Satellite Observations of the Somali Jet in the Arabian Sea

David Halpern
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, CA 91109
U.S.A.

The Arabian Sea has the second largest, Southern Ocean having the largest, surface wind speed over the global ocean during Northern Hemisphere summer. The first part of the talk deals with wind generated ocean response. In the central Arabian Sea, the vertical velocity at the bottom of the ocean Ekman layer lifts and deepens, respectively, the thermocline north and south of the axis of the Somali Jet. Thus, the sea surface is higher south of the Somali Jet axis compared to the north region and, consequently, an eastward geostrophic current is postulated, which was measured with satellite-tracked drifting buoys. In the second part of the talk, an atmospheric response to the Somali Jet is described. As the Somali Jet expands across the Arabian Sea after its onset off Africa, the surface wind convergence in the eastern Arabian Sea increased 3 fold compared to the amount of convergence before the onset. During 1988 – 1989, the time of onset of the Somali Jet, defined by the occurrence of 12 m/s wind speeds for six days, always preceded the onset of monsoon rains in Goa. When the monthly mean intensity of the Somali Jet was above normal, there was excess rainfall along the India west coast, and vice versa. A weaker Somali Jet accompanied El Nino; a stronger Jet was associated with La Nina.