Preliminary Tsunami Hazard Map of the City of Galle, Sri Lanka
Modeled Tsunami Inundation from an Andaman-Sumatran Subduction Zone Earthquake

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Tsunami inundation shown on the map is based on a computer model of waves generated by an event similar to the earthquake that occurred on 26th December 2004 in the Andaman-Sumatran subduction zone, which may be considered as a worst-case scenario of moment magnitude over 9. The model used is the Cornell Multigrid Coupled Tsunami Model (COMCOT) which solves the non-linear shallow water equations on a dynamically coupled system of nested grids using finite difference numerical schemes. The slip distribution was constrained, through trial-and-error, to match the available field measurements of the extent of inundation due to the tsunami in December 2004. Following Walsh et al. (Tsunami hazard map of Elliot bay area, WA, 2003), the computed tsunami inundation is shown on the map in three color-coded depth ranges: 0–0.5 m, 0.5–2 m, and greater than 2 m. These depth ranges have been chosen because they are approximately knee-high or less, knee-high to head-high, and more than head-high. The probable limit of tsunami inundation is the landward edge of the green zone.

The model simulation does not include the influences of changes in tides and is referred to the mean sea level. As the nature of the tsunami depends on the initial seabed deformation owing to the earthquake, which is poorly understood, the largest source of uncertainty is the input earthquake. Another significant limitation is that the resolution of the modeling is no greater or more accurate than the bathymetric and topographic data used. This means that, whilst the present version of the hazard map may be a useful tool to guide evacuation planning and in public education and awareness activities, it is not of sufficient resolution to be useful for land-use planning. Moreover, these preliminary hazard maps may be refined further to include probabilistic tsunami hazard assessments once such information for the Indian Ocean region becomes available.

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Disclaimer: This preliminary version of the tsunami hazard map of the city of Galle is intended for general informational purposes only. The developers of the map or their collaborative partners shall not be liable whatsoever for any damages or claims that may arise out of its use.

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