Bird, D. E., Burke, K., Hall, S. A., and Casey, J. F., 2008, **Triassic - Jurassic kinematic relationships between the Gulf of Mexico, Central Atlantic Ocean, and Mexico**: Eos, Transactions, American Geophysical Union, Joint Assembly Supplement, v. 89, T33A-01.

Closing ocean basins along geomagnetic isochrons can be an objective method for analyzing reconstructed continental margins because, in general, tectonic extension at passive margins stops once new oceanic lithosphere is created. Holding Africa fixed, we close the South Atlantic Ocean to Chron M4 (126.6 Ma) and the Central Atlantic Ocean to Chron M40 (165.1 Ma). In this configuration, and with the Gulf of Mexico closed by clockwise rotation of the Yucatan continental block (~42 degrees), the positions of North America and South America indicate that the Gulf of Mexico opened at least 20 My after the opening of the Central Atlantic Ocean (ca. 180 Ma) and the earlier breakup of Pangea (ca. 200 Ma). The Gondwanan terranes of eastern Mexico, Yucatan, Florida, and the United States south of the Ouachita-Marathon Suture, remained attached to Laurasia after the breakup of the supercontinent. The Gulf of Mexico then formed in Late Jurassic to earliest Cretaceous times (ca. 160 Ma to 140 Ma) by counterclockwise rotation of the Yucatan block. Two prominent basement structures, defined by seismic refraction and gravity data, are interpreted to be hotspot tracks created by a single mantle plume during this rotation. A third prominent basement structure is interpreted to be a marginal ridge that developed along the ocean-continental transform boundary between the Yucatan block and eastern Mexico. The Gulf of Mexico formed after initial rifting and extension of continental crust and widespread salt deposition (ca. 160 Ma to 150 Ma), followed by the mantle plume eruption and sea-floor spreading (ca. 150 Ma to 140 Ma).