

Altamira, A., Burke, K., and Bird, D. E., 2005, **Testing for an absence of regional shortening (or extension) across the Caribbean – South American Plate Boundary Zone (PBZ)** (abstract): *Eos, Transactions, American Geophysical Union, Fall Meeting Supplement*, v. 86, T21C-0488.

Rotations among North American (NOAM), African, South American (SOAM) and Caribbean (CARIB) Plates for the past 60 My indicate dominant right-lateral transform motion and perhaps either shortening or extension across the CARIB-SOAM PBZ. Our testable model indicates that: From 60-45 Ma SOAM moved southward ca.200 km with respect to NOAM as CARIB squeezed into the Atlantic forcing the Yucatan and Grenada basins to open. Since 45 Ma CARIB has moved only east carrying fragments of the Caribbean Great Arc that had struck the west coast of SOAM at ca.70 Ma and shearing the passive margin of SOAM in a ca.250 km wide right-lateral transform PBZ between the thick continental lithosphere of SOAM and the thick oceanic plateau lithosphere of CARIB. Pull-aparts in the PBZ include the Falcon, Cariaco and Gulf of Paria basins and flower structure thrust belts include, the Serrania del Interior, Villa de Cura, Araya-Paria peninsula and the Northern Range of Trinidad. These thrust belts generated the loads that formed the East Venezuelan 150 km wide foreland basin. This model requires that: (1) all igneous and high P/T metamorphic ages in the thrust belts of Venezuela were acquired at or before ca. 70 Ma when the Great Arc of the Caribbean struck the west coast of SOAM; (2) Younger igneous ages in the northern part of the PBZ represent fragments of the southern end of the Lesser Antillean arc dragged into the PBZ as the arc slid by; and (3) Deformation in the PBZ began no earlier than the local time of passage of the southern end of the Lesser Antillean arc except in the Gulf of Paria region where halokinesis began earlier. Collision of the Panama arc (ca.7Ma) caused shortening on the west coast of SOAM and 70 km of northward escape of the triangular Maracaibo prism bounded by the Bocono and Santa Marta strike-slip faults and by a deep lithospheric-scale thrust. Restoring the Maracaibo prism aligns the Cuisa and Oca faults with the CARIB-SOAM east-west trending PBZ.