2012 was hottest year recorded in US

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Last year was the warmest for the contiguous United States since records began in 1895, according to preliminary data from National Oceanic and Atmospheric Administration (NOAA) released Monday. The year included the warmest spring, second warmest summer, fourth warmest winter and a warmer-than-average autumn.

The average temperature for the past year was 55.3 degrees Fahrenheit (12.9 degrees Celsius) or 1 degree Fahrenheit above the previous recorded warmest year in 1998. It was 3.3 degrees above the average yearly temperature of the 20th century.

Nineteen states had their record warmest year, while another twenty-six recorded one of their top ten warmest years. A variety of cities also recorded their hottest year, one of which was New York City, which has records of temperature readings from Central Park going back 136 years.

The NOAA also found that 2012 was the 15th driest year recorded. The average precipitation for the contiguous US was only 26.57 inches in 2012, 2.57 inches below average.

Another measure of the high temperatures last year was reported by Weather Channel meteorologist Guy Walton. Using federal temperature records, he found that weather stations across the country recorded 34,008 new daily highs versus only 6,664 new daily lows. Until the 1970s, this number was relatively in balance, and the imbalance towards new daily highs was never as dramatic as 2012.

A main consequences of last year's high temperatures was a large number of extreme weather events: drought, wildfires, hurricanes and storms.

At the beginning of the year, nearly 32 percent of the mainland US was in a moderate to exceptional drought. The footprint of the drought conditions last year nearly doubled during the summer—covering 61 percent of the country during the peak of the drought last July. This is roughly equal to the drought conditions of the 1950s, making 2012 the third worst recorded drought. The same footprint remains in moderate to severe drought conditions.

As a result of the drought, the US Department of Agriculture reported that 51 percent of the corn crop, a major staple, was in "poor" or "very poor" condition. (See "US downgrades crop outlook") The drought's associated heatwave meant that more than 110 million people in the US experienced ten or more days above 100 degrees. There were 123 reported deaths by heatstroke.

The high level drought conditions also contributed to massive wildfires in the west, burning 9.2 million acres, up from 8.7 million acres in 2011. This is the third highest recorded level. In Colorado alone, damages from July wildfires were more than $450 million. Wildfires in California incurred damages of $160 million. According to the Interior Department, the cost for combating the 2012 wildfires was $1 billion. Wildfires claimed eight lives nationally.

The hurricane season of 2012 was also unusually strong, as highlighted by Hurricane Sandy, which incurred more than $65 billion in damages and led to 235 deaths. Hurricane Isaac, which made landfall over Louisiana, did an estimated $2.3 billion in damages and caused 45 fatalities in the US and Caribbean.

Severe storms were also a major cause of damage over the summer. A derecho—a system of fast moving and intense thunderstorms—struck the Midwest and East Coast early in the summer causing at least $7 billion in damages and 28 deaths. The derecho also left millions without power.

In a separate storm system, Colorado alone suffered $1 billion in damages from hail. Other states incurred similar damages.

Global warming acted as the backdrop for the record temperatures of 2012. Without a general trend of

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increasing global temperatures throughout the 20th century, which has accelerated since the 1970s, an increase of 1.0 degrees above the last hottest year and 3.2 degrees above the average of the whole 20th century would have been very unlikely. The generally higher temperatures overcame the natural cooling of the La Nina climate pattern of last year and allowed natural variability to go to an extreme, creating the conditions for the high temperatures and violent weather systems experienced throughout last year.

It is also striking that the the ten warmest years recorded have all occurred in the last fifteen years, another measure of global warming. The last time there was an average monthly temperature that fell below the global average of the 20th century occurred in February 1985.

Extreme climate events were also felt globally. The combined global land and ocean surface temperature was the eighth warmest on record, 1.06 degrees above average. Last May and June had the highest recorded land temperatures.

Over land, the Southern hemisphere recorded its warmest spring, while the Northern hemisphere recorded its fifth warmest autumn. Record temperatures were recorded in northern Africa, southern Europe, far eastern Russia, north central Australia and central and northern South America. No records for seasonally cold temperatures were made last year.

Australia's Bureau of Meteorology reported that Monday was the hottest day in Australia's recorded history, with a national average of 104.6 degrees Fahrenheit (40.3 degrees Celsius). This has contributed to the hundreds of wildfires across the country that have charred more than 1.1 million acres in three states.

Four of Australia's ten hottest days have been in the last nine days of 2013, with large portions of the country covered by a "heat dome" that covered much of the US and Greenland in June-July of 2012. (See "Melting of Greenland ice shelf likely caused by global warming") The current heatwave is a progression of the September-December period, the hottest recorded. New heat records are expected to be made over the weekend.

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