# Cyclostratigraphy of Early Mesozoic Strata of Subtropical Pangea, Morocco and Eastern Canada

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Late Triassic age strata of Early Mesozoic basins on the conjugate margins of Morocco and Eastern Canada were deposited for the most part in the sub-tropics based paleomagnetic evidence from multiple basins. The subtropical deposits exhibit a characteristic suite of facies, including shallow water saline lacustrine mudstones, evaporites (with thick halite sequences), sand patch mudstones, and eolian sandstones and siltstones. Strata interbedded with and overlying the very latest Triassic and Early Jurassic age basalts are generally similar to the Triassic deposits, but also have black mudstones and limestones, which in eastern Morocco are marine.

The Triassic age sandy mudstone-dominated strata exhibit a characteristic style of cyclicity termed sand patch cycles, the expression of which is modulated by several cycles of longer thickness period. Time (depth)-series analysis of outcrop and core sedimentary facies, and borehole gamma ray logs in the Blomidon Formation of the Fundy basin of eastern Canada, and outcrop facies data in the Bigoudine Formation of the Argana basin reveal complex, hard to interpret frequency spectra. However, paleomagnetic correlations to the well-established Newark basin Astronomically calibrated magnetic Polarity Time Scale (Newark-APTS) in polarity stratigraphies in both the Fundy and Argana basins allow accumulation rates to be measured independently. When the Newark-APTS-based accumulation rates are used, both the Fundy and Argana section reveal characteristic Milankovitch periodicities. In the Argana basin the accumulation rate and periodicities match those determined independently by frequency analysis of magnetic susceptibility by others.

Wavelet analysis of the Newark, Argana, and Fundy basin sections demonstrate a surprisingly coherent pattern of frequency change, apparently in Milankovich band, across remarkably different facies regimes. This strongly supports the hypothesis that climate is the most important factor in structuring the vertical pattern of facies variations in largely lacustrine settings.