

Influence of ERS - 1 Monsoon Currents Upon Sea Surface Temperature in the Arabian Sea

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Two remarkable phenomena occur every year in the Arabian Sea, defined as the region north of 8°N and west of India. The sea surface temperature (SST) in August (summer) is nearly as low as that in January and February (winter), and the surface wind speed is largest in July when it is twice as large as in January or February. Many processes influence SST in the Arabian Sea: clouds, wind mixing, horizontal and vertical heat advection, and air-sea heat fluxes. This report describes the influence of wind-driven currents upon SST during the 1992, 1993 and 1994 southwest monsoons. By the time of the Conference, data may be available to describe results associated with the 1995 southwest monsoon. During the southwest monsoon, the average southward Ekman and Sverdrup transports, which were computed from ERS-1 surface wind velocity measurements, were about 23 Sv (1 Sv = $1 \times 10^6 \text{ m}^3 \text{ S}^{-1}$) and 14 Sv, respectively, along 8.5°N. At the same time, the vertical transport into the Ekman layer over the Arabian Sea north of 8.5°N was about 8 Sv. Year-to-year variations were small. The inferred transport into the Arabian Sea by the Somali Current will be discussed. Similar simulations of the wind-driven ocean circulation computed with ECMWF winds revealed a surprisingly different result: along 8.5°N the southward Ekman transport was nearly two times larger than the Sverdrup transport. The relative accuracies of the two wind data products will be discussed.