



## The Effects of Global Warming on Weather and Climate

Global warming refers to the gradual rise in the overall temperature of the earth's atmosphere caused by raised levels of carbon dioxide, chlorofluorocarbon, and other pollutants [3]. As a result of global warming, a set of changes are happening to the earth's weather patterns and climate. The warmer temperatures could lead to more frequent hurricanes, droughts, wildfires, heavier storms, floods, and rising sea levels. The impact of the changing weather patterns and climate are already occurring and widespread. The following paragraphs describe the effects of rising temperatures on the weather and climate, evidence of these changes in the United States and other parts of the globe, and the increased risks introduced by these changes.<sup>1</sup>

### Heat waves

As temperatures escalate, heat waves, or periods of unusually hot weather, become more frequent and severe [5]. Heat waves put vulnerable populations and a wide range of natural processes at risk. The average temperature of the adjoining states has risen at an average rate of 0.14°F each decade since 1901 [7:28]. The 10 hottest years on record all occurred after 1990, including the 2 warmest years on record, 2005 and 2010 [4].

### Droughts

The rising temperatures and more frequent heat waves promote greater evaporation of moisture in the soil. This extra evaporation results in longer periods of dry weather, or droughts, as the precipitation and evaporation become imbalanced. Droughts can increase the risk of water shortages and severe agricultural loss. From 2000 to 2013, about 20 to 70 percent of the United States land area experienced unusually dry conditions. In 2012, the U.S. experienced the driest conditions in more than a decade [7:38].

### Wildfires

Drier conditions accompanied by higher temperatures fuel the ignition and spread of wildfires that threaten the world's forests and populations [5]. Wildfire season in the western United States has grown from 5 to 7 months since the 1970s [6]. New records

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<sup>1</sup> *Note to Instructor:* The intended audience for this cause and effect writing are individuals with interest or little knowledge of the consequences of global warming on climate and weather and the evidence of these changes. They understand common weather definitions and possess intermediate mathematical skills.

were set in 2006 as nearly 100,000 fires were reported and close to 10 million acres were burned as a result of wildfires [1].

## Precipitation

More rainfall during heavy downpours and increased frequency of heavy storms are a result of warmer temperatures. The increased rainfall and occurrence of heavy storms raises the risks of flooding in communities. Since the 20<sup>th</sup> century, the national precipitation has increased between 5 and 10 percent. In 2006, the northeast region of the United States had its wettest summer on record, surpassing the previous record by more than 1 inch [1].

## Hurricanes

The warmer water in the oceans due to hotter temperatures makes tropical storms, or hurricanes, stronger and conceivably more devastating. Accompanied by the warmer ocean temperatures, the number of category 4 and 5 hurricanes have significantly increased over the past 35 years. The flooding and damage caused by Hurricane Katrina in August 2005 was the costliest and one of the deadliest hurricanes in United States history [1].

## Sea levels

Warmer water takes up more space than colder water, resulting in rising sea levels. Melting glaciers add to the problem by dumping even more water into the oceans [4]. The rising global sea level heightens the risk of coastal flooding and damage to the ecosystem. Since the beginning of reliable records in 1880, sea levels have risen by 8 inches. Current predictions suggest that the global sea levels could continue to increase another 1 to 4 feet by the year 2100 [2].

## References

1. Denchak, Melissa. "Are the Effects of Global Warming Really that Bad?" 2016. <https://www.nrdc.org/stories/are-effects-global-warming-really-bad>. Accessed March 29, 2016.
2. NASA. "The Consequences of Climate Change." N.d. <http://climate.nasa.gov/effects/>. Accessed March 29, 2016.
3. Oxford Reference. "Definition of Global Warming." 2010. [http://www.oxfordreference.com.lsproxy.austincc.edu/view/10.1093/acref/9780199571123.001.0001/m\\_en\\_gb0337950?rskey=Tvdol0&result=5](http://www.oxfordreference.com.lsproxy.austincc.edu/view/10.1093/acref/9780199571123.001.0001/m_en_gb0337950?rskey=Tvdol0&result=5). Accessed March 29, 2016.

4. The Nature Conservancy. "Climate Change: Threats and Impacts." 2016. <http://www.nature.org/ourinitiatives/urgentissues/global-warming-climate-change/threats-impacts/>. Accessed March 29, 2016.
5. Union of Concerned Scientists. "Global Warming Impacts." N.d. <http://www.ucsusa.org/our-work/global-warming/science-and-impacts/global-warming-impacts#.Vvxe6fkrLIV>. Accessed March 29, 2016.
6. Union of Concerned Scientists. "Playing with Fire." 2014. [http://www.ucsusa.org/global\\_warming/science\\_and\\_impacts/impacts/climate-change-development-patterns-wildfire-costs.html#.Vvy4RPkrLIU](http://www.ucsusa.org/global_warming/science_and_impacts/impacts/climate-change-development-patterns-wildfire-costs.html#.Vvy4RPkrLIU). Accessed March 29, 2016.
7. United States Environmental Protection Agency, Climate Change Indicators in the United States. Third Edition. Washington: U.S. EPA, 2014.

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Get in touch if you have any questions at all. ♦ *David McMurrey*]

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