

Interactive comment on “Mid-Cretaceous paleoenvironmental changes in the western Tethys” by Cinzia Bottini and Elisabetta Erba

Cinzia Bottini and Elisabetta Erba

cinzia.bottini@unimi.it

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We thank Reviewer 2 for reviewing the manuscript and providing helpful comments that have improved the manuscript. Please see below the point by point response to the specific comments.

RC: [omissis. . .]. One of the five goals of the paper (presented in the introduction) is to assess the degree of connection of temperature and fertility variations. This is done by the authors in a qualitative manner. This might be expressed better by a simple correlation analysis of all of the data points as well as those from select parts of the sequence (e.g., during hyperthermal intervals).

REPLY: We calculated the Pearson correlation coefficient between the TI and NI for all

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studied sites and, additionally, for the onset of OAE 1a, Kilian Level, OAE 1b and OAE 1d. Results show no correlation among the two parameters except during the Kilian Level ($r=0.97$). The description of the results obtained after the statistical analyses is reported in chapter 4.3.

RC: Several of the minor points (labeled with letters) in the text and in Figure 5 are apparently defined by only 1-2 data points, strongly suggesting that they may be statistical anomalies, especially given the implied precision of percentages from counts of only 300 specimens. I think that the authors may wish to reconsider these designations and their discussions.

REPLY: We agree with the comment of the Reviewer which finds correspondence with a similar comment by Reviewer 1. As explained in the Reply to Referee 1, we modified Figure 5 by deleting all the letters labelling the TI and NI “peaks” since some of the labels were not identifying significant peaks (given by one or two single data points) or they were referring to specific temperature/ fertility intervals rather than spikes. The text has been modified accordingly (Chapter 3.3.).

RC: The diagrams in Figures 2-4 illustrate the changes in species abundances in the various sections. These diagrams would be easier to interpret if the scales for the species abundances were (mostly) similar.

REPLY: We modified figures 2, 3 and 4 plotting individual species abundance with the same scale.

RC: In addition, these diagrams feature a variable called “Total nannofossil abundance (# of Fields of View)”. The reader can guess that this represents how many FOV had to be examined to get to a count of “at least 300 specimens”, but one is never sure unless the authors specify. Perhaps a sentence in the methods section (2.2) would alleviate this little problem.

REPLY: The total nannofossil abundance represents the average number of nanno-

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fossils found in one field of view. We added a brief explanation in chapter 2.2 (line 107-108) as well as in the caption of Figure 2, 3 and 4.

RC: Is the raw data going to be supplied with this paper? I saw no mention of how it could be obtained. It would be useful to others in evaluating the paper.

REPLY: Calcareous nannofossil data described in this work can be requested contacting the authors. We ask the Editor whether it is, instead, preferred to add the dataset: if so, we can add the tables with the nannofossil data presented in the manuscript as supplementary material.

RC: Line 369 & 375 – Blake Nose rather than Black Nose.

REPLY: We corrected the text accordingly.

REMARKS: Revised figures were added in the reply to Reviewer 1.

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