DAILY CURRENT AFFAIRS 04-03-2025

GS-1

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Dholavira

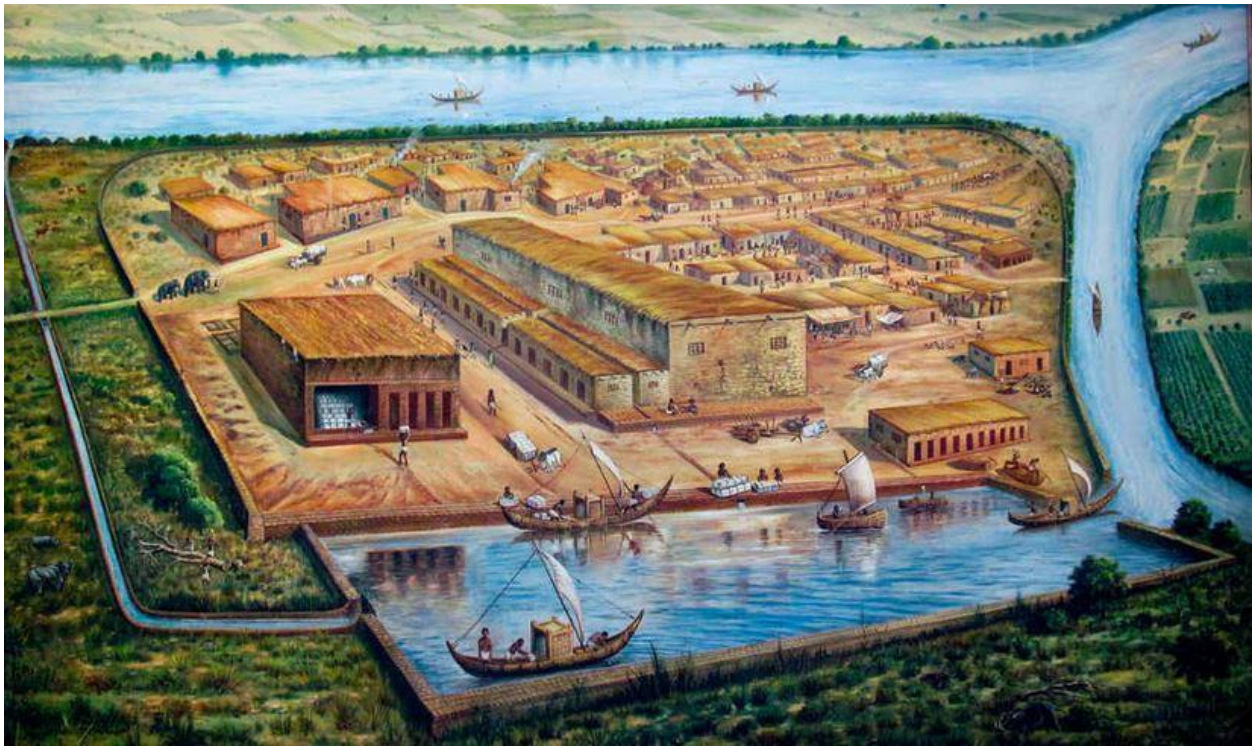
Syllabus: GS-1; Ancient Indian History

Context

- President visits UNESCO World Heritage Site Dholavira

About

- Dholavira is one of the most significant archaeological sites of the Indus Valley Civilization (IVC), located in the Kutch district of Gujarat, India.
- It is one of the five largest Harappan sites and the second largest in India after Rakhigarhi. Dholavira was discovered in 1967-68 by archaeologist **J.P. Joshi** from the **Archaeological Survey of India (ASI).**



Key Features

1. **Urban Planning:**
    - The city was divided into three parts:
        - **The Citadel (Upper Town):** Administrative and elite residential area.
        - **The Middle Town:** Residential area with planned structures.
        - **The Lower Town:** Common people's settlement.

- Well-planned streets with a grid pattern.

2. **Water Conservation System:**
   - Advanced water management with reservoirs, dams, and step wells.
   - Presence of large water reservoirs (16 in total) for rainwater harvesting.
3. **Fortifications & Defensive Architecture:**
   - Thick stone walls surrounding the city, unlike other Harappan sites that used mud bricks.
   - Large gateways and bastions for defense.
4. **Unique Script & Inscriptions:**
   - A **10-symbol signboard** found at Dholavira is considered one of the longest inscriptions in the Harappan script.
   - The Harappan script remains undeciphered.
5. **Artifacts & Economy:**
   - Beads, terracotta figurines, seals, and copper items found at the site.
   - Evidence of trade with Mesopotamia (Sumerians), Oman, and other regions.
6. **Decline of Dholavira:**
   - Around 1900 BCE, the site declined due to climate change and desertification.
   - Lack of monsoon rains led to water scarcity, forcing inhabitants to abandon the city.

UNESCO World Heritage Status

- In **July 2021**, Dholavira was inscribed as a **UNESCO World Heritage Site**, becoming India's first Indus Valley Civilization site on the list.

Comparison with Other Harappan Sites

Feature	**Dholavira**	**Harappa**	**Mohenjo-Daro**	**Lothal**
Location	Gujarat, India	Punjab, Pakistan	Sindh, Pakistan	Gujarat, India
Material Used	Stone & Mud Bricks	Mud Bricks	Mud Bricks	Mud Bricks
Water System	Advanced reservoirs	Wells, drains	Great Bath	Dockyard
Unique	Water conservation, stone	Granaries	Great Bath	Trade & port

Feature	Dholavira	Harappa	Mohenjo-Daro	Lothal
Feature	construction			city

Delimitation Exercise

Syllabus: GS-2; Polity

Context

- Tamil Nadu Chief Minister MK Stalin has reignited the debate on delimitation by urging a newlywed couple to plan a family early, linking it to securing Tamil Nadu's advantage in the upcoming exercise.

What is Delimitation?

- Delimitation is the process of redrawing the boundaries of electoral constituencies to ensure fair representation based on population changes.
- It is carried out periodically to reflect demographic shifts and maintain balanced representation in legislative bodies.

Constitutional Provisions

- **Article 82**: Provides for the reallocation and delimitation of Lok Sabha seats after each Census through a **Delimitation Commission Act** passed by Parliament.
- **Article 170**: Deals with the delimitation of **State Legislative Assemblies** based on the population.
- **Article 330 & 332**: Provide for the reservation of seats for Scheduled Castes (SCs) and Scheduled Tribes (STs) in Lok Sabha and State Assemblies, respectively.

Delimitation Commission

- A **high-powered independent body** established by the **Parliament of India** through a **Delimitation Act**.
- The last Delimitation Commission was formed in **2002** and based on the **2001 Census**.
- The latest freeze on delimitation (under the 84th Constitutional Amendment Act, 2002) extends until **after the 2026 Census** to maintain stability in political representation.

Composition of Delimitation Commission

- Retired Supreme Court judge (Chairperson)
- Chief Election Commissioner of India (Member)
- Respective State Election Commissioners (Members)

Objectives of Delimitation

- Ensure equal representation based on population changes.
- Avoid malapportionment (disproportionate seat distribution).
- Provide fair representation to marginalized communities.
- Maintain the principle of "one person, one vote, one value."

Challenges of Delimitation

- **Regional Disparities**: States with higher population control measures (e.g., South Indian states) fear reduced representation.
- **Political Resistance**: Changes in seat allocations may impact existing power dynamics.
- **Delay in Census**: As the 2021 Census was postponed, delimitation may face further delays.
- **Increased North-South Divide**: Southern states with lower population growth may lose seats to northern states with higher fertility rates.

Delimitation and J&K

- After the revocation of **Article 370**, a **Delimitation Commission (2020)** was set up to redraw assembly constituencies in **Jammu & Kashmir**.
- It increased **J&K Assembly seats from 83 to 90**, giving Jammu **6 more seats** and Kashmir **1 additional seat**.

Way Forward

- Implement **delimitation after the 2026 Census** as per the constitutional mandate.
- Ensure fair representation without undermining the federal balance.
- Use **technological tools** like GIS mapping for efficient boundary demarcation.
- Consider **alternative representation models** to address demographic variations.

MISHTI Scheme

Syllabus: GS-2; Government policies and Interventions, GS-3: Biodiversity Conservation Efforts.

Context:

- Gujarat has emerged as the **national leader** in **mangrove afforestation**, covering **19,020 hectares** in just two years under the **MISHTI** scheme.

Introduction

- The **MISHTI** scheme is a **government initiative** aimed at increasing **mangrove cover** along the coastline and **salt pan lands**.
- The scheme was launched by the **Ministry of Environment, Forest & Climate Change (MoEF&CC)** on **World Environment Day (5th June 2023)**.

Background

- **India joined the 'Mangrove Alliance for Climate'** during **COP27** (UNFCCC) held in Egypt in **November 2022**.
- MISHTI aligns with global efforts to **protect and expand mangrove ecosystems**.

Key Features of the MISHTI Scheme

1. Scope & Coverage

- Envisages **restoration/reforestation of mangroves** covering **540 sq. km.** over **five years (2023-24 onwards)**.
- Targets **9 states** and **3 union territories** along the coastline.
- Key focus areas:
    - **Sundarbans Delta** (West Bengal)
    - **Hooghly Estuary** (West Bengal)
    - Other **Bay areas & wetlands** across India

2. Implementation Strategy

- **Financial assistance** is provided to **local communities** for **mangrove plantations**.
- **Participatory approach**: Involvement of **local communities, NGOs**, and other stakeholders for **sustainability**.
- **Awareness campaigns** to educate people on the **importance of mangroves** in climate resilience.

3. Funding & Convergence with Other Schemes

- Utilizes funds from various government initiatives:

- **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)**
- **Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Fund**
- Other **relevant environmental and climate funds**

Significance of the Scheme

1. Environmental Benefits

- **Coastal protection** against cyclones, storm surges, and rising sea levels.
- **Biodiversity conservation** by supporting fishery resources and wildlife.
- **Carbon sequestration**, helping in **climate change mitigation**.

2. Socio-Economic Benefits

- **Livelihood generation** for local communities.
- **Eco-tourism potential** in mangrove-rich areas.
- **Sustainable fisheries enhancement**.

Challenges in Implementation

- **Land availability** and disputes over **coastal land use**.
- **Salinity intrusion** affecting **mangrove survival**.
- **Community engagement & awareness** in remote coastal areas.

Way Forward

- **Strengthening community participation** through incentives and training.
- **Scientific monitoring** of mangrove growth and health.
- **Integration with climate action plans** to maximize ecological benefits.

Solar Flare Captured by Aditya L1 Mission

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

Context:

- **Aditya-L1 mission** captured the first-ever image of a solar flare 'kernel,' marking a major advancement in solar physics research.

- **Solar Ultraviolet Imaging Telescope (SUIT)** onboard Aditya-L1 recorded the brightening in the **Near Ultraviolet (NUV) band**, providing new insights into solar flare energy dynamics.

About Aditya-L1

What is Aditya-L1?

- **India's first space-based solar mission**, dedicated to studying the Sun's outer layers and solar activity.
- Positioned at **Lagrange Point L1** (1.5 million km from Earth), allowing **continuous solar observation without eclipses**.

Launch Details

- **Launched on:** September 2, 2023, aboard **PSLV C-57**.
- **Successfully placed in halo orbit around L1:** January 6, 2024.

Aims of the Mission

- Study **solar dynamics**, including:
  - Solar flares
  - Coronal Mass Ejections (CMEs)
  - Magnetic field variations
- Observe **solar radiation** and its impact on:
  - Earth's climate
  - Space weather

Understanding Solar Flares

What are Solar Flares?

- Sudden bursts of **intense energy** from the Sun's atmosphere.
- Caused by **magnetic field interactions** in the solar corona.
- Release **X-rays, ultraviolet light, and charged particles** that can:
  - Disrupt **satellite communications** and power grids.
  - Influence **Earth's ionosphere and GPS signals**.

How Aditya-L1 Studies Solar Flares?

- **SUIT (Solar Ultraviolet Imaging Telescope):** Captures **UV images** of the lower solar atmosphere.

- **SoLEXS (Solar Low Energy X-ray Spectrometer) & HEL1OS (High Energy L1 Orbiting X-ray Spectrometer):**
    - Monitor **solar X-ray emissions** to detect flares.
- **Continuous observation from L1** provides a **real-time picture** of solar activity.

About Solar Ultraviolet Imaging Telescope (SUIT)

What is SUIT?

- Specialized telescope onboard Aditya-L1.
- Developed by **Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune**.
- Captures **high-resolution images in 11 different NUV wavebands** (200-400 nm), covering the **photosphere and chromosphere**.

Recent Observations

- SUIT detected an **X6.3-class solar flare**, one of the most intense solar eruptions recorded.
- Observed **brightening in the Near Ultra-Violet (NUV) band**, a wavelength never studied in such detail before.
- Provided **clear evidence of energy transmission** from the solar surface to the corona.

Significance of the Discovery

- **Validates theories** about solar energy transfer.
- Helps in **predicting solar storms and space weather** to protect satellites and power grids.
- Advances **global solar physics research**, enhancing our understanding of the **Sun's impact on Earth's climate**.

Avalanche

Syllabus: GS-3: Disaster Management – Avalanches and Landslides.

Context:

- A massive avalanche struck a **BRO project site** near **Mana village, Chamoli district, Uttarakhand**, trapping **22 workers**.
- **Rescue operations** are being conducted by the **Indian Army and ITBP**.

What is an Avalanche?

- A **sudden and rapid descent** of snow, ice, and debris down a mountain slope.
- Triggered by **natural or human-induced** factors.
- Causes **widespread destruction**, burying people, structures, and transport routes.

Types of Avalanches

a) Loose Snow Avalanche

- Begins when **loosely bonded snow** slides from a **single point**.
- Common in **steep slopes (>40°)** with **fresh snowfall**.

b) Slab Avalanche

- Occurs when a **cohesive layer of snow** breaks away as a **single slab**.
- **Most fatal type**, reaching speeds of **100 km/h**.

c) Gliding Avalanche

- Involves **entire snowpack** sliding over a smooth surface (**grass, rock**).
- Occurs at slopes **>15°**, causing large-scale destruction.

d) Powder Avalanche

- High-speed avalanche suspending **snow particles in air**, creating a **powder cloud**.
- Can reach speeds of **300 km/h**, causing a **shockwave impact**.

e) Wet Snow Avalanche

- Triggered by **melting snow** due to **temperature rise or rain**.
- **Slower but more destructive** due to **high density and force**.

Causes of Avalanches

a) Natural Causes

- **Heavy Snowfall & Wind Direction** → Leads to **unstable snowpack**.
- **Steep Slopes (30°-45°)** → Ideal angles for avalanches.
- **Temperature Fluctuations** → Weakens internal snow layers.
- **Earthquakes & Vibrations** → Trigger snow movement.

b) Human-Induced Causes

- **Winter Sports & Tourism** → Activities like skiing, snowmobiling destabilize snow.
- **Construction & Deforestation** → Weakens slope stability.

- **Military Operations** → High-altitude detonations can trigger slides.

Consequences & Impact of Avalanches

a) Loss of Life & Injuries

- Causes **suffocation, hypothermia, and trauma**.
- **Survival chances drop significantly after 15 minutes** of burial.

b) Destruction of Infrastructure

- Blocks **roads, railways, highways**.
- Buries **homes, BRO camps, and tourist shelters** under snow.

c) Disruptions in Communication & Utilities

- **Power lines, water supply, communication networks** damaged.
- Delays **rescue and emergency responses**.

d) Environmental Hazards

- **Melting avalanche snow** can trigger **landslides & flash floods**.
- Leads to **ecological damage** and **displacement of communities**.

e) Economic Impact

- Disrupts **winter tourism** and livelihoods.
- **Huge recovery costs** for damaged infrastructure.

Precautionary & Control Strategies

a) Avalanche Early Warning Systems

- **IMD Avalanche Forecasting** → Tracks snowfall, slope stability, temperature.
- **Remote Sensing & AI Models** → Real-time avalanche detection.

b) Structural Protection Measures

- **Snow Barriers & Fences** → Prevent snow buildup.
- **Deflecting Structures** → Redirect avalanches away from inhabited areas.

c) Artificial Avalanche Triggers

- **Controlled Explosions** → Initiate small avalanches to prevent larger ones.

d) Zoning & Land Use Planning

- **Avoid construction** in avalanche-prone areas.
- **Ski resorts & highways** must follow risk assessment reports.

Way Forward

- **Enhancing Real-Time Avalanche Forecasting** → Strengthen **satellite-based** monitoring.
- **Improving Infrastructure Resilience** → Build **protection tunnels & snow-retention fences**.
- **Stronger Inter-Agency Coordination** → IMD, BRO, NDMA, ITBP to **streamline disaster response**.
- **Community Training & Awareness** → Educate **residents, trekkers, military personnel** on survival skills.
- **Encouraging Climate-Resilient Development** → **Limit deforestation and unplanned construction** in high-risk zones.

Conclusion

- Avalanches pose a **significant threat** to India's **Himalayan region**.
- **Advanced forecasting, structural protection, and rescue preparedness** are crucial for disaster mitigation.
- **Strengthening inter-agency collaboration and public awareness** will enhance India's resilience against avalanches.