

Marine barite production in the Mediterranean over the last 20 kyr: Reconstructing productivity and climate fluctuations

F. MARTINEZ-RUIZ^{1*}, M. RODRIGO-GÁMIZ¹,
F. J. JIMÉNEZ-ESPEJO², D. GALLEGO-TORRES^{1,3},
V. NIETO-MORENO⁴, A. PAYTAN⁵ AND
M. ORTEGA-HUERTAS³

¹Instituto Andaluz de Ciencias de la Tierra (CSIC-UGR),
18100 Armilla, Granada, Spain (*correspondence:
fmruiz@ugr.es) (martarodrigo@ugr.es, davidgt@ugr.es)

²Department of Biogeochemistry, JAMSTEC, 2-15
Natsushima, Yokosuka 237-0061, Japan
(fjjspejo@jamstec.go.jp)

³Depto. Mineralogía y Petrología. Universidad de Granada,
18002 Granada, Spain (mortega@ugr.es)

⁴Biodiversity and Climate Research Centre, D-60325 Frankfurt
am Main, Germany (Vanesa.Nieto-
Moreno@senckenberg.de)

⁵Earth & Marine Sciences, UCSC, CA 95064, USA
(apaytan@ucsc.edu)

Fluctuations in Ba excess in sediments from the Mediterranean basins over the last 20 kyr have served to reconstruct variations in productivity in turn linked to climate changes. Productivity events recorded by Ba proxies are not correlated between eastern and western basins, pointing to significant differences in nutrient supply and paleoceanographic conditions. Differences in barite production could also derive from the mechanisms involved in barite precipitation. The recently demonstrated capability of certain microbial groups to mediate barite precipitation under laboratory conditions suggests that bacteria may have played a significant role in barite precipitation in seawater. This is also supported by a clear correlation between bacterial activity and barite production in the ocean water column. Thus, differences in bacterial activity between diverse basins should be also considered to explain spatial differences in barite accumulation rates within the sedimentary record.