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LITHOSTRATIGRAPHIC, BIOSTRATIGRAPHIC, AND MAGNETIC EVIDENCE FOR BRIEF AND SYNCHRONOUS EARLY MESOZOIC BASALT ERUPTION OVER MOROCCO IMMEDIATELY AFTER THE TRIASSIC-JURASSIC BOUNDARY.

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Previously very sparse biostratigraphic data suggested that the Early Mesozoic tholeiitic effusive and intrusive magmatism in the various basins of Morocco occurred over a long time (Ladinian-Hettangian). However, a detailed comparison of the stratigraphy underlying, interbedded with, and overlying the basalts in these basins shows not only remarkable similarities with each other, but also with sequences in the latest Triassic and earliest Jurassic of eastern North America. There, the sequences have been shown to be cyclical, controlled by Milankovitch-type climate cycles; the same seems to be true in Morocco. Thus, the Moroccan basins have cyclical sequences surrounding and interbedded with one or two basaltic units. In the Argana and Khemisset basins the Tr-J boundary is identified by palynology to be below the lowest basalt, and the remarkably close lithological similarity between the pre-basalt sequence in the other Moroccan basins and to the North American basins - especially the Fundy basin - suggests a tight correlation in time. Likewise, the strata above the lowest basalt in Morocco show a similar pattern to what is seen above the lowest basalt formation in eastern North America, as do the overlying sequences. Furthermore, geochemistry on basalts in the Argana, Bou Fekrane, Khemisset, and Iouawen basins indicates they are high-Ti quartz-normative tholeiites as are the Orange Mountain Basalt (Fundy basin) and the North Mountain Basalt (Newark basin). On the other hand, all the Moroccan basalts have a normal magnetic polarity as is true for the CAMP basalts. The remarkable lithostratigraphic similarity across Morocco of these strata suggest contemporaneous and synchronous eruption over a time span of less than 200 ky, based on Milankovitch calibration, and within a ~20 ky interval after the Triassic-Jurassic boundary. Differences with previous interpretations of the biostratigraphy can be rationalized as a result of: 1, an over-reliance on comparisons with northern European palynology; 2, over-interpretation of poorly preserved fossils; and 3, rarity of early Jurassic non-marine ostracode assemblages.