



The Thores volcanic island arc of the Pearya Terrane from Ellesmere Island formed on Precambrian continental crust

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We report on U-Pb zircon dating and bulk rock geochemistry results of intermediate to felsic rocks of the Thores Suite of the Pearya Terrane, northern Ellesmere Island (Arctic Canada). Our new results together with the previously published data show that the Thores Suite was formed in the Early Ordovician (c. 490-470 Ma) as a part of an island arc. Some of the dated samples revealed common xenocrystic zircon. The latter yielded ages ranging between c. 2690 Ma and c. 520 Ma. The obtained ages of xenocrystic zircon are interpreted to be typical of Laurentia. We propose that the youngest obtained cluster of ages c. 580-570 Ma expresses a component typical for the Timanide Orogen, which is conventionally tied to Baltica. The new dataset sheds light on the history and understanding of the Thores Suite, which used to be explained as an effect of the M'Clintock orogenesis. The latter event was commonly presented as foreign to the major Caledonian orogenesis *sensu stricto*. In our view, the Thores Suite represents an island arc, which was formed on a fragment of continental crust dismembered during Iapetus opening. Importantly, the age of the Thores island arc is coeval with other island arcs and high pressure metamorphic units of the Scandinavian and Svalbard Caledonides. Thus, it is likely that the Thores volcanic island arc was a part of the larger arc system operating within northern Iapetus. The juxtaposition of the Thores arc with the other successions of the Pearya Terrane is ascribed to a major sinistral strike-slip escape fault-system developed along the northeastern margins of Baltica and Laurentia, broadly concurrent with the main Scandian collision between the two aforementioned continents. This crustal scale fault structure enabled the juxtaposition of numerous crustal blocks of different Precambrian ancestry that can be found in various regions of the current High Arctic, including Svalbard, Greenland and Ellesmere Island.

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