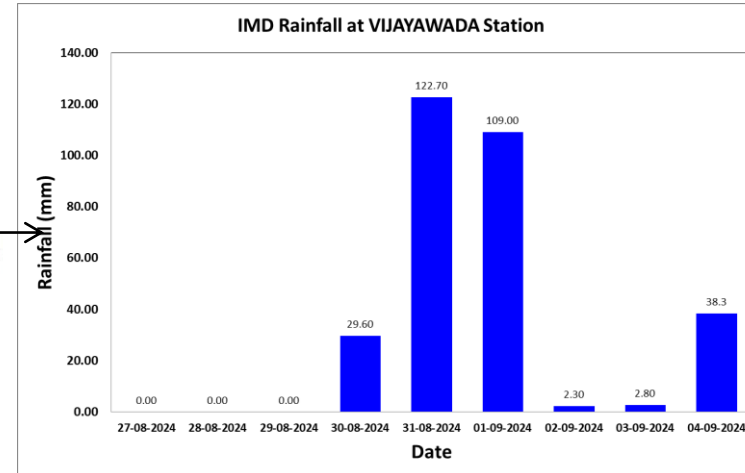
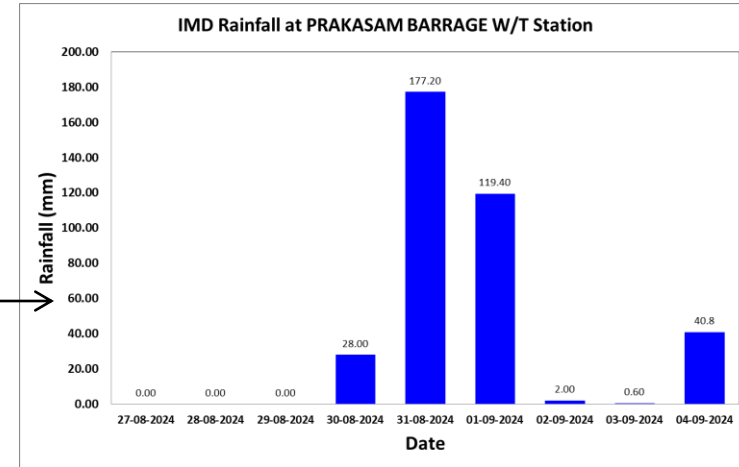
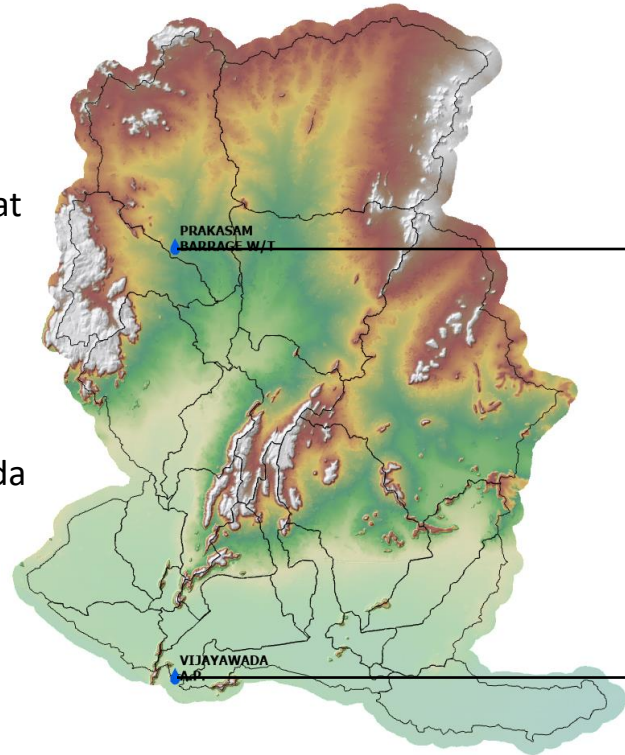


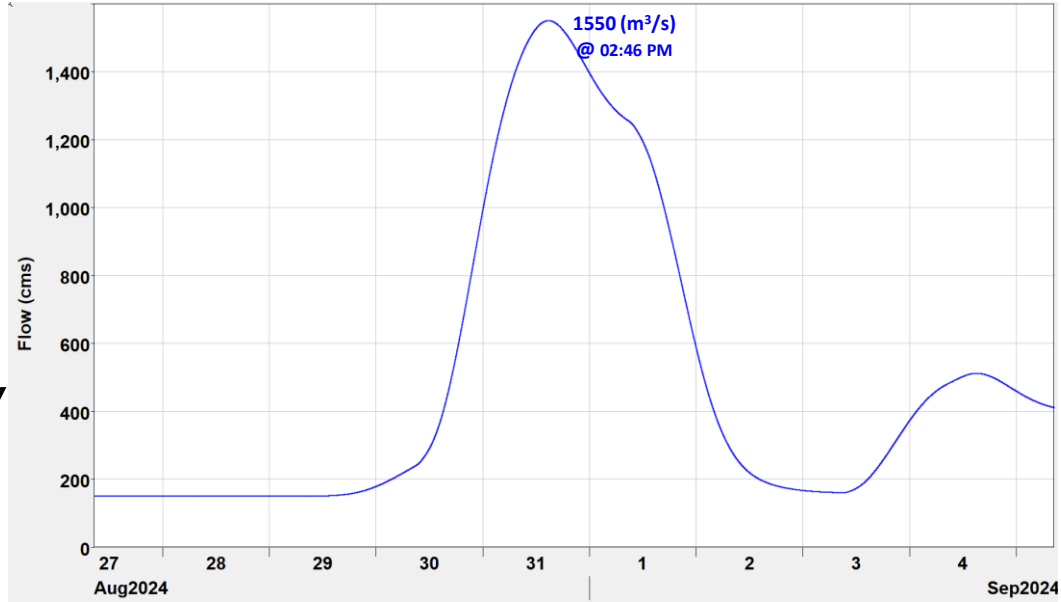
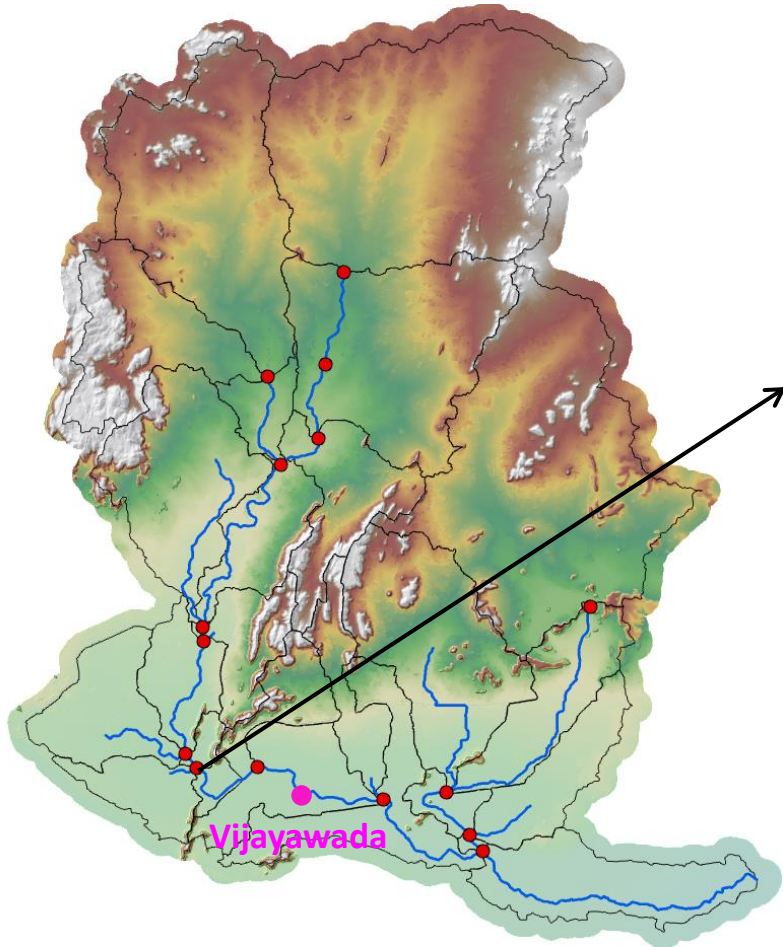
Hydrological & Hydrodynamic Modelling: The Budameru River Flash Floods Simulation



National Remote Sensing Centre
Indian Space Research Organisation
Dept. of Space, Govt. of India
Balanagar, Hyderabad 500037

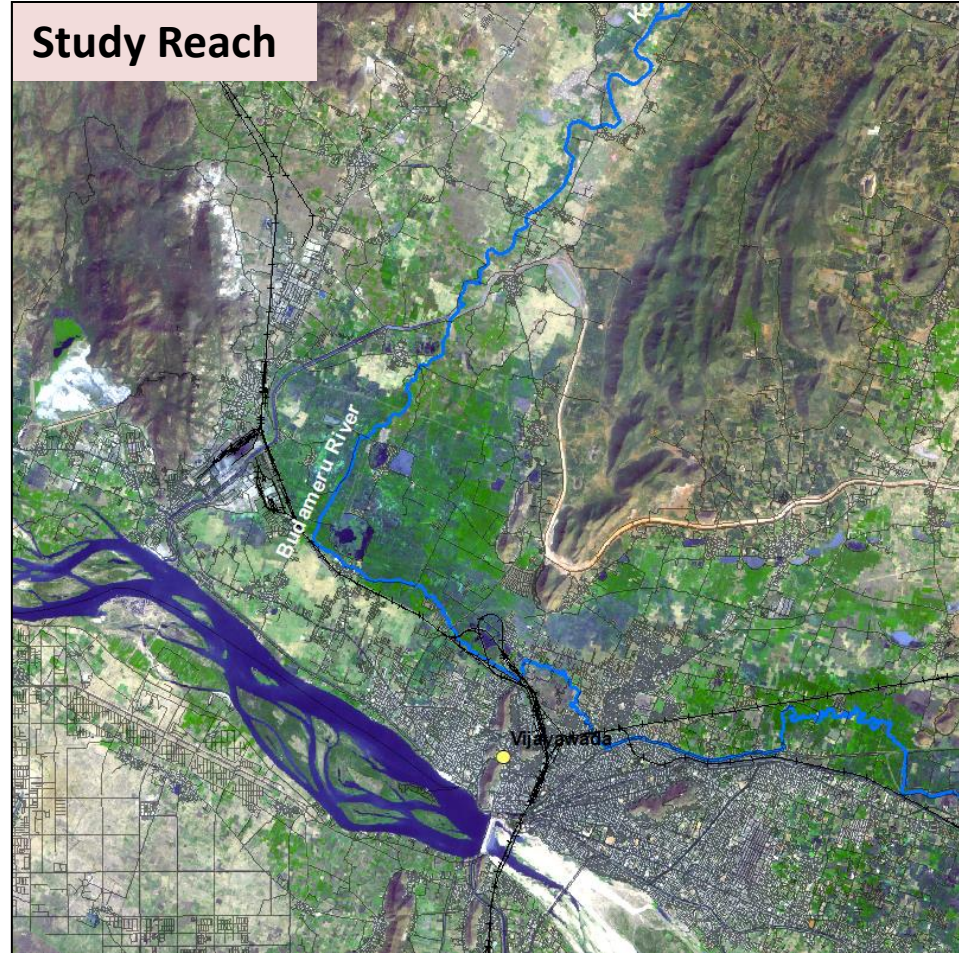
- Daily rainfall data obtained from IMD has been analysed at different gauge stations.
- The highest cumulative daily Rainfall is observed to be 177 mm and 122 mm at Prakasam Barrage station and Vijayawada station, respectively





- Flood simulation model has been developed and flood hydrograph is computed using the IMD field data
- Multiple data sources were utilized, including Land Use/Land Cover (LULC) from the IRS-P1 AWIFS at 56 m resolution, soil texture data (NBSS&LUP), and high-resolution CARTO DEM.
- Peak flood during the disaster event is found to be 1500 cumecs (approx)

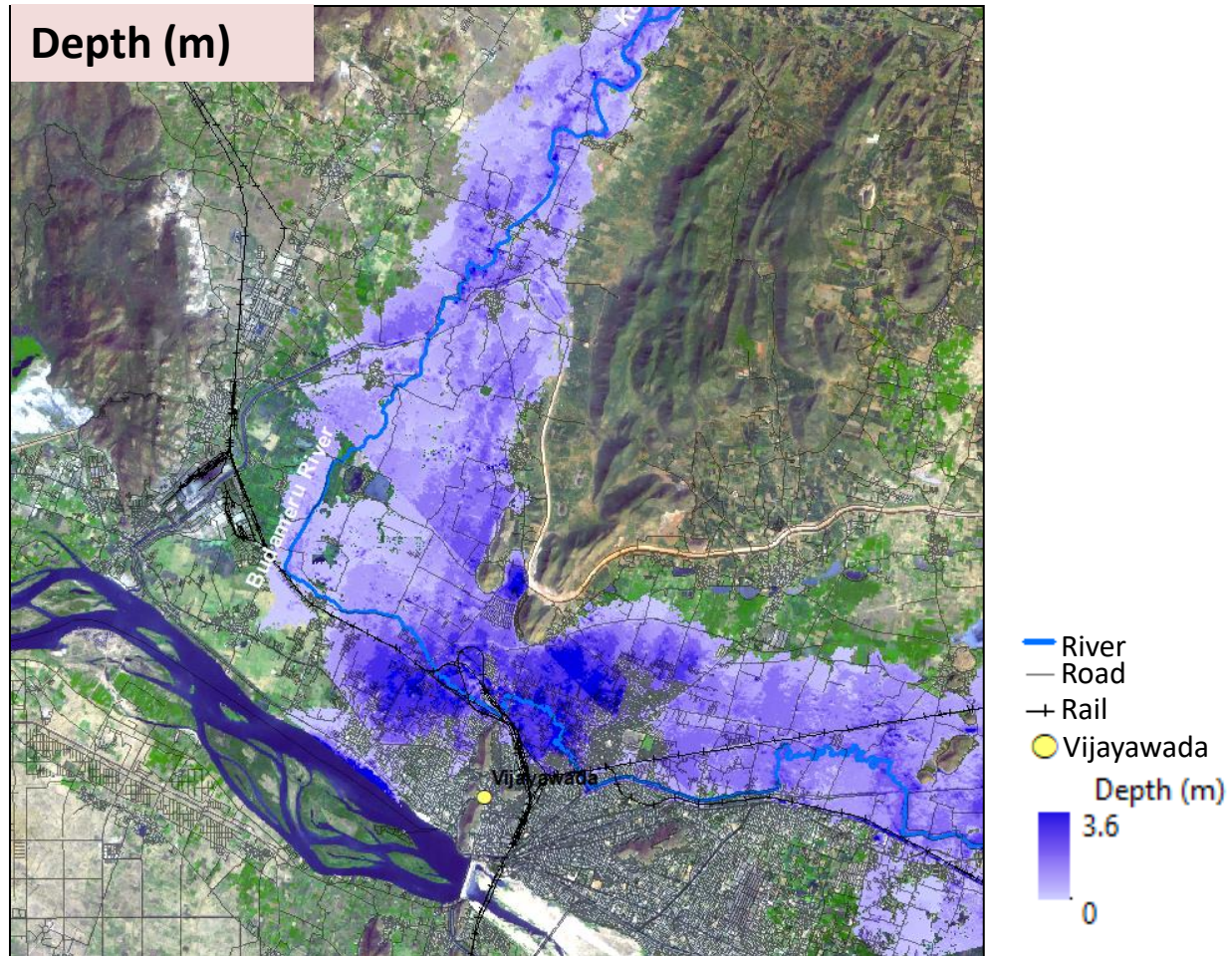
Study Reach



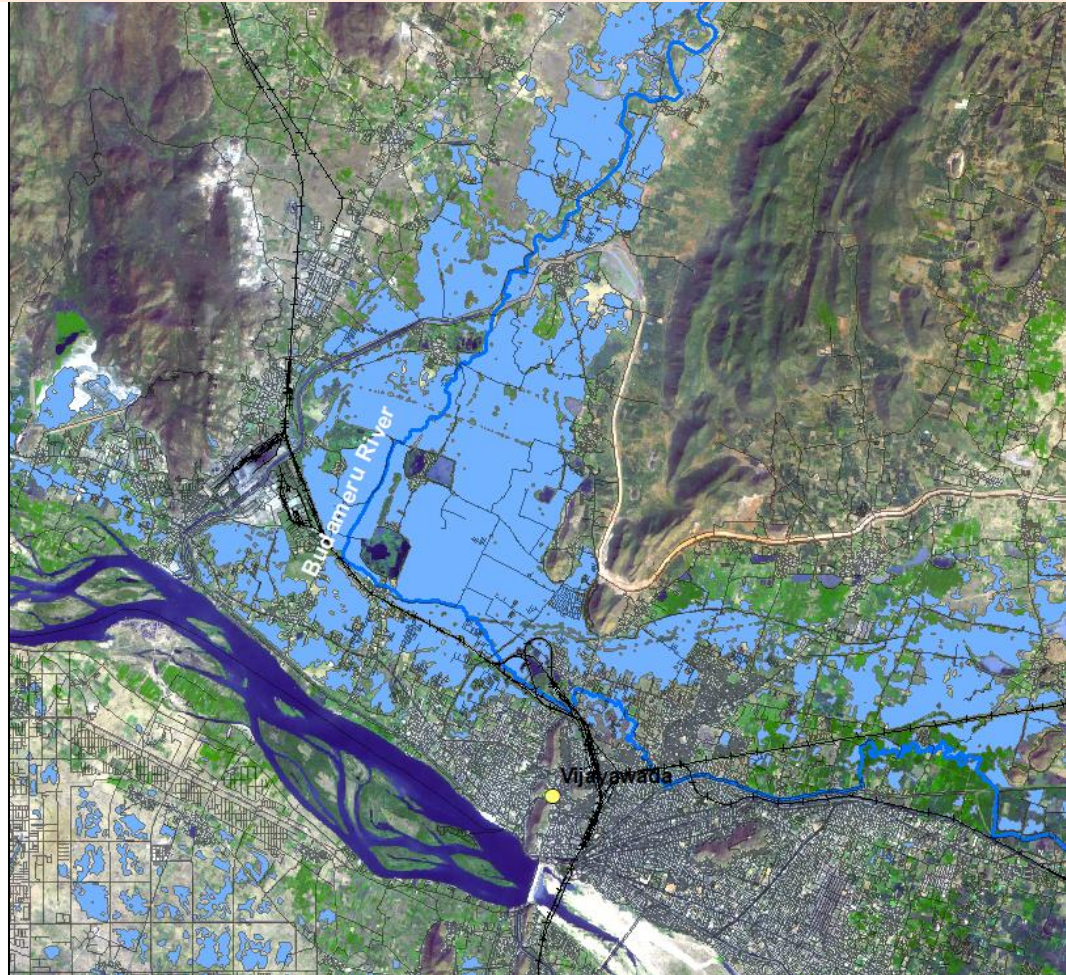
- River
- Road
- + — Rail
- Vijayawada

- A flood inundation model for the Budameru River is developed using high-resolution 2.5 m CARTO DEM data.
- The computed flood hydrographs from the Budameru River were used to simulate approximate flood inundation and to calculate the dynamics of flow.

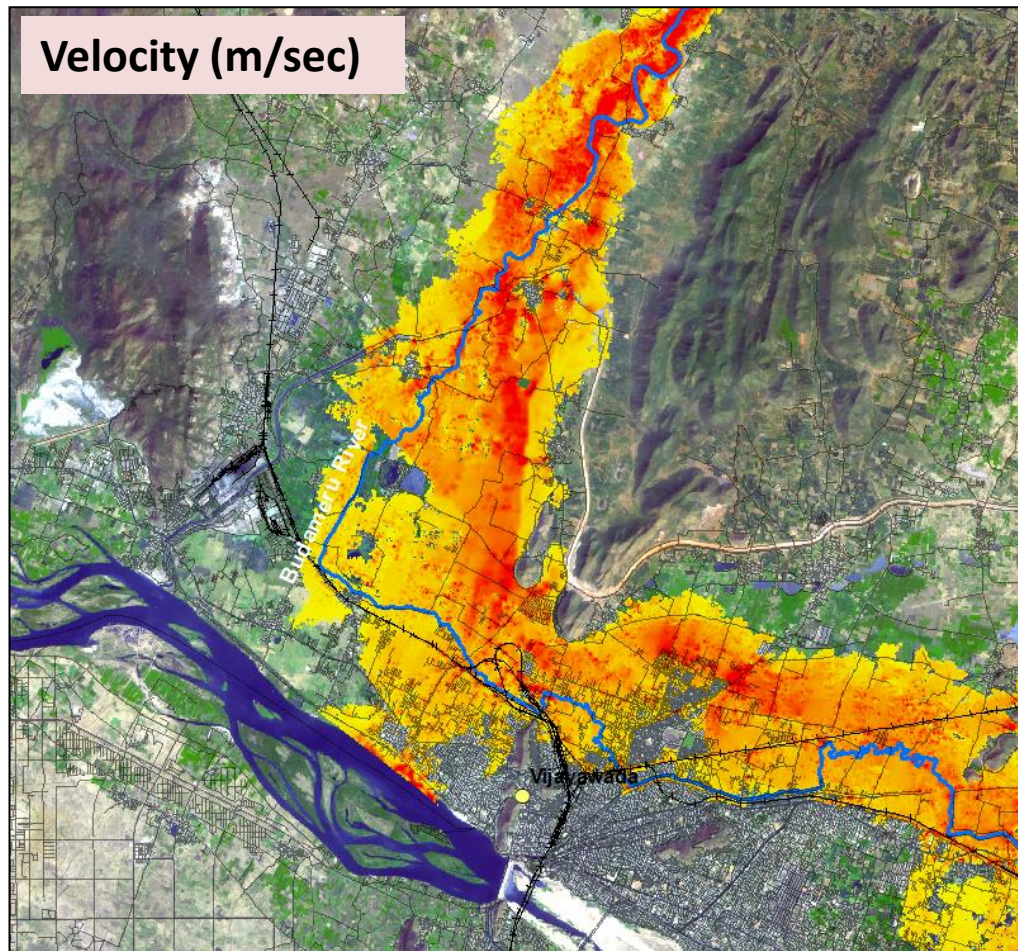
- The flood inundation simulation has a 90% agreement with the flood extent from the satellite imagery.
- Flooding beneath the vegetation and urban area can be seen in flood inundation simulation.



Flood Extent using Satellite Image



- River
- Road
- + Rail
- Vijayawada
- Flood Extent from Satellite Image



- Two IMD in-situ rain gauges are falling inside the Budameru catchment. The highest daily cumulative rainfall 177.2 mm is observed on 31st August, 2024 at Prakasham Barrage station. This event in the upstream of the catchment is caused for the flood condition in some parts of the Vijayawada city.
- The Hydrological modeling is carried out for the duration of 27th August, 2024 to 04th September, 2024.
- The peak discharge at upstream of Budameru river is observed to be 1550 m³/s.
- Flood inundation in Budameru river is simulated using Hydrodynamic model.
- Maximum Depth and Average Depth in the study area is found to be 3.6 m and 1.16 m, respectively
- Maximum velocity and Average velocity is found to be 2.02 m/sec and 0.43 m/sec.