

Interactive comment on “Oxygen isotopic analyses of individual planktic foraminifera species: implications for seasonality in the western Arabian Sea” by P. D. Naidu et al.

Anonymous Referee #3

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The paper intends to provide new information about past seasonality changes in the western Arabian Sea based on individual oxygen isotope analyses of planktonic foraminifera. The main results of the paper are two fold: -estimation of seasonal SST and SSS for specific time windows (between 22 ka BP and 0.5 ka BP); -establish climate teleconnection patterns through interpretation of the seasonality changes. This work has a high potential to provide interesting results about seasonality changes, a crucial climate parameter. However the present paper has a number of weaknesses and inconsistencies. To my opinion, the discussion is not fully supported by the data and the paper needs to be reorganised (disproportion between results and discussion parts). For these reasons, I suggest to reject the paper for publication at this stage.

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The data set could probably be reinforced, the methodology enhanced and the results more carefully discussed. The comments addressed to the author mainly concern the methodological approach since it represents the base for the interpretation and discussion. The comments are in line with those of reviewers 1 and 2.

-Point 1: methodological approach The methodological approach is an important issue of the paper that could be improved. First there is a need for additional information concerning the selected foraminifera: - size range (500-600 μm for *G. sacculifer* is rather unusual); - number of analysed foraminifera : -why is there a large difference between *G. sacculifer* (more than 15 individuals) and *N. dutertrei* (less than 8-10) ? ; -how was this number selected ? (see Schiffelbein and Hill, 1984 in Leduc et al. 2009). Second, the choice of the Bemis et al. equation should be discussed. Third, information is missing on the SST estimates based ANN (Naidu and Malmgren, 2005), and in general on the uncertainties of the SST and SSS estimates.

Leduc, G., Vidal, L., Cartapanis, O., Bard, E. 2009, *Paleoceanography*, 24, PA3202, doi :10.1029/2008PA001701

-Point 2: interpretation of the results -it is not clear if the seasonal temperature difference (as reported in Figure 6) is the difference to the modern temperature seasonality (same for SSS). -in the same direction : why is the SST (for exemple) difference (Max. SST – Min SST) so small for the Late Holocene (Table 2) (compared to the modern SST seasonal difference as shown in Figure 1). -in Table 3, the values of significant standard deviations are underlined: on what statistical base relies this choice? - $\delta^{18}\text{O}$ values of *N. dutertrei* are poorly discussed since there no constrain of temperature and salinity changes in sub-surface waters at core location.

Interactive comment on Clim. Past Discuss., 10, 3661, 2014.

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