Geophysical Research Abstracts
Vol. 15, EGU2013-12735-2, 2013
EGU General Assembly 2013


# Climate variability in the Eastern and Western Mediterranean Sea over the last two millennia: a contribution of PaleoMex/MISTRALS

Alexandra Gogou (1), Marie-Alexandrine Sicre (2), Maria Triantaphyllou (3), Konstantine Parinos (1), Ioanna Bouloubassi (4), Margarita Dimiza (3), Grigoris Rousakis (1), Gerasimos Korres (1), Nejib Kallel (5), Bassem Jalali (5), Helen Kaberi (1), Ullah Ezat (2), and Vasilios Lykousis (1)

(1) Hellenic Centre for Marine Research, Institute of Oceanography, 190 13 Anavyssos, Greece (agogou@hcmr.gr), (2) Laboratoire des Sciences du Climat et de l'Environnement, Domaine du CNRS, Ave de la Terrasse, 91198 Gif-sur-Yvette, France (marie-alexandrine.sicre@lsce.ipsl.fr), (3) Faculty of Geology and Geoenvironment, Univ. of Athens, Panepistimioupolis, 157 84, Athens, Greece (mtriant@geol.uoa.gr), (4) Laboratoire d'Océanographie et du Climat: Expérimentation et Approches Numériques, 4 place Jussieu, 75252 Paris, Cedex 05, France (ioanna.bouloubassi@upmc.fr), (5) Facluté des Sciences de Sfax, Laboratoire GEOGLOB, Route de Soukra, BP 802, 3028 Sfax, Tunisia (nejib.kallel@fss.rnu.tn)

Recent compilations of Mediterranean 2k paleoclimate archives (Luterbacher et al., 2012, MedClivar Book) stressed the lack of high-resolution/ continuous marine records. The two new high-resolution sea surface temperature (SSTs) time-series presented here from the shallow coastal shelf sediments of the Gulf of Lions and deeper ocean one of the Aegean Sea using alkenone paleothermometry, are thus an important contribution. SST values are roughly 2°C warmer in the Eastern than Western Mediterranean sites in agreement with our knowledge of the production pattern of the main alkenone producer Emiliania huxleyi in the two basins. Both SST-record reveal significant variability of cool/warm intervals, corresponding to the continental European and Northern Hemisphere climatic variability. While distant from each other, SSTs at the two sites show some degree of similarity: increasing SSTs from $\sim$ 600 to 1300 AD followed by a significant cooling till the early 1600's marking the onset of an outstanding warm period reaching values similar to present day. After a sharp decrease ending around 1700 yrs AD, the last three centuries indicate gradually rising SSTs by about 1°C/100 yrs. To our knowledge the latter feature has been undocumented in North Atlantic cores but often observed in paleoclimate reconstructions of the European climate, though with different regional timing and amplitude. This unexpected finding may reflect feedbacks from the surrounding land-masses contributing to "continentalize" the Mediterranean climate. Another notable feature is the short-lived abrupt cooling in the Aegean record between 1816 and 1824 yr AD, possibly expressing the surface water cooling subsequent to the Tambora volcanic eruption of 1815 yrs AD.

* We acknowledge financial support from MEDECOS (Marin-ERA, EU/FP6) Project and the Greek General Secretary of Research and Technology.

Luterbacher J, Garcia-Herrera R, Allan R, Alvarez-Castro BG, Benito G, Booth J, Büntgen U, Colombaroli D, Davis B, Esper J, Felis T, Fleitmann D, Frank D, Gallego D, Gonzalez-Rouco FJ, Goosse H, Kiefer T, Macklin MG, Montagna P, Newmann L, Rath V, Ribera P, Roberts N, Silenzi S, Tinner W, Valero-Garces B, van der Schrier G, Vanniere B, Wanner H, Werner JP, Willett G, Xoplaki E, Zerefos CS, Zorita E (2012) A review of 2000 years of paleoclimatic evidence in the Mediterranean. In: Lionello, P. (Ed.), The Climate of the Mediterranean region: From the Past to the Future. Elsevier, Amsterdam, 87-185.