

## **Inundation mapping and vulnerability assessment based on the December 2004 tsunami event at Galle, Sri Lanka**

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Tsunami resulting from an earthquake of magnitude of 9.3 MW off the West coast of Sumatra on 26 December 2004 was the worst human disaster in history of Sri Lanka, which caused widespread damage to property, over 40,000 human lives, displacing more than 2.5 million people along a long stretch of coastal region. Waves as high as six meters had crashed into Eastern and Southern coastal villages. Adequate preparedness for this type of infrequent but catastrophic events is of utmost importance for minimizing loss of lives and damage to coastal infrastructure.

Tsunami inundation maps along coastal regions based on past tsunami events could be used to predict the future damage due to possible massive similar events. The main objective of this study was to prepare a risk map by integrating GIS tools, bathymetry, topography and Community Model Interface (ComMIT).

The "ComMIT" is the interface for the pre-runs model using MOST (Method of Splitting Tsunami) model developed by NOAA Center for Tsunami Research for tsunami Inundation Modelling. This ComMIT interface recreates the tsunami wave and provides run-up and wave propagation time taken to reach the wave to the land.

Galle, the capital of Southern Sri Lanka was selected for the study as this area was badly devastated by the 2004 tsunami waves. Accurate Near shore bathymetry (actual field survey data), GEBCO (General Bathymetric Chart of the Oceans) one minute offshore bathymetric data, Lidar survey data for near shore topography were used to construct the model grids. Three nested Grids (A,B,C) and subduction earthquake parameters (magnitude, fault and location) were entered to the ComMIT model. The output results of ComMIT model, maximum wave height, travel time and run up were integrated with Esri ArcGIS tools for mapping

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