

Sequence stratigraphy of the Upper Jurassic deposits in the North German Basin (Lower Saxony Basin, Süntel Mountains)

Huaqing Bai (1), Christian Betzler (1), Jochen Erbacher (2), and Fanfan Zuo (3)

(1) Institut für Geologie, Universität Hamburg, Hamburg, Germany (huaqing.bai@uni-hamburg.de), (2) Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Germany (Jocher.Erbacher@bgr.de), (3) Institut für Geologie, Leibniz Universität Hannover, Hannover, Germany (zuo@geowi.uni-hannover.de)

A core recovered in the North German Basin at the locality of Eulenflucht in the Süntel Mountains, 30 km SE of Hannover, Germany, documents the Oxfordian to Kimmeridgian sequence stratigraphy of this basin. Thirteen different facies are recognized which reflect an outer ramp to restricted hypersaline lagoon evolution. Changes in grain size, variations in the amount of components, fluctuations of the matrix content and of the microscopic texture, as well as vertical lithofacies stacking patterns are integrated to define short-term sequences. Medium-term sequences are identified by changes in facies combinations and the bundling of short-term sequences. Long-term sequences are differentiated by facies proportion statistics in the distinct medium-term sequences. This allows to present a complete sequence stratigraphic subdivision of the Oxfordian and Kimmeridgian succession. The stable carbon isotopic composition of bulk samples enables a correlation with chemostratigraphic records found elsewhere. This result is supported by an ostracod stratigraphy that allows a chronostratigraphic assignment of the succession. The medium-term sequences are estimated to be driven by 400 kyr long-term Milankovitch eccentricity cycles. The long-term sequences are dominated by climate and local tectonic movements. It is proposed that a shallowing trend during the Kimmeridgian time was induced by regional uplift.