

ERS-1 Surface Wind Convergence over the Arabian Sea During 1992-1993

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Abstract

The sea surface temperature (SST) over the Arabian Sea during the 1987-1993 monsoons will be described from Advanced Very High Resolution Radiometer (AVHRR) measurements recorded on the National Oceanic and Atmospheric Administration (NOAA) polar-orbiting spacecrafts. The year-to-year difference of sea surface temperature (SS'1') over the Arabian Sea (c. g., during the 1987 and 1988 southwest monsoons) was much less than the interannual variations of rainfall recorded over India, indicating a minor influence of SST upon the intensity of the monsoon atmospheric circulation. In this paper, the effect of surface wind convergence upon the 1992 and 1993 monsoon intensities is examined. The Advanced Microwave Imager (AMI) on the European Space Agency (ESA) first Earth Resources Satellite (ERS-1), which was launched in July 1991, measures the sea surface Bragg scattering of C-band or S-cm electromagnetic radiation. Of several methodologies used to transform the measured radiances at the spacecraft into 10-m height wind vectors, the Freilich and Dunbar (1993) data set is employed. The space and time structures of the $1/3^\circ \times 1/3^\circ$ half-monthly mean 10-m wind convergence will be discussed, and a relationship with cloud amount will be examined. Whether the high wave number variability of the wind field is important will be described. Validation of ERS-1 derived 10-m height wind convergence is made in the Atlantic Ocean where a comparison is made of the 28° W-latitudes of the Intertropical Convergence Zone (ITCZ) that are computed from METEOSAT-derived cloud amounts and from the ERS-1 derived wind convergence (Halpern, Freilich and Citcau, in preparation).