

GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 357**  
ANSWERED ON 25/07/2024

**USE OF SUPERCOMPUTERS IN CLIMATE RESEARCH**

357. # SHRI BABURAM NISHAD:  
SHRI SUDHANSHU TRIVEDI:  
SMT. GEETA ALIAS CHANDRAPRABHA:  
SHRI NARAYANA KORAGAPPA:  
DR. MEDHA VISHRAM KULKARNI:  
SHRI SANT BALBIR SINGH:

Will the Minister of **EARTH SCIENCES** be pleased to state:

- (a) the significance of supercomputers in tackling challenges of climate change and research;
- (b) the details regarding supercomputers in the country set up for climate research; and
- (c) the Government's plans to help the farmers of Punjab by establishing any such research centre in the State?

**ANSWER**  
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR  
MINISTRY OF SCIENCE AND TECHNOLOGY  
AND EARTH SCIENCES  
(DR. JITENDRA SINGH)

- (a) India has made significant strides in supercomputing for weather forecasting and climate research. Supercomputer facilities are crucial to improving weather forecasting for seasonal, long, and short-range predictions, ensemble predictions with more members, and climate change scenario generation for hundreds of years. These computationally intensive processes require advanced computational resources and high storage capacities. Supercomputers have been the backbone of significant improvements in weather forecast accuracy over the past two decades. Supercomputers are used for weather and climate modeling, coupled ocean-atmosphere-biosphere-cryosphere models, and associated data assimilation, which are highly compute-intensive tasks.
- (b) The existing supercomputer details are as follows:
  - i. Pratyush:
    - Located at the Indian Institute of Tropical Meteorology (IITM) in Pune
    - Peak speed: 6.8 PetaFlops
    - Purpose: Weather forecasting and climate research
  - ii. Mihir:
    - Located at the National Centre for MediumRange Weather Forecasting (NCMRWF) in Noida
    - Peak speed: 2.8 PetaFlops
    - Used for the operational activity of MoES for monsoon prediction, air quality assessment, extreme event forecasting (like cyclones), natural disaster management, etc.

- (c) Ministry of Earth Sciences (MoES) implements the central sector schemes uniformly throughout the country and provides its services to all the stakeholders including the farmers of Punjab. The agromet advisories are disseminated to the farmers of Punjab through five AgroMet Filed Units (AMFUs) situated in Bhatinda, Faridkot, Gurudaspur, Ludhiana and Kandli, established by the India Meteorological Department through the collaboration with ICAR. Currently, there are no plans to establish any separate research centers in the State of Punjab.

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