

## **Precipitation in Eastern North Dakota during June and July 2008, 2010, and 2012**

Rainfall variability is very important for crop production because a shortage of rainfall amount significantly affects crop yields which negatively impacts the livelihood of many residents of North Dakota. Due to the large economic impact of droughts, farmers seek a mitigation strategy. Hygroscopic seeding is a rain enhancement technique for increasing precipitation. The North Dakota Atmospheric Research Board has supported research to determine suitability in North Dakota for conducting hygroscopic seeding. The research program includes three Polarimetric Cloud Analysis and Seeding Test (POLCAST) field projects (summers of 2008, 2010, and 2012) that obtained airborne and radar observations. To be able to put the measurements in a broad context, it is important to understand precipitation conditions of the field projects.

Surface data from is from seven North Dakota Agricultural Weather Network (NDAWN) stations located within a 100 km radius of the UND radar, with measurements dating back to at least 1995. Rainfall measurements are made using a 6 inch diameter tipping bucket rain gauge that has a 0.01 inch resolution. June and July are known for being considerably wet months in North Dakota. For example, Grand Forks, North Dakota receives 20 percent in June and 18 percent in July of the total rainfall between April and October (calculated from NDAWN station data). The June and July cumulus precipitation in Grand Forks varies between 1.5 inches and 11.5 inches (1990-2015). Analysis of afternoon precipitation indicates that 2008, 2010, and 2012 have typical cumulative (June/July) rainfall amounts. Measurements from the Grand Forks NDAWN station, along with the other locations is beneficial for continued analysis of POLCAST field project data. The continued analysis will provide a well rounded understanding of meteorological processes during 2008, 2010, and 2012 in Eastern North Dakota and if these years are 'typical' for the area.