

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
LOKSABHA  
UNSTARRED QUESTION NO. 961  
TO BE ANSWERED ON WEDNESDAY, 26<sup>TH</sup> JULY, 2023**

**GRAVITY HOLE IN INDIAN OCEAN**

961. PROF. SOUGATA RAY:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether a deep gravity hole has been found in the Indian Ocean;
- (b) if so, the details thereof;
- (c) whether it is likely to affect Indian coastal region in any way; and
- (d) if so, the details thereof?

**ANSWER  
THE MINISTER OF EARTH SCIENCES  
(SHRI KIREN RIJJU)**

(a)& (b) Yes Sir. The gravity hole or mass deficit in the Indian Ocean centred near to south of Sri Lanka is the largest geoidal low anomaly in the world. A geoid is a hypothetical equipotential surface that explains the geometrical irregularities of the Earth. It approximates to the mean sea level. Thus mean-sea level replicates the geoid surface, which can be high (geoid positive) or low (geoid negative) depending upon the mass distribution beneath the surface.

It is planned to achieve a comprehensive understanding about the nature, source and cause of the geoid anomalies in the region through integrated interpretation and to develop a better understanding about the geodynamic evolutionary history, mantle processes, etc. through various marine geophysical data like multichannel seismic data, wide-angle seismic data, deep ocean seismological data, etc. Recently, 17 Ocean Bottom Seismometers (OBS) were deployed in the Indian Ocean. The array recorded continuous, good quality, marine seismological data for more than two years. These data would be used to image the Earth's mantle structure.

(c) & (d) It is not yet established that the geoid low has any impact on Indian coastal region, nevertheless long- term indirect effects cannot be completely ruled out.

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