

## ***Interactive comment on “Past dynamics of the Australian monsoon: precession, phase and links to the global monsoon” by L. Beaufort et al.***

**Anonymous Referee #1**

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This paper is a welcome contribution to our understanding of the nature of past monsoon variability and its relationship to ENSO at orbital time scales. In particular, a useful attempt is made to develop ~quantitative estimates of variations in the specific monsoon parameters of palaeo primary productivity, summer rainfall and length of the winter dry season. This type of study is a very worthwhile complement to other works focusing more specifically on summer monsoon intensity variations. Therefore, it is via studies such as this that a better understanding of the cross-hemispheric dynamics of the complete palaeo (global) monsoon system can be obtained. The paper is generally well written, well-structured and the level and quality of the discussion of the results is highly appropriate and in accordance with the data presented.

I recommend acceptance following some minor revisions.

C522

A few ‘moderate’ queries for the authors to consider/address (which do not detract from the overall message of the paper):

1. In the coccolith analysis used to quantify the %Fp (i.e. using image processing/recognition techniques), why is no attempt made to cross-check automated counts with manual counts? The technique is outside my domain, but I am familiar enough with similar applications in speleothems and in such cases some level of comparison is made to manual counts. 2. It would be very useful to include uncertainty envelopes on the summer rainfall and dry-season-length anomalies shown in Figure 5. 3. Could the planktic delta-18O foram series please be shown against the tropical stack from which the age scale has been derived?

Some other suggested corrections (page/line numbers shown):

1046/15: ‘suggest’ should be ‘suggests’. 1046/16: insert ‘changes in’ before ‘global...’  
1046/19: ‘synchronically’ should be ‘synchronously’.

1047/2: delete ‘the’. 1047/8: lower case ‘n’ for north. 1047/12: insert ‘a’ before ‘pollen...’. 1047/18: substitute ‘trade’ for ‘alizean’.

1048/9: is 0.41 the average for normal years? If so, please state this. 1048/15: for ‘primary production’, ‘PP’ can be used, as it has been defined prior to this. 1048/21: not sure what is meant by the ‘curl’ of the win. Perhaps use something more appropriate here.

1049/10: should be ‘the’ Arafura Shelf.

1050/2: should be ‘at 5-cm intervals’. Likewise for the next line.

1052/3: I thought the SI prefix was ‘nano’...so ‘nanopaleontologists’? 1052/14: no hyphen needed for ‘pollen-distribution’ (but one needed on the next line!). 1052/24: ‘herbaceous’ instead of ‘herb’? And suggest change ‘climatic estimates’ to ‘proxy climate series’. 1052/26-27: I do not follow the part in brackets – needs re-wording.

C523

1053 (first paragraph of Results): needs more reference to the relevant figures. 1054 (first paragraph of 4.2): needs reference to the appropriate figures much earlier than indicated. 1054/12: remove 'does correspond to' and replace by 'agrees with'. 1054/16: should be 24, not 25 kyr.

1055: much more reference to figures needed here.

1056/26: should be 'agrees'. 1056/27: remove 'the' before ENSO.

1057/1: suggest 'palaeo data' instead of 'fossil sets' 1057/7: suggest '...from Hula, Sanbao and Dongge Caves'. 1057/9: 'isotopes' should be singular. 1057/15: not sure why the minus sign precedes the 'd18O'. Needs to be expressed more explicitly.

1058/18-19: suggest '...ITCZ probably do not have a major ...'.

1059/9: remove 'the' before summer. 1059/17: should be 'synchronicity'. 1059/26: 'signals' after eccentricity is redundant.

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Interactive comment on Clim. Past Discuss., 6, 1045, 2010.