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Preliminary Paleomagnetic and Rock Magnetic Results from the Aptian–Albian Marne a Fucoidi Formation at Monte Cucco (Hill 991), Italy

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The Aptian-Albian interval represents a key phase in Earth history, characterized by greenhouse climate conditions, major perturbations in oceanic redox state and significant changes in geomagnetic field behavior leading to the establishment of the Cretaceous Normal Superchron (CNS). Here we present an ongoing paleomagnetic and rock magnetic study of the Monte Cucco ("Hill 991") section, located on the western margin of the Umbria–Marche Apennines. The section belongs to the Umbria–Marche Succession and preserves a continuous upper Aptian–lower Albian stratigraphy record within the Marne a Fucoidi Formation, a cyclic marly–calcareous characterized by alternating marls, clay-rich marls, and calcareous levels, including organic-rich horizons and black shales associated with Oceanic Anoxic Events (OAE), particularly OAE1b. The dataset includes stepwise alternating field and thermal demagnetization to isolate the characteristic remanent magnetization, complemented by rock magnetic analyses such as magnetic susceptibility, anhysteretic remanent magnetization (ARM), isothermal remanent magnetization (IRM), and coercivity component analysis. These analyses are currently in progress and will be completed to constrain magnetic mineralogy, grain-size distribution, and environmental controls on the magnetic signal across lithological cycles and OAE-related intervals. Preliminary paleomagnetic results indicate stable characteristic remanent magnetization components. Hysteresis parameters and IRM acquisition curves suggest a mixed magnetic assemblage dominated by low-coercivity magnetite, with grain sizes ranging from single-domain (SD) to pseudo-single-domain (PSD) and a subordinate contribution of multi-domain (MD) grains. The assemblage is predominantly detrital, with local variations suggesting a relative enrichment in finely grained magnetite. The final dataset will be integrated with existing Poggio le Guaine (PLG), a Aptian-Albian complete record located approximately 20 km from Monte Cucco and compared with magnetostratigraphic data from South Atlantic marginal basins, particularly the Brazilian Equatorial Margin. This approach aims to strengthen interbasinal correlations between the Tethyan realm and Gondwanan margins and to refine constraints on geomagnetic field behavior and paleoenvironmental variability during the Aptian–Albian transition.