

# THE ATMOSPHERIC RESERVOIR

*Examining the Atmosphere and Atmospheric Resource Management*

## WHAT DOES CLIMATE CHANGE MEAN FOR NORTH DAKOTA?

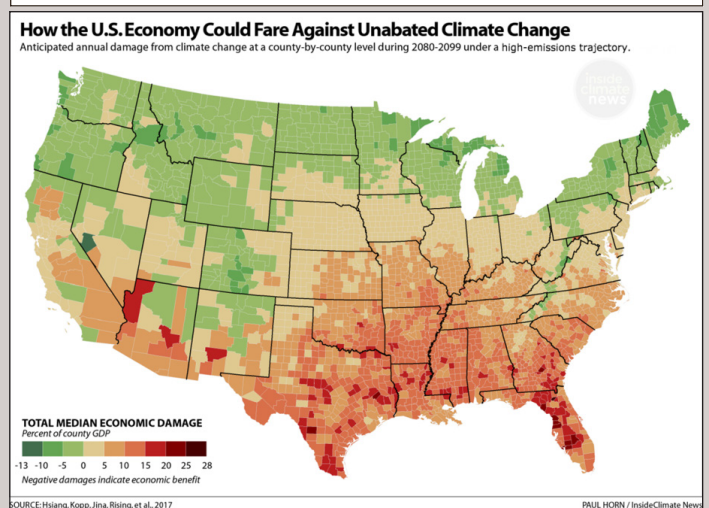
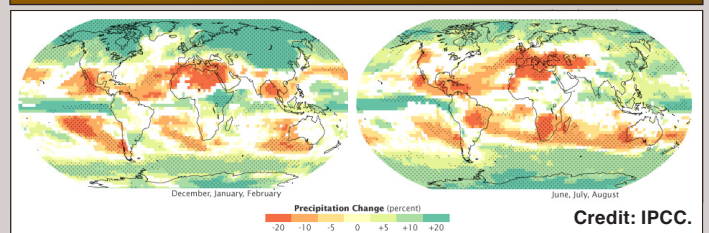
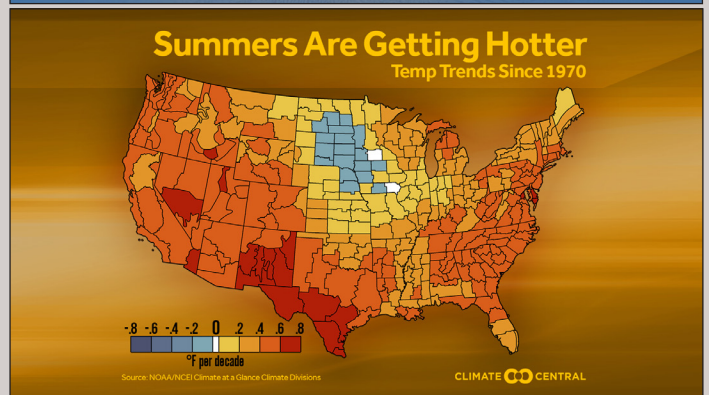
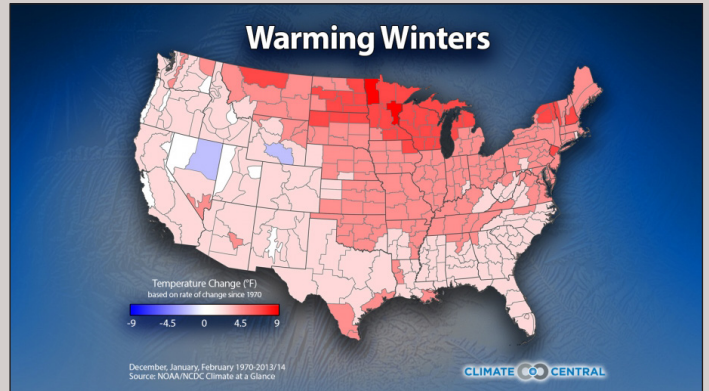
By Mark D. Schneider

When we hear about Anchorage, Alaska setting an all-time high temperature of 90 degrees Fahrenheit on July 4 or the northernmost human settlement of Alert in Nunavut, Canada (beyond the Arctic Circle at 82 degrees Latitude) reaching its all-time record high of 70 degrees on July 14, shouldn't we have experienced an unusually hot July in North Dakota? The short answer is no. In fact, most locations in our state finished July with monthly average temperatures within a degree or two of normal. July 2019 was historic globally because it finished as the hottest month on record, topping July 2016.

Whether you're convinced that our climate is changing or not, sophisticated computer models have been predicting that North Dakota would be one location that could actually benefit from global warming/climate change. Because our weather is so dynamic, warming in one location can actually create cooler conditions in another. There are ridges of high pressure and troughs of low pressure that transport warm and cold air through complex atmospheric circulation patterns. By warming one region of the Earth, we may strengthen a high pressure ridge while simultaneously strengthening a low pressure trough. Climate models have been predicting that in the future, the southwestern U.S. will become warmer and drier and that more drought periods lasting a decade or longer could occur. The overall weather pattern that would cause these conditions in the southwestern U.S. could place North Dakota in favorable conditions for a longer growing season and a slight increase in average precipitation (especially in the winter months).

The enclosed images are both actual conditions that the U.S. has experienced since 1970 and examples of what climate models predict for the U.S. in the future. Although February of 2019 will be remembered as brutally cold, North Dakota's winter months (especially February) have averaged several degrees warmer since 1970. While most of the U.S. has experienced warmer summers since 1970, North Dakota has actually seen average temperatures. When looking at projected changes in precipitation and the associated economic effects, North Dakota and northern-tier states are predicted to do quite well.

North Dakota's agricultural industry is dependent on world markets, so it's important for us to have a wordly view and be aware of how a changing climate on one continent effects another.



Atmospheric Resource Board | North Dakota State Water Commission | 900 East Boulevard, Bismarck, ND 58505  
(701) 328-2788 | <http://swc.nd.gov>

ND Weather Modification Association | PO Box 2599 | Bismarck, ND 58502 | (701) 223-4232