

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 3136
TO BE ANSWERED ON WEDNESDAY, 19TH MARCH, 2025**

LIGHTNING STRIKES

3136. SHRI V K SREEKANDAN:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether it is a fact that a recent study has highlighted a troubling increase in lightning strikes across the State of Kerala and if so, the details thereof;
- (b) whether the rate of lightning strikes in Kerala is growing faster than the national average and the State of Kerala has been recording an average of 20 lightning strikes per square kilometer a year and if so, the details thereof; and
- (c) whether it is also true that the findings were based on the satellite data of more than 16 years and if so, the details thereof?

ANSWER

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

- (a) Multiple recent studies based on short-term data indicate that Kerala is one of the hotspots for lightning activity, which peaks from March to May with a secondary peak from September to November. However, there is significant inter-annual variability of convective activity over Kerala and other parts of the Indian region, which is driven by the multiyear variability of various global factors. Hence, objective conclusions regarding long-term trends in lightning cannot be drawn from the short period of current lightning data.
- (b) As mentioned in (a), no such conclusion can be drawn because of the lack of longer period objective-based measurement and data set and the existence of significant inter-annual variability of convection over the area.
- (c) Lightning is a meteorological phenomenon that neutralizes large amounts of electric charge from the charged regions of clouds. The charge neutralization can result in intra-cloud lightning or cloud-to-ground lightning. Currently, three ground-based networks are operational in the country for lightning detection installed and managed by three organisations. These are the Indian Institute of Tropical Meteorology (IITM), the National Remote Sensing Agency (NRSA), and the Tripura University.

In addition, lightning measurements for a few years (1998-2015) are available from the satellite-based Optical Transient Detector (OTD) and Lightning Imaging Sensor (LIS) instrument payloads on board the TRMM satellite.

All these data sets have some biases based on sensor characteristics and the spatial location of the sensors. Hence, no single network provides an objective measure of lightning characteristics in the Indian region.
