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Seasonal isotope and divalent cation fluxes of pelagic and benthic carbonates from the Mozambique Channel

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The Mozambique Channel is at the origin of the greater Agulhas Current system and appears to play a significant role in the global THC as a gateway for the through-flow of Indian, NADW and Antarctic water masses. In order to better understand this poorly known system, monthly-resolved sediment trap fluxes from a suite of 8 moorings are combined since 2003 with in-situ ADCP monitoring of Mozambique eddies. These are contrasted with Holocene bottom sediments accumulating on the 2700m deep channel floor. Remote sensing and shipboard measurement across the channel show a large seasonal SST ranging from 22˚C to 31˚C at relatively constant salinity conditions of about 35‰.

Our aim is to establish the seasonal T-S cycle in terms of the isotope and divalent cation ratios of specific pelagic foraminifera as well as the T-S range of deep water masses reflected in benthic foraminifera. We will quantify the relationship between specific T-S proxies and their seasonal export productivity in order to arrive at a mass balance for comparison with the sediment. A similar proxy approach will be taken for alkenone thermometry (Uk_{37}, TEX_{86}) aswell as organic matter δD and δ^{15}N. Results will be related to coral records from Mozambique Channel islands that also exhibit strong seasonal cycles in carbonate production. Together this allows for coupling of biogenic carbonate and organic carbon productivity with sedimentary transport and preservation on the channel floor for seasonal deconvolution of sedimentary records of modern and past ocean-climate history.