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Late Jurassic Early Cretaceous tectonic reconstructions of the Central and South Atlantic Oceans

We use satellite-derived gravity anomalies and open-file marine magnetic data over the Central and South Atlantic Oceans to calculate new Euler poles and rotation angles for the relative motion between North America and Africa, and between South America and Africa. For the Central Atlantic, new reconstruction poles were calculated for Chrons M0, M4, M25 and M40 (approximately 121 Ma, 126 Ma, 154 Ma and 167 Ma). We correlate the prominent Blake Spur Magnetic Anomaly (BSMA) and East Coast Magnetic Anomaly (ECMA) with similar magnetic anomalies, called S1 and S3 respectively, over the African flank of the central Atlantic. Magnetic anomalies over the western and eastern flanks of the South Atlantic, inboard of the M4 anomalies, are analogous to the BSMA-S1 and ECMA-S3 anomaly pairs over the Central Atlantic. New reconstruction poles were calculated for Chrons M0 and M4 in the South Atlantic as well as these prominent anomaly pairs, which might be produced by the earliest oceanic rocks accreted along the margins as rifting ended and seafloor spreading began (i.e., “break-up” anomalies). Results of our kinematic analysis: 1) improve the overall fit between South America and Africa; 2) confirm an eastward ridge jump in the Central Atlantic prior to 167 Ma (Chron 40); and 3) suggest a westward ridge jump in the Central Atlantic between 164 Ma to 159 Ma (Chron 38 to Chron 32).