

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

Jorge E. Acosta Garay¹, Rodney H. Graham², William Sassi³ (1) Imperial College of Science Technology and Medicine, University of London, United Kingdom (2) Emerald Energy Plc, Epsom, United Kingdom (3) Institut Français du Pétrole, Rueil-Malmaison, France

Structural Style and Source Rock Maturation in the Upper/Middle Magdalena Basin, Colombia by Forward Modeling Along Two Distinct Transects

The tectonic and stratigraphic evolution of the Magdalena valley and adjacent areas of Colombia took place in a number of episodes. The original Jurassic back-arc extensional basin in the area has been modified during several periods of compression, oblique slip and elevation through the late Cretaceous and Tertiary. A complex finite geometry has been developed, and maturation and migration histories are significantly different in different sub-areas. On two distinct geologic traverses, the structural interpretation has been studied using a forward kinematic reconstruction approach allowing a depth extrapolation of the major structural blocks to be consistent with the surface geology and thermal and palaeo-temperature indicators. The area of specific interest is the neighbourhood of the Ibagué fault zone, a structure which was almost certainly initiated during the initial back arc rifting and which is usually taken to be the line separating the Upper Magdalena and Middle Magdalena basins. Significant Eocene elevation has occurred south of the fault, north of it a thick Cretaceous shale section reached its peak of hydrocarbon generation in the early Tertiary. It was not possible to model the evolution of the local area without extending the scope of the investigation to include a transect from the Llanos across the whole Eastern Cordillera. The Eastern Cordillera seems to have remained a positive area through the Tertiary, hence its relative immaturity.