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The Svalbard Caledonides – a collage of Laurentian, Timanian and exotic terranes assembled by Silurian - Late (?) Devonian transcurrent faulting.

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New field and geochronological data from NE Greenland and Svalbard indicate that most of the sub-terranes making up the Svalbard Caledonides (Eastern, Northwestern and Southwestern Terranes) are derived from Laurentias eastern margin. The Neoproterozoic deposits of the Eastern Terrane (Nordaustlandet) show an almost one to one correlation with the Late Neoproterozoic Eleonore Bay Supergroup in NE Greenland. Great similarities also exist between the substratum to the Neoproterozoic deposits in the two areas. The "Barentsian plate/continent" is interpreted to be derived from Laurentias eastern margin Lithologic similarities also exist between parts of the Northwestern Terrane and NE Greenland.

The geologic evolution of Svalbard's Southwestern Terrane, with subduction complexes and Late Neoproterozoic intrusives (Timanian ?) is poorly understood. It will, however, be argued that there is no need to invoke considerable right lateral strike-slip movement of the Motalefjellet subduction complex and related rocks from a position in Arctic Canada to their present position within the Southwestern Terrane, as proposed by some authors.

The structural grain of the Svalbard Caledonides, oblique to East Greenland and Scandinavian Caledonides, as well as the Ellesmerian Orogen, is interpreted to be due to counter-clockwise rotation (c. 45o) of the Caledonian trend. A counter-clockwise rotation is to be expected when the northward moving terranes reached the E-W trending Franklinian Basin north of Greenland/Laurentia, which in Early Devonian time had not yet started to close. The model predicts that there should be a dramatic change in the Caledonian structural grain somewhere south of Bjørnøya. It is furthermore speculated that the fan-shaped orientation of Late Paleozoic rift basins in the Western Barents Sea is controlled by reactivation of the rotated structural trend (e.g. Billefjorden Fault Zone and Billefjorden Trough).