

# **Emergence of a World Class Atmospheric Science Facility in the Central Himalayan Regions of India**

A. Taori, S.V. Sunilkumar, P. Pant, R. Sagar

Aryabhata Research Institute of Observational Sciences (ARIES), Nainital, India

A new institute 'Aryabhata Research Institute of Observation Sciences' (ARIES) has re-borne in year 2004 when the Department of Science and Technology, Govt. of India took over the 50 year old State Observatory, Nainital (situated at ~2km above the mean sea level, in the Shivalik range of central Himalayas).

Understanding the importance of Nainital (29.4 N, 79.5 E), it was decided that prime focus should be to set up a world-class research facility for atmospheric sciences apart from the existing astronomy and astrophysics. Reason for the above being the strategic location of Nainital to study the free tropospheric aerosols, stratosphere-troposphere exchange, monsoon dynamics and atmospheric waves. These waves can be seeded by the Himalayan topography and may propagate up to the mesosphere-lower thermosphere altitudes and manifest themselves as an important coupling agent between lower, middle and upper atmosphere. Advance facilities to study the middle atmospheric dynamics are getting established. For this, an 84-cm Rayleigh lidar is under development to study the thermal structure of the middle atmosphere, which will be commissioned by year 2009. A new project has already been approved to set up a stratosphere-troposphere (ST) radar facility which will further help understanding the thermal structure and wind field measurements in troposphere-stratosphere altitudes. To supplement these, several airglow experiments will also be stationed for simultaneous measurements. Such facilities are of great importance for coordination with the space borne measurements.

After the initial testing and data validation of the above instruments, institute would welcome scientific collaboration worldwide. The details of the above facilities and instruments together with the initial results from a Multiwavelength Airglow Photometer will be presented.