

**Application to check air quality**

1128. SHRI DARSHAN SINGH YADAV: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Indian Institute of Tropical Meteorology (IITM) launched an application to enhance awareness among the public on the hazards of air pollution and also to enable the citizens to check air quality in real terms;

(b) if so, the details thereof and the names of the cities in which this facility is presently available; and

(c) whether it is proposed to extend this facility to other parts of the country in the near future, if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY): (a) Yes, Sir.

(b) The SAFAR-Air Application (Android and iPhone compatible) is launched on 17th February 2015. The SAFAR-Air, upon registration and activation, provides site specific information on Air Quality in near real time and its forecast for the next 24 hours for Delhi, Pune and Mumbai. The SAFAR-Air monitoring and prediction is being done with the network of monitoring stations in and around national capital Delhi, Pune and Mumbai. The data quality is controlled and the project SAFAR is ISO 9001-2008 accredited.

(c) No, Sir.

**Weather modification techniques**

1129. SHRI AVINASH PANDE: Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether Government has undertaken any research or directed any study to assess the risks and benefits of weather modification techniques like cloud seeding to induce artificial rainfall in areas facing a deficit of rain;

(b) if so, the details thereof and findings regarding the risks of such technology that induces changes in regular climate patterns; and

(c) if not, whether it is lawful and permissible, or even advisable for State Governments to make use of such technology to induce artificial rainfall, in the absence of any study, or rules and guidelines formulated by the Central Government?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY): (a) Yes, Sir.

(b) Earth System Science Organization - Indian Institute of Tropical Meteorology (ESSO-IITM) is putting its effort in understanding the rain formation in clouds through studying cloud microphysical characteristics through a research program Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX).

CAIPEEX has so far contributed to total of around 800h of intense observations involving instrumented aircraft, radars and other surface based instruments. These observations have helped in better understanding of characteristics of monsoon clouds and interactions of clouds and aerosols. Specifically, the findings suggest the key role of dust aerosol (pollutant) on cloud and rain processes over the Indian monsoon region. These observations are being used to improve the representation and characterization of clouds in the weather and climate models. On the whole, 23 randomized seeding experiments were carried out both by flares and fine grained salt powder following World Meteorological Organization (WMO) Weather Modification Expert Committee recommendations.

As things stand today, artificial rain making techniques involving cloud seeding cannot be used for bringing rain clouds to rainfall deficit/drought areas. These techniques can only induce potential clouds, already passing over a given place, to produce enhanced quantum of rain. Hence, the said technology intervention will not be changing the pre-existing atmospheric circulation characteristics.

(c) Does not arise.

### **Warming of Indian Ocean**

1130. SHRI K. C. TYAGI:

SHRI KIRANMAY NANDA:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether as per the study published recently, the Indian Ocean has been warming consistently for over a century and at a faster rate than any other region of tropical oceans;

(b) if so, the details thereof and the reaction of Government thereto; and

(c) whether ocean warming has resulted in the weakening of the south-west monsoon and is proving to be detrimental to marine bio-diversity of the country, if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY): (a) Yes, Sir.