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Here, we investigated the response of calcareous nannofossil assemblages to the Middle Eocene Climatic Optimum (MECO). This warming event is characterized by a prominent perturbation both in oxygen and carbon stable isotopes occurred at Chron C18r-C18n transition (ca. 40 Ma) and lasting ca. 500-600 kyr and is interpreted as a significant short-lived hyperthermal in the middle-late Eocene long-term cooling trend (Bohaty et al., 2009). In principal, our aim is to point out if biotic response to the MECO is global and unique over wide areas and depositional settings or is more related to local conditions. To this purpose we are currently comparing calcareous nannofossils modifications at the Alano section (NE Italy) with those occurred in other MECO reference oceanic sites. Our data from the bathial Alano section (NE Italy) indicate that the MECO interval seems to coincide with significant changes in calcareous nannofossil assemblages. Eutrophic/cold taxa, show an overall increase in abundance during the warming event, in agreement with a significant negative correlation with CaCO3 content and δ18O values. Conversely, oligotrophic/warm taxa are characterized by a peculiar anticovariant trend with respect to meso-eutrophic taxa, decreasing significantly during the MECO and post-MECO intervals, with a significant positive relationship between oligotrophic taxa versus CaCO3% and δ18O values. During the MECO and post-MECO, a marked increase in reworked, mainly Cretaceous, specimens is coupled with an increase in eutrophic/cold taxa and a remarkable decrease of oligotrophic/warm taxa. These results may be explained with a transient enrichment in dissolved nutrients in warmer sea surface waters and suggests that the main factor driving the make-up of the calcareous nannofossil assemblage is the enhanced availability of nutrient in the water column. The increase in reworking is consistent with an augment in terrigenous input, due to chemical weathering accelerated by the enhanced hydrological cycle triggered by climate change. Our preliminary results from ODP Leg 320 (U1333) in the Pacific Equatorial Ocean, also seem to show changes in calcareous nannoflora assemblage during this transient episode of global warming. Next step will be carrying on more extended analyses on these new data.

Bohaty, S. M. et al. (2009), Paleoceanography, 24, PA2207.