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Southwestern Svalbard Basement Province: current state of knowledge and open questions

Jarosław Majka (1), Winfried Dallmann (2), and Karolina Kośmińska (3)

(1) Uppsala University, Department of Earth Sciences, Uppsala, Sweden, (2) Norwegian Polar Institute, Tromsø, Norway, (3) AGH - University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection, Kraków, Poland

Caledonian basement of the Svalbard Archipelago is divisible into three provinces, namely Northeastern, Northwestern and Southwestern. The latter is recently a matter of lively debate, since new evidence for Tonian magmatism (Grenville-Sweconorwegian) and late Neoproterozoic metamorphism (Torellian) has been provided. Moreover, early Caledonian high-pressure rocks known from this area seem to be much more widespread than previously thought. These new discoveries call for re-interpretation of the geological history of the Southwestern Basement Province (SBP) as well as re-consideration of its paleogeographic position prior to the Caledonian orogeny. Yet another factor, which is causing uncertainties in the up-to-date understanding of the SBP, results from the fact that several unconnected groups of geologists have been working in this area.

Here, we propose a new tectonostratigraphical scheme for the SBP, which summarizes current state of knowledge and unifies several, previously vaguely connected geological units. However, there is still a need to answer critical questions about the age and tectonostratigraphical position of some uncertain geological successions. These include mainly high-grade rocks exposed in the northern part of Oscar II Land (mostly garnet-bearing mica schists of the Kongsvegen Group), on Prins Karls Forland (garnet-bearing mica schists and amphibolites of the Pinkie Group), central Nordenskiöld Land (unnamed retro-blueschists) and southernmost Sørkapp Land (unnamed garnet-bearing mica schists). Moreover, age and position of widely recognized diamictites (Comfortless, Bellsund, Lågneset and Ferrierpiggen groups) are dubious. Also, nothing is known about quite widespread, mostly carbonaceous and presumably early Palaeozoic sediments of northern Wedel Jarlsberg Land. An unequivocal tectonic scenario for the SBP and inter-connections with the two other basement provinces cannot be proposed before comprehensive structural, geochronological and petrological studies within the above mentioned areas will be done.