

# Remote Sensing Techniques for Flood Mapping over Ganges-Brahmaputra-Meghna River Basin

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## ABSTRACT

Periodic and flash flood is one of major natural disasters happened annually in Ganges-Brahmaputra-Meghna (GBM) basin. The flood either caused by massive rainfall or melting glacier/snow water has combined with land subsidence and results in exacerbated economic loss in Bangladesh and Eastern India. A monitoring system based on satellite observation is thus necessary for early warning and precautionary estimate of inundation area. This study utilizes remote sensing imagery such as MODIS onboard Terra/Aqua and (Enhanced) Thematic Mapper TM/ETM+ onboard Landsat series, to monitor the annual change of inundation along GBM. The seasonal change of water area is later analyzed with altimetry data to monitor its flow and progress along the river channel. This observation system, along with the Variable Infiltration Capacity (VIC) model and weather forecast, is potentially to predict river discharge and inundation area with a lead-time up to few days and a spatial resolution at kilometer level for resident living downstream to respond. However, the cloud interference in passive remote sensing imagery is a major drawback during rainy season. Hence, a potential inclusion of Synthetic Aperture Radar in this system is also discussed for potential improvement.

Key Words: Satellite Altimetry, Optical Remote Sensing, Floods, Bangladesh