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The lithostrtigraphical classification of the Upper Buntsandstein in drilling logs of Thuringian Basin and South Thuringia

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Abstract

Based on well-data an overview of the lithostratigraphy of the Upper Buntsandstein of the Thuringian Basin and Southern Thuringia is presented. The initial Röt 1 transgression is followed by a prolonged regressive trend with widespread terrestrial conditions during the Röt 3. This is indicated by a diachronous change in sediment colour from grey to reddish brown appearing first in the southern Thuringian marginal facies within the lower Röt 1, later in the central basin area within the Röt 2. Distal sandstones of the Plattensandstein appear in the South from the lower Röt 1 to the Röt 2. In addition to this large-scale transgressive-regressive-transgressive cycle small-scale sedimentary cycles resulting in evaporitic horizons are a prominent feature especially within the Röt 1. Using all available data – lithology, sediment colour, wire-line logs and cycle correlation – the boundaries of the allostratigraphic subdivision of the Upper Buntsandstein can be correlated from the Thuringian Basin to southern Thuringia, thereby offering possibilities for connecting North and South German Upper Buntsandstein sequences. The small scale sedimentary cycles are interpreted as the result of the combined effect of climatic and eustatic sea-level fluctuations that might have been caused by Milankovitch cycle earth orbit variations.