

Mapping of Tsunami Impact Zone along Tamil Nadu Coast Using GIS and Remote Sensing

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ABSTRACT. The earthquake measuring 8.9 on the Richter scale that generated the great Indian Ocean tsunami of 2004 is estimated to have released the energy of 23,000 Hiroshima-type atomic bombs, according to the U.S. Geological Survey (USGS). The state of Tamil Nadu, the southern state of India has been the worst affected on the mainland, with a death toll of 7,793. Nagapattinam district has had 5,525 casualties, with entire villages having been destroyed. Kanyakumari district has had 808 deaths, Cuddalore district 599, the state capital Chennai 206 and Kancheepuram district 124. The death tolls in other districts were Pudukkottai (15), Ramanathapuram (6), Tirunelveli (4), Thoothukudi (3), Tiruvallur (28), Thanjavur (22), Tiruvarur (10) and Viluppuram (47). This 2004 disastrous tsunami waves resulted extensive damage to coastal eco systems and infrastructures such as harbors and ports. Therefore the mapping of such vulnerable area for inundation after incident of tsunami through cartography presentation is the most important tasks that has become necessary. This paper is an attempt to map the vulnerable areas along the Tamil Nadu coast using various GPS and Remote sensing techniques.

Various surveying methods were adopted for recording the inundation points, such as RTK surveying using GPS/Total station. The field data on the run-up levels collected using GPS are plotted on the land use and cadastral maps to show the land use/land parcels that were affected by the tsunami water. The elevation points are interpolated to derive the contours and the slope within the study area. These contours are used to create the Digital Elevation Model of the area using GIS techniques. This map shows the maximum inundation of water that intruded towards the land. The map reveals that mangroves and mud flats acted as natural barriers and the areas devoid of them were vulnerable to tsunami water inundation.

Key words: Survey, Land Use, GIS and Remote Sensing.

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