Did Iapetus sea-floor spreading begin at ~570 Ma? Paleomagnetic evidence from the Skinner Cove Volcanics of western Newfoundland

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The Skinner Cove Volcanics of western Newfoundland have previously yielded a U-Pb zircon age of 550 ± 3 Ma. Their remanent magnetization is shown to be primary by an intraformational conglomerate test and yields a paleolatitude estimate of 19°S ± 9°. This should represent the paleolatitude of the Iapetan margin of Laurentia at 550 Ma (as the position of the Skinner Cove Formation as a slice in the Humber Arm Allochthon implies original adjacency to underlying slices of Laurentian margin sediments). Comparison with other Laurentian paleomagnetic data from ~580 to ~520 Ma implies that Laurentia moved very rapidly northward from the south polar region during the latest Neoproterozoic. If so, the start of this rapid northward movement at ~570 Ma likely marks the onset of Iapetus sea-floor spreading between Laurentia and Gondwana. This does not conflict with the Laurentian margin sedimentation record if submergence of the margin was delayed until ~550 Ma, perhaps because magmatism at ~570 Ma caused buoyant underplating of the margin.

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