

WMO State of the Climate Update For COP30

Earth Information Day

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Global Observing System

10 November 2025
Belém, Brazil

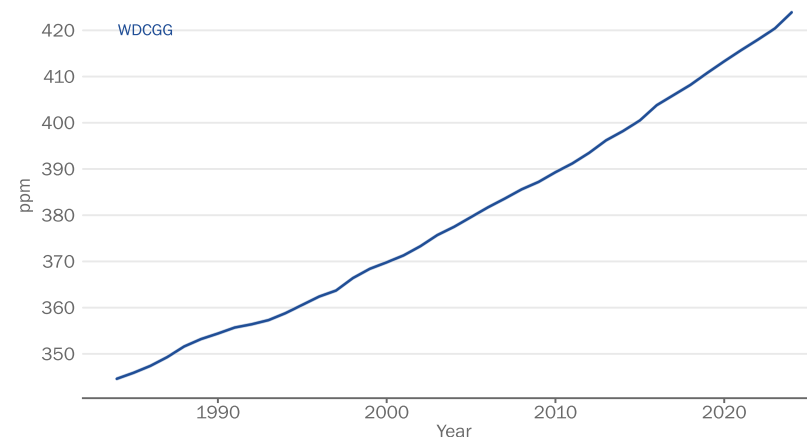
Greenhouse gas concentrations reached record observed levels in 2024.

Real-time data indicate that they continue to rise in 2025.

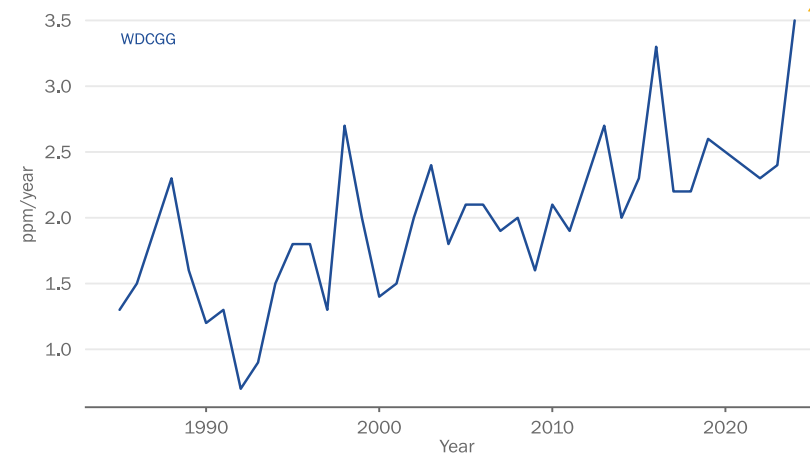
IPCC Context

Observed increases in well-mixed greenhouse gas (GHG) concentrations since around 1750 are *unequivocally* caused by human activities. Continued greenhouse gas emissions will lead to increasing global warming (IPCC, 2021).

Atmospheric carbon dioxide concentration 1984-2024



Carbon dioxide growth rate 1984-2024



The increase in concentration from 2023 to 2024 was 3.5 ppm, a record increase in the recent observational history.

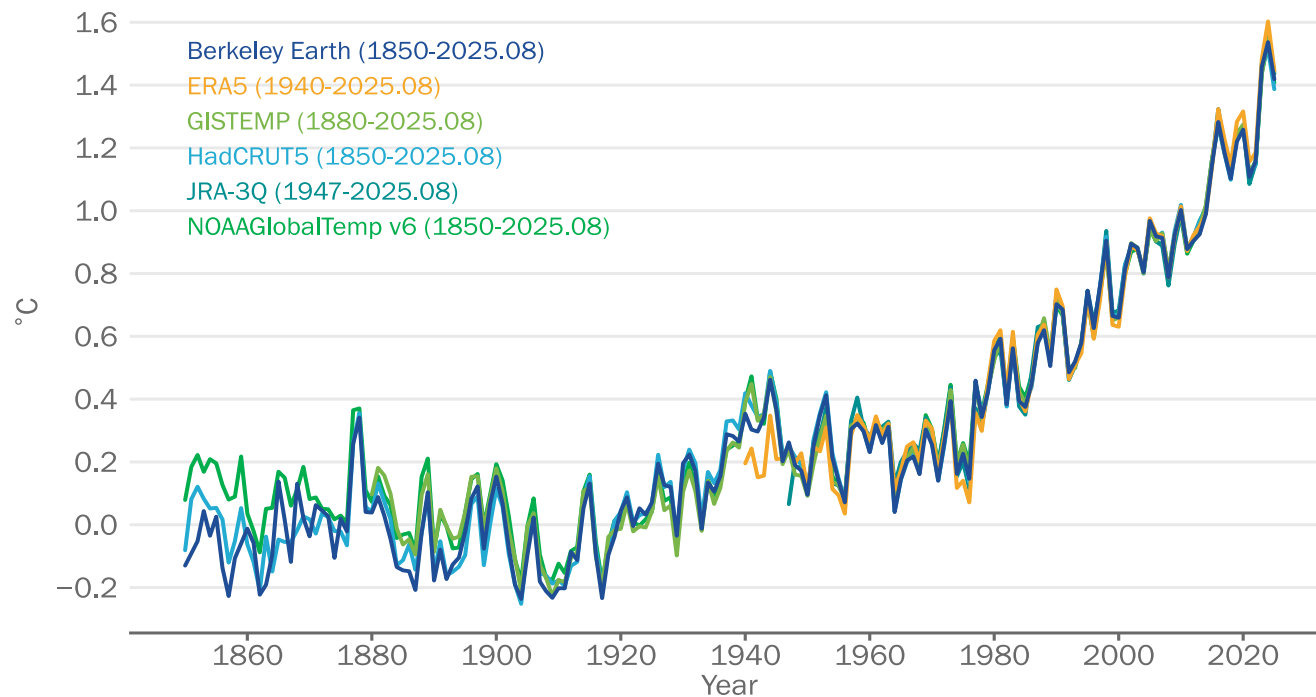
January-August 2025 was $1.42 \pm 0.12^\circ\text{C}$ above the pre-industrial average.

2025 is on track to be among the three
warmest years on record.

IPCC Context

It is *unequivocal* that human influence has warmed the atmosphere, ocean and land. Every increment of global warming will intensify multiple and concurrent hazards, and changes in extremes will continue to become larger (IPCC, 2021).

Global mean temperature 1850-2025
Difference from 1850-1900 average

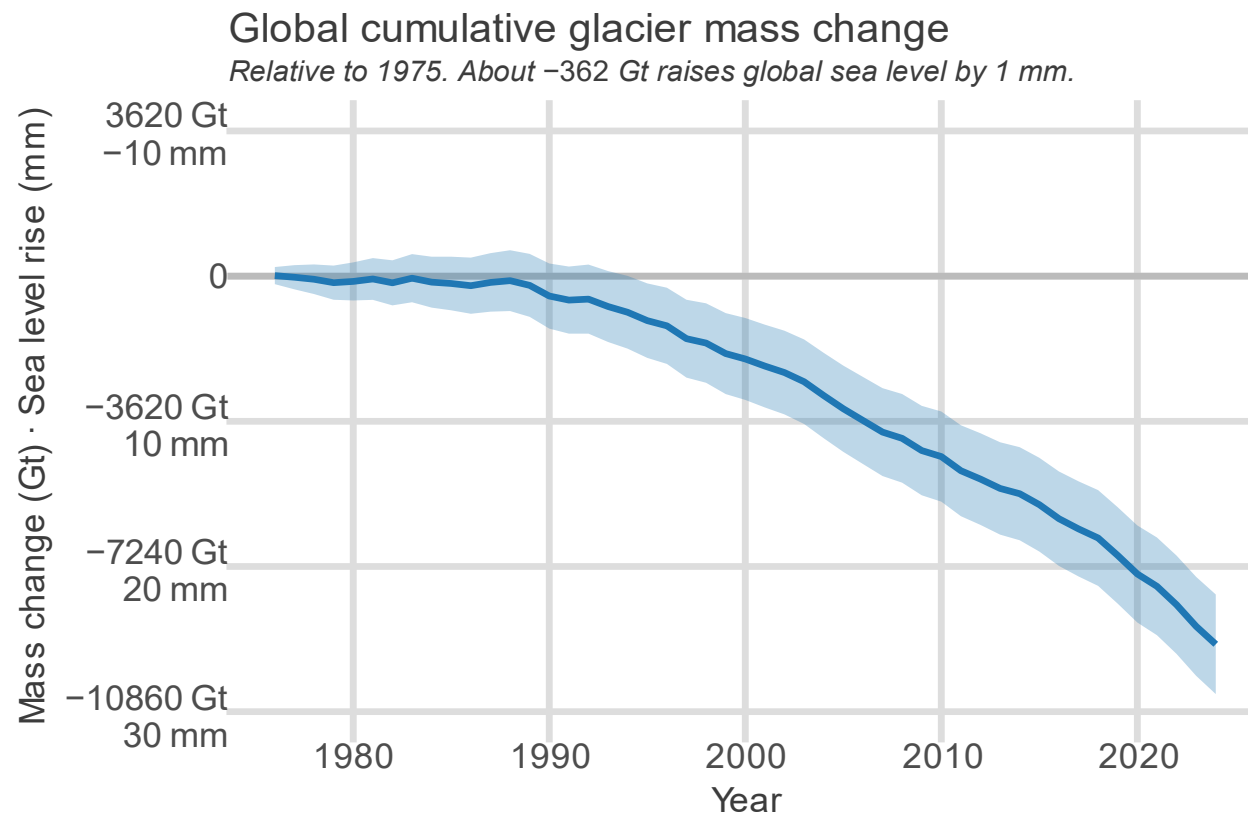


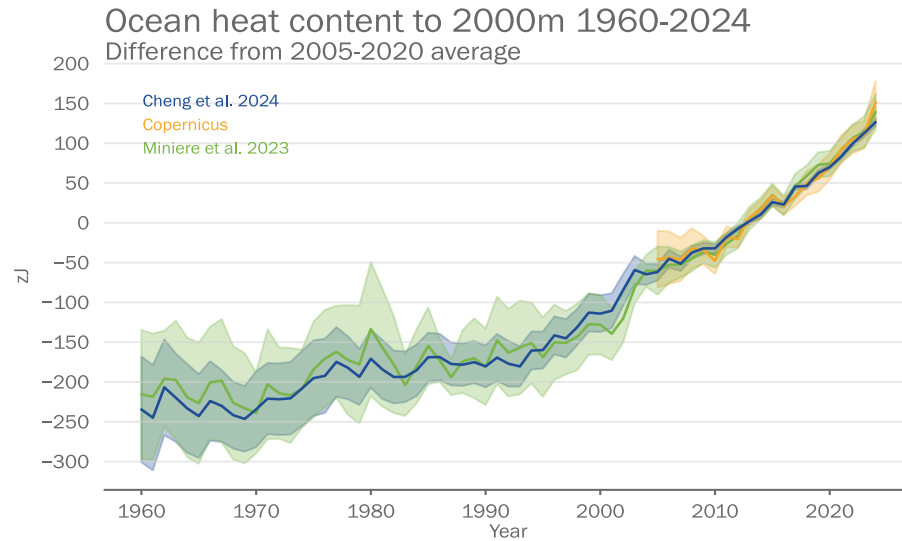
In 2023/2024, glaciers lost a record 1.3-meter water equivalent of ice.

This is equivalent to 450 gigatons or 1.2 mm of global mean sea-level rise and nominally the largest loss of ice on record.

IPCC Context

The global nature of glacier retreat since the 1950s, with almost all of the world's glaciers retreating synchronously, is unprecedented in at least the last 2000 years (*medium confidence*). Mountain and polar glaciers are committed to continue melting for decades or centuries (*very high confidence*) (IPCC, 2021).

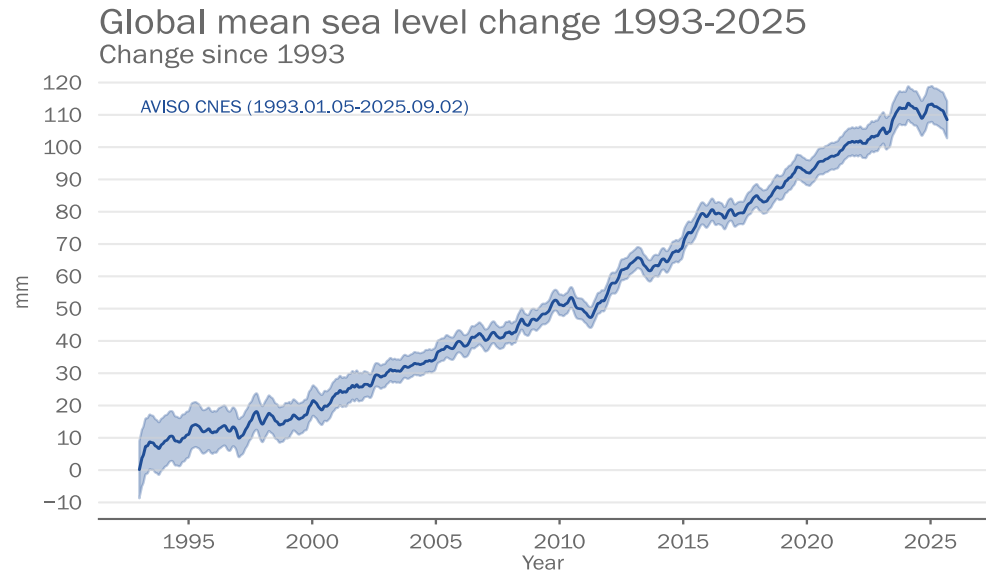




Ocean heat content in 2024 was the highest on record.

IPCC Context

It is *virtually certain* that the global upper ocean (0–700 m) has warmed since the 1970s and *extremely likely* that human influence is the main driver. Ocean warming will continue over the 21st century (*virtually certain*), and will *likely* continue until at least to 2300 even for low CO₂ emissions scenarios (IPCC, 2021).



Long-term rate of sea-level rise has increased.

IPCC Context

Global mean sea level has risen faster since 1900 than over any preceding century in at least the last 3000 years (*high confidence*). It is *virtually certain* that global mean sea level will continue to rise over the 21st century (IPCC, 2021).

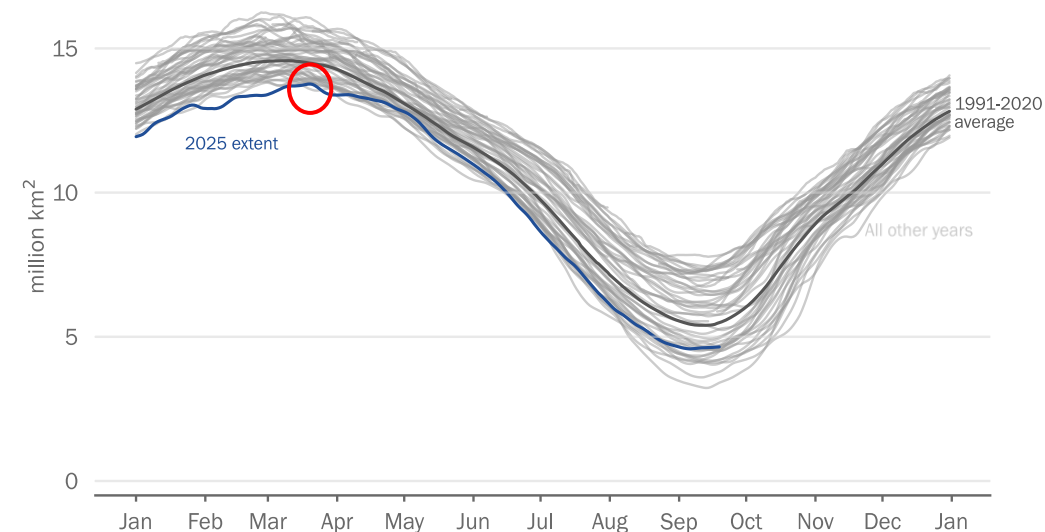
The annual maximum Arctic sea-ice extent was the lowest on record in the satellite era.

Antarctic and Arctic sea-ice extent continued to be below average in 2025.

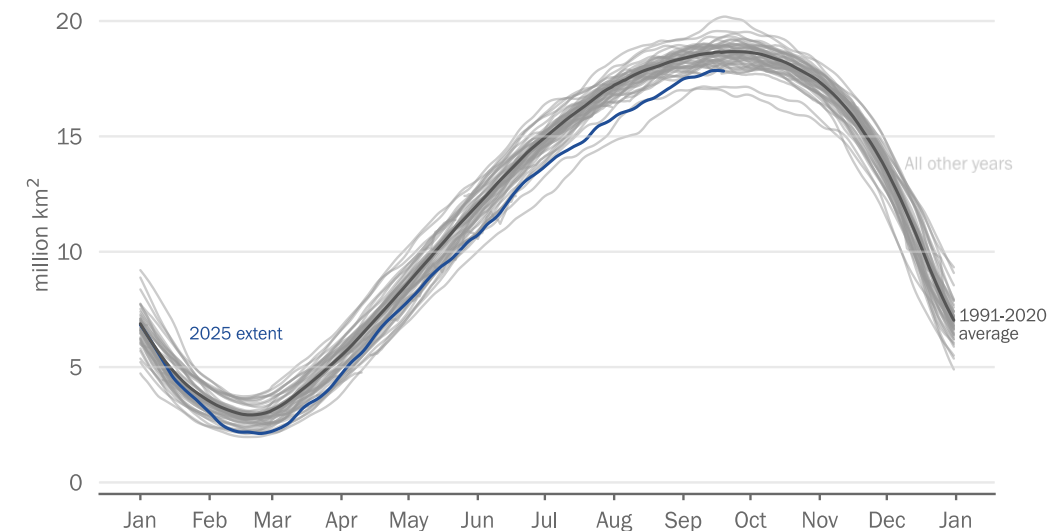
IPCC Context

Human influence was *very likely* the main driver of observed reductions in Arctic sea ice since the late 1970s (with late-summer sea ice loss *likely* unprecedented for at least 1000 years). The Arctic is *likely* to be practically sea ice-free in September at least once before 2050 (IPCC, 2021).

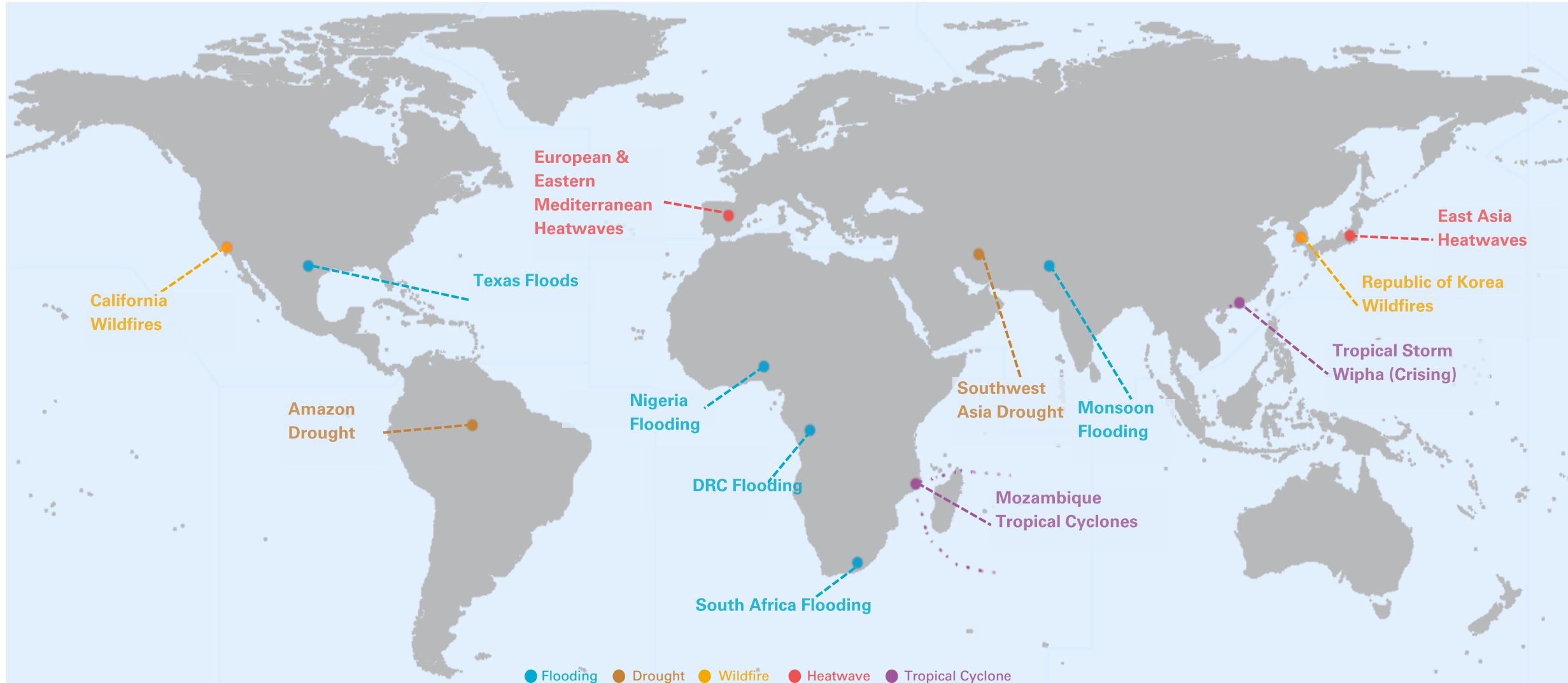
Daily Arctic sea-ice extent through the year 1978-2025



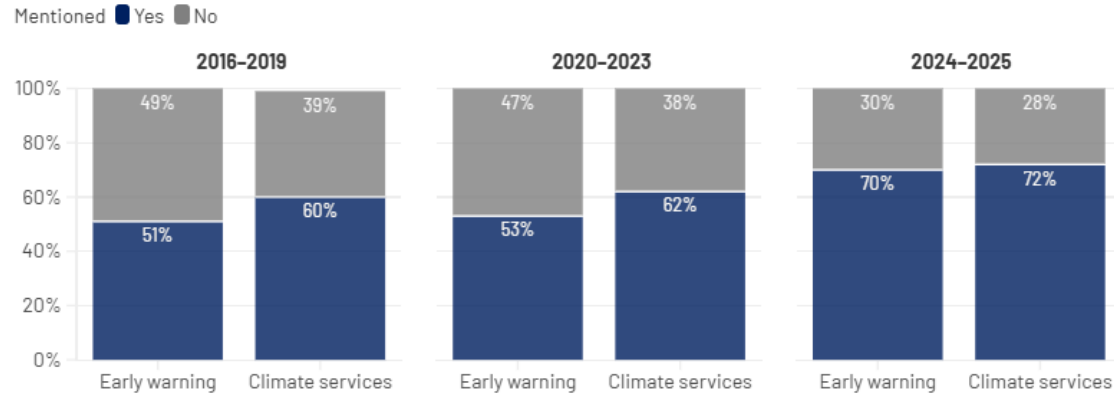
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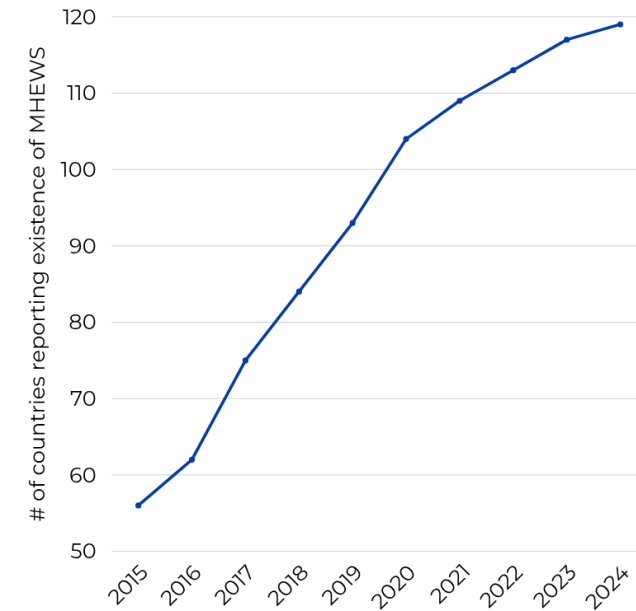
Diverse extreme events in the first half of 2025 had major global impacts



Evolution of climate services and early warning mentions in NDCs

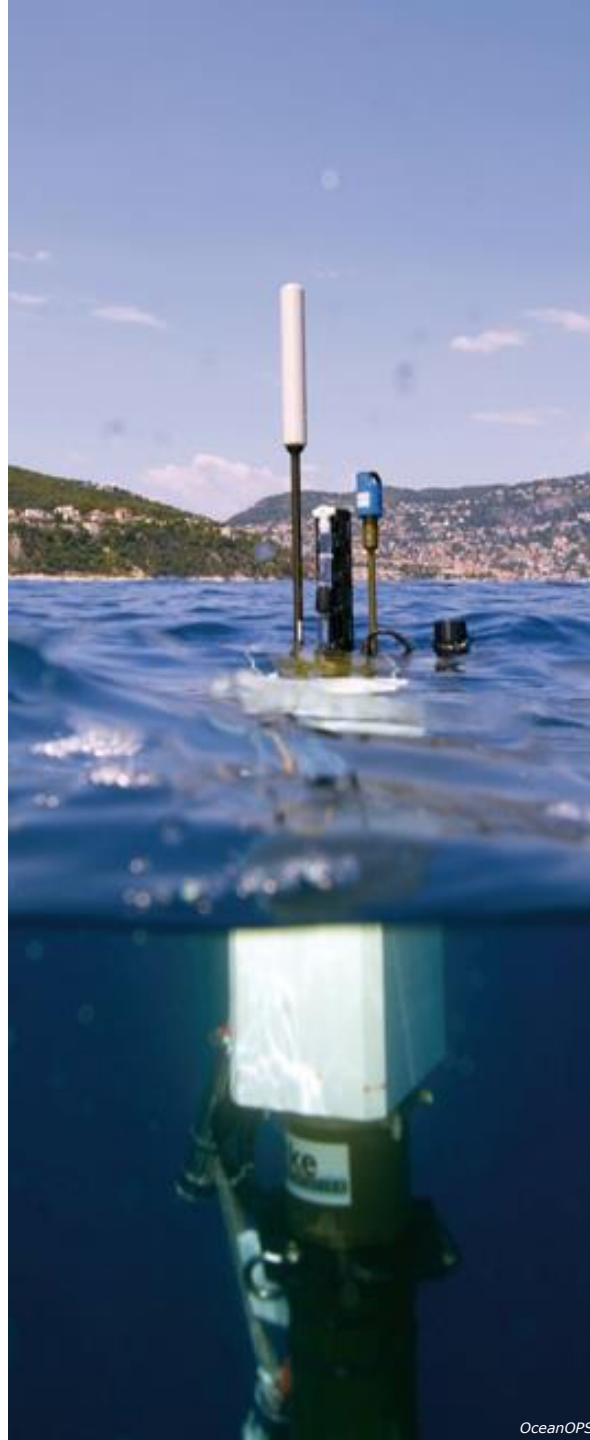


National Meteorological and Hydrological Services have a growing role to support climate action



Early warning systems are expanding with stronger observations and forecasting

Systematic observations underpin early warnings, climate services and the State of the Climate



Thank you

Read the report:



Save the date:

State of the Climate 2025

March 23, 2026