PROGRAMME & ABSTRACTS

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S9 - THE GLOBAL HANGENBERG CRISIS AT THE DEVONIAN-CARBONIFEROUS BOUNDARY - A REVIEW OF THE 6TH FIRST ORDER MASS EXTINCTION

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The Devonian-Carboniferous (D/C) boundary marks one of the major extinction events of the Phanerozoic. The generic extinction rate exceeds 45%, and ~20% of the families were affected. Black shale and sandstone deposits in different palaeogeographical settings, related to climatic and oceanographic changes, are reflected in the global Hangenberg Crisis, which has a magnitude and evolutionary significance comparable with the 1st order mass extinction at the Frasnian-Famennian boundary. The Hangenberg Crisis was a multiphase event, which affected numerous fossil groups of different environmental realms at different times. Recent studies indicate a short-termed but drastic climate cooling at the end of the Devonian, which is preceded by enhanced organic carbon burial rates during changing seawater temperatures. This has been considered as a trigger for the Late Devonian mass extinctions and the first glaciation pulse after 80 m.y. of greenhouse conditions. However, stratigraphical gaps, changes in litho- and biofacies, the lack of index fossils, and an imprecise correlation of different regions comprising neritic or pelagic faunas lead to misinterpretations of data on palaeoenvironmental changes and mass extinctions at the D/C boundary. Therefore, future studies will have to focus on interdisciplinary approaches to different palaeogeographical settings, involving isotope, chemo- and sequence stratigraphy as important addition to biostratigraphy.

S8 - KATIAN BIODIVERSITY – A PRELUDE TO THE HIRNANTIAN (ORDOVICIAN) MASS EXTINCTION AS SEEN FROM BALTIC DATA

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The Baltic data on macro- and microfossil diversity and distribution, published through IGCP projects 216, 410, 503, and complemented with new observations and carbon isotope data, serve as the basis for this study. We present different diversity curves (number of species and genera, total rates of appearances and disappearances) for nine groups of organisms (corals, stromatoporoids, brachiopods, trilobites, ostracodes, conodonts, scolecodonts, chitinozoans, acritarchs). These are correlated with the latest Baltica $\delta^{13}C$ trend in order to link biodiversity with environmental changes. The diversity of several groups (but not conodonts) increases significantly in the earliest Katian (= upper Keila Regional Stage) and decreases in the following Oandu Stage. This diversity peak coincides with the Guttenberg $\delta^{13}C$ peak. The faunal diversity fluctuates in the mid-Katian, reaching the highest values in the late Katian (Pirgu Stage) despite the step by step increase in the disappearance rate in some groups. Biodiversity in the Hirnantian is much lower than in the Katian, but several taxa manifesting morphological innovations occur also in the Hirnantian (Porkuni Stage). Middle-Porkuni rocks show the Hirnantian $\delta^{13}C$ peak. The lowest diversity episode occurs during the late Porkuni, partly due to global extinctions and partly due to local geological conditions. Two diversity peaks noted in the Katian are followed by low-diversity episodes. This suggests that corresponding disappearances occurred within comparable time intervals in the Katian and only the “second strike” of mass extinction took place in the Hirnantian.