



Optimal Design of a Tsunami Detection Network in the Gulf of Cadiz - A Contribution to the NEAMTWS of IOC-UNESCO

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The devastating impact of the 26 December 2004 Sumatra tsunami raised a question for scientists on how to forecast future tsunamis threat. Constructing a tsunami early warning system is the most effective way to answer to such problem. In 2005 the IOC-UNESCO decided to implement a global tsunami warning system in three main regions: Indian Ocean, Pacific Ocean and North East Atlantic, Mediterranean and connected seas (NEAM). The Gulf of Cadiz located close to the eastern part of Nubia-Eurasia plate boundary has been the place of several tsunamis, like the well known event of November 1755. This area, belonging to the NEAM region, remains up to now as the only zone unprotected by any warning system. The goal of this paper is to design a reliable tsunami detection network in the Gulf of Cadiz. Tsunamigenic potential study is investigated in order to evaluate active tectonic structures in the region. Tsunami hydrodynamic modeling and GIS technology are used to define the appropriate locations for the minimum number of sea-level stations. Results show that 25 tide gauge stations and 3 tsunameter sensors are recommended as the minimum number of stations to assure an acceptable protection to the large coastal population in the Gulf of Cadiz. This work was developed in the framework of NEAREST and TRANSFER projects, 6FP, European Union.