The Agulhas Return Current

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ÐžÐ¿ÑƒÐ±Ð»Ð¸ÐºÐ¾Ð²Ð°Ð½Ð¾ Botsman [25.02.2007]

The Agulhas Return Current constitutes the intense flow along the Subtropical Convergence south of Africa. It forms the
connecting link between the generically similar South Atlantic Current and the South Indian Ocean Current, thus
contributing to the water exchange between these two basins. This general along-front flow is, however, substantially
modified south of Africa by contributions from the Agulhas Current.

We have carried out a first study of the hydrography and dynamics of the Agulhas Return Current along its full length
using a collection of available modern hydrographic data. It is shown that on average the current lies at a latitude of 39830XS
south of Africa, increasing slowly downstream to a latitude of 44830XS at 608E, except where it crosses a number of
meridional ridges where northward shifts of up to 2830X are occasionally observed. Geostrophic speeds relative to 1500 m
demonstrate a gradual eastward decrease in the velocity of the current from an average of 75 cmrs at the Agulhas
retroflection to 13 cmrs at 768E. Volume transports are similarly reduced from 54=106 m3rs in the retroflection region to
15=106 m3rs at 768E. Temperaturersalinity properties show water mass characteristics of the Agulhas Current to extend
to at least 618E.
Based on these results, we suggest that the Agulhas Return Current is zonally continuous and terminates between 668E
and 708E. We therefore propose that the name South Indian Ocean Current be retained for the flow east of here only. q2001

Keywords: Agulhas Return Current; Geostrophic speed; Volume transport
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