

10 New Insights in Climate Science 2026-2027

Prelims: Current events of national and international importance | Environment

Why in News?

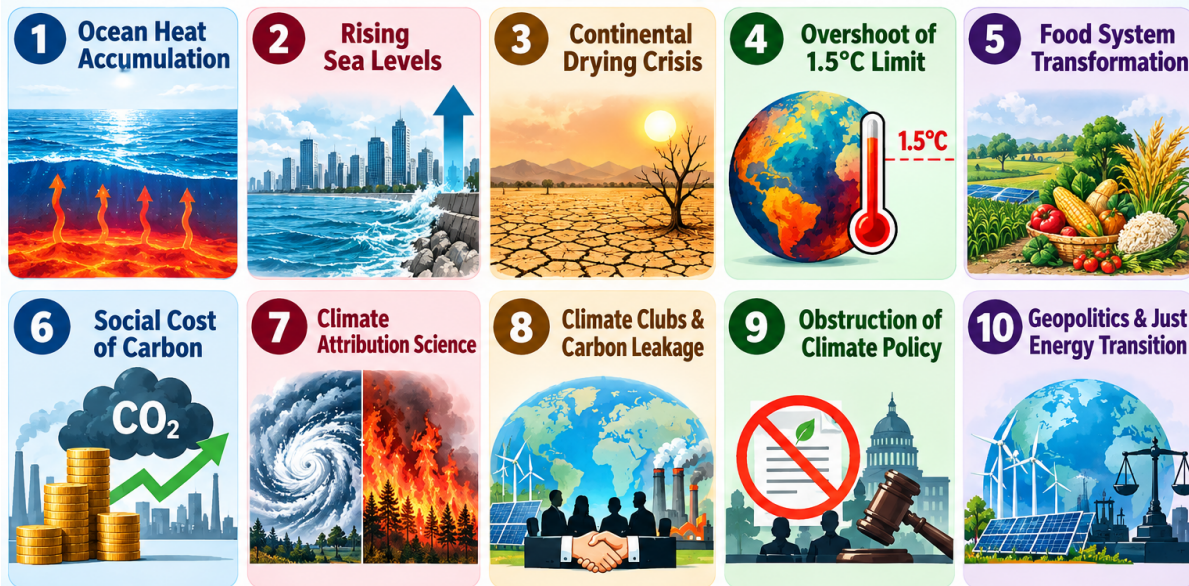
Recently, the International Science Council (ISC) released the report titled 10 New Insights in Climate Science 2026-2027.

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- The release of the report coincided with the **pre-COP31 meeting held in Fiji**.
- **Prepared by** - Future Earth, the Earth League and the World Climate Research Programme (WCRP).
- It presents recent scientific findings intended to inform climate negotiations in advance of COP31.
- **Key Highlights**
- **Global warming** - In 2025, global temperatures were approximately 1.43°C above the pre-industrial baseline.
 - The years 2015 to 2025 represent the 11 warmest years on record.
- **CO₂ emissions** - In 2025, fossil fuel and cement production emitted a record 38.1 billion tonnes of CO₂.
 - Atmospheric CO₂ concentrations reached 425.6 ppm, approximately 53% higher than pre-industrial levels.
- **Ocean warming** - Oceans absorb more than 90% of excess heat in the Earth system.
 - In 2025, ocean heat content reached a record high for the ninth consecutive year.
- **Sea-level rise** - The global mean sea-level rise rate has doubled over the past 30 years, primarily due to thermal expansion of seawater and melting glaciers and ice sheets.
- **Water insecurity** - Approximately three-quarters of the global population live in 101 countries experiencing freshwater losses since 2002.
 - The annual water gap is estimated at 458 km³, with South Asia facing significant groundwater depletion.

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Ten Major Insights



- **Social Cost of Carbon (SCC)** - Recent estimates suggest economic damages from carbon emissions may be up to four times higher than previously assessed.
 - SCC quantifies the economic impact of one additional tonne of CO₂ emissions.
- **Climate attribution science** - Advances in research now link emissions from fossil fuel and cement producers to specific climate impacts, strengthening evidence for accountability and climate litigation.
- **Climate clubs and Carbon Border Adjustment Mechanisms** - It can reduce carbon leakage but may increase costs for exporters in developing countries.
- **Climate obstruction** - Common tactics include denial, delay, policy dilution, greenwashing, and digital disinformation.
- **Just energy transition** - Geopolitical instability can disrupt clean energy supply chains and increase reliance on fossil fuels.

Reference

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