# DAILY CURRENT AFFAIRS 22-12-2025

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# Chillai Kalan

## Syllabus: GS-1; Geography

## Context

- After a **prolonged dry spell**, fresh snowfall occurred across major tourist destinations in the **Kashmir Valley**.
- Snowfall coincided with the beginning of **Chillai Kalan** (40-day harsh winter period).


## Introduction

- **Chillai Kalan** refers to the **harshest 40-day winter period in the Kashmir Valley**, marking the peak of cold conditions with **severe low temperatures, snowfall, and frozen water bodies**. It is a **distinct regional climatic phenomenon** of the north-western Himalayas.

## Duration & Winter Cycle

- Begins around **21–22 December**
- Lasts for **40 days** (mid-December to late January)

## Traditional Kashmiri Winter Phases

1. **Chillai Kalan** – 40 days (most severe cold)
2. **Chillai Khurd** – 20 days (moderate cold)
3. **Chillai Bachha** – 10 days (residual cold)

## Climatic Characteristics

- **Lowest temperatures of the year**
- Frequent **snowfall** and frost
- Freezing of **water bodies and pipelines**
- Disruption of road, rail, and air connectivity
- Caused mainly by **Western Disturbances**, not monsoon systems

## Geographical Significance

- Unique to the **Kashmir Valley**
- Influenced by:
  - Bowl-shaped valley topography
  - High surrounding mountain ranges
- Affects:
  - Settlement patterns
  - Seasonal human activities
  - Transport and communication

## Environmental Significance

- Snowfall during Chillai Kalan:
  - Recharges **glaciers**
  - Sustains **spring and summer river flows**
  - Supports the **Jhelum River basin**
- Acts as a **natural water reservoir** for agriculture and ecosystems

## Economic Significance

- Backbone of **winter tourism** in Kashmir
  - Skiing and snowboarding (especially in **Gulmarg**)
  - Gondola rides and adventure tourism
- Provides livelihood to:
  - Hoteliers and guides
  - Ski instructors
  - Pony operators
  - Local artisans and markets

- Acts as an **economic buffer during the agricultural lean season**

### Cultural & Social Significance

- Traditional attire:
  - **Pheran** (woollen robe)
  - Celebrated through **"Pheran Day"**
- Indigenous adaptations:
  - **Kangri** (fire pot)
  - Thick mud-brick houses
- Reflects strong **human–environment adaptation** in cold regions

### Climate Change Linkage

- Declining Chillai Kalan snowfall may lead to:
  - Reduced glacier mass
  - Altered river flow regimes
  - Increased vulnerability of mountain economies
- Highlights the need for:
  - Climate-resilient tourism
  - Sustainable water management

# The bulldozed demolition of MGNREGA

### Syllabus: GS-2: Social Justice – Right to Work.

### Context:

- **MGNREGA (2005)** was enacted to provide a **legal guarantee of wage employment** to rural households willing to do unskilled manual work.
- Parliament has repealed MGNREGA and replaced it with the **Viksit Bharat – Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025**.
- The editorial critically examines this replacement and its implications for **rural livelihoods, rights-based welfare, and federalism**.

### Core Arguments

**a. End of a Rights-Based Framework**

- MGNREGA was a **demand-driven, rights-based law**, not a discretionary welfare scheme.
- Repeal of MGNREGA is described as a **"bulldozed demolition"** of the rural poor's **right to work**.
- It weakened the constitutional spirit of **Article 41 (Right to Work – DPSP)**.

**b. Shift from Legal Entitlement to Administrative Scheme**

- Employment guarantee under the new Act depends on **annual allocations**, not worker demand.
- This marks a shift from **citizen entitlement** to **government discretion**.

**Procedural and Federal Concerns**

- The law was passed with **limited parliamentary debate and stakeholder consultation**.
- States, Panchayati Raj Institutions, and worker collectives were not adequately involved.
- Centralisation of decision-making undermines **cooperative federalism** and local self-governance.

## Key Criticisms of the New Framework

**a. Budget-Capped Employment**

- MGNREGA ensured work whenever demanded (subject to conditions).
- The new law introduces **normative ceilings**, making employment availability uncertain.

**b. Changed Cost-Sharing Pattern**

- Greater financial responsibility placed on states.
- Poorer states may reduce implementation due to fiscal constraints, deepening regional inequalities.

**c. Weakened Worker Safeguards**

- Dilution of:
    - Guaranteed days of work
    - Unemployment allowance

- Time-bound wage payments

- Reduced accountability mechanisms for delays and denial of work.

### Impact on Rural Economy and Labour

#### Decline in Bargaining Power

- MGNREGA raised rural wages by acting as a **floor employer**.
- Its dilution may:
  - Lower rural wage rates
  - Increase distress migration
  - Strengthen exploitative labour relations

#### Increased Rural Vulnerability

- MGNREGA functioned as a **counter-cyclical safety net** during:
  - Droughts
  - Agricultural off-seasons
  - Economic shocks
- Weakening it risks aggravating **rural poverty and food insecurity**.

#### Symbolic and Ideological Concerns

- Removal of **Mahatma Gandhi's name** is seen as:
  - An ideological break from the original moral vision
  - An attempt to delegitimise rights-based welfare discourse
- The editorial views this as symbolic erosion of social justice values.

#### Larger Governance Narrative

- Repeal of MGNREGA is portrayed as part of a broader trend:
  - Shift away from rights-based laws
  - Preference for centrally-controlled schemes
- Raises concerns about **democratic accountability, transparency, and inclusion**.

#### Ethical and Social Dimensions

- The editorial frames the repeal as a **collective moral failure**.

- Questions the ethical responsibility of the State towards:
  - The poorest
  - Informal and landless workers
- Highlights tension between **fiscal efficiency** and **social justice**.

### Conclusion

- The editorial argues that dismantling MGNREGA:
  - Undermines livelihood security
  - Weakens rural labour markets
  - Erodes federal and democratic norms
- Calls for reaffirming **rights-based welfare** as central to inclusive development.

# Bangladesh

### Syllabus: GS-2; International Relations, GS-1; Geography-Mapping

### Context

- India has stated that it is **"closely watching the evolving crisis in Bangladesh"** following incidents of **mob violence and the killing of a Hindu youth** during protests.
- The Government of India expressed **strong concern over the safety of minorities** in Bangladesh and raised the issue through diplomatic channels.

### Basic Facts

- **Official Name:** People's Republic of Bangladesh
- **Capital:** Dhaka
- **Population:** ~170 million
- **Language:** Bengali (Bangla)
- **Independence:** 1971 (from Pakistan)

### Geography & Environment

- Located in **South Asia**, bordered by **India** on three sides and **Myanmar** in the southeast

- Lies in the **Ganga–Brahmaputra–Meghna (GBM) delta**
- Predominantly flat, low-lying alluvial plains
- **Major rivers:** Padma (Ganga), Jamuna (Brahmaputra), Meghna
- **Sundarbans mangrove forest** shared with India
- Highly vulnerable to **floods, cyclones, sea-level rise**


## Political System (with Recent Context)

- **Form:** Parliamentary democracy
- **Legislature:** Jatiya Sangsad (unicameral)
- **Recent development (2024–25):**
  - Political instability and protests following leadership transition
  - Interim governance arrangement under **Muhammad Yunus**
  - Allegations of shrinking democratic space, media regulation concerns
  - National elections planned amid unrest

## Economy

- **Status:** Developing, lower-middle-income economy
- **Growth model:** Export-led
- **Key sectors:**
  - Ready-made garments (2nd largest exporter globally after China)

- Agriculture (rice, jute, fisheries)
- Remittances

- **Recent context:**
  - Growth outlook moderated due to political uncertainty
  - Inflation and investment slowdown concerns
  - Industrial safety issues highlighted by factory accidents

## India–Bangladesh Relations

### a) Strategic Importance

- Central to India's **Neighbourhood First Policy**
- Gateway to India's **North-East** and **Act East Policy**

### b) Areas of Cooperation

- Trade and transit
- Rail, road and inland waterways connectivity
- Energy cooperation (power transmission, fuel supply)
- Security and counter-terrorism
- Water sharing (Ganga Water Treaty, 1996)

### c) Recent Challenges

- Political instability affecting bilateral trust
- Temporary suspension of some visa services due to protests
- Public calls in Bangladesh for economic distancing from India
- Concerns in India over internal security and border management

## Regional & Global Role

- Member of **SAARC**, **BIMSTEC**, **OIC**
- One of the **largest contributors to UN peacekeeping forces**
- Active voice for **climate-vulnerable countries**

## Internal & External Issues

- **Rohingya refugee crisis** (from Myanmar)
- Climate displacement and urban stress
- Democratic backsliding concerns
- Economic vulnerability to global shocks

# Superkilonova

### Syllabus: GS-3: Science and Technology

### Context:

So far, only one kilonova has been unambiguously confirmed to date, a historic event known as GW170817, which took place in 2017.

### Background: Stellar Explosions

- **Supernova**
  - Final explosive death of a massive star after nuclear fuel exhaustion.
  - Produces elements up to iron.
  - Leaves behind neutron stars or black holes.
- **Kilonova**
  - Occurs due to **merger of two neutron stars**.
  - Emits **gravitational waves** and electromagnetic radiation.
  - Major source of **heavy r-process elements** like gold, platinum, uranium.
  - Rare phenomenon; only one confirmed case earlier (GW170817, 2017).

### What is a 'Superkilonova'?

- A **hypothetical astronomical event** showing features of:
  - A **kilonova** (neutron-star merger)
  - Followed by a **supernova-like explosion**
- Appears to "explode twice", challenging existing stellar explosion models.

### The Event: AT2025ulz

- **Designation:** AT2025ulz
- **Detection:** August 2025
- **Key Observations:**
  - Gravitational-wave signal consistent with neutron-star merger.
  - Optical transient detected at the same location.

- Showed **two distinct phases of brightness and colour**.

### Observational Characteristics

#### Phase 1: Kilonova-like

- Short-lived **red emission** lasting a few days.
- Indicates presence of heavy, neutron-rich elements.
- Typical of kilonova ejecta.

#### Phase 2: Supernova-like

- Brightened again and turned **blue**.
- Spectral signatures of **hydrogen** detected.
- Behaviour similar to a core-collapse supernova.

→ **Uniqueness:** Normally, kilonovae fade rapidly and do not show later supernova features.

### Proposed Scientific Explanations

- **Supernova followed by Neutron-Star Merger**
  - Massive star explodes as a supernova.
  - Core fragments into two neutron stars.
  - Rapid merger produces kilonova signals.
- **Rapidly Rotating Stellar Core Fragmentation**
  - Core rotation causes instability.
  - Leads to formation and merger of compact objects shortly after explosion.
- **Obscured or Delayed Kilonova**
  - Initial supernova debris hides kilonova emission.
  - Kilonova signatures emerge later or partially.

### Scientific Significance

- **Multi-Messenger Astronomy**
  - Combines gravitational waves + electromagnetic observations.
  - Enhances understanding of extreme cosmic events.

- **Nucleosynthesis**
  - Provides insights into origin of heavy elements.
  - Refines r-process element production models.
- **Stellar Evolution**
  - Challenges classical separation between supernovae and kilonovae.
  - Suggests more complex end-stages of massive stars.

### Current Scientific Status

- **Not conclusively confirmed** as a new class yet.
- Alternative explanations still possible.
- Requires observation of **more similar events** for validation.

### Key Terms for Prelims

- **Gravitational Waves:** Ripples in space-time produced by accelerating massive objects.
- **Neutron Star:** Ultra-dense stellar remnant formed after supernova.
- **Red vs Blue Emission:**
  - Red → heavy element-rich, cooler ejecta
  - Blue → lighter elements, hotter ejecta

### Conclusion

The possible **superkilonova AT2025ulz** may represent a **new category of stellar explosion**, combining characteristics of both kilonovae and supernovae. If confirmed, it would significantly reshape our understanding of stellar death, compact object formation, and cosmic element synthesis.

## Southern Ocean Carbon 'Anomaly'

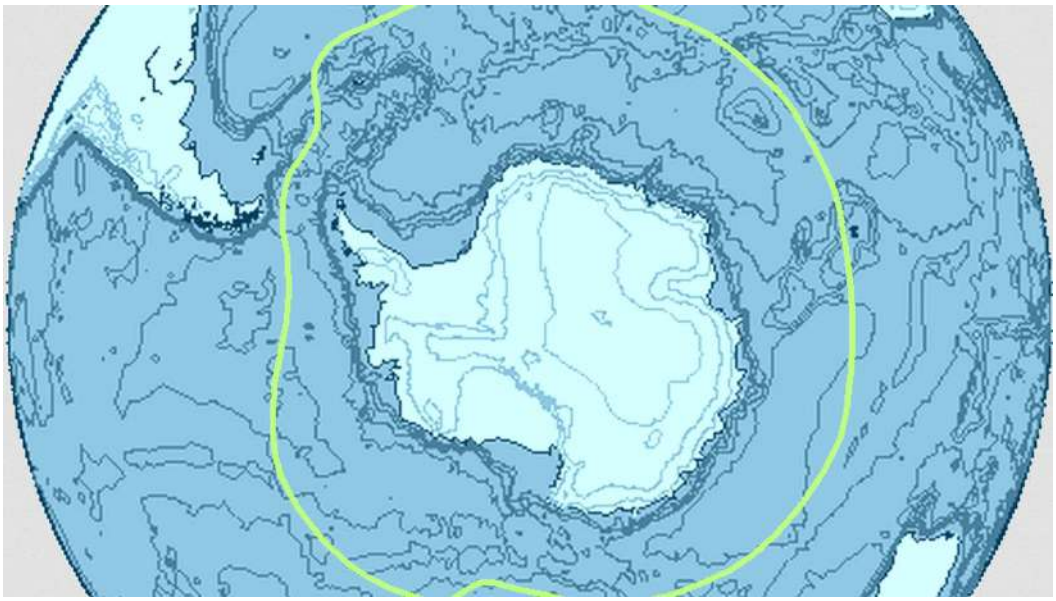
### Syllabus: GS-3: Climate Change

### Context:

- The **Southern Ocean** surrounds Antarctica and plays a **disproportionately large role in global climate regulation**.
- It absorbs a **significant share of anthropogenic $CO_2$**, making it a key component of the **global carbon cycle**.
- Any change in its behaviour directly affects **global warming projections and carbon budgets**.

## What is the 'Carbon Anomaly'?

- Climate models predicted that the Southern Ocean's ability to absorb $CO_2$ would **weaken** over time due to stronger winds and enhanced upwelling.
- **Observational data**, however, show that the Southern Ocean **continues to absorb high levels of $CO_2$**, contrary to model expectations.
- This mismatch between **observations and models** is termed the **Southern Ocean carbon anomaly**.



## Reasons Behind the Anomaly

### 1. Freshening of Surface Waters

- Increased **freshwater input** due to:
  - Melting Antarctic ice sheets
  - Sea-ice melt
  - Increased precipitation

- Leads to **lower salinity** and hence **lighter surface waters**.

**2. Enhanced Stratification**

- Fresh, lighter surface water sits above **denser deep water**, strengthening **vertical stratification**.
- This suppresses the **upward movement of deep, carbon-rich waters**.
- Result:
  - Reduced $CO_2$ outgassing from ocean to atmosphere
  - Continued net absorption of atmospheric $CO_2$

**3. Delayed Impact of Stronger Winds**

- Stronger westerly winds tend to enhance **upwelling of deep waters**.
- However, stratification **counteracts wind-driven upwelling**, delaying expected $CO_2$ release.
- This creates a **temporary buffer** against weakening of the carbon sink.

## Why Climate Models Missed This

- Many Earth System Models:
  - Underestimate **freshwater inputs**
  - Poorly represent **small-scale ocean mixing and stratification**
  - Simplify complex Southern Ocean circulation processes
- Result: **Over-prediction of $CO_2$ outgassing** and sink weakening.

## Significance for Climate Science

**1. Carbon Budget Estimation**

- Errors in modelling the Southern Ocean lead to **inaccurate global carbon budgets**.
- This affects:
  - Remaining carbon space
  - Net-zero timelines

**2. Climate Projections**

- If stratification weakens in future:

- Rapid release of stored $CO_2$ may occur
- This would act as a **positive climate feedback**

**3. Policy Implications**

- Over-reliance on natural carbon sinks is risky.
- Reinforces the urgency of:
  - Emissions reduction
  - Improved climate modelling

## Key Concepts Linked to the Topic

- Ocean stratification
- Thermohaline circulation
- Air–sea gas exchange
- Climate feedback mechanisms
- Earth System Models (ESMs)

## Conclusion

- The Southern Ocean carbon anomaly highlights that **natural systems can behave differently from model projections**.
- It exposes **critical gaps in climate modelling**, especially regarding polar oceans.
- Long-term climate policy must be based on **continuous observation, model refinement, and precaution**, not temporary buffering effects.