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Paleoenvironmental changes, climate and human impact in the Western Mediterranean Sea during the 4.2 Kyr event along a North-South Transect

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The 4.2 ka event is considered a key-period of the Mediterranean climate because of its potential impact on human societies over the Holocene. Numerous records provide a detailed description on its expression in continental and marine archives (e.g. Bini et al, 2019). They generally indicate cold/dry conditions, although not uniformly expressed across the Mediterranean, and summer dryness reinforced by dry winters. Palynological data from the central Mediterranean basin show a complex response of the vegetation during this climatic event that seems to be more pronounced in the southern sites.

In this study, we developed a multidisciplinary approach on two sequences collected in the Western Mediterranean Sea to insight the response of the W-Mediterranean forest along a North-South transect. The two marine records, KSGC-31 (43°N - 3°17.9'E; 60 m water depth, Gulf of Lion margin at 20 km from the coast) and MD04-2801 (36°30.99' N - 0°30.03' W, 2067 m water depth, 12km from the Algerian coast) were used to document regional changes in the basin between 5 and 3 kyr BP at a multi-decadal to centennial scale temporal resolution.

Information derived from palynological (pollen, spores, dinocysts, microalgae and non-pollen palynomorphs) and marine proxy data (alkenone-derived SSTs, isotopes...) are combined to evaluate environmental and hydrological changes and how this relate to human activities. Our findings highlight coherent climatic patterns and time-lags along a South-North transect in the Western Mediterranean during the establishment of droughts. They also reveal the first indications of human impact in the two areas. Overall, our study shows the effectively of our approach based on cross-analysis of continental palynological and marine evidences to decipher the chronology of sequence of events embedded in multiproxy records.

Bini, M., Zanchetta, G., Perşoiu, A., et al. : The 4.2 ka BP Event in the Mediterranean region: an overview, *Clim. Past*, 15, 555–577, <https://doi.org/10.5194/cp-15-555-2019>, 2019.