

# THE ATMOSPHERIC RESERVOIR

*Examining the Atmosphere and Atmospheric Resource Management*

## OBSERVING Differences in Precipitation



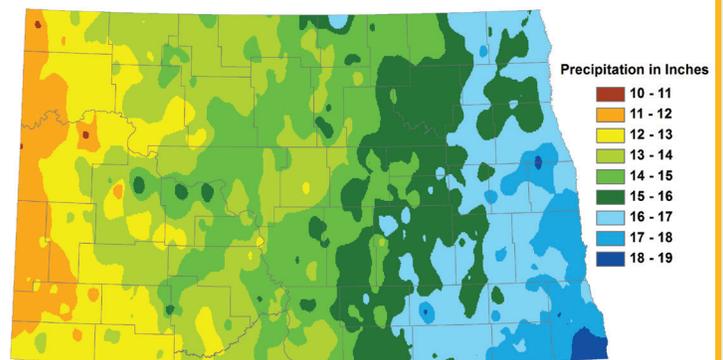
By Mark D. Schneider

Precipitation in the northern plains is highly variable. Two nearby locations can have significant differences in day to day, month to month, or year to year rainfall. It's difficult to compare North Dakota's current drought year to one of the recent wetter years without having a long-term "benchmark" for reference. That's why Daniel Brothers with the Atmospheric Resource Board's Cooperative Observer Network (ARBCON) compiles the most recent 30 years of rain gauge data into a map representing a "normal" climate period. The 30-year normal growing season rainfall map for years 1987-2016 shows much more uniform changes in precipitation, especially when starting in western North Dakota where it's normally drier and moving to the eastern part of our state where an additional seven to eight inches of rainfall can occur.

Much of the rain we receive during the growing season comes from thunderstorms in the form of showers. These showers are variable enough that we have to look at countless storm days to see if there are precipitation patterns. There is normally more low-level moisture for thunderstorms in the eastern part of North Dakota to use during their lifecycles, and this translates into increased precipitation (on average) when compared to storms in the western part of our state.

During drought years, the old adage can be true that "drought feeds on itself." With less rainfall, there is less evaporation and transpiration and the lower levels of the atmosphere are less moist. When thunderstorms do develop, the cloud bases are generally higher and the rain

30 Year (1987 - 2016)  
Average Rainfall (Apr - Sept)



that does occur has to fall through drier air which results in more evaporation before reaching the ground. The opposite is usually true for wetter years.

As farmers and ranchers know, planning for the long-term average moisture conditions can help make decisions easier when considering what type of crops to grow, when to apply fertilizers and fungicides, and how many cattle to raise in a given area. By accounting for natural variability including wet and dry cycles producers are looking at the big picture and not so focused on their short-term outcomes.

If you check your rain gauge daily and are interested in reporting for ARBCON, you can contact Daniel Brothers at (701) 328-2788 or [dabrothers@nd.gov](mailto:dabrothers@nd.gov). ARBCON would provide you with a rain gauge in exchange for your valuable observations.

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