A new study reveals that human-caused climate change is causing an increase in precipitation across the northern United States. The influence of global warming was very hard to recognize, because precipitation is highly variable. Scientists were able to work around this problem by using computer models and statistics to observe the precipitation trends under different situations of high and low pressure. They then subtracted the predicted precipitation from the observed precipitation to discern the trend caused by global warming. They predict that wintertime precipitation will continue to increase by 1-2% for every degree Celsius that the world warms. The researchers believe that this increase in precipitation is caused by the principle that a warmer atmosphere can hold larger quantities of water.

Scientists observed the damaging effects that wildfires have on the ozone layer. The extreme heat caused by wildfires, combined with the large amounts of smoke can create gigantic storm clouds, capable of reaching well into the stratosphere. Under ordinary conditions, the upward growth of storm clouds is limited by a temperature inversion at the tropopause, where air begins to get warmer with increasing height. By measuring the conditions of the atmosphere above and near wildfires, scientists tracked the properties of the smoke produced by them. The upward movement of the air pushed smoke into the stratosphere, where it remained for a long time. This smoke temporarily harmed the ozone layer in those regions. Scientists have yet to determine the extent to which wildfires harm the ozone layer and the additional chemical processes involved.

Computer simulations suggest that in the future, climate change will cause El Niño and La Niña events to become less predictable. Currently there is a strong pattern in the occurrences of these weather events; Atlantic El Nino events trigger Pacific La Niña’s, and vice-versa. This pattern is caused by patterns in air moving over the Americas from the Atlantic to the Pacific, or the other way. Climate simulations show that while becoming significantly more common, Pacific El Niño’s and La Niña’s will also be less correlated with their Atlantic counterparts. However, these recent findings are not the entire picture, as the Southern Oscillation is influenced by many complex factors, such as the Indian ocean.

Hurricane Dorian was stationary for 40 hours above Grand Bahama Island from September 2-3, 2019, causing extreme damage to homes on the island. Scientists at NASA observed the levels of rainfall using the Integrated Multi-Satellite Retrievals for Global Precipitation Measurement satellite system and observed wind levels using the Goddard Earth Observing System. Some areas on the island received 150 centimeters of rainfall. This recent hurricane is part of a clear trend, that hurricanes are slowing down. Many scientists believe that this trend is being caused by global warming, although many people are not certain.

This article is about scientists improving existing computer climate models to include the effects of crops, and especially, irrigation. Using NASA’s ModelE2 simulation, scientists simulated 3 different scenarios at high definition. The first simulation only studied the impact of natural vegetation on climate and served as a control for the experiment. The second test included crops, but without irrigation, and the third simulated the effects of fully irrigated crops. They ran multiple simulations of each scenario. The results confirmed the scientists’ prediction that irrigation plays a considerable role in climate. They concluded that irrigation impacts regions either by increasing the effect of changes in land use, ore by decreasing its effects. They also concluded that irrigation impacts the lower atmosphere, in addition to the surface and can therefore impact the climate of non-local areas.