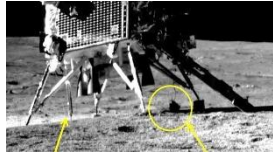


CHANDRAYAAN-3 CHASTE



- It successfully **penetrated lunar soil** and deployed a **thermal probe**, achieving what two previous missions—ESA’s **Philae (2014)** and NASA’s **InSight HP3 (2018)**—could not.
- This experiment provided crucial **data on lunar surface temperatures**, strengthening evidence of **water ice deposits**.

How ChaSTE Works

- ChaSTE’s **thermal probe** was integrated into the **Vikram lander** of Chandrayaan-3, which landed on **August 23, 2023**.
- The probe is equipped with **10 temperature sensors** placed **1 cm apart** along its length, near the **nose-tip**.
- It uses a **rotation-based deployment mechanism** instead of a hammering device, which played a crucial role in its success.
- The **motor rotates**, pushing the probe downward **until the tip touches the Moon’s surface**.
- As the probe continues to **penetrate deeper**, the increasing **resistance from the lunar soil** helps determine how far it has descended.
- ChaSTE **successfully reached a depth of 10 cm** in the Moon’s regolith, where it continuously **monitored temperature variations** until September 2, 2023.
- The final temperature readings from the deep lunar soil confirmed thermal properties essential for lunar exploration.

Comparisons with Previous Missions

- **ESA’s Philae lander (2014) on Comet 67P**: It carried the **MUPUS instrument** to measure surface and subsurface temperatures. Failed due to an **awkward landing**, preventing the probe from being deployed properly.

- NASA's InSight lander (2018) on Mars: Included the Heat Flow and Physical Properties Package (HP3), featuring a self-hammering nail nicknamed "The Mole" designed to penetrate 5 meters underground.
 - Encountered **low friction in Martian sand**, preventing it from burrowing deep enough to collect meaningful temperature data.
 - The **temperature sensors were attached to a tether**, not on the mole itself, which made data collection impossible.

KATCHATHEEVU ISLANDS



- **Location:** Katchatheevu is a 285-acre uninhabited island situated in the Palk Strait between India and Sri Lanka.
 - It is 33 km northeast of Rameswaram (India) and 62 km southwest of Jaffna (Sri Lanka).
- **Strategic Importance:**
 - Acts as a **maritime boundary marker** between India and Sri Lanka.
 - Fisheries-rich zone, crucial for Tamil Nadu's fishing economy.
 - **Anthony's Church** is a place of religious significance for fishermen of both nations.

Historical ownership of Katchatheevu

- It was **formed due to a volcanic eruption** in the 14th century.
- Initially ruled by the **Jaffna kingdom (Sri Lanka)**, later controlled by the **Ramnad Zamindari** under the Nayak dynasty (Madurai).
- **British India and Sri Lanka both claimed the island** until the **1974 agreement** settled sovereignty in Sri Lanka's favor.

International Maritime Boundary Line (IMBL)

- The **IMBL between India and Sri Lanka** was **delineated in 1974** under the **Indo-Sri Lankan maritime boundary agreement**.

- Established based on **UNCLOS (United Nations Convention on the Law of the Sea)**.
- Maritime boundaries are often defined by the **equidistance principle**, ensuring a **medial line equidistant from both nations' coasts**.
- The **IMBL** determines **Exclusive Economic Zones (EEZs)**, **Territorial waters** and other **maritime zones**.
- The **1974 agreement** adjusted the **equidistant line**, leading to **Katchatheevu falling under Sri Lanka's sovereignty**.

Other Maritime Disputes

- **With Pakistan: Sir Creek Dispute:** A **boundary dispute** over the demarcation of a 96 km estuary in Gujarat.
- **With Bangladesh: New Moore Island (South Talpatti dispute):** Permanently settled in Bangladesh's favour after a 2014 ruling by the Permanent Court of Arbitration.

NORTH SENTINEL ISLAND



- It is one of the **Andaman Islands** - an archipelago in the **Bay of Bengal** - and part of the **Indian Union Territory of Andaman and Nicobar Islands**.
- It is located **west of the central cluster of the Andaman Islands**.
- The island measures approximately 8 kilometers (5.0 mi) in length and 7 kilometers (4.3 mi) in width, covering an area of about 60 square kilometers (23 sq mi).
- The island is densely covered in **tropical rainforest**.
- It's also **circled by a shallow reef**.
- It **harbours** one of the **world's last secluded tribes** — the **Sentinelese**.
 - They are believed to be **direct descendants** of the **first humans who migrated out of Africa** around 60,000 years ago.
 - The **tribe has lived in voluntary isolation** for thousands of years, fiercely resisting contact with the outside world.

- The island falls under the Andaman and Nicobar Protection of Aboriginal Tribes Act, 1956, making it illegal to approach closer than 5 nautical miles.
- According to a 2011 census effort, and based on anthropologists' estimates, there are probably somewhere between 80 and 150 people on North Sentinel Island, although it could be as many as 500 or as few as 15.

INS TARKASH



- It is a state-of-the-art **stealth frigate** of the Indian Navy. It is part of the navy's Western Fleet.
- It belongs to the **Talwar class of guided missile frigates**. These are modified Krivak III-class frigates **built by Russia**.
- INS Tarkash was built at the **Yantar shipyard in Kaliningrad**,
- It was commissioned and inducted into the Indian Navy on November 9, 2012, at Kaliningrad, Russia.

Features:

- It uses **stealth technologies** and a special **hull design** to ensure a **reduced radar cross-section**.
- It has a length of 124.8 m, a beam of 15.2 m, and a draught of 4.2 m (13 ft 9 in).
- Top Speed: 32 knots (59 km/h; 37 mph).
- It has been equipped with a weapon sensor that enables it to address threats in all dimensions.
- It can board one Ka-28 Helix-A **antisubmarine helicopter** or one Ka-31 Helix-B **airborne early warning helicopter**.
- **Weapons:** **Supersonic BrahMos missile system**, advanced surface-to-air-missile system, upgraded 100mm medium range gun, optically controlled 30mm close-in weapon system, torpedoes, rocket launchers, and advanced electronic warfare/communication suite.

PROPOSED WAQF (AMENDMENT) BILL 2025: KEY CHANGES AND GROWING CONTROVERSY

Key Provisions of the Waqf (Amendment) Bill 2025:

- **Judicial Oversight on Waqf Tribunal Orders**
 - The amended Bill introduces a provision allowing High Court appeals against Waqf Tribunal orders.
 - This rectifies a long-standing gap in judicial review under the 1995 Act, which **previously made Tribunal decisions final and unchallengeable**.
- **Clarification on ‘Waqf by User’**
 - The controversial proposal to eliminate the Islamic legal concept of “waqf by user” has been revised.
 - The updated Bill now retains the status of such properties, like mosques and graveyards, if they were registered before the new law’s enactment, unless contested.
- **Empowering Government Officials in Property Disputes**
 - The Bill empowers senior government officers (above District Collector rank) to settle disputes over whether a property is waqf or government land, **replacing the Waqf Tribunal’s exclusive authority under the 1995 Act**.
 - Until the officer submits a report, disputed properties will be treated as government property.
- **Centralised Digital Registration of Waqf Properties**
 - The Bill **mandates the creation of a digital portal for registering and updating waqf properties**.
 - All information must be uploaded within six months of the law’s commencement, streamlining data management and curbing misappropriation.
- **Application of Limitation Act to Waqf Properties**

- Another critical change is the **removal of Section 107 of the Waqf Act, which had excluded waqf properties from the Limitation Act, 1963.**
- With this deletion, the standard 12-year limitation for reclaiming encroached property will now apply to waqf land.
- **Altered Composition of Waqf Boards and Tribunals**
 - The amended Bill allows the **inclusion of non-Muslim members, including Chief Executive Officers, in State Waqf Boards and the Central Waqf Council.**
 - Additionally, **Waqf Tribunals will now have three members instead of two, a district judge, a joint secretary-level state officer, and an expert in Muslim law.**

Controversies and Criticisms:

- **Allegations of Government Overreach**
 - Opposition argues that empowering government officials to decide the status of waqf properties significantly curtails community autonomy.
- **Marginalisation of Muslim Community in Governance**
 - While the government asserts that the inclusion of non-Muslims in Waqf bodies fosters transparency, opposition parties and Muslim organisations see this as a violation of their constitutionally guaranteed right to manage religious affairs.
- **Retrospective Implementation Concerns**
 - Though the revised Bill protects already registered “waqf by user” properties, it introduces ambiguity for those not formally documented.
 - This may endanger numerous religious and charitable assets informally managed by local communities for decades.

Conclusion:

The Waqf (Amendment) Bill 2025 introduces pivotal changes to the management and regulation of waqf properties in India. While the government emphasizes transparency, accountability, and judicial oversight, oppositions sees the Bill as an encroachment on religious freedoms and community rights.



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INDIA BRACES FOR EXTENDED HEATWAVES

The India Meteorological Department (IMD) forecasts an above-normal number of heatwave days this summer, aligning with the trend of increasing heat intensity and frequency. This poses health risks, especially for vulnerable groups, and causes economic losses. While heatwaves can be managed through timely action, the implementation of heat action plans in many states and cities has been inadequate.

IMD's Heatwave Forecast

- The IMD predicts an “above-normal” number of heatwave days across northern, central, and eastern India from April to June.
- Only the extreme south, the northeast, Jammu & Kashmir, and Himachal Pradesh might be spared from extreme heat.
- It predicted above-normal temperatures for 10-11 days in central and eastern states like Odisha, Jharkhand, and eastern Uttar Pradesh.
- Night temperatures are also expected to be higher than usual, except in the Himalayan and sub-Himalayan regions.
 - Some parts of Gujarat, Odisha, and Vidarbha have already experienced 3-5 heatwave days in March.

Economic and Social Impact of Extreme Heat

- The Reserve Bank of India's (RBI) Department of Economic and Policy Research warns that climate change could lead to a 2.8% GDP loss and 34 million of the projected 80 million global job losses.
- Urban heat island effects could warm cities by 4°C by 2100, creating severe health challenges.
- Extreme heat is linked to increased mortality, school closures, water shortages, power outages, and food insecurity.

Heat Action Plans (HAPs) in India

- HAPs have become India's key strategy for heatwave management. India's first city-level HAP emerged in 1999 after Odisha's devastating 1998 heatwave.
- At least 23 states and many districts have formulated heat action plans to minimize heatwave disruptions and prevent heat-related deaths.
- These plans outline measures such as creating shaded areas, ensuring water availability, and adjusting school and office timings.
- **Challenges in Implementation**
 - Despite improved forecasts and well-designed plans, implementation remains weak.
 - Studies show that authorities often prioritize short-term emergency responses—like providing drinking water and cooling rooms—over long-term strategies to address extreme heat exposure.
- **Other Shortcomings**
 - Inadequate planning for vulnerable groups like children and elderly
 - Weak long-term planning and mitigation strategies
 - Unlike air pollution control (which has a legally mandated Graded Response Action Plan for Delhi-NCR), no automatic heat mitigation system exists.
 - IMD issues heat alerts, but delayed impacts make timely interventions challenging.
- **Need for Stronger Coordination**
 - A study by the Sustainable Futures Collaborative found that most local administrations lacked clear responsibilities and an empowered organization to lead the effort.
 - Effective implementation requires a well-coordinated, government-backed mechanism to adapt to climate change.



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GREAT RED SPOT



- It is an **anticyclone**, a long-lasting area of high pressure on **Jupiter** creating a **persistent storm**.
- Located in Jupiter's **Southern Hemisphere**, it appears as a **giant red spot** on Jupiter's surface. The **source of the red coloration is unknown**.
- It **extends well above Jupiter's main cloud layers**.
- It is the **largest known storm in the Solar System**. With a **diameter of 15,400 miles**, it is almost **twice the size of the entire Earth** and one-sixth the diameter of Jupiter itself.
- Winds inside this Jovian storm reach speeds of about 270 mph.
- It has **existed for the last 150 years**, possibly even longer.
 - The **long lifetime** of the Red Spot may be due to the **fact that Jupiter is mainly a gaseous planet**.
 - It possibly has liquid layers but **lacks a solid surface, which would dissipate the storm's energy**, much as happens when a hurricane makes landfall on the Earth.
 - However, the **Red Spot does change its shape, size, and color**, sometimes dramatically.