**Hydrocarbon Prospectivity of the South West Atlantic Margin**

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The authors are investigating hydrocarbon source potential of the deep water margin of eastern South America from the Rio Grande Rise offshore Brazil south to the Malvinas Plateau. Direct evidence in selected piston cores and two proximal wells in the Colorado Basin was supported by a range of complementary data sets and multi-disciplinary methods to suggest the presence of Triassic to Neocomian source intervals. An improved understanding of the evolution, thickness and distribution of sedimentary sequences combined with redefinition of the principal tectono-structural features supports a model for local lacustrine kitchens along the margin. Varied exploration plays are hypothesized and illustrated based on this work.

Our data sets include multi-channel reflection and sonobouy refraction seismic; new regional bathymetric and potential fields compilations; and a super-regional review of oil geochemistries. The latter analyzed oils from Austral-Magallanes, San Jorge, Neuquen, and Cuyo basins of Argentina and the Central Brazil extending north to Para-Maranhao. Source ages for these oils varies from Triassic/Jurassic in the south to Jurassic/Neocomian in Central Brazil to Aptian in the Equatorial Margin basins. Multivariate statistical analyses of these oils revealed shared compositional attributes consistent with an origin from similar mature lacustrine shales deposited in fresh to brackish water environments. Our paleogeographic reconstructions of South America and Africa imply a restricted sea during the Triassic to Late Jurassic with anoxic bottom water conditions conducive to the preservation of oil-prone organic matter.

Sea floor spreading during early continental break-up from about 180 Ma formed a discontinuous series of aligned rift chains located inboard (Uruguay) and outboard (Argentina) of the coast- parallel basement high located at or near the present-day shelf break. These margin-parallel rift chains generated by extension bounded coast sub-parallel to coast orthogonal aulacogens that filled with non-marine sequences from Neocomian until Valanginian times. Subsequent drift-related fill partially or completely buried the topography and drove source intervals into thermal maturity. Seismic and potential fields data reveal the prominent structural features that controlled sedimentation and regional trap formation.

Our summary maps suggest areas for more detailed work with an emphasis on testing our interpretation of hydrocarbon prospectivity.