 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.

