Adaptation of benthic foraminiferal communities to the developing Burdigalian Seaway

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The Burdigalian Seaway (BS) connected the Mediterranean and Central Paratethys seas via the North Alpine Foreland Basin (NAFB). The effect of seaway development on benthic foraminiferal communities is demonstrated for the Puchkirchen Basin (PB) as part of the NAFB. Four major phases of PB and BS development are identified from integrated microfossil, geochemical, and seismic records of drill-sites and outcrops:
1) The global early Burdigalian sea-level rise initiated a marine transgression in the NAFB. In the PB, a basin-axial channel system was reactivated resulting in turbiditic and mass-flow deposits. The bathyal environment is reflected in a low diverse autochthonous foraminiferal fauna mainly composed of Bathysiphon.
2) The transgression flooded large shelf areas and established the BS. Cut off from its sediment sources, channel deposition ceased and sedimentation was controlled by prograding delta-fed clinoforms and diverse agglutinated faunas adapted to increases in organic matter input and sedimentation rates.
3) When the deep-marine PB was filled, the BS became a vast shelf sea. Concurrently, marine sedimentation reached its maximum extent in the NAFB and characteristic hyaline shelf faunas developed.
4) The beginning of a regression at 18 Ma procured the closure of the BS. Biofacies distribution shows a prograding tide-influenced shelf and widespread shallow water environments developed dominated by Ammonia, Elphidium and Cibicidoides. The closure of the BS initiated the final retreat of the Central Paratethys.

Re-evaluation of the Ottnangian stratotype and its implications for the development of the terminal Burdigalian Seaway (middle Burdigalian, Central Paratethys)

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The section Ottnang-Schanze in the North Alpine Foreland Basin (NAFB) of Upper Austria has been defined as stratotype for the regional Ottnangian stage (middle Burdigalian, c. 18.1-17.2 Myr). New studies provide an updated palecological and stratigraphic evaluation of the section based on foraminifers, dinoflagellate cysts, calcareous nannoplankton, grain-size analysis and magnetostratigraphy.
Based on the present correlation of the Ottnangian to the Bur3 sea-level cycle, the integration of the new results from biostratigraphy (foraminiferal marker species *Amphicoryna ottnangiensis*, dinoflagellate cyst zone D17a, nannoplankton zone NN3) and magnetostratigraphy (polarity chron C5Dr.2r) allow for the first time an absolute age estimate of 17.95-18.06 Myr for the stratotype.
Micropaleontological and sedimentological analyses reveal trends in bathymetry, primary productivity, bottom-water oxygenation and water energy that allow exemplary insights into the paleoenvironment of the terminal Burdigalian Seaway. Several biofacies of a eutrophic environment are distinguished that reflect a transition from a suboxic outer neritic to upper bathyal towards a better oxygenated middle neritic setting under the influence of storm events and currents. A comparison with data from Upper Austria and Bavaria consistently shows this regressive trend during the late early Ottnangian (c. 18 Ma). The facies distribution results from the progradation of a tide-influenced environment along the northern shelf of the NAFB, heralding the closure of the Burdigalian Seaway.