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The magneto-bio-chemostratigraphy of the Torrente Cicogna section (Italy): a record of Late Paleocene-Early Eocene climate

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The Early Paleogene was the time when the Earth experienced a pronounced warming trend that peaked with the Early EoceneClimatic Optimum (EECO; 52 to 50 Ma). This long-term climate trend is punctuated by short-lived warming events such as the Paleocene-Eocene Thermal Maximum (PETM), the ELMO (H1) event, and additional hyperthermals. These multiple phases are globally recorded and result in δ^{13}C negative shifts likely produced by massive influx of isotopically light carbon in the ocean-atmosphere system. Here we present paleomagnetic, geochemical and calcareous nannofossil data from the Torrente Cicogna section. This section crops out in the Belluno Valley (Venetian Southern Alps) and consists of 81 m of marls and calcareous marls. The paleomagnetic results integrated with calcareous nannofossil biostratigraphic data indicate that the Torrente Cicogna section extends from Chron C25r to Chron C23r spanning NP7/NP8-NP12 nannofossil Zones. The age-depth model suggests a relatively constant sedimentation rate of $\sim$18 m/My throughout the entire section. Stable bulk isotope data reveal the presence of a large negative δ^{13}C isotope excursion of $\sim 3‰$ and negative δ^{18}O of up to $2‰$ over the PETM. Preliminary results suggest that the ELMO hyperthermal and potentially the H2 and either I1 or I2 hyperthermals may be recorded. Interestingly, significant modifications in the calcareous nannofossil

assemblages are also observed during these short phases of altered environmental conditions. Magnetic property analysis of the Torrente Cicogna section outlined a long-term relative increase of a high coercivity magnetic phase (hematite) across the PETM and from 45 m-level upward, which may reflect climate-driven changes in continental weathering-runoff rates over the PETM and the Early Eocene.