

Abstract for Climate Center

*Sampling the Sources of Agulhas Current Particulates*

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The Agulhas Current is the largest western boundary current in the global ocean, transporting surface and intermediate water from the tropical Indian Ocean southwestward along the eastern coast of southern Africa. Near the tip of Africa it detaches from the coast, and “retroreflects” eastward as Agulhas Return Current. Near the retroflexion it “leaks” into the Atlantic, adding heat and salt. These waters become entrained into the northward-flowing Benguela Current, and ultimately contribute heat and salt to the North Atlantic Ocean. It has been suggested that the “Agulhas Leakage” exchange may be an important feedback mechanism or even a trigger for the formation of NADW, thus a major player in the global climate system. Almost all of our samples are from deep sea cores. The geographic pattern of Sr isotope ratios that we observe reflects the dispersal of the particulates southwestward by surface currents and northeastward by deep currents, but we are well aware that terrigenous detritus is shed from the continent along the travel path. In Dec. 2003 we went to Durban, South Africa to catch the RV Charles Darwin in order to obtain water and sediment cores along the course of the Agulhas Current. Before the cruise began we collected samples from the two most important rivers in northeast South Africa, the Tugela and the Mfolozi. We plan to collect samples that reflect the input into the Agulhas source regions in the Mozambique Channel. Such samples would provide the background for interpreting the patterns in the deep sea cores, and would complement the South African river samples. We hope to engage an undergraduate student in this research.