

S. Le Houedec, D. Liebrand, R. Hennekam, M. Mojtahid, 2023. Assessing atmospheric and oceanic teleconnections between the eastern and western Mediterranean over the past 8,000 years. Accepted in the Holocene

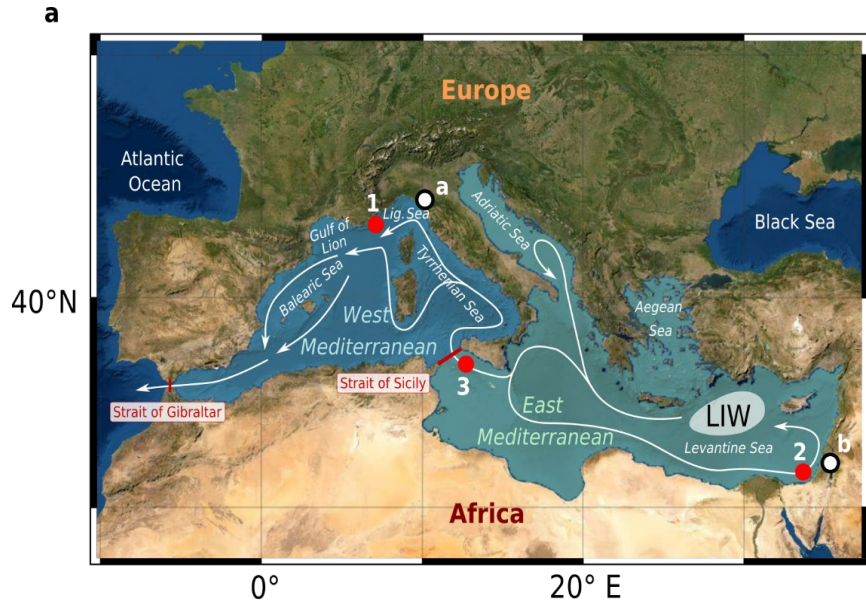


Fig.1. a) Map of the region with site locations. Numbers 1-3 refer to Holocene marine sediment cores and letters a-b to cave records. LIW: Levantine Intermediate Water.

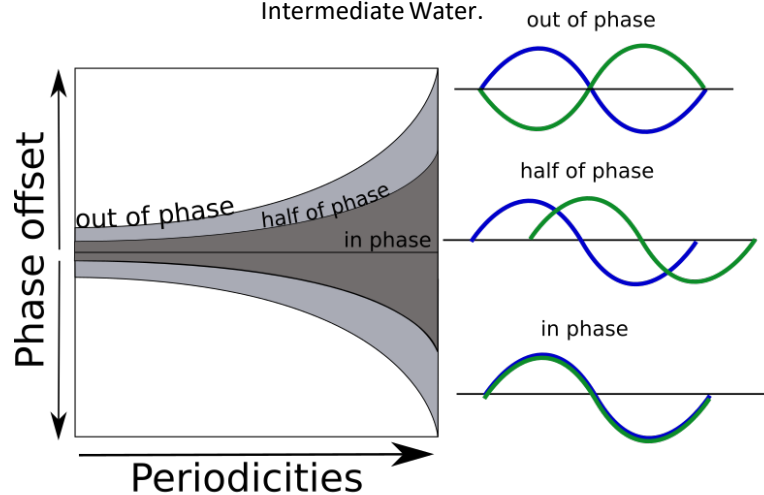


Fig.2. Blackman-Tukey cross spectral analyses

We produced for the first time, analysis of phase relationships on East, central and West Mediterranean combining both terrestrial (i.e., caves) and marine (i.e., surface and intermediate waters) archives (Fig. 1) to assess periodic lead/lag relationships (Fig. 2) and climatic/oceanic teleconnection pattern on multi-centennial and millennial time scales over the last 8000 years.

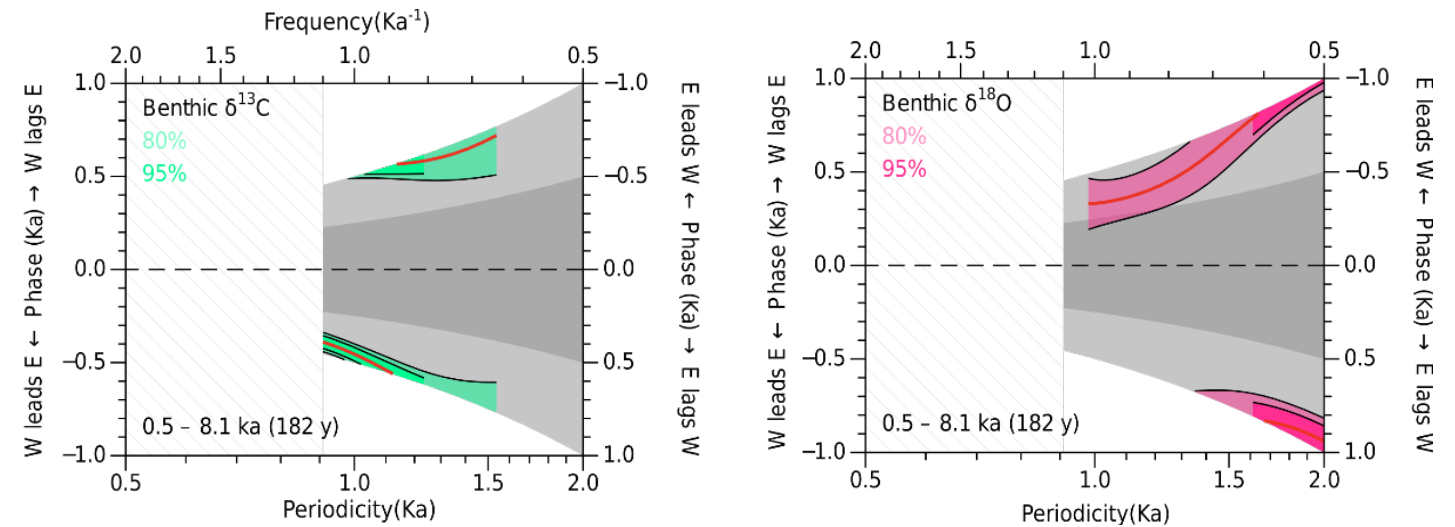


Fig. 3. Phase computations between the benthic foraminiferal $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ records from the western (core 1) and eastern (Core 2) Mediterranean basins

We document an out-of-phase relationship between benthic foraminiferal isotope records (both $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$) (Fig. 3) and broadly in-phase relationships between the planktonic foraminiferal and speleothem isotope records. These findings support the notion of a well-connected atmosphere-surface ocean system that operates largely in tune on millennial timescales throughout the past 8000 years.