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The Ordovician of the west Sørkapp Land (Southern Spitsbergen)

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The Ordovician in the Sørkapp Land is known since the 50-ies [2], yet it is relatively poorly examined and its faunas are studied insufficiently. The area in the western Sørkapp Land between Olsokbreen and Bungebreen was surveyed in 2013. Here the Ordovician (Sørkapp Land Gr - Hornsundtind and Nigerbreen fms) and presumably Ordovician-Silurian (Arkfjellet Fm) form a NE-striking antiform. The lithologies of the lower part of the section are dominated by various limestones that vary significantly in color – from almost black to light; layers of limestone with cherts also occur. The antiform's SE limb contains two psammitic layers as well as layers of schists and conglomerate. The Arkfjellet Fm is dominated by shales. The early Paleozoic rocks are unconformably overlain by the Devonian red sandstones.

The Ordovician section is a tectonostratigraphic complex composed of three to four Ordovician carbonate slivers divided by the mentioned clastic lithologies, while thrusts themselves are obscure. This is supported by paleontological data along with presumably Precambrian age of clastic rocks whose metamorphic degree does not fit that of the limestones. Structural observation further confirms that: at some parts of the section slicking sides, breccias, thick calcite veins close to contacts have been noted. Apart of that the Ordovician rocks' structure is complicated by small-scale flexures, whose axes dip northeasterly.

The Hornsundtind and Nigerbreen Fms, according to the conodonts, embrace stratigraphic interval from the Floian to the Middle Darriwilian. The lower Floian part of the section is characterized by *Wandelia guyi* Smith, *Paroistodus proteus* Lindstrom, *Colaptoconus quadraplicatus* (Branson et Mehl), *Oepikodus* sp., *Parapanderodus striatus* (Graves et Ellison). The conodont assemblages are dominated by *Wandelia guyi* that is also typical for the East and North Greenland [3]. The Early Darriwilian is confirmed by *Multioistodus* sp., *Drepanoistodus* sp., *Periodon* sp. The youngest Middle-Upper Darriwilian ages of the section are based on findings of *Belodina* sp., *Periodon* sp., *Panderodus* sp., *Drepanodus* sp.,

Protopanderodus sp. The conodonts have a Laurentian biogeographic affinity, supporting an earlier conclusions based on conodonts from Hornsund [4] and Ny Friesland [1].

Thus, in the studied area the tectonostratigraphic stack of the intercalated Ordovician and most probably Neoproterozoic rocks unconformably underlies the Devonian strata: this suggests Caledonian tectonism as the cause of the structure's formation. Presence of chert-bearing limestone points to shallow-marine environments of sedimentation of the limestone. The antiform's NE strike might be a local variation of the general N-S trend of the West Spitsbergen Caledonide. The whole Sørkapp Land area needs thorough re-mapping since the tectonostratigraphic complexes here may occur over the larger area and could continue northward to the south of the Wedel-Jarlsberg Land.

References:

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