

## LIGHTNING DETECTION NETWORK

### DESCRIPTION:

- Lightning Detection network system detects the cloud to Ground lighting. Indigenous LDN in North India will help in understanding the Lightning climatology and it's linkage with climate change.
- LDN system gives the Accurate location of lighting with the accuracy in several meters.
- Total 6 nodes are required to cover North East area of India. Base line of each node is 100–200 Kms

### SPECIFICATIONS:

|                                  |                                                      |
|----------------------------------|------------------------------------------------------|
| Lightning Type                   | Cloud to ground (flashes & strokes)                  |
| Time Synchronization             | GPS receiver with few tens of nanoseconds accuracy.. |
| Network Detection Efficiency     | >80% (for C-C)                                       |
| Location Accuracy                | <1KM for CG                                          |
| Nominal Baseline Between Sensors | 100 –200KM                                           |
| VLF Band                         | 1– 30KHz                                             |
| Remote monitoring                | Remote monitoring of nodes and central station.      |

### FEATURES:

Eight Lightning Detection nodes to be installed in North East region of India for Cloud to Ground Lighting detection. VLF receiver at 1–30 KHz. FPGA based data acquisition system .GPS time stamping for accurate location finding Single board computer based node controlling software for data decimation to server on Ethernet Data collection from all the nodes on the Processing server. Sophisticated software for the lightning data visualization.

### END USERS:

Indian Meteorological Department  
Local Authorities for data distribution





## MICROWAVE RADIOMETER

# MICROWAVE RADIOMETER FOR EXTRACTION OF CONTINUOUS TEMPERATURE & HUMIDITY PROFILE

### DESCRIPTION:

- The ground based microwave radiometer gives an unattended continuous atmospheric profiles with high vertical resolution (from 100 m to 10 km) and low maintenance

### SYSTEM SPECIFICATION:

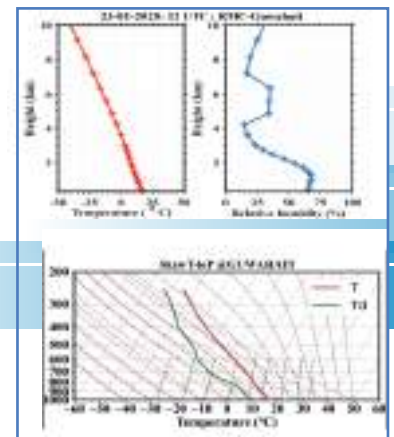
| Parameter                      | Specifications               |                                                                       |
|--------------------------------|------------------------------|-----------------------------------------------------------------------|
|                                | Humidity                     | Temperature                                                           |
| Frequency of Operation         | K Band (20-30 GHz)           | V Band (50-60 GHz) 100-400 K                                          |
| Brightness temperature range   | 5-100 K                      | 400 ms onwards                                                        |
| Average time (user selectable) | 400 ms onwards               | 10 km<br>50 m to 250 m (user defined)<br>400 m to 1 km (user defined) |
| Max. Height Coverage           | 10 km                        |                                                                       |
| Vertical resolution Below 2 km | 50 m to 250 m (user defined) |                                                                       |
| Above 2 km Range               | 400 m to 1 km (user defined) |                                                                       |
|                                | 0-360                        |                                                                       |

### APPLICATION :

- The continuous data from Radiometer have applications in Weather forecasting, Atmospheric research, Space Research, Local forecasting and aviation.

### INSTALLATION SITE :

- IMD, Guwahati, Assam





## RADIO-THEODOLITE

### DESCRIPTION:

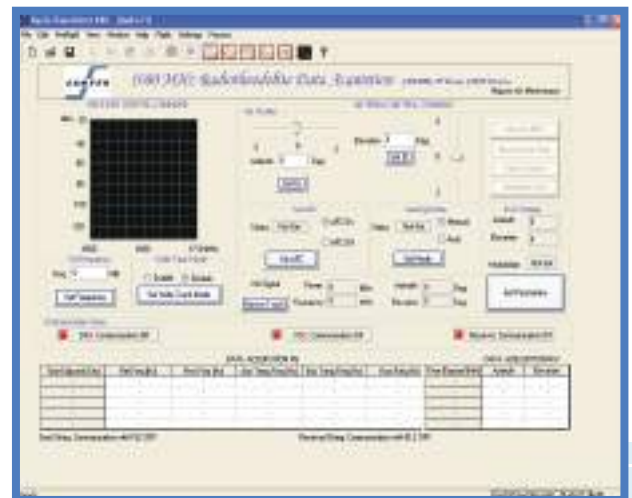
Design and development of 1680 MHz Radio-theodolite System for automatic tracking of weather balloon. The Radio theodolite computes wind velocity and the parameter profile from the received data. This data is useful for prediction.

### APPLICATION :

- Tracking of GPS-balloon : space-coordinates
- Vertical profiles of atmosphere

### INSTALLATION SITE :

Installed at IMD Mumbai,





## STRATOSPHERE-TROPOSPHERE RADAR

### DESCRIPTION :

ST Radar is a clear air radar wind profiler developed by SAMEER and installed at Gauhati University. It is India's first indigenous system in the 200 MHz band with an open Configuration (antennas and T/R modules placed in open field). The system provides high-quality data on wind speed and direction with excellent spatial and temporal resolution. This continuous data is useful in understanding various atmospheric phenomena in the North-East region of India and can enhance weather prediction when integrated into numerical weather models." ST Radar has been established at Guwahati University Campus (26.140N, 91.730E, 50 mts above MSL) by SAMEER, Mumbai.

### SYSTEM SPECIFICATION

- Type of system: 576 element Active Phased Array with T/R Modules
- Frequency: 212.5 MHz
- Bandwidth :4MHz
- Antenna element :Four element Yagi-Uda antenna
- Antenna element gain: 7.9 dBi
- Height Coverage: 500 m to 20 kms (Depending upon Cn2)

