IDENTIFICATION OF THE AGULHAS LEAKAGE PLANKTIC FORAMINIFERAL ASSEMBLAGE



Iris Wilke^a, F. Peeters^b, G.-J. Brummer^c

^aResearch Center Ocean Margins, University of Bremen, Klagenfurterstraße, 28359 Bremen, Germany

^bDepartment of Paleoclimatology and Paleoecology, Faculty of Earth Sciences, Free University, De Boelelaan 1085, 1081 HV, Amsterdam, The Netherlands

^cDepartment of Marine Chemistry and Geology (MCG), Netherlands Institute for Sea Research (NIOZ), P.O. Box 59, 1790 AB Den Burg, Texel, The Netherlands

Indian Ocean water enters the southeast Atlantic Benguela system through Agulhas rings and direct Agulhas leakage. It has recently been recognized that the Indian-Atlantic water exchange shows a distinct variability between interglacial (enhanced exchange) and glacial times (largely reduced exchange) during the late Pleistocene. This leads to the conclusion that the Agulhas leakage plays possibly a triggering role in the resumption of the thermohaline circulation after glacial conditions (Peeters et al., submitted).

Using a sedimentary record located in the southern Cape Basin a detailed reconstruction of the Agulhas leakage is possible by using characteristic Indian Ocean planktic foraminifer species associated with a modern Agulhas ring. Although species diversity is high in this record (approximately 30 species are found in the sedimentary record of the Cape Basin), only a few species are being used in the reconstruction of the history of Agulhas leakage. Depth stratified plankton tows show that highest concentrations of tropical species like *Globigerinoides ruber* and *Globigerinoides sacculifer* are found in surface waters of the inner Agulhas ring. The species *Globorotaloides hexagona*, endemic to the Indian and Pacific Oceans, inhabits deeper parts of the ring structure (300-800 m) (Peeters et al., submitted). A previous study by Rau et al. (2002) however, suggest that high concentrations of the species *Globorotalia menardii* may also be used to reconstruct Agulhas leakage. To improve interpretations on the variability of the Agulhas leakage into the South Atlantic it is essential to identify those species that are characteristic for the Agulhas rings and Agulhas current in more detail.

Here, we present results from a Cape Basin sediment trap study that allows a better identification of the typical Agulhas fauna. The trap MST-15 collected material weekly from August 2000 through February 2001 and was deployed in the South Atlantic Ocean directly in the sphere of influence of Agulhas rings (38°46.02`S, 14°0.02`E; 3500 m water depth). We use Topex Poseidon Sea Surface Heights (SSH) anomaly pictures and Sea Surface Temperatures satellite images to indicate the exact position of Agulhas rings with respect to our trap site. This study enables us to distinguish between species characteristic for **h**e Agulhas leakage and species reflecting other water masses.

References

Peeters, F.J.C. et al. (submitted). The late Pleistocene history of Agulhas leakage.

Rau, A.J. et al. (2002). A 450-kyr record of hydrological conditions on the western Agulhas Bank slope, south of Africa. Marine Geology 180, 183-201.