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Lower Cretaceous bio- and chemostratigraphy of the Lower Saxony Basin (Northern Germany)

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Lower Cretaceous sediments forming the basinal facies of the Lower Saxony Basin in Northern Germany consist predominantly of monotonous clays and clayey marls. We correlate detailed bio- and chemostratigraphic results (calcareous nannofossils, benthic foraminifera/ostracodes, d13Corg) from several drill cores covering the Valanginian to Aptian interval of the Lower Saxony Basin with outcrop data from the same area.

The d13Corg chemostratigraphy of both records reveal the well-known anomalies associated with the Valanginian "Weissert Event" and the OAE 1a as well as a negative shift corresponding to the lower Barremian "Hauptblätterton". In addition, a number of small scale trends have been identified at the corresponding sites and sections. Thus, the application of high resolution d13Corg chemostratigraphy gives way to an improved correlation between the Boreal and Tethyan realms.

The applied interdisciplinary approach on several drill sites allows also to test the synchronicity of the occurrences (or disappearances) of stratigraphic marker species and, thus, to evaluate their reliability. Moreover, the correlation between outcrop data and drill cores allows for the first time to compare the micropaleontological stratigraphic schemes often applied to scientific and industrial drill cores with classical belemnite/ammonite stratigraphy from outcrops.