

## ***Interactive comment on “Climatic subdivision of Heinrich Stadial 1 based on centennial-scale paleoenvironmental changes observed in the western Mediterranean area” by Jon Camuera et al.***

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This is an impressive set of data; I have seen it at conferences and I was looking forward to seeing it published, but this work leaves my professional curiosity unsatisfied and disappointed. The authors aim to shed light on the centennial climate variability in the Western Mediterranean region during the late glacial and document a three-phased nature of HS1. In fact, they fail. The new high-resolution data are exciting and have great potential, but the interpretation is somewhat careless. E.g.: I do not see how the HS1 in Spain could lead the hemispheric (?) signal by ca. 1 ka? This is a bald and

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provocative statement and the authors suggest “different environmental responses” (lines 144) to remedy this problem. This argument is not convincing, in particular, without explaining and elaborating on the nature of the purported responses. Perhaps the answer lies in the uncritical approach to the Padul sequence 14C-based chronology? Independent of how good the age model is – it is just a model. A critical discussion of potential flaws of the Padul chronology and their implications might solve the problem. Also, while the authors document the three-phased nature of HS1 they discuss neither the causes nor regional implications of the described features. Why does the division of HS1 matter at all? Further, The authors call for solar activity as a driver of changes in the Padul proxies. Can they elaborate on the exact mechanism? How solar activity translates to floral assemblage changes? Last but not least, the spectral analyses results seem a bit at odds with common sense. 800 yr cyclicity during HS1 event of less than 3 ka duration is already suspicious. Periodicity of 2000 yr within HS1, BA and YD (line 232-233) is simply absurd! The YD itself only lasted for ca. 1000 yr. Paleoclimate research is so much more than tuning wiggly curves and finding prescribed periodicities in proxy records! Valid, original observations call for careful and thorough and original interpretations rather than preaching to the choir using empty but catchy phrases and unsubstantiated claims.

I wish the authors will address mentioned points in the revised version of their manuscript.

best regards Ola Kwiecien

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