

Dear Climate of the Past Editors,

Please receive the revised files for manuscript cp-2015-19, originally entitled “Massive and permanent decline of symbiont bearing morozovellids and $\delta^{13}\text{C}$ perturbations across the Early Eocene Climatic Optimum at the Possagno section (Southern Alps of northeastern Italy”.

The original submission has been modified significantly. In part to address referee comments, the new manuscript includes new stable isotope data from DSDP Site 577 on Shatsky Rise in the Western Pacific. Planktic foraminiferal abundances were reported from this location nearly two decades ago (Lu, 1995 and Lu and Keller, 1995). With a recently revised stratigraphy for this location, the new stable carbon isotope data, and redefined definitions for the EECO, we can convincingly and amazingly demonstrate that the major morozovellid decline and acarininid rise occurs close to the “J event” across ocean basins. This also comes with the realization that the original polarity chron assignment for Site 1051 is incorrect. Now, all makes sense for this critical evolutionary turnover in planktic foraminifera, and we clearly show for first time that it coincides with the start of the EECO.

According to the major changes, we have given a more appropriate and effective title: *“Major perturbations in the carbon cycle and photosymbiont-bearing planktic foraminifera during the early Eocene”*.

The CoP editor for the initial submission was Gerald Dickens. As he realized the stratigraphic problems and their significance in the original submission, generated the new stable isotope data at Site 577 with Jan Backman, and contributed to rewriting significant portions of the original submission with this new framework, we place him now as the second author of the paper.

Following Dickens’ (former editor) recommendations, we have heavily modified the original manuscript, including the addition of new figures and new data regarding DSDP Site 577. We fully address referee Speijer’s comments regarding the impact of carbonate dissolution. We follow also referee Wade’s suggestions regarding figures and the labeling of post-EECO carbon isotope excursions. The data on the studied sites are now given in supplementary tables.

The request of a marked-up manuscript version showing changes made is problematic. This is because, to satisfy all commentary on the original manuscript and to fully address the indicated major revision, we basically rewrote the manuscript.

In an effort to clarify some of the main changes produced, we document these below with brief explanations.

Best regards,

Valeria Luciani, on behalf the co-authors

1 Introduction: it is now extended to place all into context.

2 Early Eocene Climatic Optimum: we added a section dedicated to the description and tentative definition of the EECO as this is problematic in current literature.

3 Sites and stratigraphy: we added the new data from Site 577.

4 Methods: this section is rewritten so that the different parts concerning sampling strategies (4.1), foraminifera (4.2) and stable isotopes (4.3) are now articulated clearly.

5 Results: the order of the writing is now sequential such that they flow with the methods, and include the new results from Site 577.

6 Discussion: this is now completely reorganized to discuss issues raised in the reviews. There is an introduction about problems related to reliability of stable carbon and oxygen isotopes of deep-sea carbonates (6.1). This follows with discussions on the observed carbon and oxygen isotopes across the EECO (6.2, 6.3). Following is commentary on the main changes in planktic foraminiferal abundance for the three sites investigated (6.4), the possible impact of carbonate dissolution on assemblages (6.5), and possible causes of the recorded “morozovellid crisis” (6.6).