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Red sea water in the southern Agulhas current system

R. E. Roman, J. R. E. Lutjeharms

Department of Oceanography, University of Cape Town, Cape Town, South Africa

roman@ocean.uct.ac.za / Fax: +27 21 6503979 / Phone: +27 21 6505313

Red Sea Water (RSW) is a particularly useful tracer in the greater Agulhas Current system. It indicates the origin of certain water masses as well as the rate of mixing in some specific features. Focusing on the southern Agulhas Current and Agulhas rings, Optimum Multiparameter Analysis is used to investigate the presence and degree of mixing of Red Sea Water in a number of recent and historical hydrographic sections. Rings investigated include both newly shed and more mature rings. Hydrographic sections from the Agulhas Retroflection Cruise (ARC) indicate that RSW travels as a coherent part of the Agulhas Current on its shoreward side and that in the Agulhas Return Current its presence can be traced as far east as 25˚E. Its presence is also evident in Agulhas rings, as observed along hydrographic sections of the Mixing of Agulhas Rings Experiment 1 (MARE 1) cruise. Red Sea Water is shown to wrap around the ring. Indications from the MARE 2 cruise and from ARC sections that crossed rings are that this hydrographic structure does not persist very long. In these sections the much reduced, Red Sea Water characteristics are observed as a single blob of water.