

**AAPG Annual Meeting  
March 10-13, 2002  
Houston, Texas**

James Pindell<sup>1</sup>, Lorcan Kennan<sup>1</sup> (1) Tectonic Analysis Ltd, West sussex, England

## **The East-Mexican Shear Margin of the Gulf of Mexico**

Models for evolution of Gulf of Mexico (GOM) require dextral shear between Yucatán and Eastern Mexico, and counter-clockwise rotation of Yucatan relative to North America. GOM opened in two stages: 1) SE-ward intra-continental stretching followed by 2) N-S-directed seafloor spreading in western GOM. Stage one dextral transtension and low-angle detachment faulting drew Chiapas Massif into the western GOM and caused Jurassic cooling of Late Paleozoic intrusives. Stage two creation of a dextral transform separated Chiapas Massif from its parent terranes (now located in Golden Lane area). Yucatán and Chiapas Massif migrated south together, leaving an oceanic window behind (deep GOM). With continued spreading, the transform progressively became a fracture zone as the Gulf spreading ridge passed by. Location of the transform along Golden Lane is clear, but its trace to south is heavily masked, probably passing beneath the Santa Ana volcanics and the Veracruz Basin (where it may be overthrust by the eastern Cordoba Platform), and crossing Isthmus of Tehuantepec between the metamorphosed oceanic 'Cuicateco Terrane' and the western side of continental Chiapas Massif. The answer is critical to accurately defining the Yucatán-Eastern Mexico pole of rotation. Trace of the transform defined here locates Yucatan-Eastern Mexico pole of rotation at 23N/84W. Projection of this trace into present-day Pacific allows about 60km of Cenozoic shortening in Chiapas Massif and Sierra de Chiapas, while still keeping Chiapas Massif east of the transform. Cuicateco Terrane has been sinistrally sheared (ENE-trending lateral ramp) as Sierra de Chiapas shortened.