



2012: A YEAR OF RECORD-BREAKING EXTREME WEATHER & CLIMATE

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The United States experienced its hottest year on record in 2012.¹

On a global scale, not only did last year mark the 36th consecutive year the annual global temperature was above average,² but each successive decade in the last 50 years has been the warmest on record.³ Additionally, the recent draft *National Climate Assessment*⁴ states that it is “virtually certain” that global temperatures will continue to warm throughout the remainder of the century, and the longer we delay reducing greenhouse gas emissions the greater the magnitude of warming will occur. In a warmer world, the trend of increasing extreme weather and climate events is expected to continue⁵ – 2011 and 2012 each experienced more extreme weather and climate events costing over \$1 billion each than any other year in recorded history.⁶

The 8-inch rise in average global sea level⁷ over the last century has intensified the impacts of storm surge.⁸ This was exemplified during Hurricane Sandy, where record high water levels⁸ and abnormally warm ocean temperatures⁹ amplified the storm’s impact along the coast of the Northeast United States. State officials in New York and New Jersey estimated aggregate losses of nearly \$80 billion from Sandy,¹⁰ shattering the aggregate \$55 billion in losses caused by weather and climate disasters in 2011¹¹ – a year when a record 14 extreme weather and climate events caused at least \$1 billion in losses each.¹²

a It is a well-established fact that global warming has resulted in a rise in global sea level (<http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009>).

TEMPERATURES

In the last decade, the U.S. broke twice as many records for extreme heat than records for cold temperatures.¹³

- *2012 was the hottest year ever recorded¹⁴ for the contiguous United States.^b*
- *July 2012 was the hottest month¹⁵ ever observed in the contiguous United States, breaking the previous record¹⁶ set during the Dust Bowl in 1936.^c*
- *March 2012 was the hottest March¹⁷ ever recorded for the contiguous United States, breaking the previous record¹⁸ set in 1910.^d*
- *In 2012, 19 states experienced their hottest years ever recorded.¹⁹*
- *In 2012, nearly one-third of the U.S. population – 99.1 million people – experienced 10 or more days of temperatures hotter than 100°F.²⁰*

HURRICANE SANDY

Recent findings show that the occurrence of extreme weather and climate events are on the rise,²¹ and the historic damages caused by Hurricane Sandy highlight the immense vulnerability of the United States to such extreme events in a warming world.

- *Hurricane Sandy was the largest hurricane ever observed in the Atlantic.^{22, 23}*
- *Hurricane Sandy caused an aggregate \$79 billion in estimated losses in New York and New Jersey alone, according to state officials.²⁴*

b The average temperature for the contiguous United States was 55.3°F, which is 3.2°F higher than the 20th century average and the warmest ever recorded (<http://www.ncdc.noaa.gov/sotc/national/2012/13>).

c The average temperature for the contiguous United States in July was 76.9°F, which is 3.6°F higher than the monthly average and the hottest month ever recorded in U.S. history (<http://www.ncdc.noaa.gov/sotc/global/2012/13>).

d The average temperature for the contiguous United States in March was 51.1°F, which is 8.6°F higher than the 20th century average for the month (<http://www.ncdc.noaa.gov/sotc/national/2012/3>).

- *Hurricane Sandy was the most destructive storm New York City's 108-year old subway system has ever experienced, according to the Metropolitan Transportation Authority.²⁵*
- *An estimated 305,000 housing units were damaged by Hurricane Sandy in New York.²⁶*
- *Approximately 21,000 flights in and out of North America were cancelled due to Hurricane Sandy.²⁷*
- *For the first time since 1888, the New York Stock Exchange was forced to close for two consecutive days due to weather.²⁸*

WILDFIRES AND DROUGHT

Climate disruptions to agricultural production have increased in recent years and are expected to increase further over the next 25 years, making the nearly \$300 billion in annual agricultural commodities vulnerable to direct impacts from climate change.²⁹

- *9.2 million acres across the U.S. were burned by wildfires in 2012.³⁰*
- *The largest wildfire observed in New Mexico's history burned almost 300,000 acres.³¹*
- *Colorado's Waldo Canyon wildfire was the state's most destructive wildfire in history, destroying 346 homes.³²*
- *The 2012 drought caused Oklahoma to experience an estimated \$426 million in damages to crops, livestock, municipalities, and property loss from wildfires.³³*
- *More than 65 percent of the continental United States experienced drought in September 2012, the largest area ever recorded in the 14-year history of the United States Drought Monitor.³⁴*

SEA-LEVEL RISE & MELTING ICE

In recent decades no other place in the world has experienced higher rates of sea-level rise than the U.S. Northeast Coast,³⁵ resulting in a regional coastal flooding increase of 1 foot since 1900.³⁶ Already, sea-level rise is enhancing storm surge³⁷ and coastal flooding, which has significant economic implications.³⁸ The melting of the Greenland and Antarctic Ice Sheets, significant contributors to rising sea level,³⁹ has recently been found to be accelerating.⁴⁰

- *The extent of Arctic Sea Ice reached the lowest level in satellite-recorded history in 2012, allowing for more heat to be absorbed by the ocean.^{e,41,42} As sea ice coverage decreases, the Arctic warms,⁴³ and the Arctic has been warming twice as fast as the rest of the world over the past several decades.⁴⁴ Recent studies have found that continued warming in the Arctic creates favorable conditions for extreme weather events.⁴⁵*
- *The Greenland Ice Sheet experienced the largest melt extent in satellite-recorded history in 2012,⁴⁶ amplifying its already significant contribution to global sea-level rise.⁴⁷*
- *In the United States, 5 million people live within 4 feet of the local high-tide line.⁴⁸ In 2012, Hurricane Sandy caused waters to rise by nearly 14 feet in New York.⁴⁹*
- *In Miami Beach, Florida, sea-level rise has made prolonged flooding a frequent event after strong storms, requiring city officials to consider a \$206 million renovation of their drainage system.⁵⁰*
- *Hallandale Beach in Florida had to spend \$10 million on new wells due to salt water seeping into six of the city's eight fresh water wells, according to former Hallandale Beach City Commissioner Keith London.^{51,52}*

e Less Arctic sea ice allows for more heat to be absorbed by the ocean's dark surface that would have otherwise been reflected back into space by the bright white surface of ice (<http://nsidc.org/cryosphere/quickfacts/seaice.html>).

ENDNOTES

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