

Global climate breaks new records January to June 2016

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About this update

This dated news record has been reorganised for clear reading and connected to current guidance.

Publication date: August 1, 2016.

Status note: Present-tense statements, market figures, deadlines and program details in the archived record belong to its publication date. Check current official sources before making a decision.

What this article reported

Geneva, 21 July 2016 (WMO) _ Global temperatures for the first six months of this year shattered yet more records, and mean that 2016 is on track to be the world's hottest year on record.

Arctic sea ice melted early and fast, another indicator of climate change. Carbon dioxide levels, which are driving global warming, have reached new highs.

Two separate reports from the U.S National Oceanic and Atmospheric Administration and NASA's Goddard Institute for Space Studies (NASA GISS) both highlighted the dramatic and sweeping changes in the state of the climate.

June 2016 marked the 14th consecutive month of record heat for land and oceans. It marked the 378th consecutive month with temperatures above the 20th century average. The last month with temperatures below the 20th century average was December 1984.

"Another month, another record. And another. And another. Decades-long trends of climate change are reaching new climaxes, fuelled by the strong 2015/2016 El Niño," said World Meteorological Organization Secretary-General Petteri Taalas.

"The El Niño event, which turned up the Earth's thermostat, has now disappeared. Climate change, caused by heat-trapping greenhouse gases, will not. This means we face more heatwaves, more extreme rainfall and potential for higher impact tropical cyclones," said Mr Taalas.

Carbon dioxide concentrations have passed the symbolic milestone of 400 parts per million in the atmosphere so far this year. CO2 levels vary according to the season, but the underlying trend is upwards. They showed a surprising increase for the first half of 2016, rising in June 2016 to nearly 407 ppm, 4 ppm greater than June 2015.

"This underlines more starkly than ever the need to approve and implement the Paris Agreement on climate change, and to speed up the shift to low carbon economies and renewable energy," said Mr Taalas.

United Nations Secretary-General Ban Ki-moon has invited leaders to a special event on 21 September to deposit their instruments of ratification, acceptance, approval or accession to the Paris Agreement on climate change. It will also provide an opportunity to other countries to publicly commit to the agreement before the end of 2016.

Temperatures

The average temperature in the first six months of 2016 was 1.3 degrees C (2.4 degrees F warmer than the pre-industrial era in the late 19th century, according to NASA.

NOAA said the global land and ocean average temperature for January-June was 1.05 degrees C (1.89 degrees F) above the 20th century average, beating the previous record set in 2015 by 0.20 degrees C (0.36 degrees F).

Each month was record warm. Most of the world's land and ocean surfaces had warmer to much-warmer-than-average conditions.

The El Niño event which developed in 2015 and was one of the most powerful on record contributed to the record temperatures in the first half of 2016. It dissipated in May.

WMO uses datasets from NOAA, NASA GISS, the UK's Met Office and reanalysis data from the European Centre for Medium Range Weather Forecasting (ECMWF) to calculate global temperature statistics for its annual state of the climate report.

Arctic Sea Ice

The heat has been especially pronounced in the Arctic, resulting in a very early onset of the annual melting of the Greenland ice sheet and Arctic sea ice. Snow cover in the northern hemisphere was exceptionally low. The ice extent as of 20 July was very close to the lowest ever for this date.

The extent of Arctic sea ice at the peak of the summer melt season now typically covers 40 percent less area than it did in the late 1970s and early 1980s. Arctic sea ice extent in September, the seasonal low point in the annual cycle, has been declining at a rate of 13.4 percent per decade.

Precipitation

Rainfall in June 2016 varied significantly around the world. It was notably drier than normal across the western and central contiguous USA, Spain, northern Colombia, northeastern Brazil, Chile, southern Argentina, and across parts of central Russia.

Wetter-than-normal precipitation was observed across northern Argentina, northern and central Europe, much of Australia, and across central and southern Asia.

From January to 4 July, China saw 21.2% above average precipitation. South China entered the flood season on 21 March, 16 days earlier than normal and more than 150 counties were record wet, according to the China Meteorological Administration. More than 300 rivers crossed the water level warning mark.

Coral bleaching

Temperatures in the Coral Sea (including the Great Barrier Reef), and the Tasman Sea were highest on record for extended periods since late summer 2016, according to Australia's Bureau of Meteorology.

These warm waters have also contributed to surface temperature warmth over Australia and unprecedented bleaching of the Great Barrier Reef, according to Australia's independent Climate Council.

There has been widespread bleaching of reefs in many other parts of the world.

Also see: World Meteorological Organization 2016 source (original link unavailable)

How to use this information now

For current use, confirm the applicable scheme rules, regulator notices, market date and reporting period. Keep historical prices or forecasts separate from present quotes and verified outcomes.

Separate source-reported facts from forecasts, targets and commentary. For a current project, retain the official source, version, effective date, assumptions and decision record in the evidence file.

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Why does the record global heat in January-June 2016 matter for organizations planning emissions reductions?

The WMO report confirmed that 2016 was tracking to be the world's hottest year on record, with June 2016 marking the 14th consecutive month of record heat. This climate acceleration underscores the urgency of corporate emissions management and transition planning. Organizations face material climate risks and increasing regulatory pressure, exemplified by the Paris Agreement's implementation. Our carbon advisory services, including emissions inventories, opportunity assessment, and transition pathways, help organizations establish baselines and prioritize reductions in response to documented climate trends and regulatory deadlines such as NSW CCMAP requirements for licensed premises.

What do CO2 levels of 407 ppm in June 2016 indicate about the need for renewable energy and decarbonization strategies?

CO2 concentrations passed 400 ppm in the 2016 record discussed in this article. That historical observation is one reason organisations evaluate emissions-reduction options, including energy efficiency and renewable electricity. A renewable-electricity claim requires the appropriate contractual instrument, ownership and retirement evidence for the applicable consumption period and reporting framework; a certificate purchase alone does not change physical energy use.

How do the Arctic sea ice declines reported in 2016 relate to climate risk assessment in organizational planning?

The 2016 report documented Arctic sea ice extent declining at 13.4 percent per decade, with summer melt now covering 40 percent less area than the late 1970s baseline. This acceleration signals material climate system changes that organizations must consider in scenario planning and climate-risk assessment. Our ASRS transition-planning support includes climate-risk and scenario analysis work packages designed to help organizations understand financial implications of decarbonization and identify vulnerabilities in supply chains and operations. Water utilities and industrial facilities face particular exposure to water availability and temperature changes, informing the staged emissions roadmaps and energy management strategies we develop for these sectors.

What does the Great Barrier Reef bleaching incident in 2016 indicate about physical climate risks to aquatic and water-dependent industries?

The 2016 Great Barrier Reef bleaching discussed in the article illustrates why water-dependent operations should assess physical climate risks as well as emissions. For a water utility, relevant exposure can include heat, changing water supply, flooding and effects on treatment and distribution. Where a climate change mitigation and adaptation plan is required, check the applicable licence guidance and document both mitigation and adaptation measures.

How did WMO's warnings about continued climate change post-El Niño inform the case for Paris Agreement implementation?

WMO Secretary-General Petteri Taalas warned that while the strong 2015/2016 El Niño event had ended, the underlying climate change from heat-trapping greenhouse gases would persist, driving continued heatwaves, extreme rainfall, and tropical cyclone intensification. This distinction between temporary climate variability and structural warming underscored the necessity of the Paris Agreement and low-carbon transition. Our carbon advisory framework connects this regulatory imperative to organizational action: emissions inventories establish baselines; opportunity assessment identifies feasible reductions; and transition planning maps pathways aligned with Paris-Agreement commitments. For Australian licensed premises, NSW CCMAP deadlines of 31 March and 31 August 2027 operationalize this international commitment at the facility and corporate level.

What does the data on rising global temperatures and CO2 suggest about the investment case for renewable energy and energy efficiency?

The 2016 temperature and CO2 figures in the article provide historical context for evaluating energy and emissions projects. An investment case still needs project-specific energy data, an engineering assessment and a comparison of base costs with eligible-incentive scenarios. Treat certificate or grant proceeds as conditional until the relevant scheme rules, evidence and application status are confirmed.

How do record precipitation and flooding events in China in 2016 relate to water-utility planning and emissions roadmaps?

The heavy rainfall figures reported for parts of China in 2016 illustrate a planning scenario for water utilities, not a forecast for any individual site. Utilities can assess flood and drought exposure across treatment, distribution and wastewater systems, then prioritise resilience and energy work using local evidence. A separate Northmore Gordon case study describes a water corporation assessing 14 high-energy sites; its historical scope should not be treated as a universal template.

What role does documented climate acceleration play in motivating organizational Scope 1, 2, and 3 inventory development?

Historical climate records provide context for a business to measure its own emissions, but they do not determine that business's reporting duty or reduction pathway. A Scope 1, 2 and 3 inventory establishes boundaries and a baseline; it does not itself reduce emissions. Use the results to identify engineering, procurement and investment opportunities, and check current ASRS or NGER obligations separately where applicable.