

**Dr. Harsh vardhan inaugurates high performance computing (HPC) facility at Noida**

Ministry of Earth Science

**Dr. Harsh vardhan inaugurates high performance computing (HPC) facility at Noida****Facility to propel India's ranking to Top 30 in the list of hpc facilities in The World**

Posted On: 30 JAN 2018 5:18PM by PIB Delhi

Union Minister for Earth Science, Environment, Forest & Climate Change, Dr. Harsh Vardhan has urged scientists and researchers to strengthen fundamental science and move towards solution science. Dedicating to the nation, the High Performance Computer (HPC) System named 'Mihir' (meaning 'Sun') at the National Centre for Medium Range Weather Forecasting (NCMRWF) at Noida today, Dr. Harsh Vardhan said that with this facility, India's capacity in weather forecasting will improve. The Minister said that the HPC facility will be India's largest HPC facility in terms of peak capacity and performance and will propel India's ranking from the 368th position to around the top 30 in the Top 500 list of HPC facilities in the world. He also pointed out that India will now also be ranked 4<sup>th</sup>, after Japan, UK and USA for dedicated HPC resources for weather/climate community. Dr. Harsh Vardhan expressed confidence that soon India will be able to match the capacities of these four nations. Stating that India's scientific research capabilities can be compared to the best in the world, he pointed out that Government sponsored National Laboratories top the institutions contribute most in terms of number of research papers in the field of Earth Sciences.

Dr. Harsh Vardhan stated that the Ministry, in collaboration with Indian Council of Agricultural Research (ICAR) is providing district-level agro meteorological advisories to farmers through 130 agromet field units. "Presently about 24 million farmers receive these advisories with information of weather forecasts on district level. These services will now be extended to block level (for about 6500 blocks) by establishing district centres (630 centres) with the help of ICAR KrishiVigyanKendras. It is planned to reach out to about 45 million farmers by July 2018", he said. In this regard, the Minister also referred to the Union Cabinet's approval to the National Monsoon Mission. Recounting some of the other achievements of Ministry of Earth Science, Dr. Harsh Vardhan referred to a Rs. 500 crore project in Koyna for putting in place an earthquake warning system.

Speaking on the occasion, Secretary, MoES, Dr M. Rajeevan said that at present, forecasts are being made for the district level, but efforts are being made to take it down to the block level.

The new HPC facility is expected to improve the following services:

- Weather forecasts at block level over India which can predict extreme weather events.
- High resolution seasonal/extended range forecasts of active/break spells of Monsoon.
- Very high resolution coupled models for prediction of cyclones with more accuracy and lead time.
- Ocean state forecasts including marine water quality forecasts at very high resolution.
- Tsunami forecasts with greater lead time.

- Air quality forecasts for various cities
- Climate projections at very high resolution.

This new HPC facility will not only help in meeting the operational requirements of the MoES but also support the research and development activities in MoES and other academic institutions working on various problems related to Earth Science. The Ministry of Earth Science has developed several services for societal benefits catering to a variety of sectors of economy by building state-of-the-art systems for multi-hazard risk reduction from cyclones, floods/droughts, heat/cold waves, earthquakes and tsunamis. The Ministry has acquired the HPC facility of 6.8 Peta Flops (PF) and has been installed at two of its constituent units: 4.0 Peta Flops HPC facility at Indian Institute of Tropical Meteorology (IITM), Pune and 2.8 Peta Flops facility at NCMRWF, Noida. The HPC facility 'Pratyush' at IITM was dedicated to the nation on January 8, 2018. This facility is part of Ministry's continuous endeavor to provide world class forecast services to the citizens of India through its various operational and research and development activities.

The Ministry holistically addresses all aspects related to the Earth System Science for providing weather, climate, ocean, coastal state, hydrological and seismological services. The services include forecasts and warnings for various natural disasters. In addition, the ministry also has the mandate to undertake ocean surveys for living and non-living resources and exploration of all the three poles (Arctic, Antarctic and Himalayas). The services provided by the Ministry are being effectively used by different agencies and state governments for saving human lives and minimizing damages due to natural disasters.

## **REPORT ON BIBLIOMETRICS ANALYSIS OF RESEARCH IN EARTH SCIENCE RELEASED**

Dr. Harsh Vardhan also released the report titled "Bibliometrics analysis of research in the field of Earth System Science" on the occasion. He emphasized that on an average, Indian researchers contribute about 5% of papers in Earth Sciences published worldwide and Indian researchers contribute about 7% of highly cited papers published in Earth Sciences worldwide.

After releasing the report, the Minister said that India's scholarly output has shown a growth of 11.8% (Compound Annual Growth Rate) during 2006-2015, registering a sharp increase from 5.6% (1995 to 2005). The Minister underlined that in terms of number of research papers during the recent decade (2006-2015), India stands 1<sup>st</sup> in Himalayan Research, 9<sup>th</sup> in Atmospheric Sciences, 9<sup>th</sup> in Geosciences, 15<sup>th</sup> in Ocean sciences, 16<sup>th</sup> in Antarctic Research and 25<sup>th</sup> in the field of Arctic Research. The Minister also stated that institutes that top in various fields include - NGRI, Hyderabad in Geosciences, IITM Pune in Atmospheric Sciences, NIO Goa in Ocean Science, NCAOR Goa in Antarctic and Arctic Sciences and Wadia Institute Dehradun in Himalayan Science. Dr. Harsh Vardhan also pointed out that some universities come very close to the top positions and cited Annamalai University in Ocean Sciences and IIT Kharagpur in Geosciences as examples.

Expert analysis of global research outputs is an essential prerequisite to understand global structure and dynamics of research and development and integrate it into policy documents. Latest tools and techniques of Bibliometrics and Scientometrics are routinely used for such analysis. Understanding the importance of this activity, a project was taken up for the first time in the Ministry of Earth Sciences (MoES) to carry out intensive analysis of research landscape of Earth System Science in India and the world, in two time periods: 1996-2005 and 2006-2015. Publication of the report titled "Bibliometrics analysis of research in the field of Earth System Science" is the outcome towards that end. The report will help us to understand research

development scenario in Earth System Science, and the position of India in international landscape.

The Study was performed on the following six topics which are of relevance to the Ministry of Earth Sciences, in two time periods, 1996 to 2005 and 2006 to 2015.

- I. Antarctic Research
- II. Arctic Research
- III. Himalayan Research
- IV. Atmospheric Science & Technology
- V. Geo-science and Technology (Geo Research) and
- VI. Ocean Science and Technology (Ocean Research).

### **Some other key findings:**

- Global research in Earth System Science published 340,905 papers between 1996 and 2005 and 571,616 papers between 2006 and 2015, a nearly 70% increase between the two decades. Annual research output in all subject areas increased in the 20-year period.
- The proportion of internationally collaborative papers also increased from 27.6% to 36.7%. Between 1996-2005 and 2006-2015, the level of international collaboration increased in the most recent period in all six subject areas.
- On an average 20-30% of research papers published by Indian researchers come from international collaborations.
- Among the funding agencies in research, DST, MOES and CSIR contribute maximum number of research papers.

Director, Indian Meteorological Department (IMD), Dr. K.J Ramesh, the Head of NCMRWF, Dr. E.N Rajgopal, Project Director, Dr. Praveen Kumar, Joint Secretary, MoES, Dr. Vipin Chandra were among those in the gathering.

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**HK**

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