Tsunami Hazard Assessment: A Case Study of Phang Nga's Coast, Thailand

Ajira Tiangtrong[1], Somrudee Jitprapai[2] and Pasu Kongapai[2]

[1]Southeast Asia START Regional Center, Chulalongkorn University, Chulawich 1 Building, 5th Floor, Henri Dunant Road, Bangkok 10330, Thailand; Tel: +66(0) -218-9465; E-mail: ajira@start.or.th
[2]Marine Science Department, Faculty of Science, Chulalongkorn University, Phyathai Road, Bangkok 10330, Thailand; Tel: +66(0) -218-5394; E-mail: somdeem@yahoo.com; phasu_krv@hotmail.com

Abstract: Continuous efforts have been made to make the public aware of tsunami hazards since the Indian Ocean tsunami in 2004 which occurred as a result of the North Sumatra Island earthquake. The massive devastation due to Japanese Tohoku tsunami in 2011 and a series of earthquakes in the Indian Ocean further increased the importance and urgency to uplift awareness efforts. The present study was therefore carried out to create tsunami hazard maps by considering numerous geographic and demographic parameters (e.g. elevation, slope, land-cover, soil erodibility, distance from shoreline and river, beach types, and coral). Three study areas were selected in Phang Nga province on the Andaman Sea coast, Thailand which were previously damaged by the 2004 tsunami. Various types of information including remotely sensed data (e.g. high-resolution satellite images) were systematically analysed using Geographic Information System (GIS). The GIS incorporates parameters using analytic hierarchy process (AHP) was assigned to criterion weighting. The result is an assessment of the degree of tsunami hazard in map format which can be simply used by various end-users. For instance, the tsunami hazard maps can provide provincial authorities with holistic information for post-tsunami relief and recovery efforts. The simplified maps can also be used in any local school curriculum as part of its tsunami mitigation program.

KEY WORDS: Tsunami hazard, Hazard assessment, Analytic hierarchy process (AHP) Remote sensing, Geographical information system (GIS)