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#EUSpace

Evidence of change of key climate indicators

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Where are we now?

By the end of 2025 the globe has warmed by about:

+1.4ºC

above the pre-industrial level

This number is based on **three separate methods** that use C3S data and calculations following those illustrated in the WMO Global State of the Climate 2024

When will we reach +1.5ºC

If warming continues at the same rate as in the last 15 years, the globe could be at:

approximately +1.5ºC by

the end of this decade

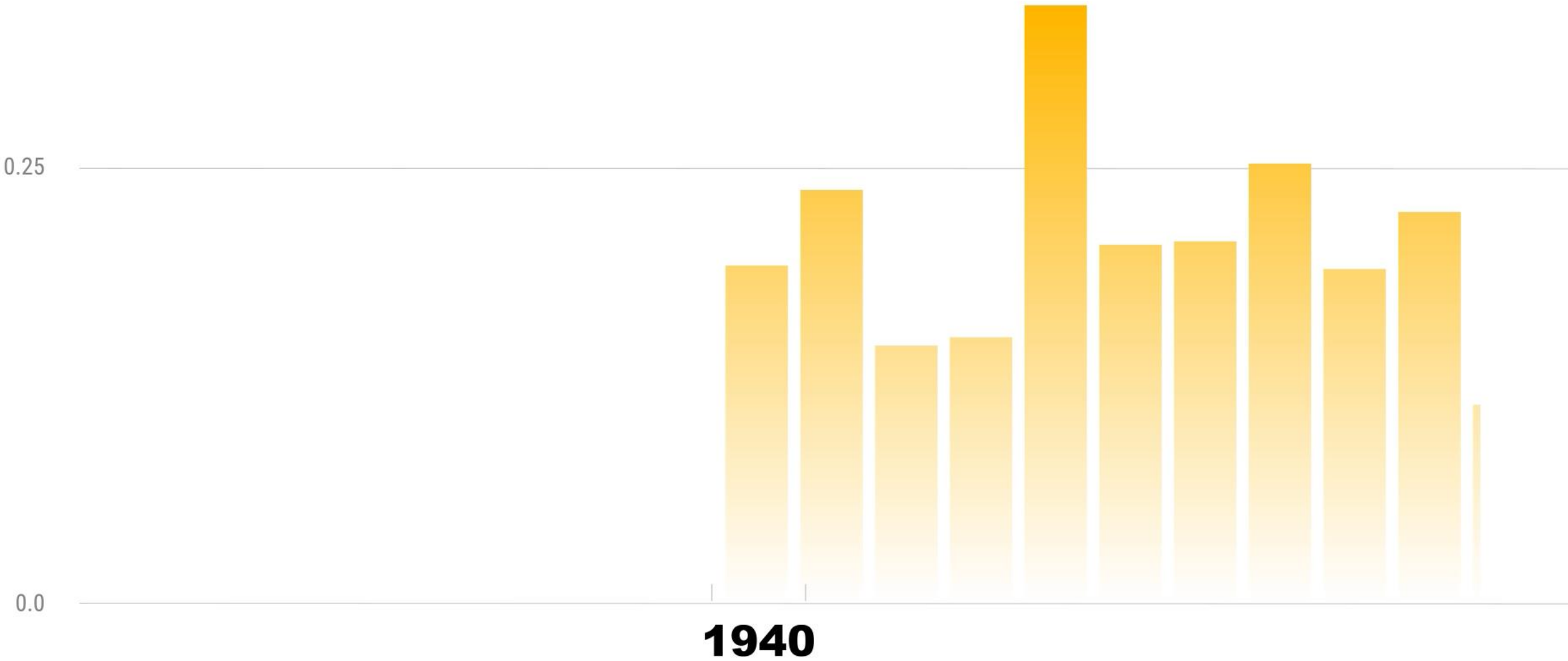
Estimate based on the method behind the **C3S global trend monitor**.

2025 was the third-warmest year on record

Global annual surface air temperature increase above pre-industrial level since 1940

Data: ERA5 • Reference period: pre-industrial (1850–1900) • Credit: C3S/ECMWF

2025 GLOBAL CLIMATE HIGHLIGHTS



WHY IS EUROPE WARMING SO QUICKLY?

Europe is warming more than twice as fast as the global average

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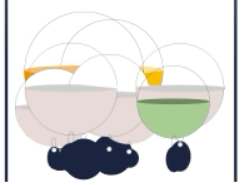
REPORT 2025

Linear trend in annual surface air temperature for 1996–2025
Data: ERA5 • Credit: C3S/ECMWF



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Record heatwave in sub-Arctic Fennoscandia

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Fennoscandia is the region encompassing Norway, Sweden and Finland. Sub-Arctic Fennoscandia refers to the area north of 60°N.
Data: E-OBS, SYNOP, ERA5, NGCD • Reference period: 1961–1990 (heatwaves) • Credit: DWD/C3S/ECMWF/Met Norway

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WILDFIRES

Wildfires in 2025

Burnt areas across Europe and the Mediterranean in 2025

Data: European Forest Fire Information System (EFFIS) • Credit: EFFIS/CEMS/C3S/ECMWF

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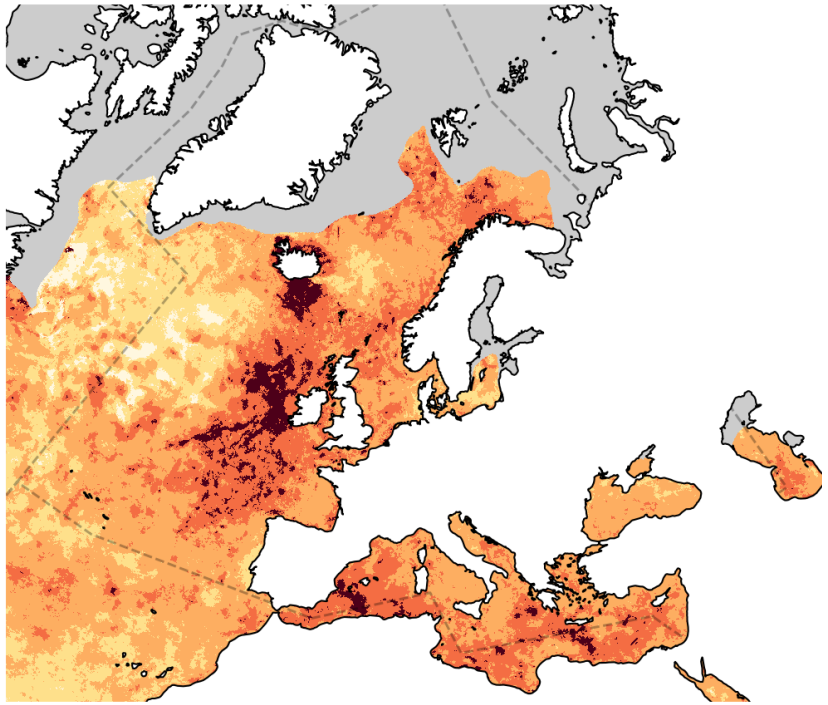
Highest marine heatwave category reached in 2025



Marine heatwave category

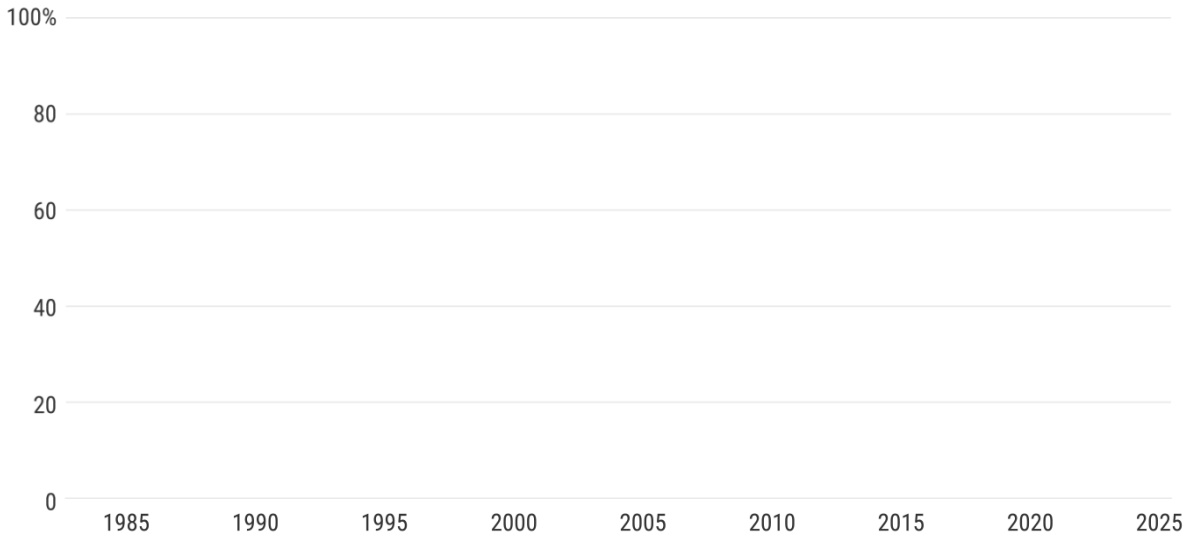
No heatwave | Moderate | Strong | Severe | Extreme

OCEAN

Marine heatwaves in 2025

Percentage of European ocean experiencing marine heatwaves in a given year

Data: C3S Sea and Sea Ice Surface Temperature v1.0 • Reference period: 1991–2020 • Credit: C3S/ECMWF/DMI



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Marine heatwaves impact biodiversity

Marine heatwaves are linked to **mass mortality events**, shifts in species distributions and seasonal timing, and **ecosystem disruption**.

Posidonia Oceanica is a Mediterranean **seagrass** that covers ~19,000 km^2 along Europe's coasts, providing **ecological + economical benefits**.

Over the past **50 years,** *P. oceanica* meadows have **declined by up to 34%.**

Conservation of meadows over the last decade has **benefited biodiversity** and **climate resilience.**

Data: UNEP-WCMC, C3S Sea and Sea Ice Surface Temperature v1.0 • Credit: C3S/ECMWF/WMO/DMI

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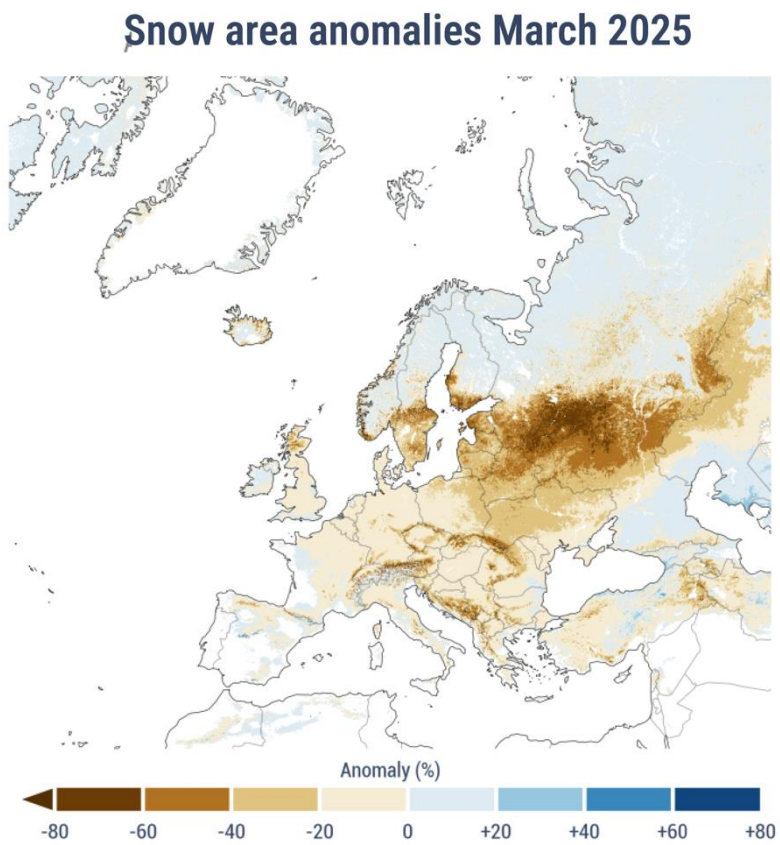
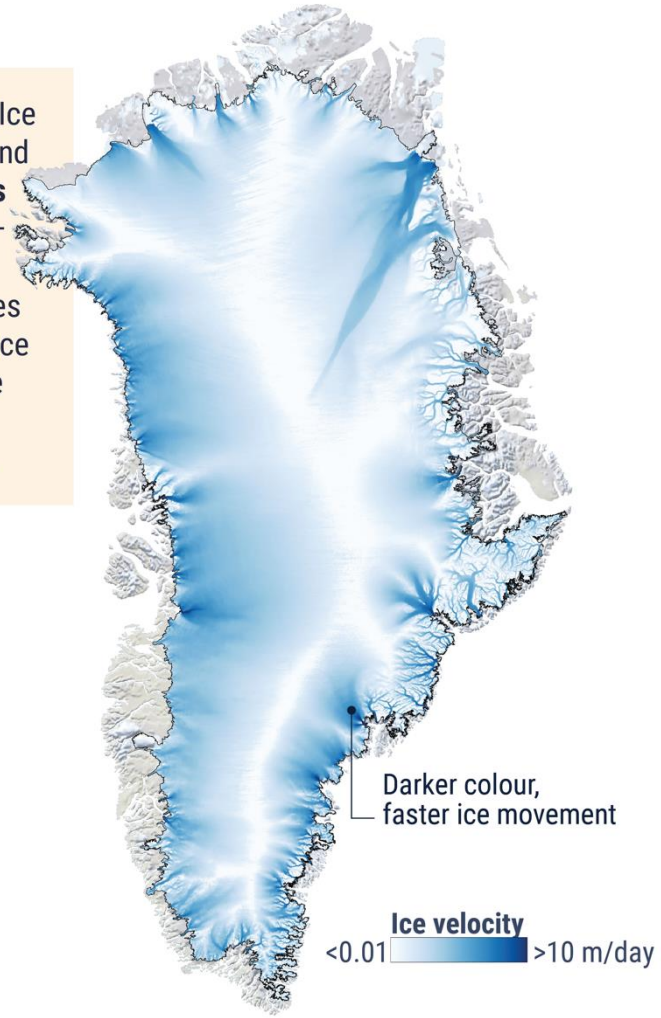
Cold environments in a warming climate

In 2025, end-of-season **snow cover** extent and mass were the **third lowest** on record.



The Greenland Ice Sheet lost around **139 gigatonnes of ice** in 2025 – equivalent to around 1.5 times the amount of ice stored in all the glaciers in the European Alps.



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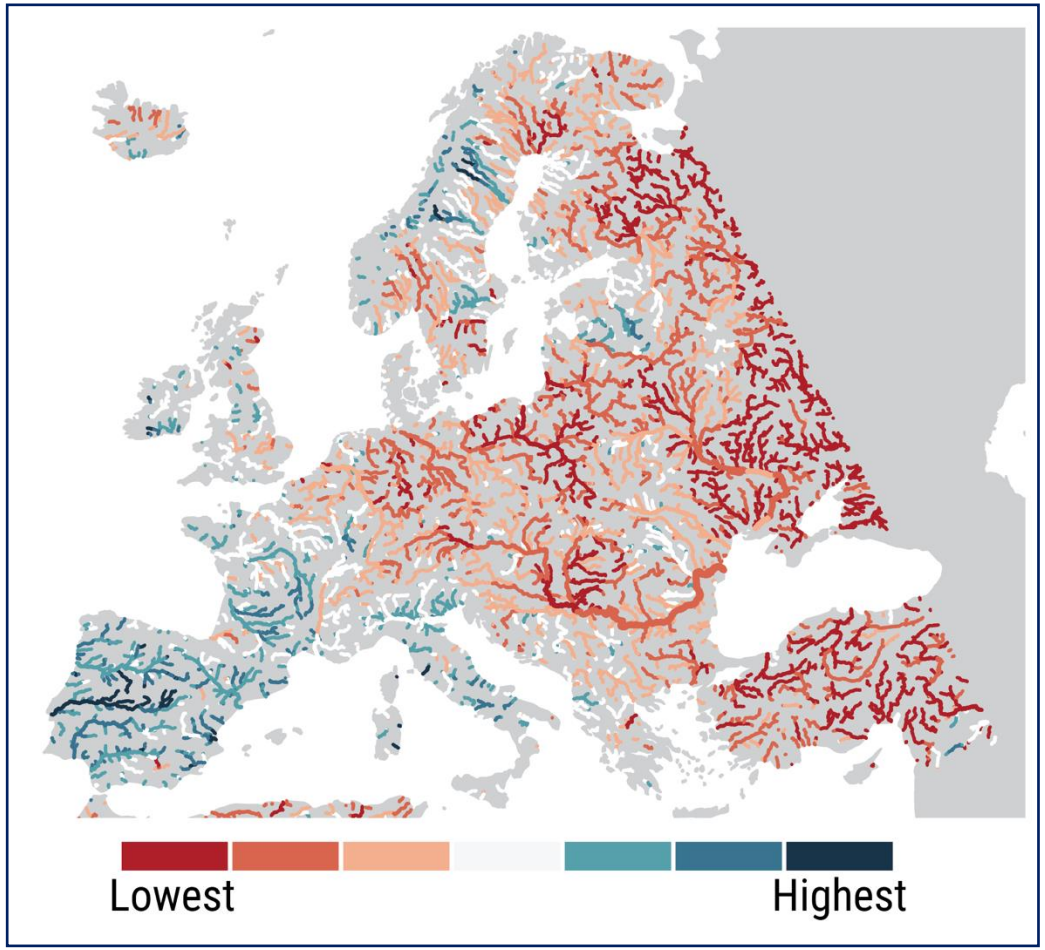
Hydrological conditions in 2025

Drier than average across most of Europe, but with **strong regional contrasts.**

Anomalies in annual average river flow



A large area from northwestern to eastern Europe saw **below-average precipitation**.

It was one of Europe's three **driest years for soil moisture** since 1992.

Annual **river flow** was below average in **70%** of rivers.

Extreme precipitation and flooding were **less widespread** than in recent years.

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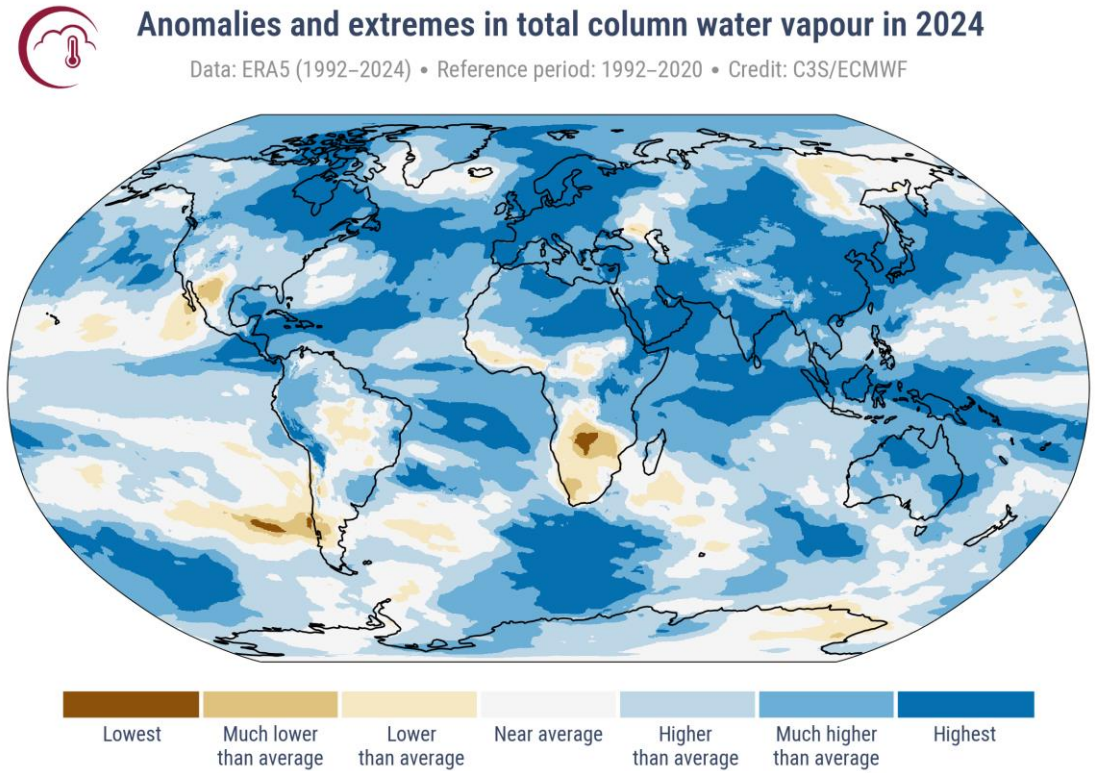
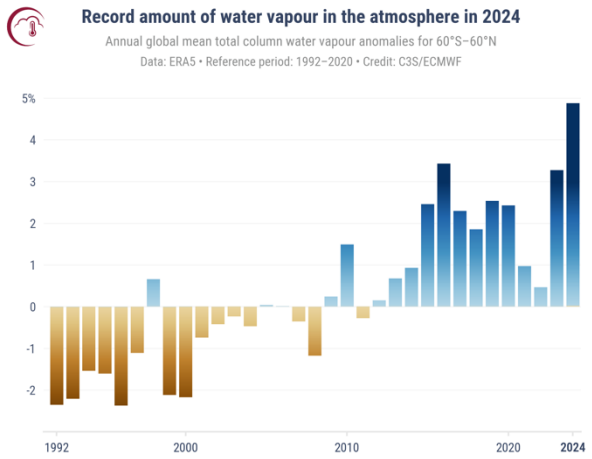
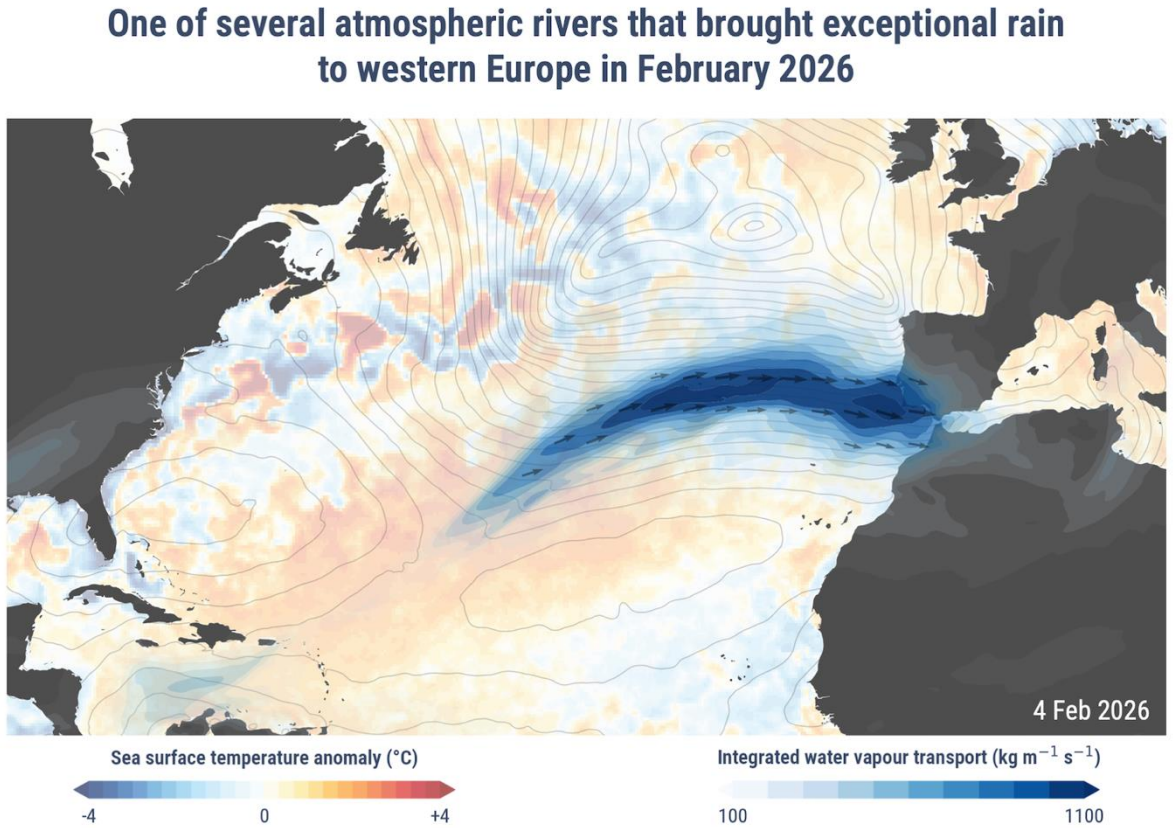
Record atmospheric water vapour in 2024





The total amount of **water vapour in the atmosphere** reached a **record value in 2024**, 5% above the 1991–2020 average



- The map shows integrated water vapour transport (foreground, blue shades), mean sea level pressure (contour lines), and sea surface temperature anomalies relative to the 1991–2020 average (background, blue/red shades) for 4 February 2026 at 00 UTC.
- Integrated water vapour transport is the total amount of water vapour carried by the wind through the atmosphere. An **atmospheric river** is a narrow band of very moist air that transports large amounts of water vapour.
- Data: ERA5. Credit: C3S/ECMWF.

Climate change costs the EU
~ €45 billion annually

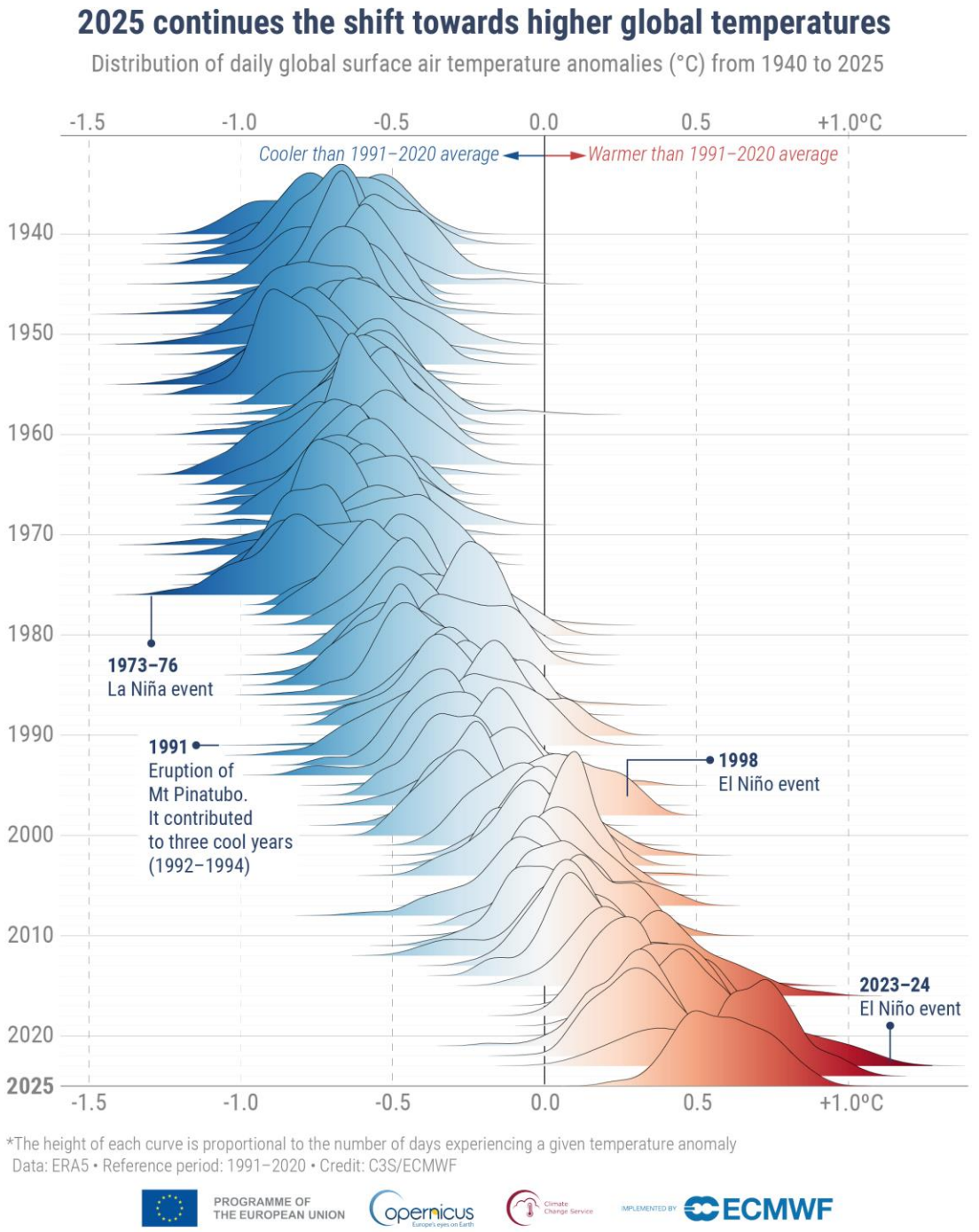
- Between 1980-2024 economic losses due to weather and climate extremes amounts to >**€800 billion**

- ~47% Hydrological hazards (flooding)
- ~27% Meteorological hazards (storms)
- ~18% Heatwaves - Climatological hazards
- ~8% droughts, wildfires, cold spells, frosts

Inaction could cost Europe over

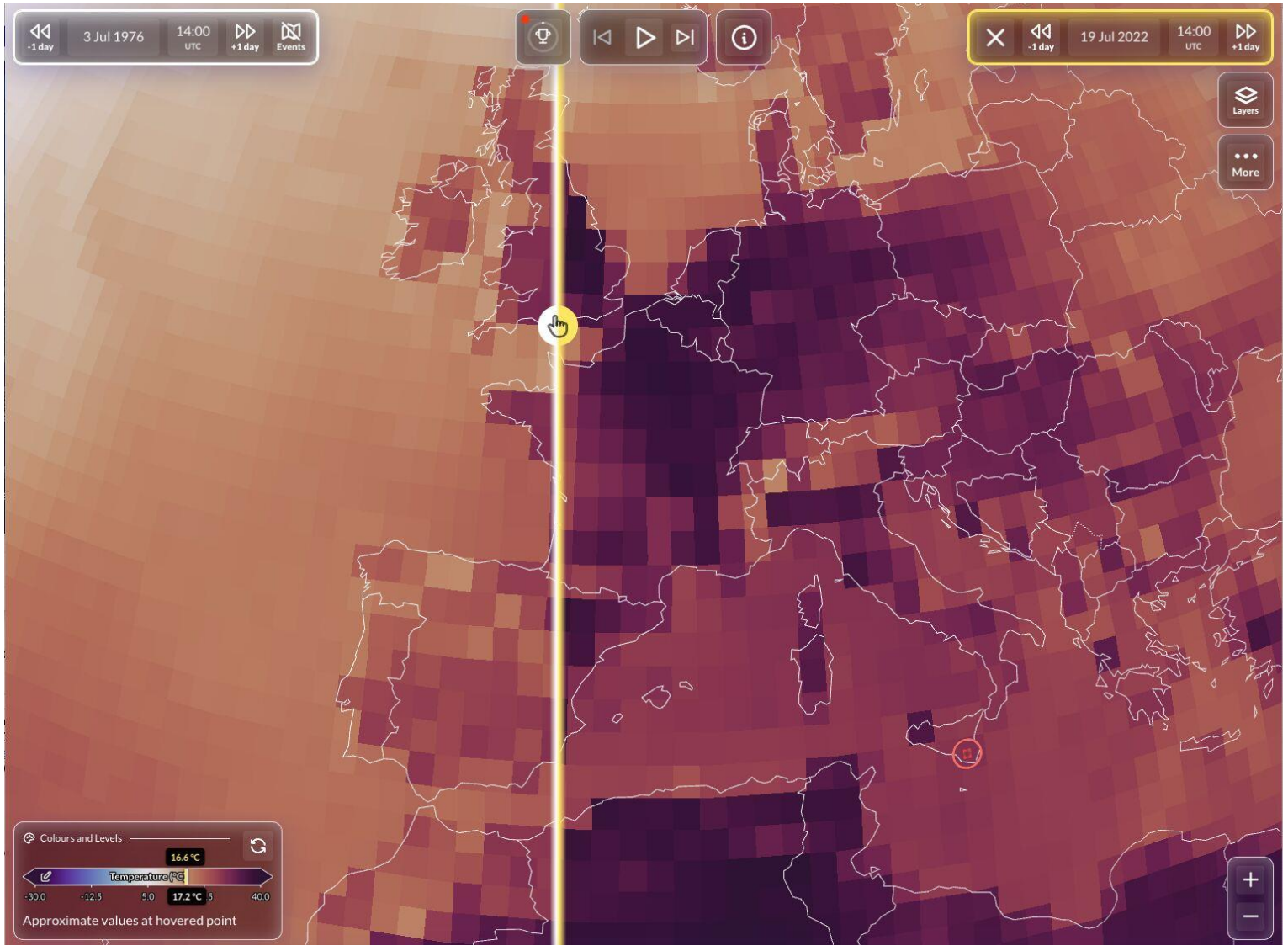
€5 trillion by 2050

https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related



Weather Replay – time machine for past weather

https://weather-replay.climate.copernicus.eu/



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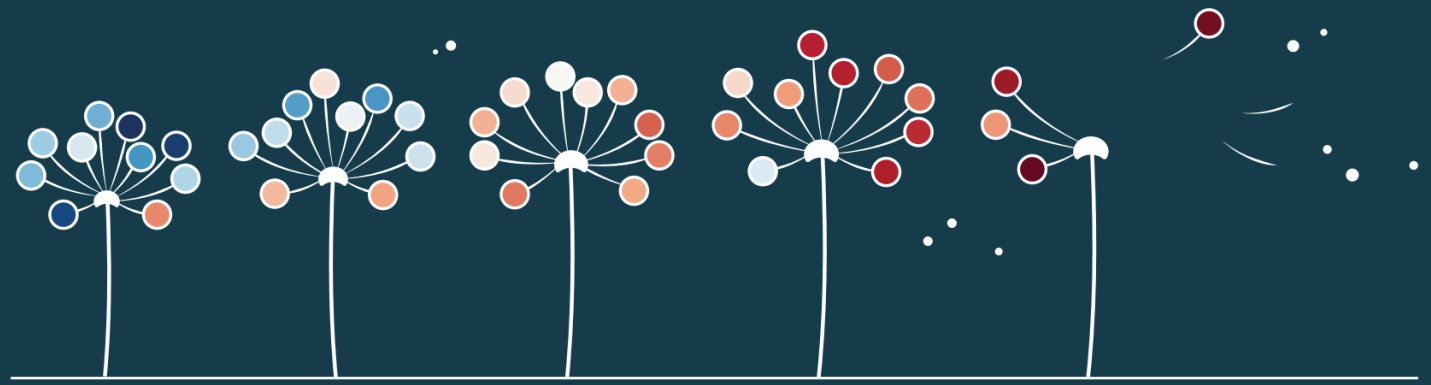

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What role did El Niño play?