



## Abstract View

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# Variability of the Somali Current System during the Onset of the Southwest Monsoon, 1979

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### ABSTRACT

An array of six current-meter moorings and several coastal temperature recorders was deployed on the shelf and continental slope off northern Somalia from March to July 1979; a seventh mooring was placed near 2°S. In addition, four deep-sea moorings were deployed for a period of one month in May–June farther offshore.

Already during the late northeast monsoon in March the Somali Current north of 5°N was flowing northeastward in the top 150 m. Underneath, in the depth range 150–400 m, a narrow southward undercurrent was observed from March to June. After the first onset of the southwest monsoon, which occurred around 5 May when winds shifted from easterly to southwesterly parallel to the coast, the near-surface temperatures on the shelf decreased immediately with no detectable phase difference between 6 and 10°N, but no change was observed in the offshore circulation pattern. The final monsoon onset around 10 June was characterized by a drastic increase in wind speeds and the establishment of a strong anticyclonic wind-stress curl over the northern Somali Basin. The current measurements showed that within a few days after this onset the northern Somali gyre spun up over the deep sea and then propagated northwestward toward the coast with a speed of 12 cm s<sup>-1</sup>. These findings are in good agreement with results of satellite infrared imagery. The observed gyre kinematics can be explained by locally generated non-equatorial Rossby waves.

When the onset reaches the coast the shallow coastal undercurrent is extinguished.

Superimposed on the gyre-scale variability were fluctuations in the period ranges of weeks to months and of 3–5 days. There is evidence that the energies of the latter were related to the development of the Somali Current.

Significant differences were found in a comparison of the 1979 current measurements south of the equator with observations obtained there during the monsoon onset of 1976.

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