Flood Risk Mapping Using Satellite Images and GIS Tools: A study on flood analysis of Thabaung, Kangyidaunt and Pathein Area, Ayeyarwady Region, Myanmar

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Abstract

Floods continue to be one of the most common natural disasters in Myanmar. Ayeyarwady delta region experiences annual floods during the peak monsoon period especially in July and August. The intensity of flood hazards appears to have increased in the Ayeyarwady Region in the past decade. The study area is located in Ngawun Riverine area. It is demarcated between latitude 16º 43' N to 17º 10' N and longitude 94º 41' E to 94º 57' E. The area coverage is about 1278 square kilometers. Google Earth Engine, Global Mapper and ArcGIS were run for various kinds of mapping and data analysis by using remote sensing data, topographic maps, census data, DEM data, and rainfall data. In 2016, the annual rainfall of Ayeyarwady Region is increase than the normal rainfall. The final flood hazard map and final vulnerable map show a value ranging from 1 to 5 and which have been classified into five major classes. The flood hazard map shows the area with high rainfall and low degree of slope have very high to high flood hazard index. The regions with very high to high flood vulnerability index have population density in the range of about 400–3372 persons per sq.km; they are located along the river. The final flood risk map is also showing the flood risk index range from 1 to 5. Because of less population density, good forest and more distance from river channels such as Kyunhlyargyi have very low flood risk index. The high risk index indicates the high population density, high rainfall within the area and the area has very flat topography.