Rift tectonics of the eastern Canadian continental margin: insights from detrital petrology and provenance

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Abstract

Studies of detrital petrology of sedimentary basins can provide unexpected details of hinterland tectonics in complex rift settings, such as the eastern Canadian continental margin. This study demonstrates how Triassic-Jurassic fault patterns controlling sedimentation in the Scotian Basin were overprinted by the effects of W. Europe–Newfoundland rifting in the early Cretaceous. Major sand supply in the Scotian Basin was the result of uplift of the Labrador rift shoulder in the late Jurassic and early Cretaceous. Deformation of the northern Appalachians by NE-trending strike-slip faults created Lower Cretaceous Chaswood Formation basins on land and uplifted horsts that rapidly shed sediment. These faults were reactivated late Paleozoic structures subparallel to the extension direction of the evolving rift between Ireland–Iberia and the Newfoundland margin. With the onset of seafloor spreading by the early Albian along the entire rift segment, deformation of Chaswood basins ended and the principal sand supply to the Scotian Basin was from the Labrador rift shoulder.