

Tsunami run-up modeling and inundation maps for the coast of Thailand

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On 26 December 2004, one of the strongest Earthquake occurred at the Indian ocean of the Western coast of northern Sumatra, Indonesia. Measuring $M_w=9.3$ megathrust, this Earthquake triggered a massive tsunami that struck the Indian ocean neighboring countries and Somalia. The devastating evidence of the damage caused by this highly destructive waves has been recorded via in-situ measurements and by satellite imagery. In this work, basic wave properties inferred from wave scattering images are used to compute wave run-up and water penetration and inundation levels of the nearby beaches. Available analytical methods and a simple linear beach profile, depending only on the beach steepness, are used for this task. As a complementary step, we present an assessment of tsunami damage caused on the west coast of Thailand, specifically at the regions of Phang-Nga, Ranong and Phuket. These inundation maps were generated from pre- and post- tsunami imagery acquired on 2004-12-04 and 2004-12-3 by SPOT-5 satellite with a 10 m resolution. Inundation maps are then coupled to a SRTM digital elevation model (DEM) of the affected region in order to provide us with initial estimates of wave run-up and water penetration levels caused by waves reaching this region.