

## ***Interactive comment on “Hybrid insolation forcing of Pliocene monsoon dynamics in West Africa” by Rony R. Kuechler et al.***

### **Anonymous Referee #2**

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This is an excellent contribution to the understanding of monsoon dynamics in Africa, for the Pliocene time period, on which there is not much information and provides insights on climate dynamics in a warm world. Much of the value of the paper derives from its pretty unique time series of deuterium hydrogen isotopes in long chain n-alkanes derived from higher plant waxes. This is interpreted as a proxy for hydroclimate, and the justification for doing so is well addressed in the paper. To constrain further and strengthen the interpretations of their data, in my opinion the authors should take more into account the uncertainties surrounding the source regions of the n-alkanes in their marine record. The authors do indicate that: "our records of the terrigenous fraction in marine sediments integrate huge catchment areas since large parts of the Saharan and the Sahel can be considered sources of the material of

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primarily eolian origin (Tiedemann et al., 1994; Vallé et al., 2014)." "predominance of eolian transport of plant waxes probably in the form of coatings on dust particles" " The low  $\delta^{13}C_{31}$  variations are attributed to a relatively stable wind system (Tiedemann et al., 1994) and the integration of a large source area"

In my opinion these are important issues that would need to be discussed in more detail in order to clarify, for instance if the biomarker signals are driven by changes in the wind system, source, and/or the modes of transport (e.g. particle sorting with distance, resuspension) of the particulate material rather than just climate at the source.

I would also have provided a more extended discussion on the implications of the difference in magnitude of the isotopic signals interpreted in terms of hydroclimate changes between the late Pleistocene and the Pliocene. Few studies are capable of doing so with the pretty unique data set presented.

The frequency analysis seems quite noisy, and the relevant frequencies at given time intervals are often barely distinguishable from the noise. The discussion would have also benefited from a more detailed assessment of the significance of the frequency analysis in the different time intervals.

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