E1-06: Analysis of remotely sensed data on sea surface temperature of waters around Sri Lanka

K K A S Yapa
(Dept of Physics, University of Ruhuna, Matara)

Remotely sensed AVHRR (Advanced Very High Resolution Radiometer) data from NOAA (National Oceanic and Atmospheric Administration) satellites for the period January 1996 – May 1997 are processed to produce sea-surface temperature (SST) maps of waters that surround Sri Lanka. Raw data of 1 km resolution from day time passes of satellites NOAA 12 and NOAA 14 on reletively cloud free days during the above period have been used to produce SST maps within the area of latitudes between 4.5N –11N and longitudes between 78E-85E. The days with heavy clouds were left unprocessed as they do not give any SST information after atmospheric corrections. The land areas are masked out for clarity.

Composite averages of SST for each month are also made. The highest SST values are recorded in the month of April while lowest values can be seen in January and December, in both 1996 and 1997. Comparison of first few months (Jan-May) in 1996 and 1997 shows that, on the average, SST is higher for 1997 than for 1996.

Time series evaluation by Principal Component Analysis using monthly composite SST maps for the above period has also been carried out. The cloud cover was removed and each composite was smoothed using a (3x3) median filter. The composites were standardized and spatial eigen vectors and their corresponding temporal amplitudes were computed via singular value decomposition. First four of the computed empirical orthogonal functions explained about 68% of the total variance with first one having 41.5% variance. It can be seen that, on the average, the waters in the north and north-east regions are warmer while south-west and south-east regions are reletvely cooler.

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