Carboniferous tectonics, basin development and deformation in the Cabot Strait area

George S. Langdon
Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland A1B 3X5, Canada

A geophysical data set from the Cabot Strait, including conventional reflection seismic, gravity and magnetic data, was interpreted. This data was combined with published onshore geological data to characterize and reconstruct the tectonic history of the area. The Cabot Strait is situated at the northeast corner of the Maritimes Basin, which developed in mid-late Devonian times as a pull-apart basin ("rhombochasm") associated with offset along a regional strike-slip system. From Cape Breton Island northeastward, this system is represented by the Cabot Fault, which acts as a focus for tectonic activity. Two other fault systems parallel the central Cabot Fault: the Cape Ray fault to the east, and the "Coastal" fault to the west; these three faults subdivide the Strait into two deep linear basins, with separate tectonic and depositional histories. Several major unconformities and the sequences that they bound are imaged on seismic data; these mainly terrestrial packages are related to periods of local fault movement and regional tectonics, rather than to conventional sea level curves. Sediments within these basins display a variety of deformational styles, including steep thrusts, salt-related decollement, salt diapirism, and inversion.