



## Abstract View

[Volume 12, Issue 12 \(December 1982\)](#)

### Journal of Physical Oceanography

Article: pp. 1358–1372 | [Abstract](#) | [PDF \(1.31M\)](#)

# Water-Mass Distributions at Intermediate Layers off the Somali Coast during the Onset of the Southwest Monsoon, 1979

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(Manuscript received September 14, 1981, in final form July 9, 1982)

DOI: 10.1175/1520-0485(1982)012<1358:WMDAIL>2.0.CO;2

### ABSTRACT

Hydrographic observations at intermediate depth in the Somali Basin have been made during and after the transition from the northeast monsoon to the southwest monsoon, 1979. The data are discussed in relation to measurements of absolute currents during the same time period. Earlier water-mass identification by Warren *et al.* (1966) is confirmed and extended by introducing a well-defined Equatorial Water Mass. The distribution of water masses and its temporal evolution with the changing monsoonal wind field is analyzed on three different spatial scales. Equatorial and near-coastal undercurrents are an important factor in the large-scale redistribution of water masses in the intermediate layers. Cross-equatorial exchange of water, in particular highly saline Red Sea water, is largely confined to a narrow region off the East African Coast. No obvious response of these currents to the onset of the southwest monsoon is detected. In the mesoscale range anticyclonic subsurface eddies containing Equatorial Water are observed in the northern and southern Somali Basin. A possible formation mechanism of these features through equatorial westward subsurface jets is discussed. Double-diffusive intrusions with vertical scales of over 100 m are observed near strong fronts. Their characteristics compare well with theoretical predictions (Ruddick and Turner, 1979). A stability analysis for the upper and lower boundaries of these intrusions shows significantly that double-diffusive processes are acting also on these intrusions themselves.

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