

VISION BEHIND THE INITIATIVE

Atmospheric science and climate research is one of the priority focus areas of Central University of Jammu (CUJammu). It is pertinent to mention that CUJammu is fostering research excellence to understand the fundamental science questions in atmospheric chemistry, air quality and climate dynamics. High aerosol load poses severe implications to human health, climate and overall ecosystem. Aerosol particles as ice nuclei (IN) and cloud condensation nuclei (CCN) play important role in determining physical processes like precipitation initiation, cloud properties, radiative transfer and tropospheric composition. The North-Western Himalayas (NWH) has unique climate and geographical settings with rich biodiversity and other natural resources. Despite of the enormous significance, our understanding on key properties of aerosol particles, which may affect the orographic precipitation in this region is limited. This missing link constrains the climate models and limit the accuracy of climate predictions from this region. According to the International Panel on Climate Change (IPCC), aerosol-cloud interactions play a key role in climate forcing, but there is a lack of fundamental understanding on cloud forming properties of aerosols and there is an urgent need of increased spatial coverage of in-situ (field) measurements. This centre will serve as foundation for long-term research collaboration and continued knowledge exchange between CUJammu and other institutions in India and abroad. The long-term objective behind the establishment of H2A2CR Centre is to contribute to the Global Atmospheric Watch (GAW) Programme of World Meteorological Organization (WMO). The expansion of measurement network at this high altitude centre will ensure the sustainability of Himalayan ecosystem for benefit of society at large. Overall, the planned studies at this strategic high altitude location in the NWH will lead to accomplishment of following extra-ordinary milestones:

- ⇒ **Capacity building:** This centre is going to be the first of its kind atmospheric and climate research centre in J&K. This breakthrough development will strengthen the science and technology infrastructure of this region and will be an important step towards self-reliant India.

- ⇒ **Skill development through training and support to scientists and students:** This centre serves as a hub for knowledge dissemination and skill development where researchers from all over the country are trained to pursue atmospheric and climate research.

- ⇒ **Fostering of new interdisciplinary collaborations between scientists:** One of the objectives of this centre is to serve as connecting link between science and society through interdisciplinary research.
- ⇒ **Climate research in the Himalayas:** This centre will evolve as a Nodal centre to conduct cutting edge research in the field of atmospheric science and climate change through national and international collaborations. Continuous measurements will lead to ready database which can be further used by academicians, scientists and policy makers.
- ⇒ **Air quality and ecosystem health:** Under the existing MoU with JKPCC and JK Forest Department, currently continuous measurements of PM₁₀, PM_{2.5}, NO_x, SO_x and NH₃ are going on. Further addition of instrumentation will lead to quality controlled database which will further help in assessing the implications of air quality parameters on biodiversity and human health.
- ⇒ **Societal impact and policy framework activities:** Regular inputs to the policy makers will help in formulating region specific policy framework to achieve clean air goals in the J&K, which will directly lead to sustainable livelihood in the region.

