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New findings to the provenance of Lower and Middle Buntsandstein in Central Germany

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Abstract

Object of this study are provenance analyses in sediments of the Middle and Upper Buntsandstein in the Thuringian Syncline, NE Hesse and S Lower Saxony. The influence of the Eichsfeld swell during Buntsandstein deposition and sediment supply is of special interest. To the west of the Eichsfeld swell sediment composition points to (low rank) metamorphic source areas. In contrast, samples from the Thuringian area imply high rank metamorphic or plutonic source areas. Cathodoluminescence analyses of the quartz grains and whole rock geochemical data confirm provenance differences.

The Bohemian Massif was the major source area for the Thuringian sediments, whereas in Hesse most likely also local erosional areas occurred. The Eichsfeld swell acted as palaeogeographic barrier resulting from minor subsidence and favored the formation of two major transport systems in central Germany: 1) from the S to SW to N towards Hesse and 2) from S to SE to N towards Thuringia.