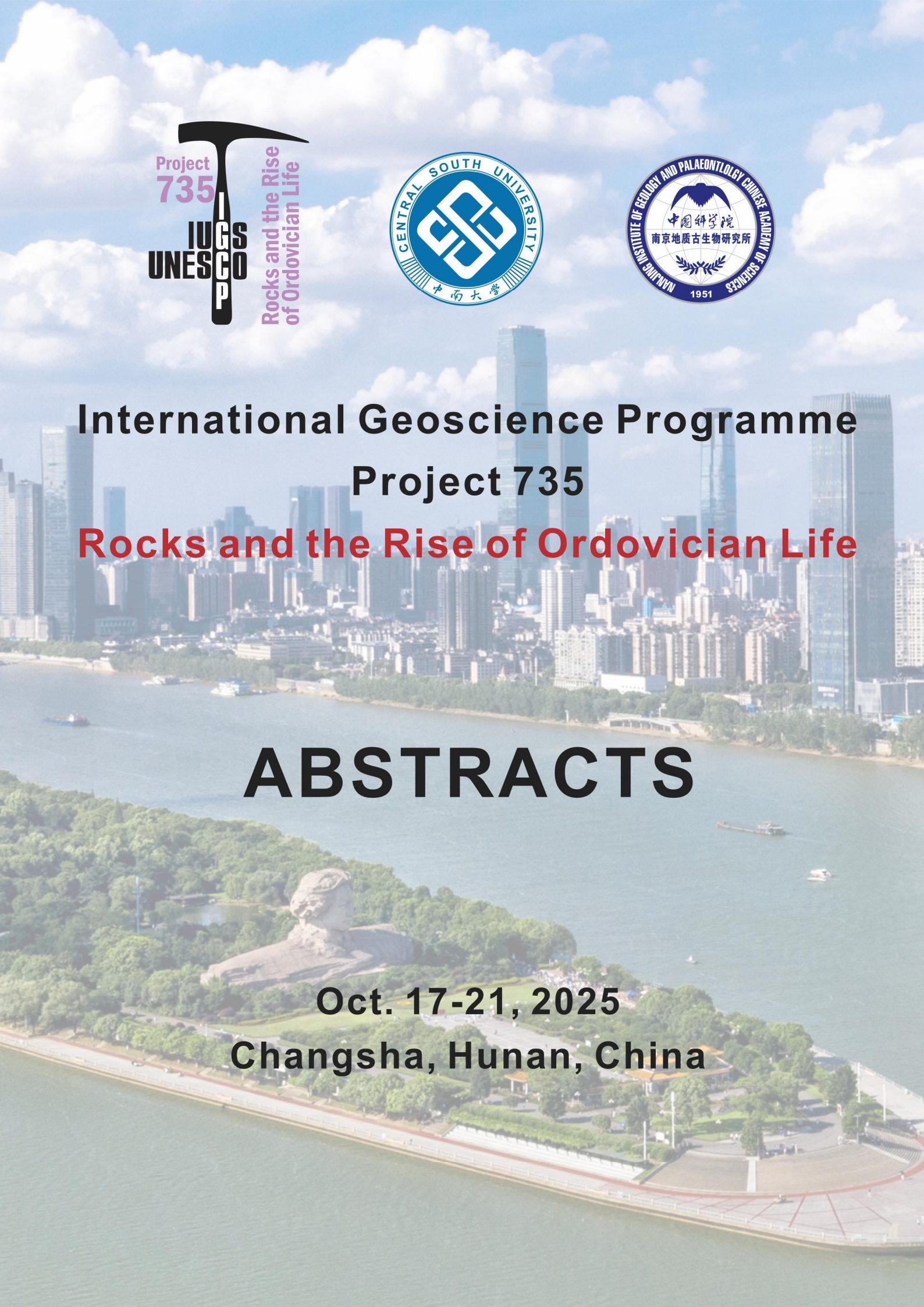

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ABSTRACTS

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Conodont $\delta^{18}O$-based reconstruction of Lower and Middle Ordovician paleotemperatures in Baltica: New data from the deep-shelf Aizpute-41 drill core, Latvia

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Conodonts are important tools in Ordovician stratigraphy, providing an archive for oxygen isotope palaeothermometry ($\delta^{18}O_{con}$). In the Baltic region, conodont biostratigraphy is well established, but $\delta^{18}O_{con}$ data, especially from the deeper shelf successions, remain limited. To address this gap, we studied Lower and Middle Ordovician conodont biostratigraphy and oxygen isotope ratios from the Aizpute-41 drill core in western Latvia. This section is stratigraphically more complete than previously investigated sites in Estonia, allowing for a much more detailed conodont palaeoecological analysis and an assessment of regional variations in $\delta^{18}O_{con}$.

In total, 61 samples from the Aizpute core were studied. These conodonts are generally well preserved, with CAI (Color Alteration Index) values of 1–1.5. The studied interval ranges from the upper *Paroistodus proteus* Zone (Tremadocian) to the *Pygodus anserinus* Zone (uppermost Darriwilian). Altogether, 73 conodont species representing 38 genera were identified. Species diversity shows a generally continuous increase, interrupted by a slight decline in the lower Darriwilian and reaching its peak in the upper Darriwilian. Specimen abundance varies considerably between samples, especially in Tremadocian and Floian, ranging from 450 to 46000 specimens/kg. Notably, the occurrence of *Baltoniodus triangularis*, absent in shallow-shelf settings, allows the Floian–Dapingian boundary to be precisely identified in this section. Our initial $\delta^{18}O_{con}$ measurements focused on two genera, *Drepanodus* and *Drepanoistodus*, due to their presence in most samples. In total, 238 elements from 25 samples were analysed, yielding nearly a thousand reliable SIMS (secondary ion mass spectrometry) results. The data show a general increase in mean $\delta^{18}O_{con}$ values from 15.5‰ in the Floian to 18.8‰ in the late Darriwilian, corresponding to an ~12 °C decrease in palaeotemperature during this interval.

Superimposed on this overall cooling trend, several short-term warming events were identified during which $\delta^{18}O_{con}$ values decreased by about 0.5‰ (equivalent to an ~2 °C temperature increase). The most pronounced cooling (increases of 1–1.5‰ in $\delta^{18}O_{con}$) occurred in the Floian, early Dapingian, earliest Darriwilian and late Darriwilian, with a relative stability during the early and middle Darriwilian. Comparison of $\delta^{18}O_{con}$ values from albid and hyaline tissues revealed specimen-dependent offsets. However, differences between *Drepanodus* and *Drepanoistodus* were negligible through time, suggesting no vital effect and supporting the interpretation that these two genera occupied the same habitat.

In the next phase of our $\delta^{18}O_{con}$ research, we will extend analyses to several other long-ranging genera with presumed ecological differences (e.g., *Baltoniodus* and *Protopanderodus*) with two main aims: (1) to refine further the Early and Middle Ordovician climate trends, and (2) to test whether interspecific isotopic differences reflect habitat preferences.

KEY WORDS : conodonts, biostratigraphy, Ordovician, Oxygen Isotopes, SIMS