

PROGRAMME & ABSTRACTS

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S24 - CRYPTOSPORE ASSEMBLAGES FROM THE HIRNANTIAN OF ANTICOSTI ISLAND, QUÉBEC, CANADA, AND FROM VALGA-10 BOREHOLE, ESTONIA : PALAEOPHYTOGEOGRAPHIC AND PALAEOCLIMATIC IMPLICATIONS

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Rich palynological assemblages have been recovered from deposits of Hirnantian age in Anticosti Island (Québec, Canada), and from borehole Valga-10 in southern Estonia. The assemblages are rich and well preserved and include acritarchs, chitinozoans, and cryptospores. The age of the deposits is well constrained by means of palynomorphs (acritarchs and chitinozoans) as well as sequence stratigraphic and chemostratigraphic correlations. Cryptospores assemblages from the two localities are similar and are also broadly comparable to the few known coeval assemblages described elsewhere. They include 16 species and testify for the first time to the presence of an extended and diverse bryophytic cover during Hirnantian times in Laurentia and Baltica. The present findings contribute to a questioning of the current scenario of a Gondwanan origin of land plants and their successive spreading to lower palaeolatitudes. The recovery of diverse and abundant cryptospores in Hirnantian deposits may be related to increased input of land-derived sediment during the global sea-level fall linked to the Late Ordovician glaciation, but also demonstrate tolerance to a wide range of climatic condition of the early land plant flora.

S16 - THE EVOLUTIONARY SOURCES OF DINOSAUR BODY SIZE EVOLUTION

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Body size is associated with, among many other things, life history, population growth rate, metabolism, locomotion, population ecology, reproduction and even the rate at which genes evolve. We study the evolution of body size in dinosaurs using multiple large datasets and novel phylogenetic methods which can automatically detect shifts in the rate of evolution through evolutionary time and among subgroups. We find that, taken as whole, dinosaurs underwent a rapid and short-lived burst of diversification of size early in their evolutionary history; during this burst the rate of body size evolution increased 10-fold. Following this initial increase we find that the rate falls precipitously to a level comparable to that initially seen. The rate remains at this level until near the end of the group's history where there is another significant burst of size diversification. The pattern observed across the whole group masks considerable variation in rates within subgroups of the dinosaur phylogeny. The subgroups also show variation in rate through time with some recapitulating the burst pattern observed across all dinosaurs. The long-held view that the diversity in body is the product of homogeneous macroevolutionary processes may not be correct; rather our findings suggest that dinosaur body size evolution is better characterised by varying rates.