Holocene sea-level changes in the Mediterranean: the role of remote and near-field ice sheets

Paolo Stocchi[1], **Spina Cianetti**[2], **Laura Girometti**[1]**and Giorgio Spada**[1]

[1] *Istituto di Fisica, Università di Urbino "Carlo Bo", Urbino, Italy.*
[2] *Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy.*

The sea-level change attributed to the melting of continental glaciers is the result of global eustatic, local glacio-hydro-isostatic and geoidal contributions. The relative importance of each factor depends upon the distance between the investigated site and the ice-sheet loading centres, and from the details of the load time-history. The global solution of the sea-level equation (Clark, 1980) evidences six zones on the Earth' surface showing characteristic post-glacial relative sea-level curves. In the present work we solved the sea-level equation for a spherically symmetric visco-elastic Earth through a pseudo-spectral algorithm to investigate the effective presence of different zones of Clark in the Mediterranean Sea. At first we have implemented the complex ICE1 and ICE3G models and we have compared the relative sea-level predictions of the two models at various times. Successively the effects of their single main ice aggregates (Fennoscandia, Laurentide and Anctartica) have been studied comparing the results to the sea-levels predicted at different times considering simple ad-hoc ice loads in order to investigate the possible presence of Holocene sea-level highstands (Zone V and Zone VI) in the Mediterranean Sea. The predicted sea-level curves have been also evaluated relatively to the sea-level observations available along the Mediterranean coasts.

References:

J.A. Clark. The reconstruction of the Laurentide ice sheet of North America from sea level data: method and preliminary results. J. Geophys. Res., 85, 4307–4323, 1980.