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Core top particle component analysis from the southwestern Indian Ocean

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The link between the Indian Ocean and the Atlantic Ocean through the Agulhas Current system is a crucial element of the global ocean circulation and heat exchange. The Agulhas Current system partly originates from oceanic currents through the Mozambique Channel. However, it is poorly understood how the current is affected by oceanographic and climatic variability in the upstream regions. Here we present planktonic foraminifera abundances of 34 core top samples covering the Mozambique Channel and the East African margin between 9 ºS to 20 ºS.
Three distinct regions were defined based on additional terrestrial clastica, pelagic and reef retrieved components. Variations in terrestrial component composition indicate riverine influences and transport mechanisms along the shelf.
Along the East African Margin and the Mozambique Channel only five species make a significant contribution to the planktonic foraminifera fauna, between 49.6 and 84.2% of the foraminifera assemblage with mean of 71.5%. No major changes in species composition were observed, suggesting that the assemblage is homogeneous in composition. Therefore our core top analysis defines the planktonic foraminifera fauna characteristic of the Agulhas Current source region. Consistent with the Agulhas leakage fauna found in the adjacent South Atlantic. Thus, the Agulhas leakage fauna originates in the upstream source area, e.g. the Mozambique Channel. Among the major species, only G. siphonifera was recognized to show a shift in its mean abundance within the W-E Channel transect compared to the N-S African margin. The results were integrated and compared to the Brown University Foraminiferal Data Base (BFD) using Principal Component Analysis.