

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 2588
TO BE ANSWERED ON WEDNESDAY, 7THAUGUST, 2024**

EARTH SCIENCES RESEARCH

2588. SHRI MANICKAM TAGORE B:
SHRI VIJAYAKUMAR ALIAS VIJAY VASANTH:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the status of technology infrastructure and equipment used in Earth Sciences Research and Monitoring across the country;
- (b) details of the specific technological challenges faced by earth scientists in conducting research, data collection and analysis;
- (c) whether the Government plans to upgrade existing technology to enhance capabilities in areas such as climate modeling, disaster prediction, and natural resource assessment;
- (d) whether any collaborative efforts or partnerships with research institutions, private sector entities, or international organizations aimed at advancing technological innovation in Earth Sciences has been initiated by Government, if so, the details thereof;
- (e) the steps taken by the Ministry to integrate cutting-edge technologies such as remote sensing, artificial intelligence and big data analytics into Earth Sciences Research and applications; and
- (f) whether the Government outline any budgetary allocations or funding priorities for technology upgradation in the field of Earth Sciences for the current fiscal year?

ANSWER

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

- (a) The technology infrastructure and equipment used in Earth Sciences Research and Monitoring across the country include:
 - High-Performance Computing (HPC) facility of 6.8 PFlops for weather and climate services.
 - 39 Doppler Weather Radars for weather monitoring.
 - A fleet of Six scientific research vessels to conduct the oceanographic research programmes/projects the Arabian Sea, Bay of Bengal and the Indian Ocean.
 - Two year-round stations in Antarctica (Maitri and Bharati), one station in Arctic (Himadri), and one station in the Himalayas (Himansh).
 - Atmospheric Research Testbed which is an open field observatory with state-of-art Instruments near Bhopal for better understanding of monsoon processes.
 - A high-altitude cloud physics laboratory (HACPL) was established at Mahabaleshwar for understanding clouds, aerosols and precipitation over the Western Ghats.
 - Scientific deep drilling to comprehend the genesis of water- reservoir triggered earthquakes in the Koyna region of Maharashtra.

- (b) No.
- (c) Yes. The HPC facility will be augmented by about 21.1 PFlops.
- (d) Yes. Ministry of Earth Sciences in collaboration with the national Institutes is developing the manned submersible for 6000 m water depth under the Deep Ocean Mission.
- (e) Artificial Intelligence (AI) and remote sensing are being used to improve weather, climate, and ocean forecasting skills at various institutes under the Ministry.
- (f) Yes. The budget (BE component) allocated for the central sector scheme Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS) IMD component is 233.27 Cr for the FY 2024-25.
