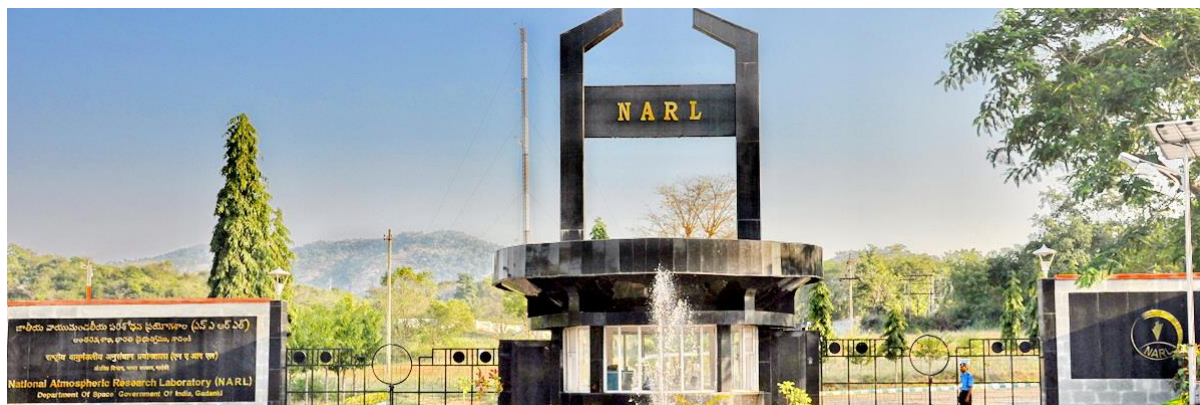


National Atmospheric Research Laboratory



ABOUT

National [Atmospheric Research Laboratory](#) in Gadanki Village, Tirupati, Andhra Pradesh, India and NARL is an autonomous research laboratory fully funded by the Department of Space, Government of India. The centre was established in 1992. NARL is involved in Atmospheric and Space Sciences by carrying out fundamental and [applied research](#). NARL starts as the National Mesosphere-Stratosphere-Troposphere (MST) Radar Facility. NARL is managed by a Governing Council with Secretary, DOS as the Chairman and Director, NARL as member secretary. It is one of the prime centres for atmospheric research in India. Prime work as a state-of-the-art MST radar, Sodium Lidar, [Optical Rain Gauge](#), etc.

Research Centre Name	National Atmospheric Research Laboratory
Centre Type	Central
Governed By	Department of Space
Location	Andhra Pradesh, India
Topic Cover	A state-of-the-art MST radar, Rayleigh/ Mie Lidar, Boundary Layer Lidar, Sodium Lidar, Lower Atmospheric Wind Profiler, Sodar, Disdrometer, Optical Rain Gauge, GNSS-NavIC receiver, Automatic Weather Station apart from regular launching of the GPS Radiosonde
Application Mode	Online & Offline
Head	Dr. Amit Kumar Patra
How to Reach	NARL, Andhra Pradesh
Founded In	1992
Website Link	Click Here

MISSION AND VISION

Through observations and modelling NABL is on a vision to develop capability for predicting the behavior of the [atmosphere](#).

DIFFERENT PUBLICATIONS FROM CENTRE

Some of the published research work of centre year wise. Some of the titles are listed in below table.

1) 2021 Articles

1	Representation of Arabian Peninsula summer climate in a regional atmospheric model using spectral nudging.
2	Role of meteorological regime in mitigating biomass induced extreme air pollution events.

3	Impact of assimilation of satellite retrieved ocean surface winds on the tropical cyclone simulations over the north Indian Ocean.
4	Phase-wise analysis of the COVID-19 lockdown impact on aerosol, radiation and trace gases and associated chemistry in a tropical rural environment.
5	Temperature tele-connections between the tropical and polar middle atmosphere in the Southern Hemisphere during the 2010 minor sudden stratospheric warming.
6	Vertical and spatial distribution of elevated aerosol layers obtained using long-term ground-based and space-borne lidar observations.
7	Impact of COVID-19 lockdown on ambient air quality in megacities of India and implication for air pollution control strategies.

2) 2020 Articles

1	Wind Profile Tracking in MST Radar Using Viterbi Data Association.
2	Objective evaluation of stubble emission of North India and quantifying its impact on air quality of Delhi
3	COVID-19 lockdown induced changes in NO ₂ levels across India observed by multi-satellite and surface observations.
4	Relationship between presunset wave structures and inter bubble spacing: The seeding perspective of equatorial plasma bubble.
5	Daily and monthly variations of the Equatorial Ionization Anomaly (EIA) over the Brazilian sector during the descending phase of the solar cycle 24.
6	Ionospheric disturbances in a large area of the terrestrial globe by two strong solar flares of September 6, 2017, the strongest space weather events in the last decade.
7	Large-scale dynamics of western disturbances caused extreme precipitation on 24-27 January 2017 over Jammu and Kashmir, India.

RESEARCH AND DEVELOPMENT GROUPS

1) Aerosols, Radiation and Trace Gases Group

Aerosols, Radiation and Trace Gases Group (ARTG) is a group which is involved in research of [atmospheric aerosols](#), trace gases, radiations, clouds and their interactions. The small sub-micron size particles known as aerosols which are produced from a variety of man-made as well as natural processes such as vehicle exhaust, waste-burning, wind-blown dust, [volcanic eruptions](#) etc.

ARTG group has a long-term project to research on atmospheric aerosols, trace gases and clouds and their consequences on the [earth's radiation](#) budget and clouds using observations and modelling.

2) Atmospheric Structure and Dynamics Group

Atmospheric Structure and Dynamics Group focuses to evaluate and detect the atmosphere through exact, long-term, and comprehensive sensing by using radio and [optical waves](#) both by active and passive means. Interests and areas of research of the group involves, research of Middle [Atmospheric Dynamics](#) with special priority on tropospheric and lower stratospheric structure and dynamics and on mesosphere and lower thermosphere.

3) Clouds and Convective Systems Group

The clouds and convective systems group research on the [microphysics](#) and dynamics of clouds, precipitation and other huge impact on weather systems. An important priority is given to the understanding of the genesis, structure and interaction of these systems with the ambient environment. The organisation is actively involved in understanding the small-scale processes happening near the tropical and extratropical tropopause, boundary layer processes and their connection to the generation of convection, [monsoon dynamics](#), in general, active and break spells, in particular.

4) Computers and Data Management Group

To initiate a data center as per International norms and control the data archival & data dissemination processes. To invent, organize and control the [network infrastructure](#) and all other IT operational facilities. To form and evolve industry standard web based and desktop software application packages for in-house utilization and distribution.

5) Ionospheric and Space Physics Group

[Ionospheric research](#) at NARL was commenced dated back in 1993 using the high power 53 MHz radar located at Gadanki, commonly known as mesosphere-stratosphere-troposphere (MST) radar. This is one of the powerful radar of this kind in the world that is situated at magnetically low latitude (6.4oN magnetic latitude) but well exterior to the equatorial electrojet belt (3o magnetic latitude). We look for to understand the structure, energetics, and dynamics of the ionosphere and the systems that couple it so as to define the future state of the ionosphere finer. A crucial feature is added in the recent time is the studies related to the [space weather](#).

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