

CHANGES IN IAPETUS PALEOGEOGRAPHY AND PALEOCEANOGRAPHY REVEALED BY CONODONT DATA FROM THE LAURENTIAN MARGIN.

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Changes to the paleogeography and paleoceanography of the Iapetus Ocean through the Early Paleozoic can be inferred from detailed studies of the margins of cratonic borderlands. The low latitude Laurentian margin fronting Iapetus has an exceptional stratigraphic record in the Canadian Appalachians, especially western Newfoundland and the Anticosti Basin. More than 1500 samples from mostly stratigraphic sections in the Lower Paleozoic succession have yielded over 200,000 conodonts to provide detailed biostratigraphic, paleoecologic and paleobiogeographic data. Neodymium (Nd) isotope values from conodonts have also helped discriminate major changes in ocean water masses. This margin and its conodont faunas document the rift-drift stage, passive to convergent margin evolution, volcanic arc collision (Taconic Orogeny), and the later Iapetus Ocean closure with the initial collision with Baltica. Also well documented are changes in oxygenation of the deeper ocean basin and important paleoclimatic changes associated with the terminal Ordovician glaciation. The interplay of open Iapetus waters with the restricted inboard epeiric seas of the Laurentian margin is reflected in the changing biogeographic relationships of the North Atlantic and Midcontinent conodont realms, most evident along the shelfbreak region. Likewise, subtle changes in conodont biofacies within each realm along environmental clines respond to both eustatic and tectonic events. Comparisons and correlations to selected key regions on the other margins of the Iapetus Ocean assist in reconstructing the temporal patterns of Iapetus paleogeography and paleoceanography.