



## Abstract View

[Volume 11, Issue 9 \(September 1981\)](#)

### Journal of Physical Oceanography

Article: pp. 1171–1193 | [Abstract](#) | [PDF \(2.10M\)](#)

# The General Circulation and Meridional Heat Transport of the Subtropical South Atlantic Determined by Inverse Methods

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(Manuscript received January 22, 1981, in final form June 9, 1981)

DOI: 10.1175/1520-0485(1981)011<1171:TGCAMH>2.0.CO;2

### ABSTRACT

Using hydrographic data of the IGY and METEOR expeditions, the inverse method of Wunsch (1978) has been applied to the subtropical South Atlantic Ocean to determine its general circulation and meridional heat transport. The method is based on the conservation of mass and salt in a number of isopycnal layers. Results of the meridional circulation of the two data sets are pretty much the same: a northward transport ( $\sim 20 \times 10^6$  metric tons per second) of waters above the North Atlantic Deep Water (NADW) and a comparable southward transport of deep waters. Details of the horizontal circulation of various water masses can be quite different between the two data sets; nonetheless, some gross common features have been found: the northward transport of the Surface Water is basically carried by the Benguela Current, the South Equatorial Current and the North Brazilian Coastal Current. The Antarctic Intermediate Water is carried northward by the Benguela Current as opposed to flowing all the way northward along the South American Coast. The southward flowing NADW is deflected from the South American Coast into the mid ocean by a seamount chain near  $20^\circ\text{S}$ . There is no significant net meridional transport of waters below the NADW in this region.

The computed total heat transport (geostrophic plus Ekman) is equatorward with a magnitude of about  $0.8 \times 10^{15}$  W near  $30^\circ\text{S}$  and indistinguishable from zero near  $8^\circ\text{S}$ . Forcing the total heat transport across  $30^\circ\text{S}$  to be poleward would result in an unrealistic circulation scheme.

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