

## ***Interactive comment on “Rapid climatic variability in the west Mediterranean during the last 25 000 years from high resolution pollen data” by N. Combourieu Nebout et al.***

### **Anonymous Referee #3**

Received and published: 3 April 2009

Dear Editor You will find here the review of the manuscript entitled: " Rapid climatic variability in the west Mediterranean during the last 25 000 years from high resolution pollen data by N. Combourieu Nebout, O. Peyron, and I. Dormoy "

This manuscript presents a very high temporal pollen record since the last 25 000 years from ODP site 976 at 1108 m water depth in the western part of the Alboran Sea. The authors, used pollen quantitative reconstructions to demonstrate the sensitivity of Mediterranean vegetation to changes linked to the North Atlantic climatic variability during the late glacial and Holocene. To do this the authors quantified temperate Mediterranean forest development and estimated annual precipitation (Pann)

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and coldest and warmest months temperature (MTCO and MTWA) anomalies by using the Modern Analogue Technique (MAT). Chronology was established by using ten AMS <sup>14</sup>C dating. The high sedimentation rate of the studied core and the high resolution pollen record allow to recognise the main climatic successions since the late glacial period suggesting that Mediterranean vegetation changes have been modulated by short and long term variability of the North Atlantic over the last 25 000 years. The manuscript is well structured and supported by a large set of data. Results are well presented and partly encourage the conclusion.

Nevertheless, the manuscript present two main doubtful points that I will summarize as follow: 1) The authors present in figure 3 results from MAT reconstructions showing summer and winter Temperature and Precipitation anomalies. In my opinion authors should provide rough Temperature and Precipitation data as well error bars for each estimation. Presentation and discussion of these data should better depict the interpretation of the vegetation and climatic scenario in the western Mediterranean area.

2) Results from MAT reconstructions and TMF record indicate a good correlation with SSTs alkenone record from Cacho et al. 1999 during the main climatic transitions since the late glacial period. On contrary short term climatic changes are only recorded by TMF record. Similarly, the SST record by MAT using planktic foraminifera assemblages in the same core MD95-2043 (Perez-Folgado et al., 2002) doesn't display rapid climatic oscillation especially during the Holocene. The absence of several ACP events in the marine record precludes a solid correlation between TMF and SSTs records. In particular, authors suggest a possible correlation between several pollen events in core ODP 976 and North Atlantic cold events proposed by Bond et al., (1993, 2001). Nevertheless, the low number of radiocarbon dating during the Holocene sensibly reduce the reliability of such kind of correlations. To support their assumptions, authors should present graphically in the manuscript the good match between Bond and western Mediterranean vegetation events and eventually provide a more persuasive scenario in term of short-term climate forcing.

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In conclusion, after careful considerations the manuscript provides an important contribution for a better understanding of the climate variability in the western Mediterranean area. I find the manuscript in its present form acceptable for publication after taking into account the proposed revisions.

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Interactive comment on Clim. Past Discuss., 5, 671, 2009.

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5, C28–C30, 2009

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