



Buntsandstein unconformities and high-resolution base-level cycles: implications for the evolution of the Central European Basin using an integrated cyclomagnetostratigraphy

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In Central Europe, the ~1 km thick Buntsandstein was deposited in the large intracratonic Central European Basin. Occasionally, tectonic pulses affected the sedimentary succession. Their effects are recorded by unconformities. Truncation below such unconformities points to the development of a system of highs and grabens, with strong differences in the amount of uplift or subsidence. A precise timing of such tectonic events is of major importance for understanding the evolution of the Central European Basin. The Buntsandstein sedimentary succession displays a striking cyclicity of varying magnitude. The most obvious cycle is the 10 to 20 m thick small-scale cycle (wet-dry cycle) that is ascribed to changes in lake level (base-level) and assumed to be controlled by astronomical forcing of climate. Combined with wireline logs, these cycles can be mapped over large parts of the Central European Basin providing a high-resolution cyclostratigraphic framework. Hence, the cycles represent basin-wide events. The isochronous character of this framework, consisting of about 60 cycles, has been proven by magneto- and biostratigraphic means. Compared with available radioisotopic ages for the base and top of the Early Triassic, a Buntsandstein duration of about 6 Ma is derived. This is considerably shorter than hitherto assumed, thus having an impact on models for the evolution of the Central European Basin. Furthermore, the Buntsandstein cyclostratigraphy allows precise correlation of truncation below unconformities.