A Look at 2025

Takeaway Points from the State of the Climate Report

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Storm formation in the Brazilian countryside.
(image: Mauricio Caetano de Souza, iStock)

GLOBAL CLIMATE

The three main greenhouse gases that warm our atmosphere by trapping some of Earth's outgoing energy—carbon dioxide, methane, and nitrous oxide—all reached record-high levels in 2025. The average rate of carbon dioxide accumulation in the atmosphere increased from 0.6±0.1 parts per million (ppm) per year in the early 1960s to 2.4 ppm per year during the decade of 2011–20. At the same time, fossil fuel emissions increased from 3.0±0.2 petagrams of carbon per year in the 1960s to 9.8±0.5 petagrams of carbon per year in the most recent 10-year period of 2015–24. Fossil fuel emissions in 2025 are estimated to be a record high of 10.3±0.5 petagrams of carbon. One petagram is equal to more than 2.2 trillion pounds.

The annual average global surface temperature for 2025 was among the three highest on record (since at least 1850). Only 2023 and 2024 were warmer, and both of those years were influenced by warm El Niño conditions in the eastern and central Pacific Ocean. In contrast, cool La Niña–like conditions occurred at the beginning and end of 2025. A clear warming trend continued, with the last 11 years being the warmest 11 years on record. Also in 2025, high humidity heat extremes occurred with near-record frequency and intensity. These extremes can lead to dangerous heat-related illnesses. Above Earth's surface, temperatures in the lower troposphere were also elevated, with 2025 being the second-warmest year on record.

Increasing temperatures also impact the frozen landscape. Land-based glaciers around the world continued to lose ice for the 38th consecutive year, with each losing on average more than one-meter water equivalent—the height of water that would result if the ice melted down to its liquid state—for the fourth straight year. About 41% of the ice lost by glaciers since 1976 has occurred in just the last decade. Permafrost temperatures and active layer thickness—the portion of ground that thaws and refreezes each year—continued to increase in most locations, and many new records were set. During the winter of 2024/25, lakes in the Northern Hemisphere froze later, thawed earlier, and had shorter durations of ice cover than normal, with ice durations 15 days shorter on average compared to the 1991–2020 average.

The average percentage of cloud area fraction in the sky during the year was the second lowest since records began in 1980, at 68.5%, which means that more sunlight than usual reached Earth's surface. On average, precipitation was below normal over the oceans but above normal over land, which is typical during La Niña conditions. Intense precipitation, as measured by the maximum one-day rainfall averaged across the globe, was the fourth highest on record in 2025. The increased rainfall over land led to above-average lake water storage, with over 70% of monitored lakes in the Northern Hemisphere having higher-than-usual storage levels. However, in Central Asia, the Caspian Sea, which is the world's largest inland body of water, and the Large Aral Sea, both had lower-than-normal water levels.

Despite the increase in precipitation, surface soil moisture was lower in 2025 than in any other year since 1991. This was mainly due to many areas experiencing above-average evaporation. Globally, the area of the land surface experiencing drought remained elevated compared to conditions before 2019, with substantial increases in eastern Europe, the Danube basin, and Central Asia. Drought conditions eased in southern Africa and central and northern South America.

The Iberian Peninsula had unprecedented fire activity, which drove a record for overall fire emissions in Europe. Nevertheless, at the global scale, 2025 had the lowest overall fire activity in the 23-year record, driven by low activity in South America and Africa. On average, the land surface continued to darken during 2025, driven by wildfires, heatwaves, and low snow cover, all of which are associated with the continued above-average temperatures.

The salient events and trends highlighted here are reported in greater depth in the State of the Climate in 2025, the supplement to the August issue of BAMS. Figures shown here are drawn from the supplement and are not cited in text.

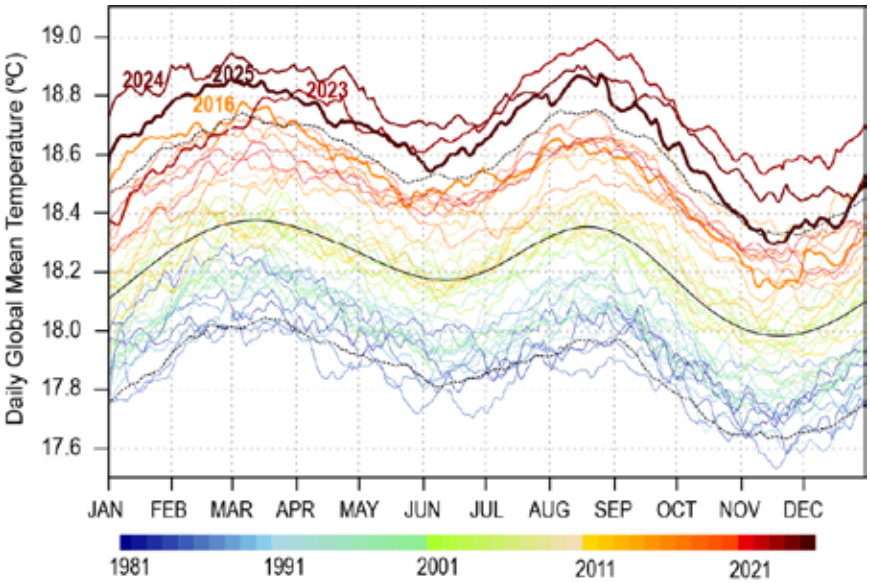
The darker the surface, the more sunlight is absorbed, which creates localized heating. The persistent warmer-than-average conditions also affected plant growth, with early start-of-season dates—the time of year when trees and plants begin to bud—including the earliest on record for the United Kingdom.

GLOBAL OCEANS

Almost 90% of the excess heat in Earth's climate system is absorbed by the global ocean. The globally averaged ocean heat content from the surface to 2000-meters depth—the amount of heat stored in this portion of the global ocean—reached a record high in 2025, surpassing the previous record set in 2024. In tandem, global sea surface temperatures marked the third consecutive year of extreme warmth. Among other impacts, the sustained heat uptake by the oceans contributes to more frequent, longer, and widespread marine heatwaves and also to accelerated sea level rise. Marine heatwaves were observed over 87% of the global ocean during 2025, while marine cold spells became even less frequent, reaching their lowest occurrence in the observational record. Water expansion due to warming temperatures, along with melting glaciers and ice caps, contributes to global sea level rise. Long-term sea level rise continues to increase the frequency and severity of extreme sea level events, which contribute to coastal flooding and erosion. This rise has been accelerating over recent decades.

The ocean also plays a major role in removing carbon dioxide from the atmosphere by absorbing close to 30% of anthropogenic carbon dioxide emissions that were released into the atmosphere. The oceanic absorption of carbon dioxide in 2025 increased compared to the prior decade. The absorption of this carbon is the main cause of acidification in the oceans, which lowers the pH balance of the water and can alter and harm natural ecosystems.

Global sea surface temperatures remained high in 2025



Global sea surface temperatures remained exceptionally high in 2025, marking the third consecutive year of extreme ocean warmth. Long-term warming has accelerated, increasing from approximately 0.12°C per decade for the 75-year period starting in 1950 to about 0.21°C per decade for the most recent 25-year period. Marine heatwaves, which occur when sea surface temperatures are within their highest 10% of all measurements at a particular location for five or more consecutive days, were observed over 87% of the global ocean during 2025, down slightly from 2024. Conversely, marine cold spells, which occur when sea surface temperatures are within their lowest 10% of all measurements at a particular location for five or more consecutive days, became even less frequent, reaching their lowest occurrence in the observational record. (Figure 3.1 in *State of the Climate in 2025*; see discussion in section 3b.)

Dissolved oxygen is vital for aerobic marine organisms and plays a major role in shaping species distributions and regulating the production of natural greenhouse gases such as nitrous oxide and methane. It is especially important for marine ecosystems and biogeochemical cycling. In 2025, global ocean dissolved oxygen continued to decline, with inventories decreasing by about 0.45% per decade since 1965 due to warming, reduced ventilation, ocean circulation changes, and enhanced biological respiration.

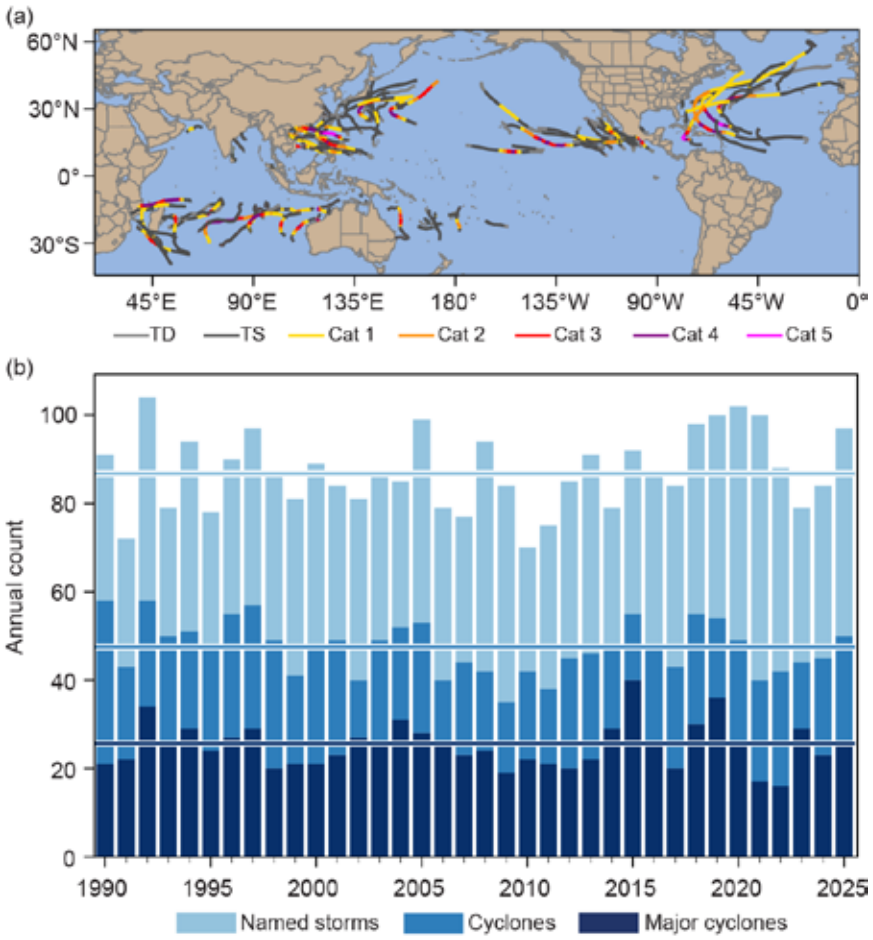
THE TROPICS

Cool neutral El Niño–Southern Oscillation (ENSO) conditions were present in the eastern central Pacific during much of 2025, with weak La Niña–like conditions at both the beginning and end of the year. A negative Indian Ocean dipole event—among the strongest in the 44-year record—occurred during boreal autumn, with above-normal sea surface temperatures in the eastern Indian Ocean and below-normal sea surface temperatures in the western Indian Ocean. These events influence regional precipitation patterns. Overall, tropical precipitation was above average for the year, and the 2025 annual temperature across the tropics, from 20°S to 20°N, was the seventh highest in the 176-year data record, cooling from the record warmth of 2024.

Although the total number of storms in 2025 was well above average, the total accumulated cyclone energy—a combined measure of strength, frequency, and lifespan of tropical storms and hurricanes—from those storms was slightly below the 1991–2020 average.

There were 12 named storms in the Australian basin during the 2024/25 season, and eight of these became severe tropical cyclones (Australian Category 3 or above), both of which were the most in a season since 2005/06. In February, Tropical Cyclone Zelia reached Category 5 intensity at sea and made landfall as a Category 4 storm northeast of Port Hedland in Western Australia. Very heavy rain fell along the cyclone's path, with reported four-day totals from February 12 to 15 as high as 678 mm. Flood heights at the town of Marble Bar were nearly two meters above previous records.

There was a higher-than-usual number of tropical cyclones in 2025



In total, there were 97 named tropical cyclones around the world during the 2025 Northern Hemisphere season (January–December 2025) and the 2024/25 Southern Hemisphere season (July 2024–June 2025), which was 10 more than the 1991–2020 global average of 87. Fifty storms reached hurricane strength, and 25 of those storms reached major hurricane strength, which is equivalent to Category 3 or higher on the Saffir–Simpson Hurricane Wind Scale. Five storms reached Category 5 intensity, which is more than in 2024 (four) but less than in 2023 (seven). Three of these storms occurred in the North Atlantic, tying for the second most on record for that basin. Four Category 5 storms occurred in the North Atlantic in 2005. (Figures 4.21a and b in *State of the Climate in 2025*; see discussion in section 4g1.)

In the North Atlantic, Hurricane Melissa became one of the strongest Atlantic hurricanes on record, with a maximum intensity of 165 kt and a minimum central pressure of 892 hPa on October 28. Melissa made landfall in Jamaica with 160 kt maximum sustained winds, causing devastation on the western part of the island. It made an additional landfall in Cuba as a Category 3 hurricane and two landfalls in The Bahamas as a Category 1 hurricane.

THE ARCTIC

The landscape and conditions of the Arctic, a vast area north of 60°N, have been changing rapidly over the last two decades. The change is driven by surface air temperatures that are increasing at a rate nearly three times faster than the rate for the entire planet. With records that date back to 1900, 2025 was the second-warmest year on record for the Arctic, with an annual temperature that was 1.38°C higher than the average temperature from 1991 to 2020. Autumn and winter are warming at the fastest rates.

Along with warming, precipitation is increasing across the region. This increase includes the potential for bigger rain and snow events. In the spring, snow cover was near normal in May across Eurasia and North America but was below normal in June with an early loss of snow pack. This type of spring melt is now a common occurrence. The temperature and precipitation changes can alter the Arctic landscape. Increases in tundra plants, including their numbers, locations, and heights, have been observed since the 1990s; 2025 had the third highest value in the record with respect to greenness, a measure of the increase in plants and productivity. At the same time the tundra becomes more green, permafrost—continuously frozen soil—has been thawing. One of the consequences of permafrost thaw is the release of carbon dioxide and methane from beneath the Earth's surface. Analyses suggest that tundra and boreal forest ecosystems became a small net source of the gases over the last couple of decades. This marks a significant shift from an area that once absorbed more carbon dioxide from the atmosphere than it released to one that releases more than it absorbs, meaning that it contributes to greenhouse gas emissions into the atmosphere.

The Greenland Ice Sheet—the second largest reservoir of frozen fresh water on the planet—lost an estimated 129±50 Gigatons of ice overall in 2025. Sixty percent of the planet's glaciers and ice caps outside of Greenland and Antarctic are also found in the Arctic, and ice loss across these areas has tripled since the mid-1990s. During 2023/24, the most recent year of data, ice loss with melt across Arctic Scandinavia was nearly 15 times higher than the 1991–2020 average. In the Arctic waters, sea ice continued to decline. The maximum extent in 2025 was the lowest in the 47-year record, while the minimum extent was the 11th lowest. The thickness of the sea ice, which is related to its age, has also been decreasing over time. Ice older than four years old is nearly absent, with only 95,000 square kilometers of older ice in September 2025 as compared to 1.5 million square kilometers in the 1980s.

Without sea ice cover, the surface waters are exposed to heating from solar radiation and the atmosphere. In the Arctic, August is the month when sea ice has shrunk to nearly its smallest extent and, therefore, the ocean has the most accumulated summer heat from solar radiation before cooling begins and sea ice growth starts around mid-September. Thus, August is considered to be the month that best represents summer sea surface temperatures in the Arctic. The August 2025 sea surface temperature in most Arctic Ocean regions was the highest in the 44-year record and the average across the Arctic was the second highest on record.

ANTARCTICA AND THE SOUTHERN OCEAN

In 2025, numerous record-high monthly temperatures were set across Antarctica, contributing to the warmest year for the polar ice cap since the start of the record in 1979. No record-low monthly temperatures were recorded at any station during the year.

Surface melt on the continent was above average on nearly all the ice shelves—except the northeastern Ross Ice Shelf—particularly between mid-December 2024 and early January 2025.

Melt on the Antarctic Peninsula approached record levels in early January. Accompanying the melt was record-high supraglacial meltwater, which is meltwater that accumulates in depressions or hollows on the ice surface. The strong melt was due to warmer air and ocean temperatures.

Antarctic sea ice remained below average in 2025, with annual daily minima of sea ice extent and sea ice area recorded on March 1st, being the fourth and second lowest on record, respectively. The overall low sea ice coverage continued the trend in low sea ice extent and area that began nearly a decade ago in 2016.

Across the Southern Ocean, sea surface temperatures were above average in 2025, continuing the trend observed since 2005. Together with the sea surface temperatures, ocean heat content was also above average, reaching its highest level on record in 2025 and continuing a long-term warming trend.

In the stratosphere above Earth's surface, the 2025 Antarctic ozone hole was smaller than average and was among the weakest ozone holes observed since 1992. The ozone hole broke up on November 30, 11 days earlier than average.

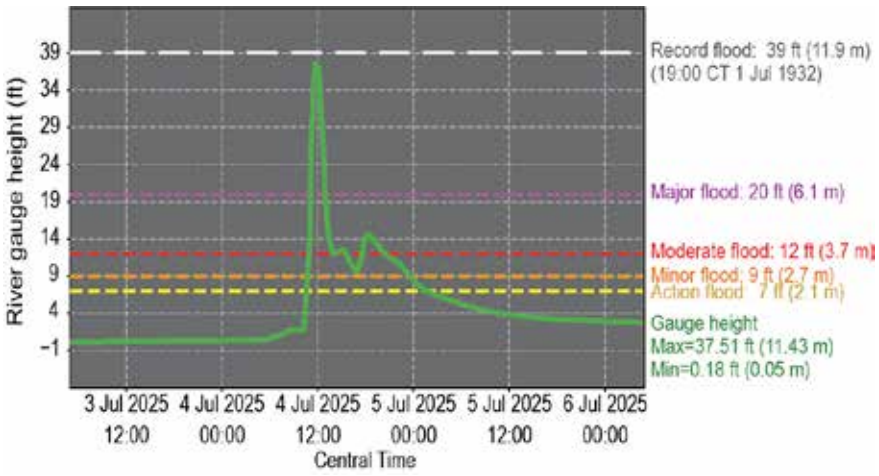
REGIONAL CLIMATES

North America

Following record warmth in 2024, North America observed its third-warmest year in 2025 at 1.06°C higher than the 1991–2020 average. The second-warmest year on record is 2023, making the last three years the three warmest for the continent in the 176-year record that extends back to 1850. At the national level, Canada reported its ninth warmest year on record, the United States its fourth warmest year, and Mexico its third warmest. The latter part of 2025 was particularly warm for the continent as a whole, with September–November 2025 being the warmest autumn on record.

Overall, annual precipitation amounts were slightly drier than average for Canada and the United States, and slightly wetter than average for Mexico. Periods of extreme dryness contributed to severe wildfires in Canada and the United States. From May through September, record-breaking heatwaves and nationwide drought conditions set the stage for Canada's second-worst wildfire season on record. Approximately 8.9 million hectares burned over five months, with Saskatchewan and Manitoba accounting for more than half of the national total. Smoke plumes spreading thousands of kilometers caused prolonged poor air quality for millions of people. Across the contiguous United States, over 77,000 wildfires occurred during the year, which was 14%

Catastrophic flooding occurred in Hill Country, Texas (United States), in July 2025



Catastrophic flooding in the Texas Hill Country in July resulted in at least 135 fatalities. Infrastructure damage was widespread, with numerous roads and bridges washed out, resulting in losses estimated to be in the hundreds of millions of U.S. dollars. The most severe impacts occurred along the Guadalupe River in Kerr County; the Texas Tribune reported 119 fatalities, including 27 people at a summer camp and other residents and vacationers in the area. A band of 180 to 300 millimeters of rain occurred over the South Fork of the Guadalupe River, most of which fell in just three hours. Analyses indicate that the magnitude of this three-hour event was at least a 1-in-1000-year event over areas near San Angelo and Hunt, Texas, corresponding to a 0.1% chance of occurrence at a given location in any year. These areas received more than four months' worth of rainfall in just a two-day period. At the gauge located in Kerrville, Texas, as shown in the figure, the Guadalupe River rose from just under 0.6 meters (2 feet) to over 11 meters (37 feet) within hours on the morning of July 4, briefly reaching major flood levels. (Figure SB7.2 in *State of the Climate in 2025*; see discussion in Sidebar 7.1.)

more than the 2001–20 average; however, geographically, the approximately 2 million hectares burned represented just 72% of the average. Southern California saw the most destructive activity in January; fueled by 60 kilometer per hour Santa Ana winds and dry conditions, the Eaton Fire (5600 hectares) and the Palisades Fire (9300 hectares) devastated the region. Together, they destroyed over 16,000 structures and caused 31 fatalities. Arizona's Dragon Bravo Fire was the nation's largest of the year, burning over 59,000 hectares between July and September to become the state's seventh largest on record.

During October 7–10 in the Huasteca region of eastern Mexico, the Tlanchinol station in Hidalgo recorded a total precipitation accumulation of 731.5 mm and set a new daily historical record with 323.1 mm precipitation in 24 hours on October 8. These rains caused catastrophic flooding and landslides across five states, resulting in 83 fatalities and 17 people reported missing. Economic losses were estimated to be approximately $2.5 billion U.S. dollars.

For the first time in 10 years, there were no landfalling hurricanes in the United States; however, Hurricane Erick struck Mexico's Pacific coast, becoming the first Category 3 hurricane to impact Mexico's Pacific coast in the month of June since 1950.

Central America and the Caribbean

The year was warmer than normal across most of Central America, with the northern countries experiencing the warmest temperatures, while the Caribbean observed its third-warmest year since records commenced in 1950. This region has been warming at a rate of 0.13°C per decade since 1950, and even faster since 1970, at 0.19°C per decade. Freeport (The Bahamas) experienced its warmest year in the 43-year record. In total, 8 of 23 reporting stations across the Caribbean islands recorded annual temperatures among their three highest on record. The tropical North Atlantic Ocean, a primary driver of air temperatures in the region, was warmer than normal for much of the year.

The Caribbean was relatively drier than normal in 2025. Annual precipitation was generally below normal in the Caribbean slope from Panama to Nicaragua, except for Costa Rica, and was especially notable along Nicaragua's mid-southern Caribbean coast. Two stations in St. Vincent and the Grenadines—Argyle and ET Joshua—experienced their driest years on record. Drought developed across

Hurricane Melissa had devastating impacts in the Caribbean

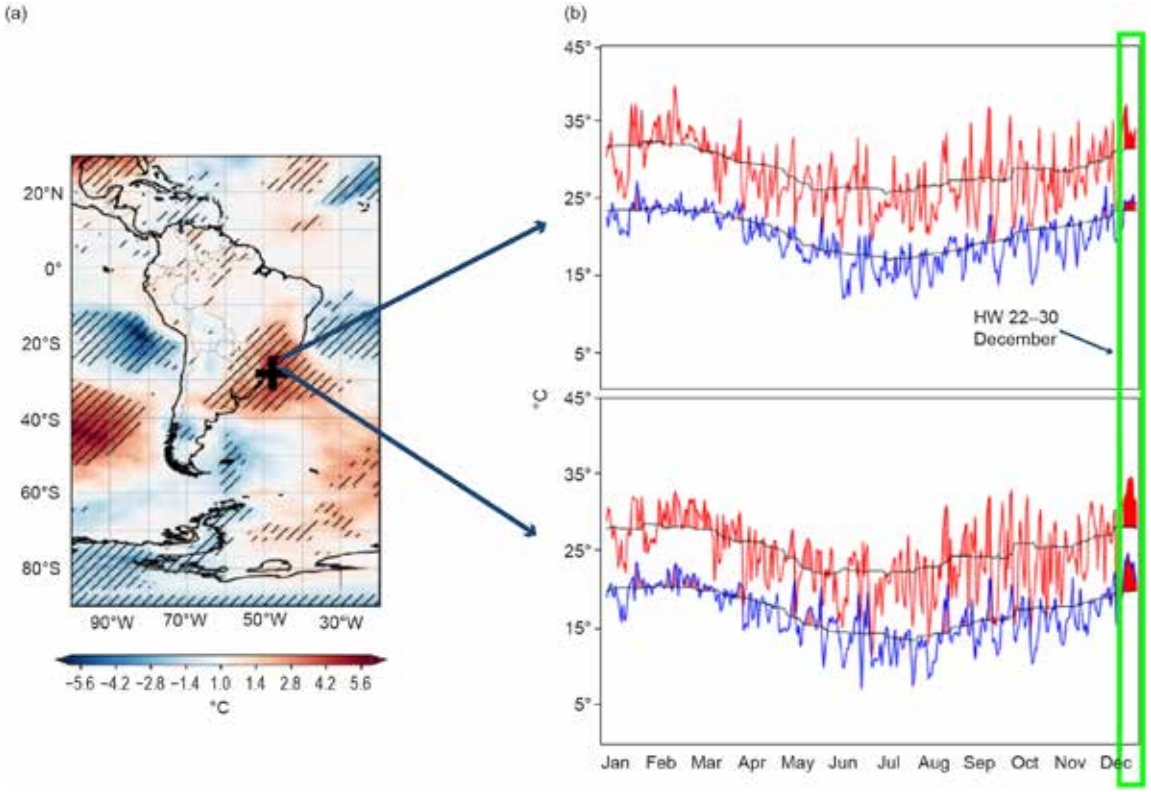
Hurricane Melissa was one of the strongest Atlantic tropical cyclones on record. The storm caused severe and widespread impacts, affecting more than eight million people across the Caribbean, particularly Haiti, Dominican Republic, Jamaica, Cuba, The Bahamas, and Bermuda, from October 23 to November 1. Peak devastation occurred on October 28 and 29 when Melissa made landfall in Jamaica as a Category 5 storm and Cuba as a Category 3 storm, bringing intense rains, strong winds, and powerful storm surge. Melissa became the costliest storm on record for Jamaica, with damage estimated at more than $12.2 billion U. S. dollars, more than 56% of the country's gross domestic product in 2024. (Figure SB7.4 in *State of the Climate in 2025*; see discussion in Sidebar 7.2.)

the Windward Islands during September–November, as well as in a few other locations, particularly in the eastern Caribbean. In contrast, record-wet conditions were observed in parts of The Bahamas and wet conditions prevailed for Cuba and Hispaniola, likely related to Hurricane Melissa impacting the area at the end of October. In addition to Melissa, several other tropical systems affected the Caribbean in 2025, including Hurricane Erin in August, Tropical Storm Imelda in September, and Tropical Storm Jerry in October.

South America

Temperatures across northern South America were mostly near normal or slightly above normal during 2025; however, La Niña conditions early in the year contributed to below-normal temperatures in Venezuela from January to March. Central South America, which includes Brazil, Bolivia, Paraguay, and Peru, reported an average annual temperature that was 0.76°C above normal, making 2025 the fourth-warmest year in the record dating back to 1961. There were sharp contrasts in southern South America: Argentina reported its second-warmest year on record, while Chile reported its seventh coolest. In February, a strong heatwave led to temperatures surpassing 38°C in some areas. Quaraí in the state of Rio Grande do Sul in southern Brazil reached 43.8°C on February 4, the highest temperature on record in Rio Grande do Sul since the beginning of the twentieth century. Argentina reported its warmest February on record, with daily maximum temperatures broken at several locations throughout the month. During austral winter, intense cold waves affected the continent. New minimum temperature records were set at some stations in Chile and Argentina on June 30.

An intense heatwave baked southeastern Brazil



An intense heatwave affected southeastern Brazil during the last week of December 2025. Red (high danger) and orange (severe) heatwave alerts were issued across several states, impacting about 150 million residents. On December 25, the city of Rio de Janeiro reached a historic high of 40.1°C, and. on December 28, the temperature in the city of São Paulo, Brazil, reached 37.2°C, the highest temperature on record in 64 years of observations. (Figure SB7.6 in *State of the Climate in 2025*; see discussion in Sidebar 7.3.)

Venezuela recorded half of its typical rainfall during the dry season, which lasts from January to March. In contrast, the wet season (April–June), experienced more than 50 percent above average precipitation in several regions. The influences of La Niña and tropical wave activity brought above-normal precipitation to Colombia during most of the year, while Ecuador was particularly wet from February to April. Bolivia experienced catastrophic flooding in early 2025—resulting from an unusually prolonged wet season—with accumulated rainfall exceeding 300 mm in the Beni, La Paz, and Santa Cruz departments. More than 50 fatalities and the displacement of hundreds of thousands of families were reported. In Argentina, Bahía Blanca received 312 mm of total precipitation during March 4–8, with 209.5 mm reported on the 6th, the highest daily total for this month since 1956. This exceptional event was estimated to be a 1-in-100 year event.

On November 7, an EF-4 tornado struck Rio Bonito do Iguaçu (Paraná State) in southern Brazil. This was one of the strongest ever in the country, with winds of 340 kilometers per hour.

Africa

Africa observed its seventh-warmest year on record, following the record warmth of 2024. Annual temperatures were above normal across most of the continent. In July and August, prolonged heatwaves in Egypt drove temperatures above 40°C in many regions, which affected human health and increased wildfire risks. The Indian Ocean island countries of La Réunion and Mayotte observed their second- and fourth-warmest years on record, respectively. Seychelles observed its seventh-warmest year and also recorded its second highest maximum daily temperature in the 54-year record, reaching 34.7°C on March 3.

Seychelles was also dry in 2025, with total annual rainfall (1806.3 millimeters) just 74% of normal, making it the third driest year on record. In eastern Africa, severe drought resulting from the failure of both the March to May and October to December rain seasons led to more than 10 million people across Somalia, Ethiopia, and Kenya needing humanitarian food assistance in December. Communities in central and eastern counties of Kenya had to rely on emergency water trucking. In southern Ethiopia, worsening water shortages and declines in livestock conditions were reported. In Somalia, significantly reduced flows were recorded along the Shabelle and Juba Rivers. Rainfall during the October to December season in southern Somalia and eastern Kenya was near-record low.

In the Western Cape of South Africa, severe drought conditions developed due to below-normal rainfall that began in August. Water supplies were affected as the water level of Garden Route Dam in George declined steadily throughout the year, dropping below 50% capacity by December and prompting stricter municipal water use policy.

Wet conditions were observed across the continent as well. The Sahel experienced a generally favorable and productive rainy season, with annual observed rainfall above the 90th percentile in central Niger. Above-average rainfall was also observed across most of Senegal, The Gambia, southeastern Mauritania, and southern Mali. This pattern aligns with a “recovery of Sahel rainfall” trend observed in recent decades.

During January 11–12, Tropical Cyclone Dikeledi struck parts of northeastern Madagascar, causing three fatalities and affecting over 7000 people. The storm also passed within 85 kilometers of the south coasts of Mayotte on January 12, bringing heavy rain, with more than 200 to 300 millimeters accumulating over a 24-hour period. Cities were flooded as this event worsened the already difficult conditions following Tropical Cyclone Chido, which had devastated the island in December 2024.

Tropical Cyclone Garance hit La Réunion on February 28. Although rather small in size, the storm produced record-breaking heavy rainfall that led to severe flooding; several stations recorded 200 to 300 millimeters in just three hours.

In northern Morocco, total rainfall in March in Tangier was 349 millimeters, which is more than 50% of the average annual rainfall. Chefchaouen recorded 318 millimeters during March 7–15, which represents about one-third of its average annual total.

During August 10–11, Tropical Storm Erin brought heavy rain to Cabo Verde off the coast of West Africa, resulting in floods, landslides, and extensive damage, particularly in São Vicente and Santo Antão. Rainfall recorded in just a few hours exceeded the annual average, overwhelming drainage systems and causing widespread damage to homes, infrastructure, and services. At least 12 people were killed.

Europe and the Middle East

Europe observed its warmest year on record, with the United Kingdom, Iceland, Norway, and West Kazakhstan each individually reporting record annual warmth. For nearly all other countries across the continent, 2025 temperatures were among their 10 highest on record. There were no areas with below-normal annual temperatures.

It was the warmest summer on record for both Spain and Portugal. A new all-time national daily maximum temperature record of 46.6°C was set on June 29 in Mora, Portugal. A new all-time national daily maximum temperature record of 50.5°C was also set on July 25 in Silopi, Cizre, during a late-July heatwave in Türkiye. That same day, 66 stations broke their own temperature records across the country. In Northern Europe, 28 stations in Norway recorded temperatures of 30°C or higher for at least five consecutive days in July. Two of those stations recorded 13 consecutive days reaching at least 30°C, a new national record in duration. In Sweden, Kvikkjokk-Årrenjarka, which is located just north of the polar circle, recorded 10 days with temperatures above 30°C, breaking the previous record of 4 days, based on measurements extending back for more than 100 years.

The Middle East saw one of its driest years on record. Türkiye reported its driest year, and Syria, Lebanon, and Cyprus each reported their second driest. Syria experienced its worst fire season in over 10 years with about 3.7% of the total forest area burned.

Central Europe experienced a prolonged dry spell from early February to late May. Summer was dry overall for the Iberian Peninsula; it was the driest summer on record for Portugal, with only 24% of its normal total. In Spain, almost 4000 square kilometers was burned in 2025, the most since the start of the record in 2006. Almost 380 square kilometers burned was due to just one fire, which occurred in the Zamora Province in northwestern Spain in August and was the largest single fire on record for the country. At least 12,000 people had to evacuate their homes. During July and August, central Montenegro faced one of its most severe wildfire seasons in the past two decades, with more than 100 square kilometers of forest and agricultural land burnt.

Conversely, the eastern Aosta Valley in northwestern Italy recorded 300 mm in 48 hours during April 15–17 with local maximum values up to 600 mm, triggering river flooding and landslides. In the hardest hit areas, this was considered a 1-in-1000-year event. A severe cloudburst impacted Moscow on July 15, with 75 to 85 millimeters of rain falling in less than two hours—an amount that equaled or even exceeded the city's typical monthly average for July. In September, Luxembourg received 400% of its normal precipitation, making this the wettest month on record since observations began in 1947. On September 25, more than 130 millimeters of rain fell in the Nahariya area of northern Israel, far exceeding the previous national record for September of 96 millimeters set in 1932. The monthly average is 3 to 4 millimeters. The entire rainfall event occurred in less than four hours, with more than 100 millimeters falling within just two hours.

The most significant storm of 2025 in Western Europe impacted Ireland, the United Kingdom, and northwestern France on January 24. Ireland recorded a 184 kilometer-per-hour wind gust at Mace Head—a lowland coastal station—provisionally the strongest gust

on record in Ireland. Another storm on December 27 brought exceptionally high winds to eastern central Sweden, with some stations recording gusts up to 170 kilometers per hour, estimated to be a 1-in-100-year event. At least four people died, and Sweden saw its most severe forest damage from a single event since 2007.

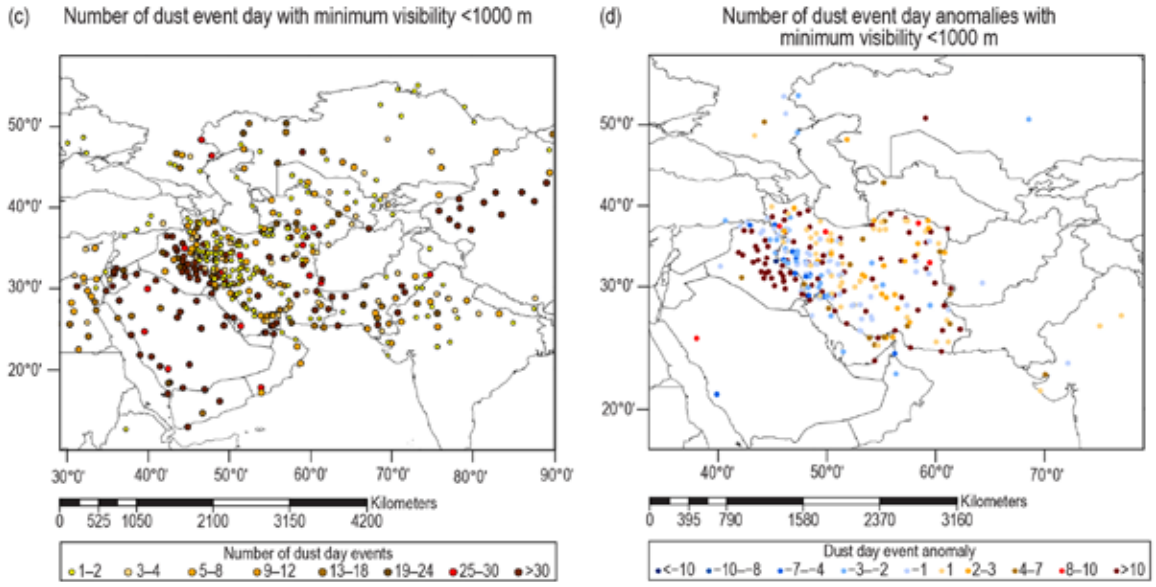
Asia

Annual mean temperatures were above normal across most of Asia for 2025. The Republic of Korea, Russia, and China each reported their second-warmest year on record. For the Republic of Korea, all months from June to October were either first or second warmest on record for their respective months. For China, summer 2025 tied with summer 2024 as the warmest on record. Japan observed its third-highest annual temperature, making 2023, 2024, and 2025 the three warmest years in the 128-year record. Japan also observed its warmest summer on record, and a new national daily maximum temperature record of 41.8°C was set at Isesaki in Gunma Prefecture on August 8.

Bangladesh experienced an unprecedented heatwave in April, which broke a 76-year record for the most consecutive days of scorching temperatures. In Pakistan, temperatures reached 49°C in the southwestern province of Balochistan on April 14 and 15, which is unusually extreme for April. In Kazakhstan, minimum temperatures were 4°C to 6°C above average in April across much of the country, leading to a rapid snowmelt and overflow of rivers in northern Kazakhstan.

For Asian Russia and Russia as a whole, average total precipitation for 2025 was the highest since the start of the record in 1936, at 112% and 110% of normal, respectively. Precipitation in Russia has increased by 1.9% per decade since the mid-1970s, especially in spring, which

Drought and dust storms impacted Central and Southwest Asia



Iran and neighboring countries experienced one of their longest and most severe dry periods on record from late spring through mid-December. In many regions, it was the driest period in the last 50 years. The lack of precipitation led to significant depletion of freshwater reservoirs in several provinces and megacities across Iran, triggering water rationing in some urban areas. Several regions, particularly in southwestern and western Iran, recorded 13–30 severe dust days—where visibility was less than 1000 meters—that posed significant risks to transportation, health, and economic activities. Severe dust storms also occurred in Iraq, Kuwait, Saudi Arabia, eastern Pakistan, Central Asia, and northwest China. (Figures 7.51 and d in *State of the Climate in 2025*; see discussion in section 7g5.)

has seen an increase of 5.4% per decade. In Indonesia, annual total rainfall was 121% of normal, making 2025 the second-wettest year since 1991.

The Meiyu season in the middle and lower reaches of the Yangtze River in China began on June 7 and ended on June 30, 7 and 16 days earlier than normal, respectively, with total rainfall 88.3% of normal. For the rainy season (occurring in July and August) in North China, both the total (356.6 mm, 261.1% of normal) and duration (59 days, 29 days longer than normal) were record highs. A rainstorm in July produced record-high totals—for example, 605.8 millimeters at Yixian, Hebei—and led to the largest flood in the Haihe River on record. In September and October, central North China experienced an unprecedented precipitation event that resulted in severe flooding across nine provinces, adversely affecting over seven million people and leading to direct economic losses estimated at nearly $25 billion U.S. dollars. Total precipitation for the two months was the highest since the start of the record in 1979 and more than three times the normal total.

The summer monsoon over South Asia, which typically contributes about 75% of the annual precipitation over the region, set in over Kerala in the southwestern part of peninsular India on May 24, eight days earlier than its normal date of June 1 and covered the entire country on June 29, nine days ahead of its normal date (July 8). The total rainfall for the season was 108% of the long-term average, which is within the normal range. In Pakistan, monsoon rainfall was 123% of the 1961–2010 average. Bangladesh and Sri Lanka also received above-normal rainfall during their summer monsoon seasons.

In late November, Cyclone Senyar brought extreme rainfall to northern Sumatra, Indonesia. The highest daily rainfall total of 411 millimeters was recorded on November 26 at the BPP Kuala rain gauge station, Aceh, with an accumulated rainfall total of 714.5 millimeters during November 26–27. This triggered widespread flooding and landslides, causing more than 1200 fatalities and displacing thousands of people.

Oceania

Australia and New Zealand each reported their fourth-warmest year since records began in 1910 and 1909, respectively. Both countries were surrounded by anomalously warm ocean waters throughout the year. At the monthly scale, the mean national temperature for Australia was among the five warmest on record for January, February, March, and October, including the warmest March on record. Heatwave conditions impacted large parts of the country from January into early April. New Zealand observed its warmest November on record, with the warmth continuing through most of December for the North Island. Kawerau (Bay of Plenty) recorded New Zealand's highest temperature for 2025—35.6°C on December 7. It is uncommon for New Zealand's highest temperature of the year to occur in December; the last time this happened was in 2015. Surface air temperatures across Micronesia were also generally above normal throughout 2025 due to an expansive area of above-average sea surface temperatures in the region.

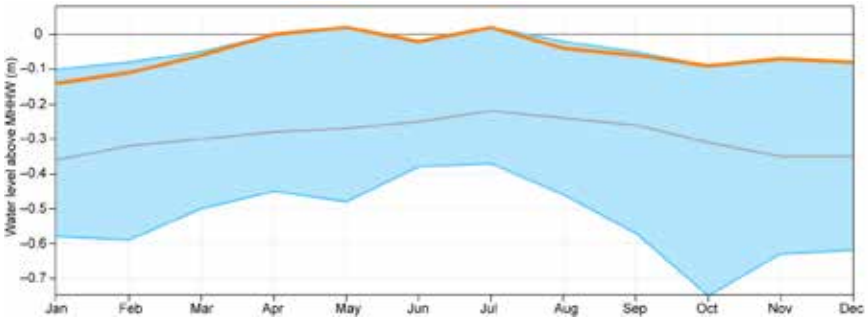
Both the northwest Pacific and southwest Pacific saw rainfall patterns consistent with La Niña. In Micronesia, Kapingamarangi, for example, received just 68.4% and 86.0% of its normal rainfall in the first and second half of the year, respectively. Farther north, Kwajalein was also dry, recording only 56.8% of normal from January to June, and 88.9% from July to December. Conversely, islands in the Intertropical Convergence Zone (ITCZ) were very wet. Kosrae received 154.1% of its normal precipitation during the second half of the year, which helped make 2025 its seventh-wettest year on record.

A dry signal persisted across the equatorial South Pacific throughout 2025. The contraction of rainfall to the southwest during January–March and October–December was driven by weak La Niña conditions. From April to October, drought impacts were observed across Tuvalu, the Northern Cook Islands, Niue, and Tonga. Drought conditions also impacted

much of southern Australia. It was the driest January–June on record for large parts of southeastern South Australia and part of southern Victoria. The monsoon arrived at Darwin in northern Australia, on February 7. This was the latest date since records began there in 1957/58, surpassing the previous latest onset date of January 25 in the 1972/73 season. The average timing of the monsoon onset at Darwin is the last week of December.

In New Zealand, a state of emergency was declared in Selwyn District, Christchurch, and Banks Peninsula during April 30 and May 1, with significant flooding causing dozens of road closures. Akaroa recorded 223 millimeters of rain on the 30th, its highest one-day total since records began in 1977 and equivalent to 23% of the town's normal annual rainfall total.

Sea level reached record highs in Micronesia as global mean sea level continued to rise



The average global mean sea level for 2025 set a new record, for the 14th year in a row, rising to 111.2 millimeters above the average for 1993, the year when satellite altimetry measurements began, and was 1.0±0.5 millimeters higher compared to 2024. Local sea levels averaged during 2025 were also above normal over most of the global ocean. For example, record-high sea levels were observed at various tide gauges across Micronesia during the year, in part due to the La Niña conditions and to the extensive record-warm water across the west Pacific. The monthly mean sea level at Apra Harbor, Guam, as shown in this figure, was the highest on record from April to July, and in October and November. In July, Saipan, which is located about 190 kilometers north of Guam, experienced significant coastal flooding and erosion due to the combination of record-high sea levels, new moon tides, and storm surge from Tropical Cyclone Krosa. (Figure 7.60 in *State of the Climate in 2025*; see discussions in sections 3f and 7h2.)

On August 26, a hailstorm impacted Imaki, Tanna, Vanuatu. The storm was caused by a lingering trough over the southern island of Vanuatu, enhancing the development of cumulus clouds. Hail in the tropics is sporadic, and this was the first recorded occurrence in 23 years.