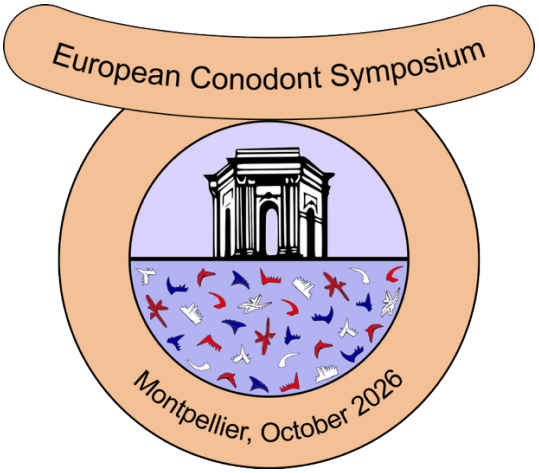
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ABSTRACT BOOK

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Ordovician conodont faunas and palaeoclimate in Baltoscandia: new insights from the Aizpute-41 drill core section, western Latvia

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In both Estonia and Sweden, the Ordovician sequences of the palaeocontinent Baltica have been well documented for its environments and faunas, including conodonts. It is a major study for the reconstruction of early Palaeozoic climate evolution. However, regional comparisons of conodont assemblages and palaeoclimatic data (based on oxygen isotopes) from the Lower and Middle Ordovician remain limited in Baltica. Moreover, data from Latvia – representing deeper-water environments within the eastern part of the palaeobasin – have been virtually missing.

This study is devoted to a regional taxonomic comparison of Ordovician conodont faunas across the Baltic region and adjacent areas, including western Russia, Lithuania, Norway, and Sweden, using Jaccard and Dice diversity indices, in the aim to identify similarities and differences. Special attention is given to the Latvian reference section Aizpute-41, which provides data from the late Tremadocian to early Sandbian. Secondary Ion Mass Spectrometry (SIMS) was used to analyse oxygen isotopes ratios (δ18O) of several conodont genera and to identify possibly different living habitats in the water column. Results indicate that the Aizpute conodonts faunas show greater taxonomic similarity with the shallow-water Estonian sections (≈ 60%) than with the Swedish ones (≈ 40%). Overall differences between regions remain small, although only a limited number of species are commonly available to characterise individual areas. Nevertheless, Aizpute appears to represent an intermediate setting: environmentally closer to the Swedish sections while influenced by the shallow-water faunas from northern Estonia.

The isotope data obtained on the Aizpute fauna provide one of the most detailed palaeoclimatic datasets for the Lower and Middle Ordovician of Baltica, suggesting a gradual cooling of ca -12°C from the latest Tremadocian to the latest Darriwilian, possibly interrupted by five short warming events of ca 2°C. Moreover, inter-generic analysis of δ18O values tends to show that Baltoniodus and Protopanderodus specimens are associated with higher values, which could be interpreted as an indication of deeper ecological niches.

This study highlights the importance of Latvian sections for understanding ecological gradients and environmental dynamics within the Baltica palaeocontinent.

Keywords: Conodonts, Oxygen Isotopes, Ordovician, Diversity, Similarity Index