GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 1050
TO BE ANSWERED ON WEDNESDAY, 26TH JULY, 2023

ACROSS SCHEME

1050. SHRI MADDILA GURUMOORTHY:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the details of the Atmosphere and Climate Research-Modelling Observing Systems & Services (ACROSS) scheme which aims to provide for a reliable weather and climate forecast;
(b) the progress made under the same and the intended impact of the said scheme; and
(c) the details of other measures being taken to improve climate forecasting?

ANSWER
THE MINISTER OF EARTH SCIENCES
(SHRI KIREN RIJIJU)

(a) Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS) umbrella scheme is central sector scheme, pertains to the atmospheric science programs of Ministry of Earth Sciences (MoES). The entire gamut of weather/climate prediction involves the observational systems, assimilation of meteorological observations, understanding the processes, research and development of dynamical models and providing the forecast services. Each of these aspects is incorporated as sub-scheme under the umbrella scheme ACROSS and is implemented by four different institutions under MoES namely: India Meteorological Department (IMD), National Centre for Medium Range Weather Forecasting (NCMRWF), Indian Institute of Tropical Meteorology (IITM) and Indian National Centre for Ocean Information Services (INCOIS) which implements a small part of one of the sub-schemes.

(b) The progress made under the ACROSS scheme are listed below:

(i) Development of global advanced weather prediction models and Ensemble Prediction System to generate deterministic and probabilistic forecasts at a high horizontal resolution of 12 km. In addition, regional models with higher resolution also have been developed.
(ii) For past few years, skill of IMD's weather forecasts and warnings, especially cyclone prediction has improved substantially.
(iii) A first of its kind high-resolution Air Quality Early Warning System for Delhi has been developed to predict extreme air pollution events in Delhi. A very high-resolution (400 meters) model for operational air quality forecasts using both satellite and surface chemical data assimilation has been developed.
(iv) Procurement of 6.8 Petaflop High Performance Computer (HPC) in 2018.

(v) The number of Doppler Weather Radars (DWR) network has been increased to 37.

(vi) A Multi-Mission Meteorological Data Receiving & Processing System **(**MMDRPS) has been established. The system has three dedicated earth station and data receiving system to receive the data from currently operational Geostationary satellites INSAT-3D, INSAT-3DR and INSAT-3DS to be launched in year the 2021-22.

(vii) Seventeen (17) High Wind Speed Recorders (HWSR) were installed at Vishakapatnam, Machilipatnam, Chennai, Goa, Cuddalore, Bhubaneshwar, Kakinada, Puri, Ongole, Digha, Kavali, Haldia, Pamban, Gopalpur, Kanyakumari, Veraval and Bhuj.

(viii) Establishment of 199 new Agro-Meteorological Field Units (AMFUs) for rendering Agromet Advisories in addition to already existing 130 AMFUs.

(ix) IMD provides agrometeorological advisories twice in a week in collaboration with Indian Council for Agricultural Research (ICAR). A recent assessment report published by the National Council of Applied Economic Research (NCAER) concluded that investments made by the Government to enhance weather and forecasting services are yielding great economic benefits to farmers, livestock rearers and fisherfolk. India's investment of nearly 1,000 crores through Monsoon Mission and High Performance Computers yielded benefits worth rupees 50 thousand crores to ~10.7 million below poverty line (BPL) agricultural households and 0.53 million BPL fisherfolk households in the country over a period of five years. Therefore, investments by Government have yielded fifty-fold gains to agricultural farmers, livestock rearers, and fisherfolk of India.

(x) A Lightning Location Network with sensors at 83 locations across the country has been put in place. The DAMINI LIGHTNING ALERT Mobile App has been developed and released in May 2020.

(xi) Thunderstorm warning for 1022 stations covered all over the country as nowcast basis (3hrs forecast).

(xii) The Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX) observational campaign, was conducted during 2018-19 and 2019-20 for understanding cloud and rainfall processes in natural and seeded clouds over the rain shadow region, and resulted in 240 hours of observations.

(xiii) The Indian Institute of Tropical Meteorology (IITM) has developed an Earth System Model (ESM) for the first time. The IITM-ESM will be the first climate model from India that participated in the Coupled Modeling Intercomparison Project-Phase 6 (CMIP6) experiments required for the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report.

(xiv) A new open access book on *Assessment of Climate Change over the Indian Region* has been published in June 2020. This is the first climate change report for the Indian region from the Ministry of Earth Sciences, and discusses the influence of human-induced global climate change over the Indian subcontinent, the adjoining Indian Ocean, the Himalayas and on the regional monsoon.

(xv) State wise reports have been prepared on rainfall changes/trends and its variability based on the recent 30 years of data (1989-2018).

(xvi) Upgradation of the forecast dissemination strategy**.** MoES has made a drastic improvement in the dissemination of weather-related information to all stakeholders, including the public.

(xvii) Atmospheric Research Testbed has been established in the State of Madhya Pradesh with state-of-the art measurement systems for improving the model parameterization.

(c) Augmentation of observational network across the country along with the computing facility helped in improving the weather and climate research in the country.

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