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Evidence for the Middle Eocene Climatic Optimum ("MECO") in the Venetian Alps.

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Long-term cooling through the Eocene was interrupted by a $\sim$ 600 kyr climatic warming event in the Middle Eocene known as MECO (Middle Eocene Climatic Optimum). This event occurred during magnetochrons 18r/18n ($\sim$ 40.35-39.6 Ma), concomitantly with several reliable calcareous plankton biohorizons (e.g., LO and HO of *O. beckmanni*, HO of *S. furcatolithoides*, LO of *D. bisectus*). Originally documented in several deep sea sites in the Southern Ocean (Bohaty and Zachos, 2003) MECO now appears to be recorded globally. With further records from the Contessa section in Italy (Jovanne *et al.* 2007) and from the tropical Atlantic ODP Leg 1260 (Sexton *et al.* 2006) and ODP Leg 1051 (Edgar et al. 2007). Here we present new bulk stable isotope and geochemical data placed within a biomagnetostratigraphic framework from the Alano di Piave section, NE Italy (Rio et al., 2006). Similar to other published records this section shows a gradual onset of warming over several hundred thousand years. Peak conditions culminating in a maximum negative δ^{18}O of 1.2 per mill amplitude coincident with a negative δ^{13}C signal of $\sim$ 0.7 per mill and a minimum in inorganic carbonate content. However, in contrast to the Southern Ocean δ^{13}C record we record a different isotopic signature during the recovery phase. A rapid positive

δ^{13}C excursion to stable values, of $\sim$ 450 kyr duration is interrupted after $\sim$ 200 kyrs by a short-lived negative excursion before recovery to $\sim$ pre-event values. δ^{18}O recovers relatively rapidly within 400 kyrs. Field observations suggest the occurrence of "sapropel like" intervals coincident with these changes in the δ^{13}C record. Additionally, paleontological data (from the Alano section) indicate that the prominent changes in calcareous nannofossil and planktic foraminifera assemblages mirror the altered sea surface conditions characterizing MECO. We use a suite of geochemical proxies and the paleoecological significance of calcareous microfossils to investigate this phenomenon and to reconstruct the local environment through MECO.

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