Inundation Modeling at Gulf of Khambhat Along the West Coast of India Due to Tsunamigenic Earthquakes From the Makran Subduction Zone.

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The Makran subduction zone in the southern part of Pakistan is seismically active and there have been several historical tsunamigenic earthquakes from this region e.g. in 326BC, 1008, 1524, 1765, 24th Jan 1851 and 27th Nov 1945. These earthquakes have caused large scale devastation along the west coast of India. The shelf in the western margin of India is highly varying from north to south. The tectonics of the western continental margin is typically passive continental margin is highly complex hosting a number of deep seated faults, rift systems, basement highs and NW –SE trending ridges such as Laccadive ridge, Laxmi Ridge, Prathap ridge etc.

A possibly large tsunamigenic earthquake from the region is modeled to quantify the tsunami propagation, the arrival times and run ups along the Gulf of Khambhat on the west coast of India. The state of Gujarat being close to the Subduction zone has to be closely monitored and detailed inundation modeling has been carried for Gulf of Khambhat. The run up heights are seen to range from 0.3 to 0.4 m. Inundated distances have been obtained only few meters. The varying nature of the width of the shelf in this region is responsible for the variation in the arrival times, run ups and inundation distance. As the shelf is wide in this region the inundated distance is not very significant.