

Indian Institute of Tropical Meteorology (IITM), Pune

Press release (12.3.2024)

Inauguration of Atmospheric Research Testbed facility in Central India (CORE MONSOON RESEARCH LABORATORY OF IITM)

Key Highlights:

- HMoES dedicated the IITM's ART facility to the Nation
- Inauguration of the ART facility marked a significant milestone in India's journey towards becoming a global leader in atmospheric research and forecasting.
- The Atmospheric Research Testbed (ART) represents a pioneering initiative by the Indian Institute of Tropical Meteorology (IITM) to enhance our understanding of atmospheric dynamics and improve weather prediction capabilities.
- ART –CI located in Silkheda, Sehore, Madhya Pradesh, ART serves as a cutting-edge platform for comprehensive atmospheric observations
- Equipped with a diverse array of remote-sensing and in-situ instruments, the facility enables continuous monitoring of key meteorological parameters such as convection, clouds, cloud microphysics, precipitation, and land surface properties.
- The establishment of ART underscores IITM's commitment to advancing atmospheric science and promoting interdisciplinary research collaborations.

CRL,NCCR,Vishakhapatnam; 12.3.2024: The Chief Guest, Hon'ble Union Minister of Earth Sciences, Shri Kiren Rijiju ji today remotely inaugurated the Atmospheric Research Testbed (ART) - Central India which is located in Silkheda, Sehore, Madhya Pradesh during the inauguration of the National Centre for Coastal Research (NCCR) Coastal Research Laboratory (CRL), Bhoomi Puja of Research Building of NCCR - CRL at Dolphin's Nose, Visakhapatnam on 12th March 2024. The Hon'ble Union Minister unveiled the ART–CI site in the august presence of Secretary, Ministry of Earth Sciences (MoES), Dr. M. Ravichandran, Director NCCR, Dr. M V Ramana Murthy, Director IITM, Dr. R. Krishnan, Project Director ART, Dr. G. Pandithurai.

While addressing the online gathering, the Minister said that he is very much satisfied with the Ministry's dedicated professional team, their efforts and their work environment that have led to breaking various barriers of atmospheric sciences and leading the nation with new capacities. He congratulated the two newly inaugurated centres of MoES institutions and the associated team for their dedicated contribution to the nation.

The complete inaugural program was live telecasted and is available online:

<https://youtube.com/live/d-MAbIjla1M?feature=share>

Brief Information of Atmospheric Research Testbed facility in Central India (ART-CI)

The monsoon trough over the Central India (CI), which mostly comprises of the monsoon core zone, is one of the important semi-permanent systems of the regional monsoon system. Detailed atmospheric measurements in the monsoon core zone are important to comprehensively understand monsoon synoptic-scale disturbances such as lows and depressions, which usually form over the Bay of Bengal during the summer monsoon season and move west-northwest over CI and produce abundant rainfall over the Indian region. It is known that the variability in all-India summer monsoon rainfall is highly correlated with that of summer monsoon rainfall over CI, so an improved prediction of rainfall variability in CI region should certainly help improve the larger-scale predictability.

Considering the importance of observational and analytical research in this task, an Atmospheric Research Test bed in Central India (ART-CI) is established at Silkheda in Sehore district of Madhya Pradesh (50 km northwest of Bhopal) in central India. The ART-CI will have an extensive set of remote-sensing and in-situ instruments that will provide continuous observations of convection, clouds, cloud microphysics, precipitation, land surface properties and surface energy budget, (and many more) to capture all of the major modes of variability in the atmosphere, including diurnal, synoptic, seasonal, and yearly variations in monsoon core zone.

Numerical models play a vital role in monsoon prediction. But all weather and climate models have some systematic biases due to inadequate representation of tropical clouds by parameterization schemes. Long-term observations of clouds including their convection, microphysical properties and precipitation are critical for understanding the root causes of model errors and/or biases.

At ART-CI permanent observation facility, the integrated data sets from concurrent and collocated multi-instrument observations (e.g. millimetre and centimetre wavelength radars, wind profiler, radiosonde, meteorological tower, radiometer, lidar, ceilometer, disdrometer, high-density rain-gauge network, and many more) will be obtained. Products that can be obtained concurrently are very useful for process studies include: e.g. vertical profiles of environmental moisture from soundings and profiling instruments, cloud and precipitation morphology and organization from scanning and vertically pointing radars of multiple frequencies, three-dimensional hydrometeor types and fall speeds in convective and mesoscale cloud systems from dual-polarization radar and vertical pointing radar, vertical velocity information at cloud scale from non-precipitating through deep clouds from wind profiler. This data set shall provide statistics of quantities (or their distributions) over long time period and many “real life” conditions and thus give a large number of cases for testing and evaluating model representation of the physical processes observed.

The ART-CI project is a highly focused observational and analytical research facility which will provide resources for Indian monsoon process studies and also evaluating global weather and climate models. These efforts are vital in the interest of accelerating improvements in both observational methodology and monsoon prediction models in India.

For more details, contact the following:

Dr. G. Pandithurai, Scientist-G & Project Director-ART, IITM, Pune (Email: pandit@tropmet.res.in)

Media related query: Mrs Shompa Das, PRO, IITM Pune (Email: pro@tropmet.res.in)

Photographs of ART Site:



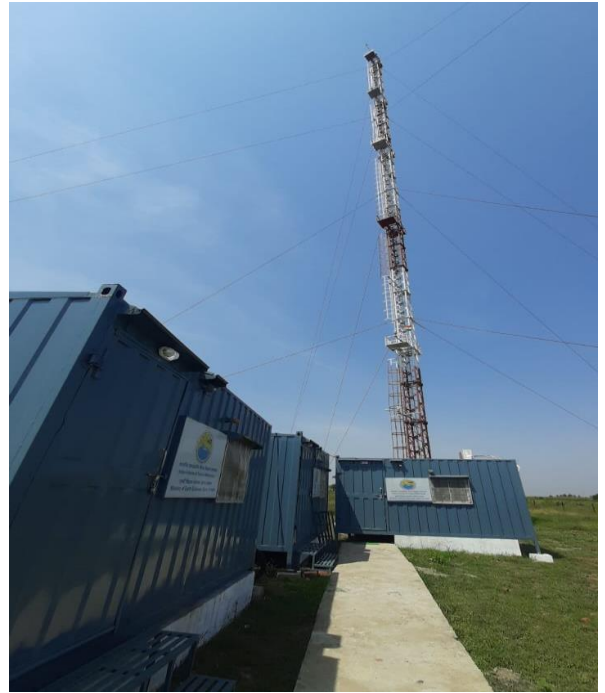




Fig: ART at a glimpse

Inaugural session

