

**AAPG Annual Convention
Salt Lake City, Utah
May 11-14, 2003**

Martin L. Shields, Alan R. Carroll, Anthony J. Simo, and Essam Sharaf, University of Wisconsin-Madison, Madison, WI

Subsidence History of the East Java Basin, Indonesia and its Implications for Oil and Gas Exploration

The integration of geohistory curves with interval thickness maps from the East Java Basin reveals a complex relationship between structural timing, depositional sequences, basin subsidence, and petroleum accumulation. Results show that the East Java Basin recorded four evolutionary stages during its 50MA lifespan. During the Eocene (49.0-33.7MA), extension of continental crust was dominant, creating southwest to northeast trending horsts and grabens that had low areas preferentially filled with continental sediments, including lacustrine petroleum source facies. Slower, more regionally uniform subsidence during the Oligocene to Early Miocene (33.7-16.4MA) is interpreted to record moderate subsidence or sag that was dominated by carbonate mound development. A major reorganization of the basin occurred during the Mid-Miocene to Mid-Pliocene (16.4-3.6MA). The northern Rembang area was inverted by a series of south-verging reverse faults. Subsidence continued south of this area as the basin experienced north-south compression oblique to the original southwest to northeast basement structure. Quartz arenites derived from the north were deposited during this stage, and secondary porosity developed in carbonate facies due to weathering on major unconformities. These reservoirs contain most of the petroleum accumulations discovered to date. The final basin configuration developed during the late Pliocene to recent (3.6-0MA). The symmetry of the basin reversed, as north-verging thrusts uplifted the southern Kendang area. This retroarc thrusting was accompanied by the first major influx of volcanoclastic sediments from the Sunda arc, the first definitive link between basin evolution and arc magmatism.