



Megha-Tropiques-1 Satellite

Prelims: Megha-Tropiques-1 Satellite, ISRO, Re-entry of Satellite, CNES, Earth Observation Satellite.

Mains: Megha-Tropiques-1 Satellite.

Why in News?

Recently, the [Indian Space Research Organisation \(ISRO\)](#) has successfully carried out the controlled Re-Entry experiment for the decommissioned **Megha-Tropiques-1 (MT-1) Satellite**.

- An uninhabited area in the **Pacific Ocean between 5°S to 14°S latitude and 119°W to 100°W longitude** was identified as the targeted re-entry zone for MT1.

What is Controlled Re-entry?

- Controlled re-entries involve **de-orbiting to very low altitudes** to ensure the impact occurs within a targeted safe zone.
- Usually, large satellites or rocket bodies, which are likely to survive aero-thermal fragmentation upon re-entry, are **made to undergo controlled re-entry to limit ground casualty risk**.
 - Aero-Thermal Fragmentation is a process in which an object traveling through the Earth's atmosphere at high-speed experiences extreme heat and pressure, causing it to break apart or fragment.
- However, all **such satellites are specifically designed to undergo controlled re-entry** at end-of-life.

What are the Key points of the MT-1 Satellite?

- **About:**
 - It is an **Indo-French [Earth Observation Satellite](#)**, which was launched in October 2011 for carrying out tropical weather and climate studies
 - The main objective of this mission is to **understand the life cycle of convective systems that influence the tropical weather and climate** and their role in the associated energy and moisture budget of the atmosphere in tropical regions.
 - With its circular orbit **inclined 20° to the equator**, it is a unique satellite for climate **research that aided scientists seeking to refine** prediction models.
- **Payloads:**
 - **Microwave Analysis and Detection of Rain and Atmospheric Structures (MADRAS)**, an Imaging Radiometer developed jointly by CNES (Centre National d'études Spatiales), France and ISRO;
 - **Sounder for Probing Vertical Profiles of Humidity (SAPHIR)**, from CNES;
 - **Scanner for Radiation Budget (ScaRaB)**, from CNES;
 - **Radio Occultation Sensor for Vertical Profiling of Temperature and Humidity (ROSA)**, procured from Italy.



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