

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 491
TO BE ANSWERED ON WEDNESDAY, 20TH JULY, 2022**

DRONE TECHNOLOGY FOR ATMOSPHERIC DATA

491. SHRI SANJAY SADASHIVRAO MANDLIK:
SHRI MANOJ TIWARI:
SHRI SUDHEER GUPTA:
SHRI SUBRAT PATHAK:
SHRI PRATAPRAO JADHAV:
SHRI SHRIRANG APPA BARNE:
SHRI BIDYUT BARAN MAHATO:
SHRI DHAIRYASHEEL SAMBHAJIRAO MANE:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government is set to deploy drones to gather atmospheric data in place of weather balloons released from different locations in the country from time to time;
- (b) if so, the details thereof and the manner in which this new technology is likely to be beneficial to the India Meteorological Department ;
- (c) whether the Government has conducted any study in this regard and if so, the details thereof;
- (d) the details of benefits likely to be accrued by the Government in the field of weather forecasting through this technology;
- (e) the total amount of money likely to be saved by the Department of Meteorology by using drone technology as instruments attached to the weather balloons are not recoverable; and
- (f) the details of other meteorological activities in which Government proposes to use this drone technology?

ANSWER

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

- (a) Yes sir, India Meteorological Department (IMD) is exploring the possibilities to deploy drones to gather atmospheric data from various locations, in place of weather balloons.
- (b) Currently, radio sounding is the method in practice to measure vertical profile of physical properties of the upper air atmosphere and this is done by launching a transmitter interfaced with sensors aloft a weather balloon. Although weather balloons are widespread in use since long, it poses a limitation to successful recovery of the sensor and also limits the use of more sophisticated and widespread sensors due to underlying implicit cost involved. With the advent and sophistication in the unmanned aerial systems commonly known as drones, IMD is exploring the possibility to replace balloons with drones in gathering upper air observations. This new technology is expected to make the sensors recoverable and reusable thus likely to benefit IMD.

- (c) An inter-departmental committee has been constituted by IMD to conduct studies in this regard. In order to explore the technical feasibility of upper air boundary level data sensing, an invitation to industry and academia to demonstrate experimental drone based radio-sounding on No Cost No Commitment (NCNC) basis has been released by Ministry of Earth Sciences (MoES) and it is available on MoES and IMD websites. The last date for the submission of proposal is 16th of July, 2022.
- (d) Upper air observations are a part of initial conditions for the weather forecast models. This new technology if found technically feasible through contemplated experimentation is expected to benefit IMD in the field of weather forecasting by providing high resolution upper air data from unexplored and remote areas along with the data from existing observatory networks.
- (e) Total amount of money likely to be saved by the Department shall be estimated during the experimental sounding.
- (f) Government of India through the MoES is setting up a Thunderstorm Testbed site over East India for in-depth study of thunderstorms over the region. As a part of this project, the Ministry proposes to purchase two drones for monitoring of weather parameters of the atmospheric boundary layer prior to occurrence of thunderstorms and also for post event monitoring of damages.
