

**GOVERNMENT OF INDIA**  
**MINISTRY OF EARTH SCIENCES**  
**LOK SABHA**  
**UNSTARRED QUESTION No. 4642**  
**TO BE ANSWERED ON WEDNESDAY, APRIL 22, 2015**  
**GLOBAL HUB FOR NATURAL CALAMITIES**

**4642. SHRI Y.V. SUBBA REDDY:**

**Will the Minister of EARTH SCIENCES be pleased to state:**

- (a) whether an international conclave was held recently in Kerala and made certain recommendations on disaster forecasting for finalising the same by Heads of Global Space Agencies in Mexico;**
- (b) if so, the details thereof;**
- (c) the manner in which Government takes this as an opportunity to showcase its potential and become leader in disaster forecasts;**
- (d) whether the country is to be designated as the global hub for forecasting and managing natural disasters like tsunamis, cyclones and earthquakes; and**
- (e) if so, the details thereof and its likely benefits?**

**ANSWER**

**MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND  
MINISTRY OF EARTH SCIENCES  
(SHRI Y.S. CHOWDARY)**

- (a-b) Yes Madam. International Conference on Climate Change and Disaster Management - Space Based Systems and their Applications: Technological and Legal Perspectives (i3CDM) was held during February 26-28, 2015, at Kovalam, Thiruvananthapuram, India. The meeting was organised by the International Academy of Astronautics (IAA) ,International Institute of Space law, Ministry of Earth Sciences, Govt. Of India and the Kerala State Council for Science Technology and Environment and Indian Space Research Organisation (ISRO). The conference theme was on climate change and disaster management. In order to reduce uncertainties in climate assessment and prediction the following suggestions were made:**
- 1. Studies unequivocally show that Climate Change is real. Extreme weather events, including intensities of cyclones and probability of heat waves, are on the increase. Imprints of the changing Climate are felt in the Indian summer monsoon dynamics as well.**
  - 2. While estimating the magnitude of past climate change, it is essential to remove long- period oscillations (including the 30-year and other periodic variations) which are clearly manifested in precipitation. It is also felt that the future climate simulations should also include the potential impacts in the middle atmosphere.**
  - 3. Uncertainties in the future climate projections through models are quite large. That needs to be addressed adequately through targeted R&D efforts. Issues identical towards such efforts are presented in the Annexure.**
- (c) India's global scale accomplishments in building and operating world class Cyclone, Tsunami and Storm Surge early warning systems was prominently showcased in the conference. Efforts of India serving as Regional Tsunami Service Provider (RTSP) for tsunami warning and Regional Specialised Meteorological Centre (RSMC) and for UN-ESCAP for cyclone warning was greatly appreciated.**
- (d-e) No Madam.**

**Annexure.**

- 1. Satellite observations do provide a solution to the above problem to a good extent. However, there are several areas in satellite remote sensing that require strengthening, including global measurements of:
  - a. Wind profiles in the troposphere**
  - b. 3- dimensional distribution of water vapour and other greenhouse gases****
- 2. Details of some of the upcoming missions for satellite remote sensing of aerosols (using UA satellite) and greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and CO (using GeoCurb) were presented in the conference. These advancements will certainly improve the measurements of aerosols and greenhouse gases. However, more of the similar missions with adequate global coverage with high spatial and temporal resolutions should be ensured.**
- 3. Measurements of black carbon (BC) from satellite sensors, with sufficient accuracy, is yet to be made. This area requires further strengthening.**
- 4. Assessment of the effect of black carbon requires improvement in the inventories. The effect of BC emitted by different sources (e.g., biomass, vehicle exhaust) is found to be different. This requires detailed mapping and investigations on the BC sources.**
- 5. Importance of blending Satellite remote sensing data with ground-based observations is essential to increase utility of these data.**
- 6. One of the most important requirements is the improved sampling of space-borne observations of water vapour profiling using microwave radiometers. Studies clearly show that the model forecasts get substantially improved by the assimilation of this data. However, the spatio-temporal sampling of these measurements is not adequate at present and needs to be improved. Further, the continuity of such mission for global 3-dimensional distribution of water vapour should be ensured.**
- 7. Constellation of satellites to measure optimum number of parameters almost simultaneously should be further strengthened.**
- 8. Small satellites have demonstrated their large potential for Earth observations with high cost-benefit ratio, and should be further explored.**
- 9. Framework for analysing satellite data for geophysical parameters and disaster analysis should be formulated.**
- 10. Exchange of satellite data through open access for climate studies and disaster management should be encouraged.**