New data on the climate of the last 20,000 years in the Mediterranean basin

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November 29, 2014

An international team of scientists, among which are three researchers from the University of Granada (UGR) and the Andalusian Institute of Earth Sciences (joint center UGR-CSIC) in Spain, has uncovered new information about the **climate** in the **Mediterranean basin during the last 20,000 years** thanks to the chemical composition of sediments deposited on the seabed. This work has been published in the journal Quaternary Science Reviews, and he RNM179 Group researchers of the UGR Francisca Martínez Ruiz and David Gallego Torres (Andalusian Institute of Earth Sciences, CSIC-UGR) and Miguel Ortega Huertas participated (Department of Mineralogy and Petrology). They are co-authors Miriam Kastner (Scripps Institution of Oceanography, UCSD, La Jolla, USA), Marta Rodrigo Gámiz (NIOZ Royal Netherlands Institute for Sea Research, Texel, The Netherlands) and Vanessa Nieto Moreno (Biodiversität und Klima Forschungszentrum, Frankfurt am Main , Germany).

The study of high resolution marine sediments allows a characterization of past climate will contribute to the knowledge of current climate change and possible scenarios of future climate change. To do this, says the scientist, “the Mediterranean is an outstanding natural laboratory for paleoenvironmental investigations because its semi-enclosed basin character makes it particularly sensitive amplifier and the effects of global change.”

The time interval studied in this scientific article is of particular interest in climate change as significant developments since the Last Glacial Maximum (LGM, for its acronym in English), such as the last event Heinrich (period in which waves of icebergs were detached from glaciers and crossed the North Atlantic), the transition Bolling-Allerod, the Younger Dryas (climatic cooling phase late Pleistocene) and Holocene climatic oscillations. Scientists have evaluated the usefulness of various geochemical and mineralogical indicators of climate variability, concluding that they provide a more reliable and accurate information are: the Ti / Al (titanium / aluminum) and Zr / Al (zirconium / aluminum relations) to interpret the changes in wind contributions and therefore reconstruct dry and wet cycles; relationships Mg / Al (magnesium / aluminum), K / Al (potassium / aluminum) and Rb / Al (rubidium / aluminum) as indicative of variations in river inputs, and oxygenation conditions reconstructed from relations trace metals (U, Mo, V, Co, Ni, Cr, ie, molybdenum, vanadium, cobalt, nickel and chromium).

Of particular interest has been the study of biological productivity, reconstructed from the content of barium (Ba) in sediments derived from biogenic barite. “Because many of climatic changes have a cyclical -destaca the teacher Martinez, the evolution of future climate and its control mechanisms, both natural and anthropogenic, requires an understanding of the climate system in the past and the response of the individual components (atmosphere, biosphere, lithosphere, hydrosphere, cryosphere) on a larger scale than the instrumental record”.

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