

## ***Interactive comment on “The MIS 5 palaeoenvironmental record in the SE Mediterranean coast of the Iberian Peninsula (Río Antas, Almería, Spain)” by T. Torres et al.***

**Anonymous Referee #1**

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This manuscript presents a modest new palaeoenvironmental dataset from a coastal site in SE Spain resulting from complementary palynological (pollen and non-pollen palynomorphs), sedimentological and micropaleontological (ostracods and foraminifera) studies. The dating by amino acid racemisation (AAR) places the sequence in the range of the interval MIS 11 to MIS 5. Overall, the interdisciplinary approach is interesting and sound with a particular investment of effort in combining micropaleontological and geochemical analyses. However, the high number of age inversions only supports a Middle Pleistocene age of the Río Antas deposit, and the absence of a benthic foraminifera  $\delta^{18}\text{O}$  record precludes the identification of the Marine Isotopic Stages and sub-Stages (MIS) that the authors discussed in the text and show in figure 2. Un-

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fortunately, if the stratigraphy is uncertain, the evolution of the vegetation and that of the lagoonal system presented in the manuscript remains also uncertain. Moreover, the fragmentary nature of the pollen record and the small size of the dataset inevitably leave open questions of signal vs noise, replicability, robustness of trends, etc. For example, there are only 37 pollen samples for an interval that the authors correlate with a time interval of more than 100,000 years: MIS 5 (~135–73 ka: 62,000 years), MIS 6 (~185–135 ka: 50,000 years) and MIS 11 (~425–380 ka: 45,000 years). Additionally, the manuscript as currently written does not appear well-suited to the wide international and interdisciplinary readership of *The Climate of the Past*. For instance, the Discussion is composed of three sections, Sedimentary environments, Organic geochemistry (biomarkers) and Palynology, that describes and interprets independently the results of each environmental indicator. There is not a real integration of the three types of information. The interpretations and discussions are focused quite strongly on the site-specific formation history, with relatively little in the way of wider implications for other sites or regions.

It is therefore with regret that I cannot recommend publication of this manuscript in its current form in *The Climate of the Past*.

In preparing a revised/resubmitted manuscript, I would encourage the authors to consider the following points:

- a) Add a more critical discussion of the AAR ages.
- b) Do not try to establish MIS intervals using palynological and sedimentological information. MIS boundaries should be based on the benthic foraminifera  $\delta^{18}\text{O}$  record.
- c) Re-organize the manuscript and, particularly, the Results and the Discussion sections by integrating the information provided by the different environmental proxies.
- d) Determine the palynozone boundaries, if any, and establish the relationship between the lithological units and the palynozones.

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e) Revise the pollen percentages of figures 4 and 5. The percentages of Juniperus in the two figures seem not to be the same.

f) Draw a new figure combining under the same depth scale the sedimentological, biomarker and pollen profiles.

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