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Cenozoic relative movements of Greenland and North America by closure of the North Atlantic-Arctic plate circuit: The Labrador Sea, Davis Strait, Baffin Bay, and Eurekan Orogen

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Cretaceous to earliest Oligocene plate motions between Greenland and North America are only modellable at high resolution from a short-lived (61-42 Ma) sequence of magnetic isochrons in the Labrador Sea. Understanding them at other times is hampered by interpretational conflicts and low resolution in geoscientific observations of the Labrador Sea, Davis Strait, Baffin Bay, and Eurekan Orogen. To better contextualize these observations, we build and manipulate models of North America-Eurasia and Eurasia-Greenland divergence in order to depict post-84 Ma North American-Greenland motions at quantified high resolution. Among our findings, we show that the North American-Eurasian plate boundary propagated northwards, leading the continental shelves in the Labrador Sea to separate by 74-72 Ma and in Baffin Bay later, at around 63 Ma, and that field evidence for the Eurekan Orogeny having occurred in two distinct phases is directly related to a 46 Ma change in Greenland-North American plate motion parameters.