



Integrated observations from Near Shore Sources of Tsunamis in the Gulf of Cadiz

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The Gulf of Cadiz is one of the seismogenic-tsunamigenic areas around Europe; it is one of the few geological environments able to generate transatlantic tsunamis, which can deeply affect the coasts of Iberia and Morocco, but with significant effects in northern Europe and the Caribbean Islands. Here we report the major results of the EU Project NEAREST (Integrated observations from Near Shore Sources of Tsunami: toward an Early Warning System). NEAREST carried out the geophysical exploration of this area that led to the complete mapping of one of the most active tectonic structures and the determination of the associated geo-hazards. A GEOSTAR deep sea observatory was installed above one of those potential tsunamigenic structures, south of the Portuguese coast since 2007. This observatory allows the continuous monitoring of a set of geophysical and oceanographic parameters and, complemented to the land observation networks, may represent a major step for implementation of a future Tsunami Early Warning System of SW Iberia. In addition, NEAREST improved the numerical models of large tsunami impact based on high-resolution bathymetry and then produced accurate inundation maps in selected areas of SW Portugal. NEAREST also carried out a sedimentological study of paleo-tsunamis and paleo-earthquakes deposits and investigated the tsunami generation mechanisms.