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Climate of the Past Discussions

Interactive comment on "Holocene hydrography evolution in the Alboran Sea: a multi-record and multiproxy comparison" *by* Albert Català et al.

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This is an interesting new high-resolution Holocene dataset. I am particularly interested in the comparison of the various SST reconstructions. The authors demonstrate differences among Mg/Ca and Uk'37 SST temperature development, especially during the transition between the Glacial and Holocene. The high-resolution sampling and age-dating allows to look at even smaller time scales. I am attaching a graphical comparison of the new HER-GC-ALB2 Mg/Ca SST with very nearby Alboran Sea ODP 976 and cores 384B and 436B (Nieto-Moreno et al. 2015).

The Medieval Climate Anomaly (MCA) appears quite warm in the TEX86 data of 384B and 436B. When looking at the Uk'37 SST data of the same cores, only the first half

of the MCA may be warm, whilst the second half is cold. Your new ALB2 Mg/Ca data suggests a cold MCA, similar to the lower resolution ODP 976 Uk'37 SST data. All cores have been taken in fairly similar water depth of 1000-1300 m.

It would be worth disussing the comparison with TEX86 data in the Alboran Sea and possible significance of the differences, as well as limitations of the various methods. How about e.g. replicability? If one would take 10 cores within a few kilometres distance from the same region and analyse them with the same methods, would we expect similar results? In the ield of ice cores it has now turned out that single ice core isotope results are far less reliable than a statistical average of a whole series of course. Variability appears to be very high.

As a second point, I encourage the authors to discuss the Late Glacial and Holocene SST signal also in a global or at least interregional context. Lüning & Vahrenholt 2019 (online 2018) have published a comparison of North African and Arabian Holocene temperature data as well as a comparison with the Marcott et al. global data. It turns out that the Alboran SST evolution is qute similar to the global development. Please see figures 10 and 11 in Lüning & Vahrenholt 2019.

Lüning, S., F. Vahrenholt (in press, 2019): Holocene climate development of North Africa and the Arabian Peninsula. In: Bendaoud, A., Hamimi, Z., Hamoudi, M., Djemai, S., Zoheir, B. (Eds.), Geology of the Arab World - An overview', Springer, ISBN 978-3-319-96794-3.

https://www.researchgate.net/publication/327823688_Holocene_Climate_Development_of_N

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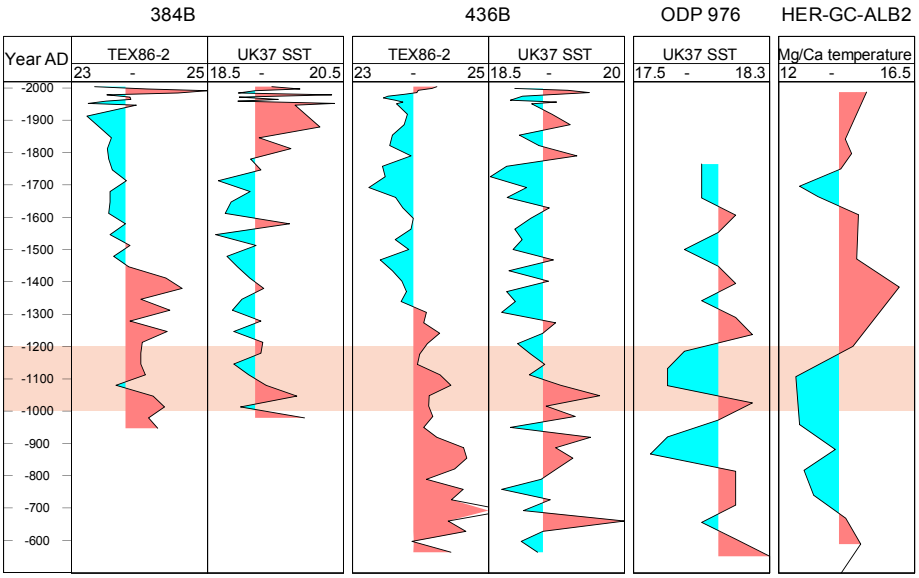
384B
436B
ODP 976
HER-GC-ALB2
Year AD
TEX86-2
UK37 SST
TEX86-2
UK37 SST
UK37 SST
Mg/Ca temperature
23 - 25
18.5 - 20.5
23 - 25
18.5 - 20
17.5 - 18.3
12 - 16.5
-2000
-1900
-1800
-1700
-1600
-1500
-1400
-1300
-1200
-1100
-1000
-900
-800
-700
-600

Fig. 1.