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PROGRAMME abstracts and AGM papers

Computer modelling of heterochronic change in gastropod morphology

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Raup's classic helicoid logarithmic spiral cone model is isometric, and hence organisms that approximate to this model cannot evolve a change in shape by heterochrony of the whole shell morphology. A computer model (HETEROSIM) is presented here in which Raup's parameters are permitted to change through ontogeny, and this allometric model is a good fit to a variety of gastropod species, especially Pulmonata. Simulated heterochrony (neoteny, acceleration, progenesis and hypermorphosis) can be applied to the generated shell shapes and a variety of sometimes surprising shapes can result. Suites of simulated shell shapes connected by heterochronic transformations often match well with the patterns of variation within gastropod families. The model can therefore engender hypotheses of heterochronic evolution that can then be tested against phylogenies. The model is also advocated as a stimulating pedagogic tool in teaching heterochrony.

Reassessing the Hirnantian macrofauna extinction in the central Anti-Atlas of southern Morocco

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The Hirnantian glaciation, one of the largest in the Phanerozoic, was long thought to have occurred in two phases, accompanying a double-phased extinction, respectively linked to the initial cooling and final melting of the ice sheets. Recent work in high palaeolatitudinal settings, however, has identified a much more complex 'Cenozoic style' scenario for the Hirnantian glaciations, comprising over 15 high-order glacial cycles (Ghienne et al. 2014).

Our contribution aims to plot the entire macro- and micro-fauna record of the Central Anti-Atlas, southern Morocco, collected by Destombes (2004) against the revised architecture for the Hirnantian. Our database will allow us to evaluate if macro-faunal turnovers relate to other specific phases of the many glacial cycles. So far, our data compilation includes 150 species from seven sites and up to 200 km of section. We report a decrease in faunal abundance and biodiversity, moving from Southwest towards Northeast, and through time, from the first glacial cycle towards the glacial maximum.