



Environmental magnetic signature of the Selandian-Thanetian Transition Event (STTE) and Early Late Paleocene Event (ELPE) in the Contessa Road section (Italy)

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The Early Cenozoic has been experienced a ~350-kyr-long hyperthermal event of environmental disruption, not described before and here named Selandian–Thanetian Transition Event (STTE), has been recognized and well constrained in the western Tethys Contessa Road section (Gubbio, Italy). The STTE exhibits distinct magnetic properties of sediments that record the STTE at Contessa, as low magnetic susceptibility and decrease in total ferromagnetic mineral content are consistent with reductive dissolution. However, we also document two components in the isothermal remanent magnetization (IRM) and First-Order Reversal Curves (FORC) diagrams that suggest the occurrence of biogenic magnetite throughout the STTE, indicating that the occurrence of magnetofossils is not due to a preservation effect. Systematic variations in magnetic parameters are consistent with increased ocean primary productivity during the STTE, which induced higher populations of magnetotactic bacteria through increased terrigenous input and, therefore, increased nutrient supply. Noteworthy, the uppermost part of the STTE includes the equivalent of the suspected hyperthermal, short-lived Early Late Paleocene Event (ELPE). The ELPE event shows an episode of increase in magnetic properties of the sediments, including an increase in magnetofossil concentration, as indicated by IRM components and FORC diagrams.