

SODAR System

Sound detection and Ranging (SODAR) is one of the best means to probe the lower atmosphere. Acoustic pulses of short duration are transmitted at single frequency vertically upwards in the atmosphere using an acoustic antenna. The sound waves while interacting with thermal inhomogenities and wind get scattered. In monostatic SODAR system the back scattered acoustic pulses are received by the same antenna which are coming back from thermal inhomogenities in the atmosphere. These signals are amplified, processed and displayed as echogram. It can probe up to a height of 1 km. Mixing height and stability condition can be got by analyzing the echogram which are useful in interpretation of air quality data and air quality modeling. SODAR echogram also give information about the height of inversion, time of onset and decay of thermal plumes, height of fog layer, strength of turbulence etc. A monostatic SODAR system made by National Physical Laboratory, New Delhi is in operation at CPCB, Delhi.

In the system a pulse of frequency 2.26 KHz is generated through software in every 6 secs. Data acquisition in the system is controlled through user friendly software. The data acquired is processed by the software, an online display of ABL thermal structure is produced and the records are stored.

Automatic Weather Station

Automatic weather station working at Parivesh Bhawan collects data of meteorological parameters as wind speed, wind direction, temperature, relative humidity, solar radiation, atmospheric pressure, and rainfall. These data are useful in interpretation of air quality data and air quality modeling.

In this automatic weather station wind speed and wind direction are measured by ultrasonic sensors, temperature is measured by Pt 100 sensor and relative humidity by a capacitive sensor. Solar radiation measurement is done by silicon photodiode sensor, atmospheric pressure is measured by a piezoresistive sensor and rainfall by tipping bucket method by detecting tipping procedure by sensors. Output of the sensors are given to a data logger where it process and store the data. The data can be retrieved and further processed by the software installed in PC kept inside laboratory which is connected to the data logger.