HOW DID THE PLANKTONIC FORAMINIFERA RESPOND TO THE EXTREME ENVIRONMENTAL STRESS INDUCED BY THE SELLI (OAE1a, LATE EARLY APTIAN) AND BONARELLI (OAE2, LATEST CENO鼍ANIAN) EVENTS?

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Planktonic foraminifera, which are greatly sensitive to chemical-physical parameters and readily preserved, can record evidence of environmental stresses through time. The investigation of the two major episodes of Corg-rich black shales of the Cretaceous Period, namely the Selli (late Early Aptian) and Bonarelli (latest Cenomanian) Levels and their equivalents corresponding to the global Oceanic Anoxic Events OAE1a and OAE2, gives the opportunity to clarify how the planktonic foraminifera responded to the development of extremely stressful environmental conditions. The record of planktonic foraminiferal distribution and assemblage composition across the Selli and Bonarelli Levels and their equivalents was provided by several sections surveyed in detail in Italy (Umbria-Marche Appenines as type-area, Southern Alps, Gargano Promontory, Sicily), SE Spain, SE France, SE England, Tunisia, and Morocco. When progressive, rapid deterioration of the environmental conditions developed, reaching the climax in coincidence of the Selli and Bonarelli Events, some species and genera responded by showing a preference for the new conditions, others by showing varying levels of tolerance or intolerance. These kinds of behaviour are reflected in the shifting patterns of species diversity, dominance, abundance, and size that extend well outside the established limits of variability. Some discrete acmes and crises have been identified. New species and genera appeared and previous existing species and genera underwent serious loss and even extinction. In addition, morphological and coiling ratio changes occurred together with the increase in abundance
of specimens bearing test abnormalities. The first taxa to disappear were the more specialized ones, and the survivors were the generalists with greater tolerance to environmental stress. Similarly, the forms proliferating across the critical intervals and the first colonizers were opportunists, typically very small in size. Based on diversity, abundance, composition, and overall size of assemblages, some discrete phases of different degree of environmental perturbation within the marine ecosystem have been distinguished throughout the intervals across the Selli and Bonarelli Events. Some species and genera prove to be useful indicators for extremely stressed environments in low-middle latitude during the Early-early Late Cretaceous, even shedding light upon the intensity of the environmental perturbation that took place.