

Dale, A. L., Mann, P., and Bird, D. E., 2013, **Crustal structure of the Central Atlantic rifted-passive margin from South Carolina to the southeastern Bahamas: a first step to understand its petroleum potential** (abstract): American Association of Petroleum Geologists Annual Meeting, Pittsburgh, PA 1556803.

The conjugate margins of the eastern North America and northwestern Africa are widely recognized as volcanic rifted margins of Triassic-Jurassic. Wide-angle seismic experiments in the early 1990's in the Carolina trough, offshore South Carolina, indicated a typical Mesozoic volcanic passive margin with 5 to 10 km of volcanic extrusions were emplaced on thinned continental crust that extends over 800 km along the eastern margin of the North America. Modern refraction studies have not been carried out farther south of the Carolina in the Atlantic margin of the Florida peninsula and the Bahamas carbonate platform. Collectively, the eastern Florida-Bahamas margins forms a segment of over 1800 km in length with little exploration and no commercial hydrocarbons discovered to date. In this study we present five gravity models along transects ranging from 800-1300 in the margin dip direction and one 1900-km-long, margin-parallel transect from northern Florida to the tip of the southeastern Bahamas. The data used includes 6 km spaced gridded DNAG, free-air, and Bouguer data. Model constraints include widespread explosion seismic refraction data from 1960s and 70s, three deep exploration wells, and magnetic data to enhance depth-to-basement estimations. Results include: 1) reoccupation of Carolina trough wide-angle transect from early 1990s: Gravity model matches closely with refraction profile and shows a lower crustal body consistent with a volcanic origin; sediment thicknesses range from 5-10 km; 2) Central Florida; 12km; 3) Northern Bahamas: 5-10km; and 4) Central Bahamas: 5-7km. The volcanic passive margin character of all transects is consistent with their origin as part of the Central Atlantic Magmatic Province from the Triassic age to the Mesozoic. Along-strike variations in sediment thicknesses and estimated heat flow values of a volcanic passive margin are used to calculate maturity of an inferred late Jurassic source rock deposited along the length of the margin.