11. Near Real Time Flood Inundation Mapping & Flood Hazard Zonation

NRSC/ISRO has been mandated with monitoring and mapping the flood inundation during floods/cyclones in the Country using satellite remote sensing data in near real-time. This has been done since 1995 and provided several maps addressing the support management issues for flood disasters.

Methodology

Flood inundation mapping is carried out using optical and microwave of the best available spatial resolution from national and international satellites. Spectral analysis of optical data for identifying the flood inundation feature is the principle for using optical datasets. The backscatter coefficient is a significant parameter for understanding the flood inundation feature in microwave SAR datasets. Flood hazard zonation maps are prepared using long-term satellite-derived flood inundation GIS layers and analysis of river gauge levels across ~20 years, and hazard information is derived. It will be helpful in non-structural/structural measures for preparedness and mitigation in flood-affected areas. Atlases completed for Assam, Bihar, Odisha, West Bengal, Andhra Pradesh States, and Uttar Pradesh are in progress.

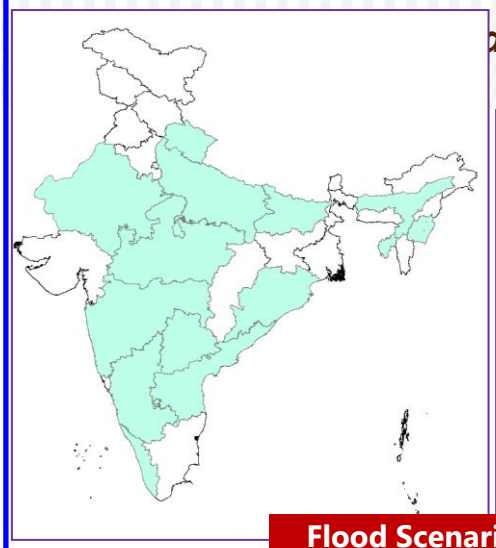
Utilization: Disaster Management Support Group (DMSG), Remote Sensing Applications Area, NRSC, ISRO is responsible for executing near real-time flood inundation mapping in the Country and dissemination to the users. Near real-time flood inundation maps and value-added products are prepared and disseminated to the MHA, NDMA, SDMA's State Remote Sensing Applications centers, concerned line departments, etc., through NDEM and Bhuvan geo-portals.Near real-time flood inundation maps are helpful for the line departments for planning the relief and rehabilitation activities and also to know the overview at the disaggregated administrative level for damage estimation.

Disaster Risk: Over a period of time, National Remote Sensing Centre, ISRO, has created a repository of extensive data on the floods & cyclones in different areas of the Country. These historical flood maps, generated by NRSC, ISRO, are helpful for the identification of flood hazard areas. Flood hazard maps are one of the critical non-structural methods of flood damage mitigation and a crucial input for disaster risk reduction. These maps help plan developmental activities, construction of relief, rescue, and health centers, and planning flood-tolerant crops in floodplains. NRSC will take up disaster risk assessment studies on a pilot scale.

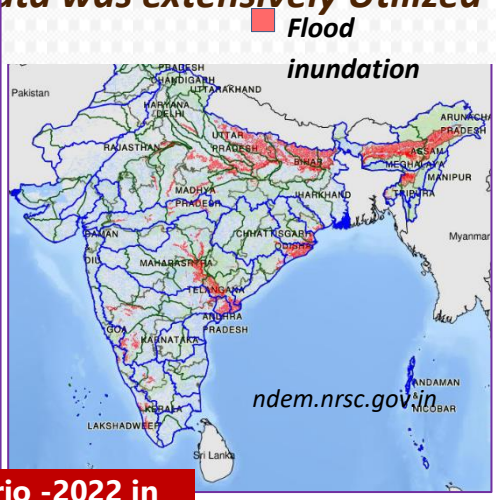
Resourcsesat-2 LiSS IV Image in part of Cachar district, Assam State, during June 2022 showing flood inundation areas

Near Real-time Flood Monitoring & Mapping

Floods have occurred in 14 States. Assam, Bihar, UP, AP, Telangana& Odisha are major affected



ata was extensively Utilized



Flood Scenario -2022 in India

S. No.	States	Flood Inundation Area (Ha)	High Resolution Satellite Data Based Information for Value Addition	No. of Flood Inundation Maps Showing the Total Extend of Flood Inundation	No. of Districts Affected	Duration of Satellite Based Mapping & Monitoring
1	Andhra Pradesh	642313	27	13	3	14th Jul -14th Sep 2022
2	Assam	1037985	6	41	31	18th May - 17th July 2022
3	Bihar	467117	7	33	33	4th Jul -20th Oct 2022
4	Karnataka	35835	8	5	9	12th Jul -17th Aug 2022
5	Kerala	32008	-	2	5	31st Jul – 7th Aug 2022
6	Madhya Pradesh	111824	-	2	18	24th Aug - 09th Sep 2022
7	Maharashtra	72972	3	6	7	17th Jul - 14th Sep 2022
8	Meghalaya	5602	-	4	2	16th June - 24th June 2022
9	Odisha	290955	8	8	13	16th Aug - 5th Oct 2022
10	Rajasthan	14754	-	4	4	24th Aug - 26th Aug 2022
11	Telangana	197477	2	12	6	14th Jul -14th Sep 2022
12	Uttar Pradesh	639061	17	36	54	09th Aug -26th Oct 2022
13	Tripura	3105	-	2	7	19th June - 21st June 2022
14	Uttarakhand	-	1	-	-	26th August 2022
TOTAL		35,51,008	79	168	192	