6th YOUNG GEOMORPHOLOGISTS' DAY
Geomorphology for Society
from risk knowledge to landscape heritage
Cagliari, 28-30 September 2015

SPATIAL VARIABILITY OF HOLOCENE RELATIVE SEA LEVEL CHANGES IN THE WESTERN MEDITERRANEAN

Matteo VACCHI [1]

[1] ***Aix-Marseille Université, CEREGE CNRS-IRD UMR 34, Europole de l'Arbois BP 80, 13545 Aix-en-Provence, Cedex 4, France, vacchi@cerege.fr***

An improved database of 639 published and new relative sea-level (RSL) data points constrains the Holocene sea-level history of the western Mediterranean Sea (Spain, France, Italy, Slovenia, Croatia, Malta and Tunisia). I compiled the standardized database using an innovative multi-proxy methodology based on: (1) modern taxa assemblages in Mediterranean lagoons and marshes; (2) beachrock characteristics (cement fabric and chemistry, sedimentary structures); and (3) the modern distribution of fixed biological indicators. These RSL data-points were coupled with the large amount of archaeological RSL indicators available for the western Mediterranean. I assessed the spatial variability of RSL histories for 22 regions, defined according to the geographical position of the data-points and the neotectonic context of each area.

At the basin scale, RSL rose continuously for the whole Holocene with a sudden slowdown at ~7.5 ka BP and a further deceleration in the last ~4.0 ka BP, after which time observed RSL changes are related to variability in glacio- and hydro- isostatic adjustment. The sole exception is southern Tunisia where data show evidence of a mid-Holocene high-stand compatible with the melting history of the remote Antarctica ice sheet. Local uplift or subsidence significantly influenced the Holocene RSL changes in eastern Sicily, the northeastern Adriatic and eastern France.

Analysis of late Holocene sea-level histories in tectonically stable areas allowed a first estimate of vertical land-level changes due to glacial and hydro-isostatic adjustment in the western Mediterranean. It ranges from ~-1.5 m in the north-western sector of the basin up to ~-3.4 m in the southeastern part. Rates of late Holocene RSL rise ranged between ~0.8±0.2 and ~0.4±0.1 mm a^{-1}, significantly slower than the on-going rates of RSL rise currently recorded by most west Mediterranean tide gauges.