



Elementary climate cycle of the Upper Palaeozoic continental cyclothems in the east equatorial Pangaea. MŽec Lake, the largest European Lake during the Stephanian B

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The Stephanian B (Kasimovian, Upper Pennsylvanian, Carboniferous) is usually considered as a relatively dry period in the equatorial Pangaea because of rather scarce coal seams. In the central and western Bohemian basins during the Stephanian B, a freshwater lake with area estimated to more than 5,000 sq.km was formed, as it is easily traced by MŽec horizon of fine, mostly laminated claystones to siltstones. The lacustrine deposits contain a moderately preserved pollen and spore assemblages produced by macroflora from the lake watershed, fish remnants, and a perfectly preserved clay mineral assemblage and lacustrine carbonates, mostly Mg, Ca-rich siderites suitable to the stable isotope analysis. The Lake lifetime was estimated from the mean sedimentation rate in comparable basins and lakes to be 100-200 ky. The analyses of the Lake sediments permitted to reconstruct 2 transgression/regression cycles probably driven by the 40 or 100 ky Milankovitch cyclicity. We suppose that these cycles are elementary components of the continental cyclothems of the Upper Pennsylvanian with still poorly understood nature, but traditionally attributed to sea level variations. The development of floral assemblages interpreted from palynological record during these 2 cycles was not simply cyclic and was unexpectedly moderate. This means that the climate cycles in the east equatorial Pangaea were milder than the Milankovitch-like glacial/interglacial variations in the current tropical continental environments. The

lithological description of the strata below and above the MŽec Lake (from the Lower to Upper Stephanian) indicates that the Stephanian climate in the study region varied from humid to seasonally humid, with proportions between these two types changing cyclically at periods about 1 My long. The most possible explanation of the latter cyclicality is a long-term variation of the Earth orbit eccentricity (1-2 My period), possibly translated through southern Gondwana "glacial"/"interglacial" events, corresponding to glacioeustatic sea level changes and marine regressions/transgressions in shelves and seaways surrounding the east equatorial Pangaea.