

Trace elements of Mediterranean vermetid reefs as proxies for natural and anthropogenic processes

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Marine calcifying organisms record in their shells environmental conditions, such as sea surface temperature, productivity, precipitation and dust fluxes. The reef builder vermetid, *Dendropoma petraeum* is a sessile gastropod, secreting its aragonite shell in the tidal zones of the warm belt of the Mediterranean Sea, a region under high anthropogenic stress. Millennial scale trace element (TE) records from vermetid reefs across the Mediterranean Sea (Israel, Crete, Sicily, Tunisia and Spain) provide the opportunity to decouple anthropogenic effects from natural environment conditions and climate variability.

We present TE/Ca records from vermetid shells, grouped according to traditional environmental context. U and Sr, elements traditionally related to temperature in corals, show an increasing content variability between the basins that is well pronounced after 1650AD.

Western basin Pb record shows two medieval peaks separated by a minimum around 1350 AD and a recent industrial era rise. Eastern Pb record shows a low preindustrial variability and a rise similar to the Western basin from 1750 AD.

Preindustrial Cd records show similar east and west variability, with a sharp increase observed in the Eastern Mediterranean from 1950 AD.

The content of the terrigenous elements Al and Fe shows a spatial east-west trend. However, the Fe records from across the Mediterranean Sea converge towards lower values during the 20th century. The records of these elements may provide a tool to estimate natural dust and riverine fluxes, and anthropogenic alterations of land coverage.