

Arctic Amplification

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Arctic Amplification Latest News

According to the 2024 European State of the Climate Report, Europe has warmed nearly twice as much as the global average, with far-reaching climatic and ecological consequences.

What is Arctic Amplification?

- **Arctic amplification** is a phenomenon where **temperature changes in the polar regions**, especially the **Arctic**, are **more intense** than the **global average** temperature change.
- It is a form of **polar amplification**, which occurs when **changes in Earth's atmosphere** lead to a **greater rise in temperatures near the poles** than in other parts of the world.
- This effect is **measured against the average temperature rise** of the planet and is **particularly pronounced in the northern polar regions**, hence the term **Arctic amplification**.
- The phenomenon is primarily driven by changes in the **net radiation balance of the atmosphere**, especially due to the **increase in greenhouse gases** like **CO₂** and **methane**, which trap more heat in the Arctic region.

- The major contributing factors to Arctic amplification are: **Ice-Albedo Feedback, Lapse Rate Feedback, Water Vapour Feedback & Ocean Heat Transport.**

Key Highlights from the 2024 European State of the Climate Report

- The **Arctic region** is warming **three to four times faster** than the global average, a phenomenon called **Arctic Amplification**.
 - This is due to the **melting of Arctic ice**, reducing the **albedo effect**, where **ice (which reflects sunlight)** is replaced by **darker surfaces (land or water)** that **absorb more solar radiation**, enhancing warming.
- **Warming Trends in Europe vs. Global Averages:**
 - The **global average temperature** has risen by approximately **1.3°C** above **pre-industrial levels** (1850–1900 baseline).
 - In **2024**, the planet crossed the critical **1.5°C threshold** for the **first time**.
 - **Europe's average temperature** has increased by about **2.4°C**, making it one of the **fastest-warming regions** on Earth.
 - This accelerated warming has led to **extreme weather events**, including **intense heat waves, heavy rainfall, and flooding**.
- **Regional Climatic Contrasts Within Europe:**
 - The **Eastern part of Europe** experienced **warmer and sunnier** conditions.
 - **Western Europe** witnessed **cloudier and wetter** weather.
 - **Southeastern European countries** (e.g., **Bulgaria, Romania, Serbia, Croatia**) saw their **longest heatwave on record** in 2024.
 - The **number of 'cold stress days'** was the **lowest ever**, and **below-freezing temperature days** dropped significantly.

Source: **IE**

Source: <https://vajiramandravi.com/current-affairs/arctic-amplification/>

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