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# Tsunami hazard assessment in the Euro-Mediterranean region: outcome of the TRANSFER European project

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The FP6 TRANSFER project (2006-2009) (led by University of Bologna) focused its activities on tsunami hazard assessment for the Euro-Mediterranean area, based on updated databases, tsunami hazard assessment through numerical modeling and propositions of operational tools for warning purposes.
Within the project, the activities in CEA were devoted to three main fields. First, the numerical methods have been tested against several benchmark problems which were able to demonstrate the efficiency of the methods used. Then a statistical approach has been proposed to analyze the tsunami variability along shorelines. This study was inferred from the numerous databases gathered after the 2004 Indian Ocean tsunami. First order numerical models have been carried out without grid refinement, compared to available observations and discussed with respect to the well accepted coastal amplification laws (Green, Synolakis). The method thereby defined was finally applied to the Balearic Islands to consider the tsunami threat for earthquake sources originating from northern Africa. The results underline the relative tsunami exposure for the different sections of the coastline for the Balearic Islands. Finally two detailed hazard studies have been conducted in Palma (Majorca, Balearic) and Istanbul (Turkey), based on scenarios of tsunamigenic earthquakes. The results show that the harbour of Palma in Majorca is rather protected from the tsunamis considered in the study (i.e. earthquakes with magnitude 7.0 to 7.3 along northern Africa), whereas the southeastern coastline of Majorca seems to be more significantly exposed. In Istanbul, for the given scenarios (earthquakes with magnitude 7.1 to 7.4 in the Sea of Marmara), the tsunami exposure is more important for several coastal low-lying sites where inundations can occur.
Beyond these results, the project also gave the opportunity to refine databases of tsunami observations in France, namely for the 2003 tsunami triggered by the Mw 6.9 Boumerdès (Algeria) earthquake. A field survey allowed to identify several harbours in the French Riviera where disturbances related to local resonances have been reported during the tsunami. This new database illustrates well which kind of effects a moderate tsunami can imply on coastal infrastructures, a hazard to be accounted for in the future tsunami warning system under construction for the North East Atlantic and Mediterranean region.