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Assessment of exposure of Sri Lanka to Tsunami hazards from Sunda Trench: A case study of Southern coast

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A study on assessing the exposure of Sri Lankan coastal regions to Tsunami hazards is presented in this paper. Considering the geographical location of Sri Lanka relative to the undersea earthquake prone regions in the world, it is evident that Sri Lanka is exposed to tsunamis which also became apparent by the Indian Ocean Tsunami (IOT) in 2004 and subsequent alerts in 2005 and 2007. Due to IOT, more than two thirds of the coastline in Sri Lanka in the northern, eastern, southern as well as relatively sheltered western coastal areas were subjected to inundation. However, it was clear in the aftermath of the IOT, that the degree of damage along the coastal belt of Sri Lanka was not uniform with some areas suffering more damage while in certain other areas, often not far away, there was less damage or no damage at all. The level of exposure of coastal areas exhibited a considerable variation even along a short stretch of the shoreline. Thus, it will be important to assess the risk of future potential tsunamis for Sri Lanka in order to come up with an accurate and reliable early warning system with information related to possible tsunami scenarios in the form of arrival time, nearshore wave height, extent of inundation, etc. This study was carried out using numerical modelling techniques and taking into consideration, the various stages of tsunamis due to undersea earthquakes; generation, deep water propagation, shallow water transformation and inundation. Attempts were made to arrange the results in a database containing information to be effectively utilized by a tsunami early warning and evacuation system. Attention was mainly focused on the southern coast of the country in this study.

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