DAILY CURRENT AFFAIRS 17-11-2025

GS-1

1. **Tsunami**

GS-2

2. **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**
3. **National Technical Textiles Mission (NTTM)**

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4. **Aditya-L1**
5. **UN Water Convention**

Tsunami

Syllabus: GS-1: Physical Geography & GS-3: Disaster Management.

Context:

A powerful quake rattled northern Japan on Sunday (November 9, 2025) evening, followed by several more temblors, according to the Japan Meteorological Agency.

Tsunami

Introduction

- The term *"Tsunami"* is derived from the Japanese words *"tsu" (harbour)* and *"nami" (wave)*, meaning "harbour waves."
- A tsunami is a series of long-wavelength, high-energy sea waves caused by a sudden disturbance in or near an ocean.
- It can cause massive destruction when these waves reach shallow coastal areas.

Causes of Tsunami

- **Undersea Earthquakes (Most Common Cause):**
  - Subduction zones where the oceanic plate slips beneath a continental plate generate tsunamis (e.g., 2004 Indian Ocean tsunami).
  - Sudden vertical displacement of the seabed displaces large volumes of water.
- **Volcanic Eruptions:**Submarine volcanic explosions can rapidly displace water (e.g., Krakatoa eruption, 1883).
- **Landslides:**Underwater or coastal landslides (triggered by earthquakes) can generate local tsunamis.
- **Meteorite Impacts:**Rare, but large meteorites hitting oceans can produce mega-tsunamis.

Characteristics

- Wavelength: 100–200 km
- Speed: Up to 800–1000 km/h in deep ocean (similar to a jet plane)
- Amplitude: Small (30–50 cm) in deep ocean; increases drastically near coast due to the shoaling effect
- Period: 10 minutes to 2 hours between successive waves
- Multiple Waves: Often the second or third wave is the largest, not the first

Propagation Process

- **Generation:** Sudden disturbance displaces water column.
- **Propagation:** Waves travel outward in all directions across the ocean.
- **Amplification:** As depth decreases, wave speed decreases but height increases.
- **Run-up and Inundation:** Waves hit coastlines, flooding inland areas with tremendous force.

Major Tsunamis (Case Studies)

Year	Event	Region	Impact
2004	Indian Ocean Tsunami	Sumatra–Andaman Subduction Zone	Over 2.3 lakh deaths across 14 countries; major impact on Tamil Nadu and Andaman-Nicobar
2011	Japan (Tohoku) Tsunami	Pacific Ocean	Fukushima nuclear disaster; about 15,000 deaths
1960	Chile Tsunami	Pacific Ocean	Affected Hawaii and Japan
1883	Krakatoa Volcano	Indonesia	36,000 deaths due to volcanic tsunami

Tsunami Early Warning System (TEWS)

In India:

- Established in 2007 under the Indian National Centre for Ocean Information Services (INCOIS), Hyderabad.
- Functions under the Ministry of Earth Sciences (MoES).

Components include:

- Seismic monitoring network
- Bottom Pressure Recorders (BPRs)
- Tide gauges
- Real-time data transmission

India is recognized as a Tsunami Service Provider (TSP) for the Indian Ocean Region (along with Australia and Indonesia).

Mitigation and Preparedness

Structural Measures:

- Coastal protection walls, mangrove afforestation, proper coastal zoning
- Construction of tsunami-resistant buildings in coastal areas

Non-Structural Measures:

- Community awareness and education
- Tsunami evacuation drills and signage
- Integration of TEWS with disaster management authorities

Policy Measures:

- Disaster Management Act, 2005
- National Disaster Management Authority (NDMA) guidelines for tsunami management
- National Tsunami Warning Centre (NTWC) established at INCOIS

Impact of Tsunami

- Environmental: Coastal erosion, saltwater intrusion, destruction of mangroves and coral reefs
- Economic: Loss of fisheries, agriculture, infrastructure, and tourism
- Social: Massive displacement, health crises, loss of life and livelihood

Way Forward

- Strengthening regional cooperation for early warning (e.g., Indian Ocean Tsunami Warning System)
- Promoting coastal ecosystem restoration (mangroves, dunes, coral reefs)
- Enhancing community-based disaster risk reduction (CBDRR)
- Integrating satellite technology and AI in forecasting

Conclusion

Tsunamis are natural hazards but become disasters when human vulnerability is high. Building resilient coastal communities through science, preparedness, and policy integration is key to minimizing future impacts.

Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

Syllabus: GS-2; Government policies and Interventions

Context

- Recently, **glaring irregularities** have been found in the execution of the **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**.
- In response, the **Ministry of Skill Development and Entrepreneurship (MSDE)** has **blacklisted 178 training partners** for non-compliance and poor performance under the scheme.

About Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- **Launched:** 2015
- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship (MSDE)
- **Implementing Agency:** National Skill Development Corporation (NSDC)
- **Objective:** To empower India's youth through **industry-relevant skill training**, improving their employability and livelihood opportunities.

Eligibility Criteria

- **Age Limit:** 14–35 years
- **Nationality:** Must be an **Indian citizen**
- **Education:** Open to individuals from **all educational backgrounds**, including those with minimal formal education
- **Employment Status:** Priority to **unemployed or underemployed** individuals
- **Aadhaar Requirement:** Aadhaar card is typically **mandatory** for enrolment

Key Features

- **Industry-driven training:** Regular consultation with industry experts to ensure updated and relevant skill modules.
- **Short-term courses:** Enable participants to gain marketable skills quickly.
- **Recognition of Prior Learning (RPL):** Individuals with existing skills can receive **certification** without undergoing full training.
- **Placement Assistance:** Trained candidates receive help in securing employment or self-employment opportunities.
- **Focus on inclusivity:** Encourages participation from **women, rural youth, and marginalized communities.**

Significance

- PMKVY plays a key role in fulfilling the objectives of **Skill India Mission**, bridging the gap between **skill supply and industry demand**, and contributing to India's **demographic dividend** utilization.

National Technical Textiles Mission (NTTM)

Syllabus: GS-2; Government policies and Interventions

Context

- The **National Technical Textiles Mission (NTTM)** has **supported the development of Indigenous Thermal Testing Instruments** for *Protective Textiles* in collaboration with the **Northern India Textile Research Association (NITRA)**.
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  These instruments will help test thermal resistance, insulation, and performance of protective clothing, such as firefighter suits and industrial safety gear — strengthening India's **self-reliance (Atmanirbhar Bharat)** in technical textile testing.

About National Technical Textiles Mission (NTTM)

- **Launched:** 2020
- **Nodal Ministry:** Ministry of Textiles
- **Duration:** 2020-21 to 2025-26
- **Outlay:** ₹1,480 crore
- **Objective:** To position India as a **global leader in Technical Textiles** and enhance domestic production, R&D, and exports.

Four Key Components

1. **Research, Innovation & Development:** Promotes indigenous R&D, prototype development, and commercialization of innovations in technical textiles.
2. **Promotion & Market Development:** Focuses on increasing domestic consumption and creating international market linkages.
3. **Export Promotion:** Encourages exports through incentives, policy support, and creation of an **Export Promotion Council for Technical Textiles (EPCTT).**
4. **Education, Training & Skill Development:** Integrates technical textiles into academic curricula and offers specialized training in top institutes.

What are Technical Textiles?

- These are **functional fabrics** designed for **technical performance** rather than aesthetics.
- Also called *industrial textiles, performance textiles, or hi-tech textiles.*
- **12 categories:** Agrotech | Buildtech | Clothtech | Geotech | Hometech | Indutech | Meditech | Mobiltech | Oekotech | Packtech | Protech | Sportstech

Applications:

- Used in **medical equipment, safety gear, automotive interiors, construction materials, agriculture, and defense.**

Significance

- Links with *"Atmanirbhar Bharat"*, *"Make in India"*, and *"Skill India"* initiatives.
- Promotes **innovation-led industrial development** under the **textile sector**.
- Supports sustainable and high-value exports.

Aditya-L1

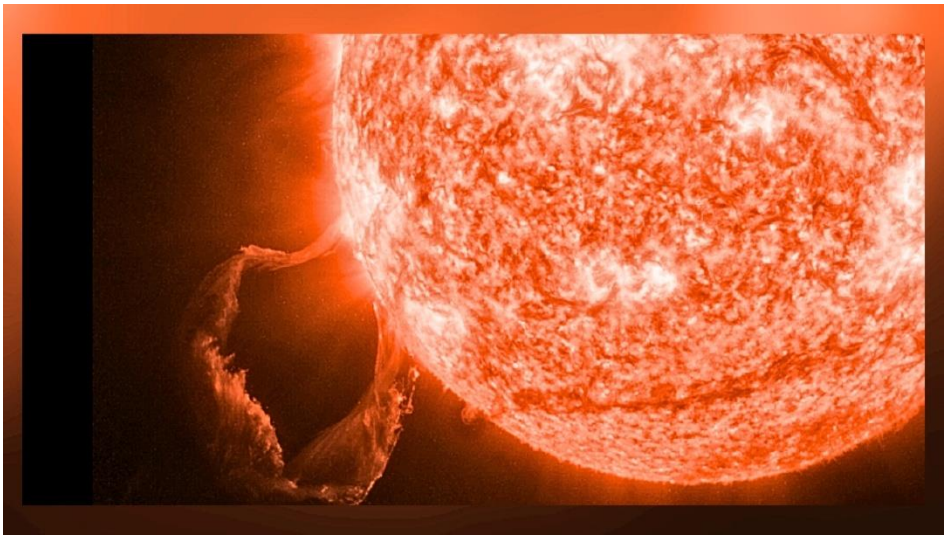
Syllabus: GS-3; Science and Technology – Space.

Context:

- For the **first time**, scientists from **Aditya-L1 (India)** and **NASA** have jointly recorded **spectroscopic observations** of a **Coronal Mass Ejection (CME)** in the **visible wavelength range**.
- This marks a major advancement in solar physics and space-weather studies.

About Coronal Mass Ejections (CMEs)

- **CMEs** are massive expulsions of **plasma and magnetic field** from the Sun's corona.
- When directed toward Earth, they can cause **geomagnetic storms**, disturbing **satellites, GPS, power grids, and communication systems**.
- Understanding CMEs is crucial for **space-weather forecasting** and for protecting **space infrastructure**.



Significance of the Observation

- Until now, **continuous spectroscopic studies** of CMEs in the visible range were **not possible**.
- The new observation allows scientists to:
  - Measure **chemical composition** of ejected plasma.
  - Determine **temperature and density** of solar material.
  - Calculate **velocities** using **Doppler shifts**.
  - Analyze **energy and dynamics** of CME evolution.

Role of Aditya-L1 Mission

- **Aditya-L1** is **India's first dedicated solar observatory**, positioned at the **Lagrange Point L1** (~1.5 million km from Earth).
- It continuously observes the Sun without Earth's shadow interference.
- The mission carries **seven scientific payloads** — four for remote sensing and three for in-situ measurements.

About the VELC Instrument

- **Visible Emission Line Coronagraph (VELC)** is the **main instrument** onboard Aditya-L1.
- It can:
  - Image the solar corona from **1.05–1.5 solar radii**.
  - Perform **spectroscopy and spectro-polarimetry** in visible and infrared lines (e.g., **Fe XIV – 530.3 nm**, **Fe XI – 789.2 nm**, **Fe XIII – 1074.7 nm**).
- This enables **high-resolution measurements** of solar magnetic and plasma parameters.

Scientific and Strategic Importance

- Helps understand the **Sun–Earth connection** and **space-weather dynamics**.
- Provides early data for predicting **solar storms** that affect satellite communication and navigation.
- Strengthens **India's global role** in advanced **space-science collaborations**.
- Enhances national preparedness for **technological hazards** caused by solar activity.

Challenges

- CMEs are **highly dynamic**, requiring precise timing and spectral detection.
- **Data interpretation** involves complex modelling of solar plasma and magnetic fields.
- Translating observation into **accurate prediction models** remains a challenge.

Conclusion

The successful spectroscopic observation of a CME in visible wavelengths marks a **scientific milestone** for India.

It showcases the **technological sophistication** of the Aditya-L1 mission and strengthens **global understanding of solar activity**.

This collaboration enhances **India's leadership in solar research** and contributes to building a more **resilient space environment** for the future.

UN Water Convention

Syllabus: GS-3; Water Conservation- International Institutions

Context

- **Bangladesh** has become the **first country in South Asia** to join the **UN Water Convention**.

About the UN Water Convention

- **Full Name:** *Convention on the Protection and Use of Transboundary Watercourses and International Lakes*
- **Adopted:** 1992 (Helsinki)
- **Came into Force:** 1996
- **Serviced by:** *United Nations Economic Commission for Europe (UNECE)*

History

- Initially a **regional framework** for the **Pan-European region**.
- **Since March 2016**, following an amendment, **all UN Member States** can join it.

Key Features

- A **legally binding international instrument** for sustainable management of **shared water resources**.
- Promotes:
  - Implementation of **SDGs** (esp. Goal 6: Clean Water and Sanitation).
  - **Conflict prevention**, **peace**, and **regional cooperation**.
- Requires parties to:
  - **Prevent, control, and reduce** transboundary impacts.
  - **Use shared waters equitably** and **sustainably**.
  - **Cooperate** through agreements and **joint bodies**.
- **Framework nature:** Does **not replace** bilateral/multilateral basin agreements — rather, it **supports and complements** them.

Significance

- A **global tool** to implement the **2030 Agenda for Sustainable Development**.
- Enhances **transboundary water cooperation**, crucial for climate resilience, food and energy security, and peace.