

GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 1153**  
ANSWERED ON 05/12/2024

**LAUNCH OF HIGH-PERFORMING COMPUTING FACILITY TARANG**

1153. # DR. KALPANA SAINI:  
SHRI MAYANKBHAI JAYDEVBHAI NAYAK:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the features of the TARANG facility at the Indian National Centre for Ocean Information Services (INCOIS); and
- (b) whether this facility will help the oceanographers in giving tsunami warnings in India and neighbouring countries?

**ANSWER**

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

- (a) TARANG is a 64-bit machine, capable of supporting multi-tasking, multi-programming, multi-user and time-sharing environment, of a proven architecture with scalable processing elements, scalable high performance I/O, scalable interconnection network and a balanced design to have 99.5% uptime with adequate redundancies and to avoid single point of failure so as to meet the operational requirements. The HPC system is supported by technical support facilities such as Transformers, Diesel Generators, UPS, Batteries, Multiple utility paths, Lighting system, Adequate no of earthing pits and Cables.

The compute capacity is about 1 Peta FLOPS, with a 2 Peta Byte storage and 3 Peta Byte archival storage. Additionally, there is a dedicated standalone system for Artificial Intelligence (AI) and Machine Learning (ML) applications with a capacity of 15.5 Peta FLOPS.

- (b) Yes. This facility will help INCOIS to provide Service Level 3 Tsunami warning Services in addition to early warning on Storm surges, High Waves, Swell Surge (Kallakadal) and Extreme currents. The workloads of TARANG include:
  - (i) Operational models for providing Tsunami Early Warnings for India and other 25 countries on the Indian Ocean rim,
  - (ii) Next generation Ocean State Forecast system with more accurate representation of physical processes, non-hydrostatic dynamics, high resolution nests for local forecasts and advanced data assimilation techniques and
  - (iii) Developing / improving sophisticated models such as MOM, ROMS, HYCOM, Wave Watch III, SWAN, Tunami N2, ADCIRC leveraging advanced technologies such as Artificial Intelligence and Machine Learning.

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