

On the integrated regional Ordovician correlation charts of Estonia, Latvia and Lithuania

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The system of the Ordovician bio-, litho- and chronostratigraphic units is highly detailed in Estonia, Latvia and Lithuania. The regional stages of the Ordovician System were defined in Estonia and introduced for the western part of the East European Platform, including Latvia and Lithuania, in the 1960-1980s. Based on this chronostratigraphic standard, several versions of integrated regional Ordovician correlation charts were elaborated in a well-coordinated manner. These charts used a unified nomenclature of lithostratigraphic units, with different sets of formations for all major facies zones, and the distribution areas of most units crossed the national borders. The regional chronostratigraphic units, although not defined in full accordance with the International Stratigraphic Guide, are routinely applied in Estonia, Latvia and Lithuania also today, and their correlation to the global chronostratigraphic standard is mostly well-constrained.

Since the early 1990s, the developments in the Ordovician stratigraphy in different countries have been more independent and new attempts of compiling regional charts were not undertaken until 2023. This has led to increasing differences in the development of nomenclature and correlation of formations in different countries. The new, amended versions of the national Ordovician correlation charts reveal differences in nomenclature and ranks of several lithostratigraphic units, with remarkable differences in their boundaries and subunits in different countries, like in the case of the Drąseikiai, Daugavpils, Mežciems formations that are ranked as groups in the modern stratigraphic chart of Lithuania. In several instances, the correlation of the formations has been justified during the last decades, but there was usually no comprehensive analysis on how much this might influence the correlation of the formation in other national correlation charts; this is true, for example, for the Kallavere and Kõrgekallas formations in Estonia. There are numerous other discrepancies between the national correlation charts where we cannot be sure whether the differences are based on results of precise correlation or simply due to adherence to traditional views without further factual justification.

The Ordovician correlation chart compiled for the volume '*A Global Synthesis of the Ordovician System*' (part 1, 2023) emphasises these discrepancies. The differences between the national correlation charts clearly hamper cross-border cooperation between Estonia, Latvia and Lithuania in the field of regional geology and stratigraphy. The compilation of unified regional correlation charts has served as the main motivation for establishing the Baltic Stratigraphic Association in 1994. Today, there is an urgent need to reinvigorate cross-border cooperation in the preparation and development of stratigraphic charts to ensure their consistency in different countries, and the preparation of regional stratigraphic schemes will serve this purpose in the best possible manner. This is equally valid for the Ordovician System as well as other stratigraphic systems documented in the region.

Key words: regional stratigraphy, Ordovician, Estonia, Latvia, Lithuania, timescale, regional stage, formation.