National Conference on Recent Advances in Science, Engineering, Humanities, and Management (NCRASETHM - 2024)
28th January, 2024, Banquet, Noida, India.

CERTIFICATE NO : NCRASETHM /2024/C0124132

A STUDY OF GROUND-BASED REMOTE SENSING FOR DETECTING AND ANALYZING FOG INCIDENTS

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ABSTRACT

Fog over the IGP as measured by satellite has been covered in earlier chapters, along with the overall scenario of fog conditions and the influence of meteorological elements. Because satellite photography has better spatial, spectral, and temporal resolutions, it covers the fog over the IGP in its whole. On the other hand, since fog occurs close to the surface and makes visibility low, ground-based observations can provide a more accurate estimate of fog episodes. Meteorological station visibility readings used to be the foundation for fog detection. A ground-based active remote sensing device, a ceilometer uses LIDAR technology to monitor height range from the ground with high temporal resolution. An LIDAR's fundamental components are its transmitter and receiver. In order to collect the backscattered photons, the laser pulses are transmitted through the atmosphere and then collected at the receiver. Clouds, aerosols, and trace gases can be measured using the received backscattered profile. Ceilometer can track the movement of smoke, dust, and other air pollutants. In addition, the Ceilometer has become an indispensable tool for studying planetary boundary layer structure and turbulent processes through ground-based observations of Cloud Base Height (CBH). Ceilometer and satellite-based observations have been used to determine the boundary layer cloud percentage across the North Atlantic region. Low cloud fraction daily fluctuations and diurnal cycle are calculated. This method determined the relationship between the height of the mixed layer and CBH, and it classified the atmospheric boundary layer according to the type and cover of clouds.