

General Theme 4

4.5

The increased accuracy and precision of the Geological Time Scale and the growth of a large data base of carefully dated stratigraphic successions on a worldwide basis has led to a much improved understanding of the enormous variation in the rates of geological processes (see references, below). Rates of sedimentation and the frequency and duration of sedimentary breaks (unconformities, diastems, hiatuses, etc.) exhibit a fractal-like distribution over time periods ranging from 10^{-6} to 10^8 years, a range of fifteen orders of magnitude. As Sadler (1981) first demonstrated, a log-log plot of sedimentation rate against elapsed time is a straight line, and only now are we fully realizing the implications of this for the issue of stratigraphic preservation. Sedimentary breaks are ubiquitous in the sedimentary record, much more so than has been assumed, and sedimentary models that assume continuity, including the practice of stratigraphic classification and correlation, Walther's law, cyclic sedimentation, facies models, sequence stratigraphy, and source-to-sink studies, all require re-evaluation in this context.

A session is proposed that brings together studies that examine rates of processes and issues of sedimentary preservation, in all sedimentary environment, over all time scales. It is anticipated that the knowledge accruing from such a session will lead to much more realistic numerical models in all areas of sedimentological study.