NATURE | NEWS

Year of Paris climate talks is likely to be the hottest on record

World Meteorological Organization says that a record-breaking temperature in 2015 underscores the need for a global climate deal.

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Stuart Palley/ZUMA Press/Corbis

California is just one place in the world that has suffered from weather related problems in 2015. Here a fire burns near the town of Clear Lake during the state's prolonged drought.

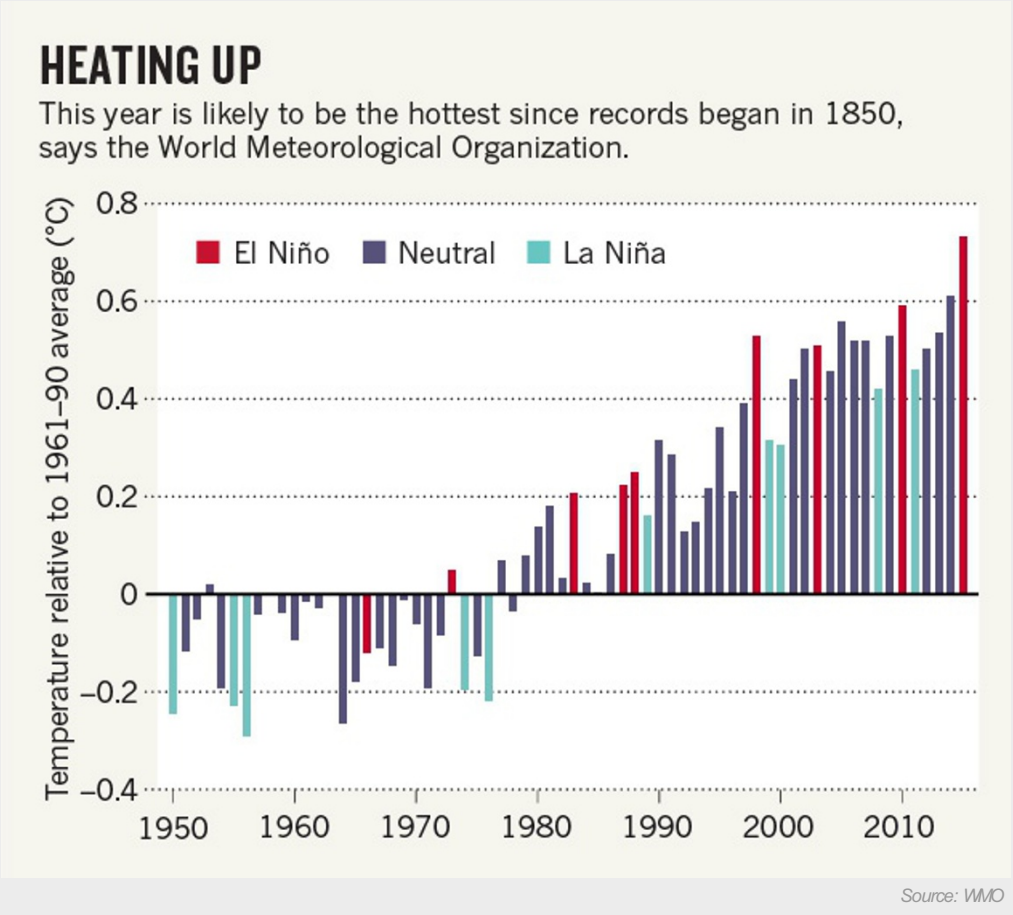
As world leaders prepare to wrangle over a climate deal in Paris, the World Meteorological Organization (WMO) has announced that 2015 is on track to become the warmest year on record.

“What we would call a ‘cold’ year now would have been a warm year just a few decades ago,” Michel Jarraud, the WMO’s secretary-general, said in a press conference on 25 November.

The WMO also said that compared to the pre-industrial 1880–99 average, the world has now warmed a full 1 °C, half of the 2 °C limit to dangerous climate change. “This is a great concern and it underlines the urgency of reaching a decision in Paris,” said Jarraud.

The mean surface temperature from January to October was 0.73 °C above the 1961–90 average of 14.0 °C, according to a preliminary estimate based on three global temperature data sets. This is likely to make 2015 the hottest year since records began in 1850.

The high temperature is the combined result of human-induced greenhouse warming and the powerful El Niño warming event that has emerged this past year in the Pacific Ocean, according to the WMO (see 'Heating up').



The mean annual atmospheric concentration of carbon dioxide — the most abundant heat-trapping gas in the atmosphere — is now about 43% above preindustrial levels. Global average CO_2 concentration in the atmosphere is expected to reach 400 parts per million next year, after temporarily crossing that largely symbolic threshold earlier this year. The effect of the strong El Niño on global temperatures is likely to continue in 2016, but the rate of temperature rise could slow down if a cold El Nina event succeeds the El Niño — as has happened in the past. But the long-term warming trend will continue nonetheless.

Notwithstanding the recent, puzzling pause in global warming — which according to a recent analysis could be a mere statistical artefact — the 2011–15 period was the warmest five-year period on record, at about 0.57 °C above the average for the 1961–90 baseline, according to the WMO.

Warming this year was more pronounced over land regions at high northern latitudes than over the oceans and in the tropics — consistent with climate model projections used by the Intergovernmental Panel on Climate Change. Parts of Europe, South America and Oceania experienced prolonged heat waves. Studies suggest that the probability of such events has increased more than ten times over the last century.

“The global average air temperature record has been absolutely smashed in 2015,” said Matthew England, deputy director of the Climate Change Research Centre at the University of New South Wales in Sydney, Australia, in a statement distributed by the Australian Science Media Centre. “This warming blows away the record-breaking 1997–98 El Niño by a massive 0.2 °C. This should be a huge wake-up call in the lead up to Paris for urgent and binding deep cuts in fossil fuel emissions."

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