Geophysical Research Abstracts
Vol. 16, EGU2014-11617, 2014
EGU General Assembly 2014

An updated database of Holocene relative sea level changes along the Mediterranean coasts

Matteo Vacchi (1,3) and Alessio Rovere (2,3)

(1) Aix-Marseille Université, CEREGE CNRS-IRD UMR 34, Aix en Provence, France, (2) Lamont Doherty Earth Observatory, Columbia University, 61 Rte 9w, Palisades, 10964, USA (rovere@ldeo.columbia.edu), (3) SEAMap srl, Environmental consulting, Via Ponti Borghetto SS, (SV), Italy.

Present-day sea level variations in the Mediterranean depend on various factors, including recent climatic forcing, tectonic activity, anthropogenic effects, and glacio-isostatic adjustment (GIA).

Mediterranean coasts offer an exceptional opportunity to investigate the various mechanisms that contribute to sea level variations on different time-scales. In fact, geological, geomorphological and archaeological indicators can be coupled with the available instrumental observations. Several areas of the Mediterranean basin are affected by a significant tectonic activity contributing to a widespread coastal instability. The northern Mediterranean coasts are, potentially, the most affected by the process of isostatic adjustment due to the proximity to the former Alpine and Fennoscandian ice sheets. However, GIA-related deformation of the whole Mediterranean basin is mainly driven by water-loading, which contributes to a significant and widespread subsidence whose extension and strength, in turn, directly depend on ice sheet chronology and Earth viscosity.

In the Mediterranean, different kinds of RSL markers have been used to reconstruct RSLs: biological, sedimentary, geomorphological and archaeological. The production of such great amount of literature, which is still rapidly growing in number, has led to the obvious consequence of fragmented information, only occasionally reviewed in some localities, but never collected into an organic database to be analysed at the scale of the Mediterranean basin.

We aim to create a database of Holocene (last 10 ka) geological data across the Mediterranean basin. This represents a tool of fundamental importance for understanding and tuning GIA models and to assess sea level rise hazards, which are particularly magnified in low-lying or subsiding coastal areas. Here we present the first results of this study carried out both in tectonically active areas (Aegean Sea, Greece) and stable ones (Southern France and Corsica, NE Spanish coast, Nile Delta). Preliminary analysis allowed assessing the spatial variability of Holocene RSL histories according to distance of the former ice sheet. Furthermore, we evaluated the role of the right-lateral North Anatolic Fault in controlling the Late Holocene RLS variation in Northern Aegean Sea.