

The Agulhas Return Current

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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. Temperature-salinity 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

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Keywords: Agulhas Return Current; Geostrophic speed; Volume transport

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J.R.E. Lutjeharms Đ, Đ½Đ°Ñ°ĐμĐ¹Ñ•Ñ,Đ°Ñ€Đ¾Đ¹Đ½Đ°Đ°Đ¾Đ¾Đ¾Đ¾Đ,Đ.

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