



Brest, 26<sup>th</sup> May 2011

## Response to anonymous reviewer

### **Specific Comments**

#### 3.2. Dinocyst analysis

→ “I would like to see the species numbers in order to confirm that the sample size (300 dinocyst counts) or counting method (100 specimen counts except for *L. machaerophorum*) was adequate for quantitative discussion including dinocyst-derived SST.”

→ “In addition, the information on confidence limit for species% data may be helpful for readers on the understanding of quantitative discussion including minor species% (less than 10%), because the confidence limit may be estimated as  $\pm 10-14\%$  for 100-400 specimen counts in general.”

→ We did a table (Appendix A in Excel format) that will show all dinocyst counts on the two recent cores (MD04-2805 CQ and MD99-2339). In addition, a column in the Excel file will also mention the percentage error according to the equation of Stockmarr (1971) which takes into account the number of dinocysts and the number of *Lycopodium* spores counted on each level. This error never exceeds 10% in our studied cores.

#### REF

Stockmarr, J. 1971. Tablets with spores used in absolute pollen analysis. *Pollen et Spores* 13, 615-621.

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### 5.2.2. Transfer functions vs. alkenones

→ "It may be helpful for readers if authors supply additional information on the reliability of alkenone-SST as annual temperature proxy in the study area. I do not know whether the most productive season of coccolithophores producing alkenone had been maintained in fall in the study area for the past 30kyrs. The alkenone-SST in Holocene shows the middle between the February and August dinocyst-SSTs (Fig. 6). However, the alkenone-SST in the lower half of Core MD04-2805CQ is similar or nearly the same to February SST derived by dinocyst rather than middle SST between February and August SSTs."

→ The reliability of alkenones is based on an estimation of the analytical error. However, the seasonality of the alkenone production may indeed have changed through time (MARGO Project Members, 2009) and no current proxy is, obviously, better than another to provide an accurate picture of past SST. The fact that alkenone-derived SST are closer to February SST during the glacial is already discussed in Penaud et al. (2010, QSR, only dealing with data from core MD04-2805 CQ). A paragraph will be included in the revised manuscript on this observation.

### 6.1.1. Last Glacial Maximum

→ "In Fig. 5, I could not identify three warm periods in Gulf of Cadiz and NW Moroccan margin. Although the authors state on the existence of thee warmer periods, is the discussion of this section limited to the results from the SW Iberian margin?"

→ We have deleted the three warmer periods delimited on Figure 5 (cf. also Table 1 will be modified accordingly). Even if warmer and colder excursions on the three cores occurring



during the LGM are obvious on Figure 5, it is not obvious to count 3 events. We will discuss more the LGM in terms of mean SST reconstructed during the interval 19-23 ka (Table 1 modified), by comparing values with model outputs (M. Kageyama).

### Technical Corrections

→ Fig. 1. Modify the label of longitude “O” (garbled characters?) to “W” → done