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Biogeography of benthic foraminifera in contourite drift systems

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Benthic foraminifera colonize a wide range of marine environments, including contourite drift systems (CDS). CDS are characterized by sustained bottom currents and cover large areas on the seafloor, e.g., in the North Atlantic. Due to their high sedimentation rates, they represent fundamental archives for paleoclimatology and paleoceanography. Some studies already highlight the influence of high current velocities on assemblages of epibenthic foraminifera and suggest their applicability as a reliable proxy for bottom current reconstructions (Schönfeld, 2002; Jorissen et al., 2007 and references therein). Certain epibenthic foraminiferal species live as highly adapted opportunistic suspension feeders using elevated substrates as a unique ecological niche. Through their elevated microhabitat, they optimize the uptake of suspended food particles gaining an advantage over other epibenthic organisms. However, their application as a bottom current proxy has so far been limited to the Iberian Margin and has been barely tested outside the Gulf of Cadiz (e.g., Diz et al., 2004).

The present study aims to document biogeographic distribution patterns of benthic foraminifera in extended CDS from different latitudes. Two data sets from the high-latitude North Atlantic (50-62°N) are presented here. The surface samples of the first data set originate from the Björn and Gardar drifts between the Reykjanes Ridge and the Rockall Plateau south of Iceland. Deposition is primarily controlled by the Iceland Scotland Overflow Water. The second data set is located further west within the Eirik Drift on the southern slope of the Greenland margin. The main controlling water mass is the Deep Western Boundary Current.

Initial results show that epibenthic species dominate over infaunal taxa. The data set is mainly determined by the tubular agglutinated species *Rhabdammina abyssorum*, *Saccorhiza ramosa*, and *Rhizammina algaeformis*, as well as hyaline forms such as *Hoeglundina elegans*, *Cibicidoides wuellerstorfi*, and *Cibicides refulgens*. Thus, several different suspension-feeding taxa dominate the data set. Three assemblages of benthic foraminifera are distinguished: agglutinated suspension feeders dominating in more clayey environments, hyaline suspension feeders dominating in sandier environments with increased current velocities, and infaunal detritus feeders dominating below 2000 m water depth.

The presented data sets are currently complemented by samples from the Campos drift on the Brazilian margin (10°-22°S). Together, the low, mid and high latitude data sets will improve our understanding of biogeographic distribution patterns of benthic foraminifera in CDS. The expected results will be fundamental to ensure the applicability of foraminifera-based proxy methods for bottom current reconstruction.

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