SDSU Extension

2017 Northern Plains Drought on Tribal Lands

Laura Edwards
SD State Climatologist

Contributors

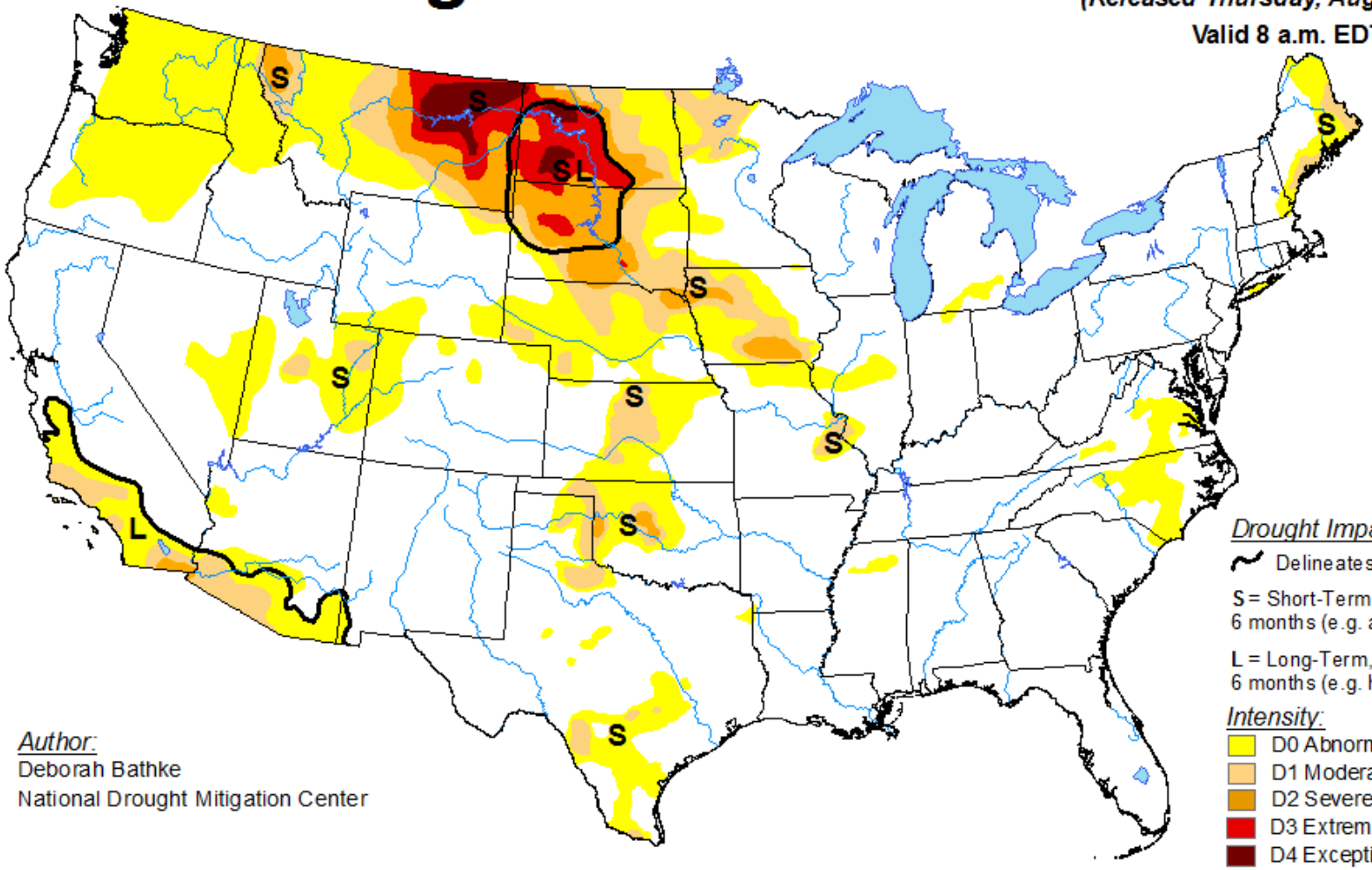
- David Martin, Bureau of Indian Affairs wildland fire
- National Weather Service offices in Bismarck, Rapid City, Aberdeen, Sioux Falls and Regional Climate Services
- SDSU Extension, NDSU Extension, and MSU Extension
- High Plains Regional Climate Center
- Doug Kluck, National Integrated Drought Information System (NIDIS)
- National Drought Mitigation Center, Univ of Nebraska-Lincoln
- NOAA Climate Prediction Center

U.S. Drought Monitor

August 8, 2017

(Released Thursday, Aug. 10, 2017)

Valid 8 a.m. EDT



Author:
Deborah Bathke
National Drought Mitigation Center

Drought Impact Types:

Delineates dominant impacts

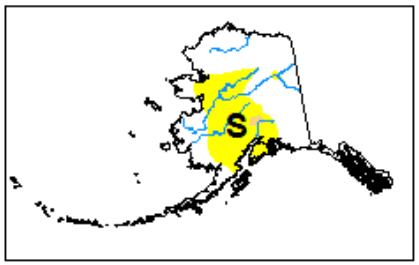
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

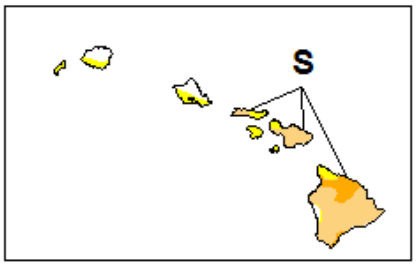
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

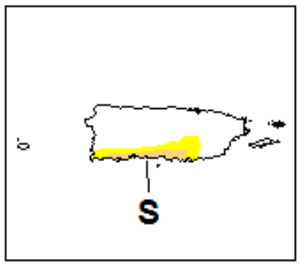
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.







USDA NDMC

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

Montana, North Dakota and South Dakota

August 8, 2017

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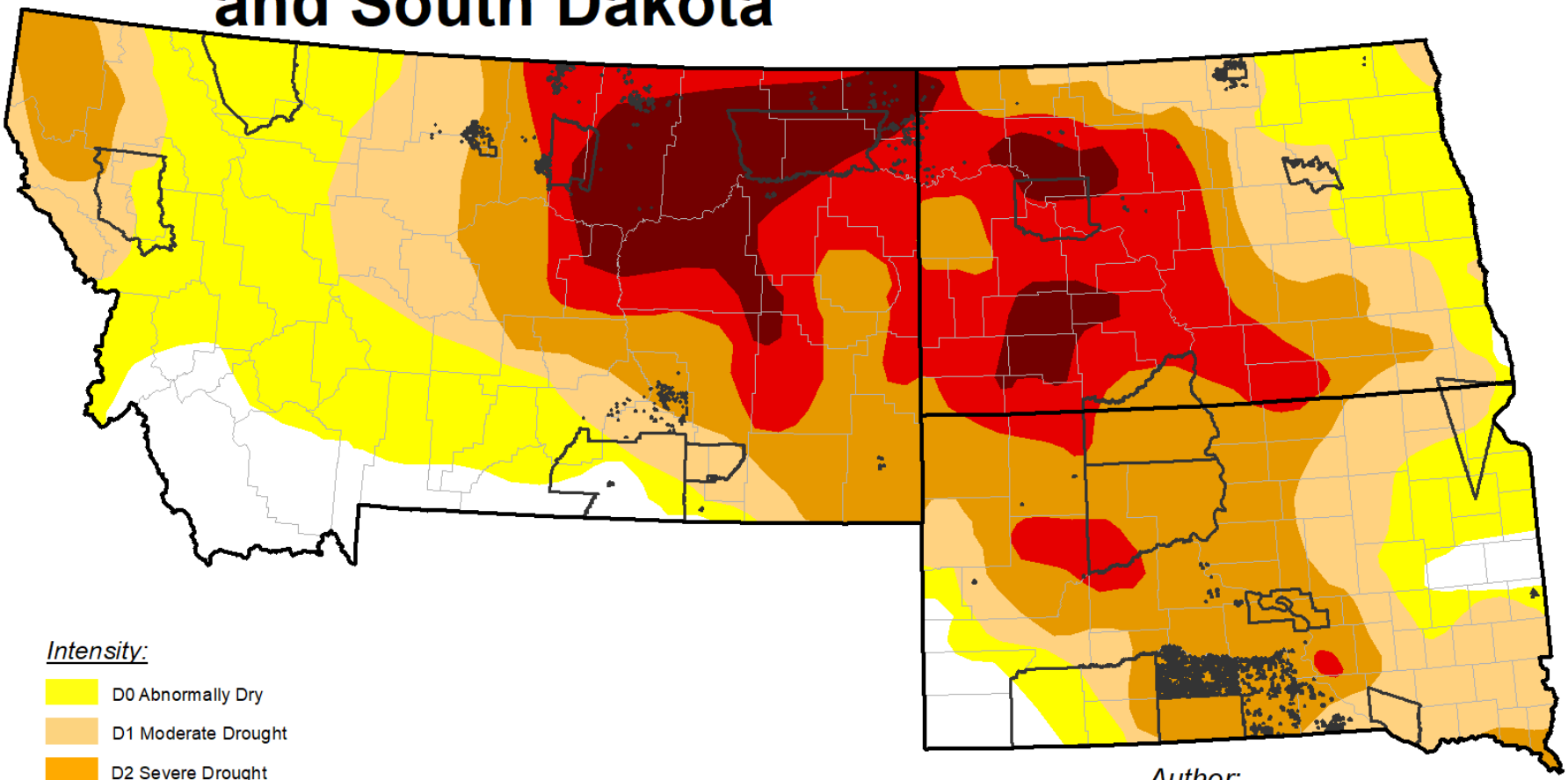

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U.S. Drought Monitor
Montana

August 8, 2017

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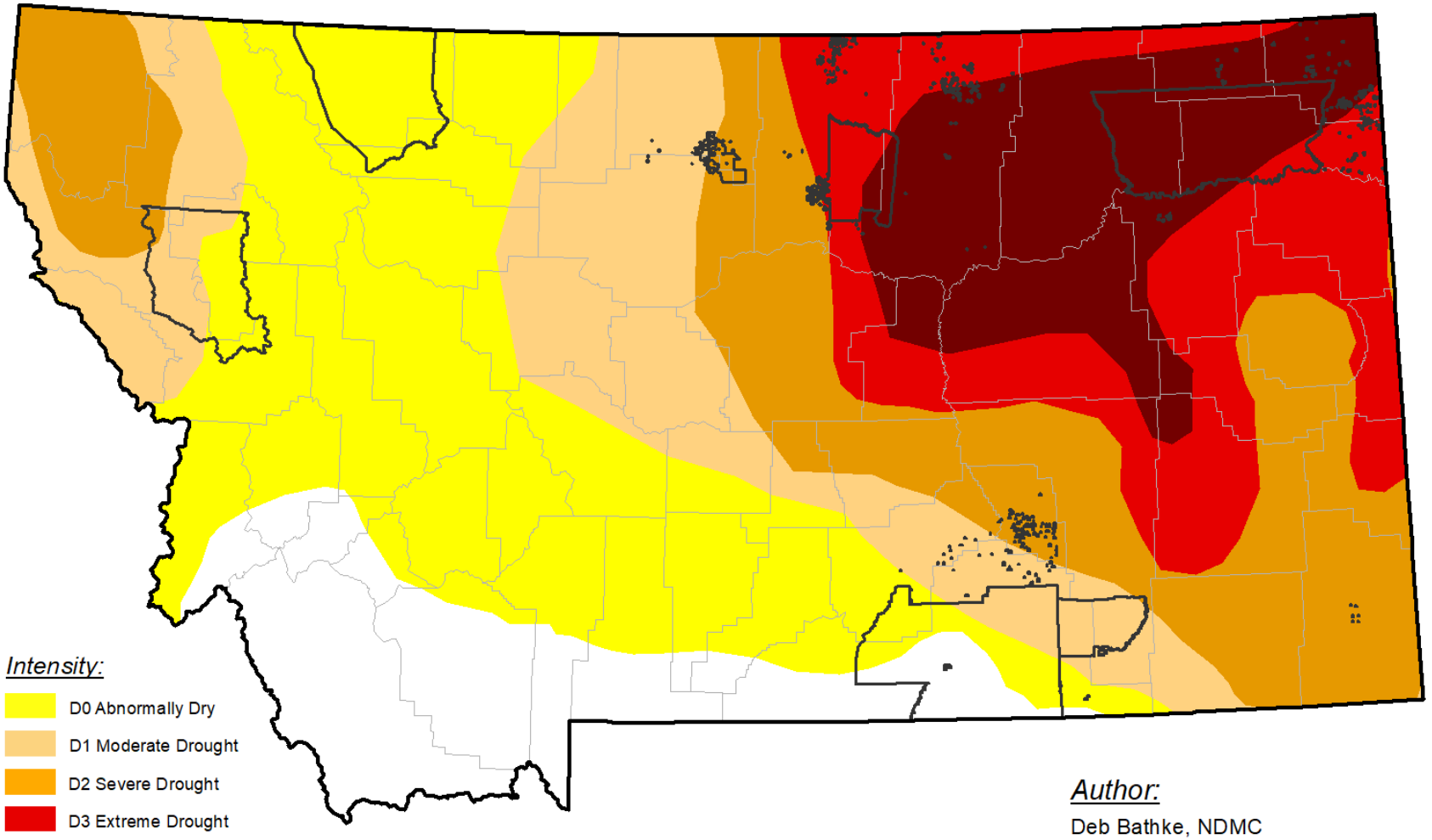

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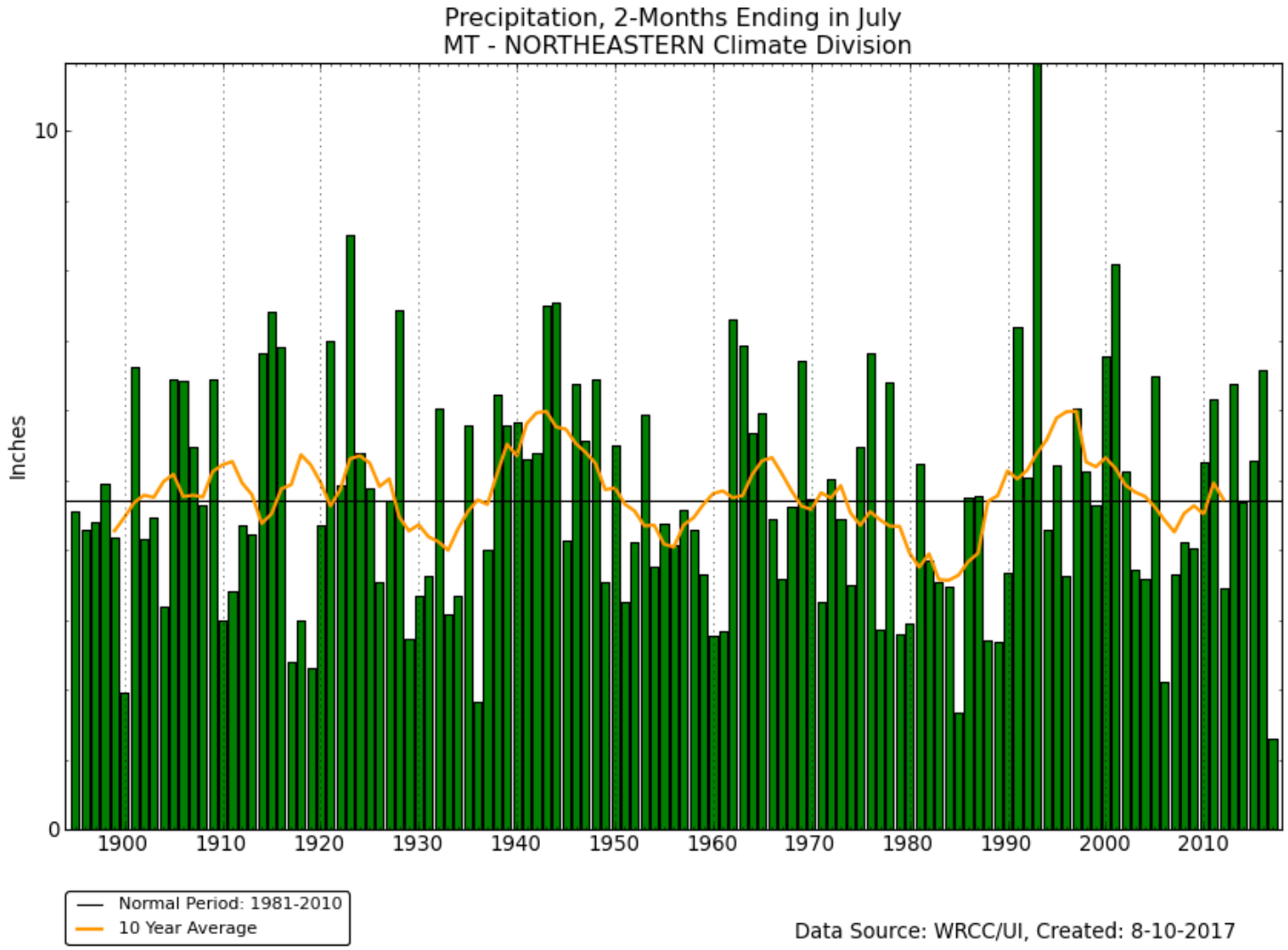
Northeastern Montana



Source: WestWide Drought Tracker, https://wrcc.dri.edu/wwdt/time/

U.S. Drought Monitor

North Dakota

August 8, 2017

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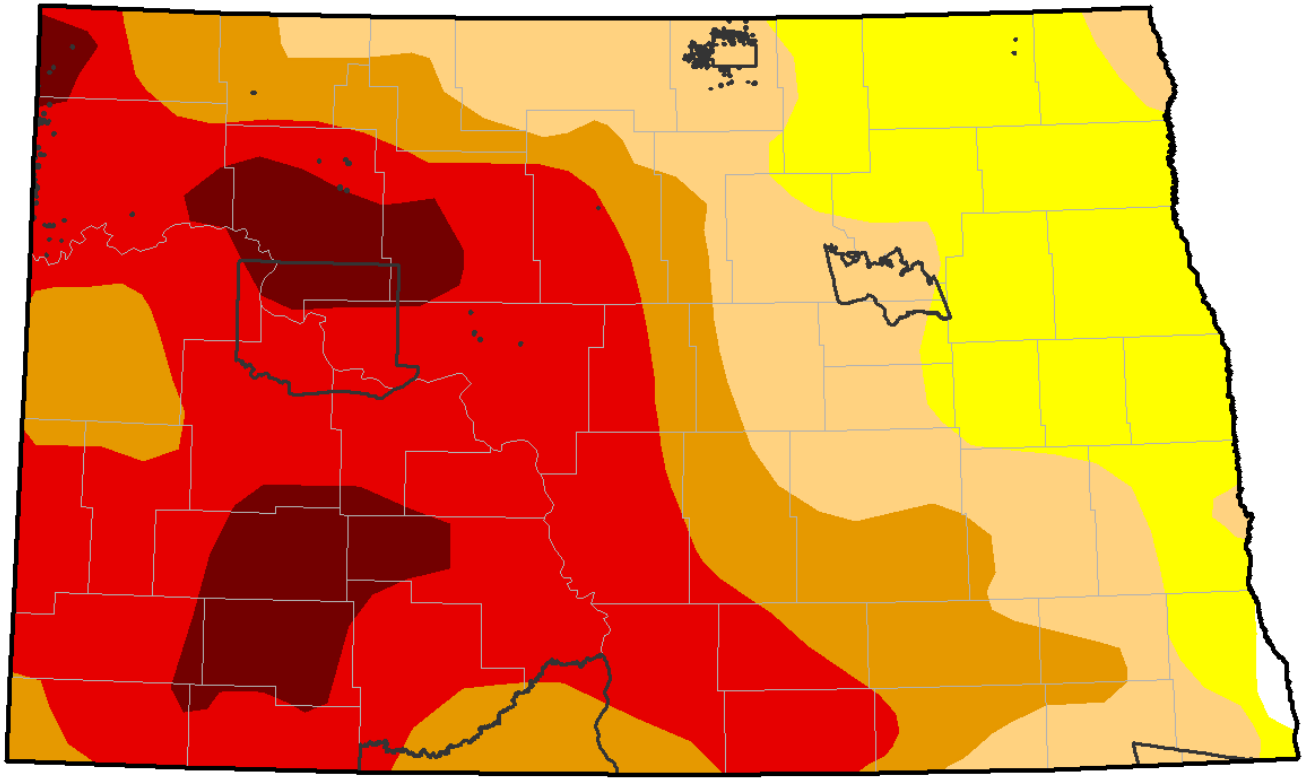

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U.S. Drought Monitor

South Dakota

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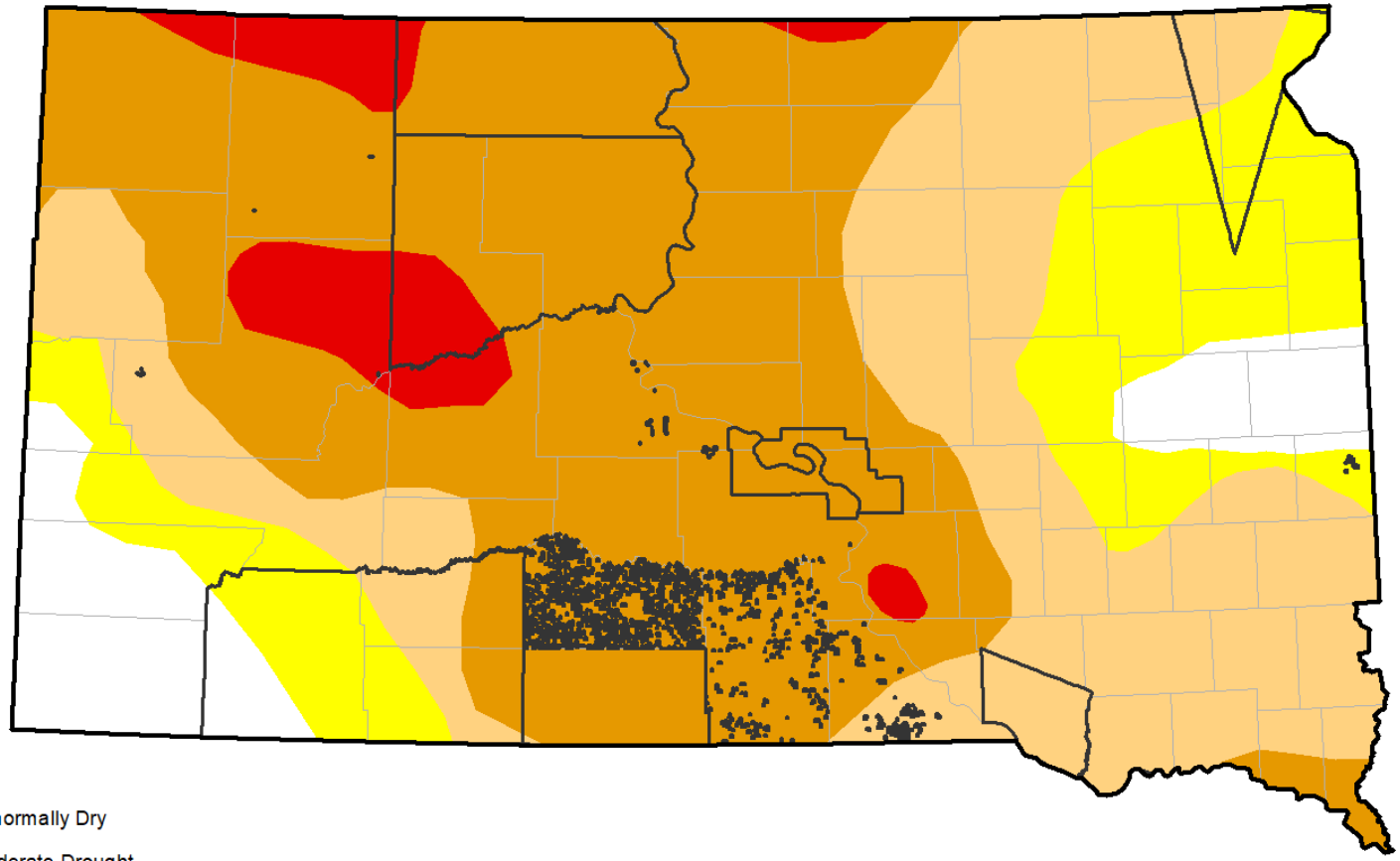

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Author:

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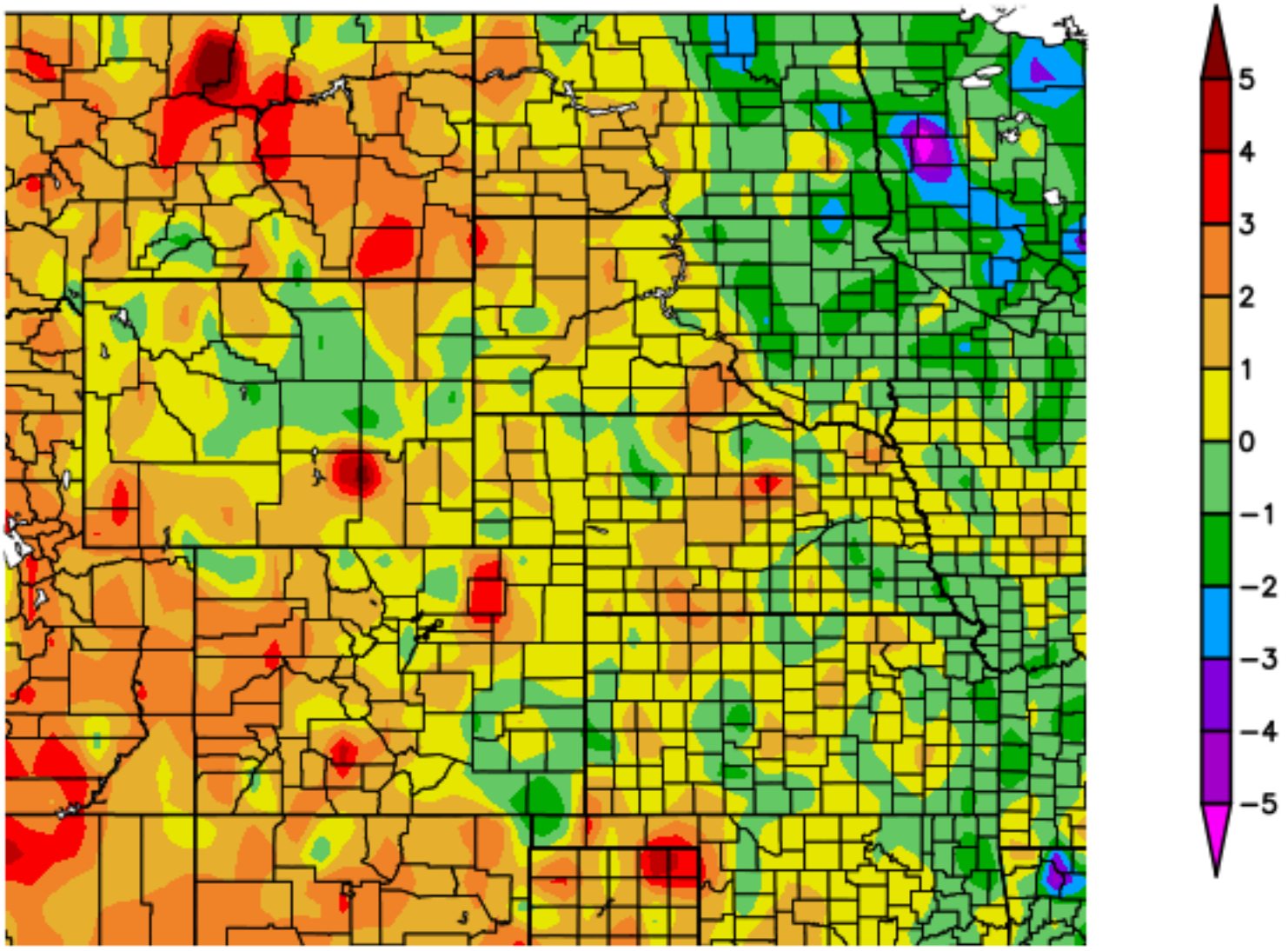
http://droughtmonitor.unl.edu/

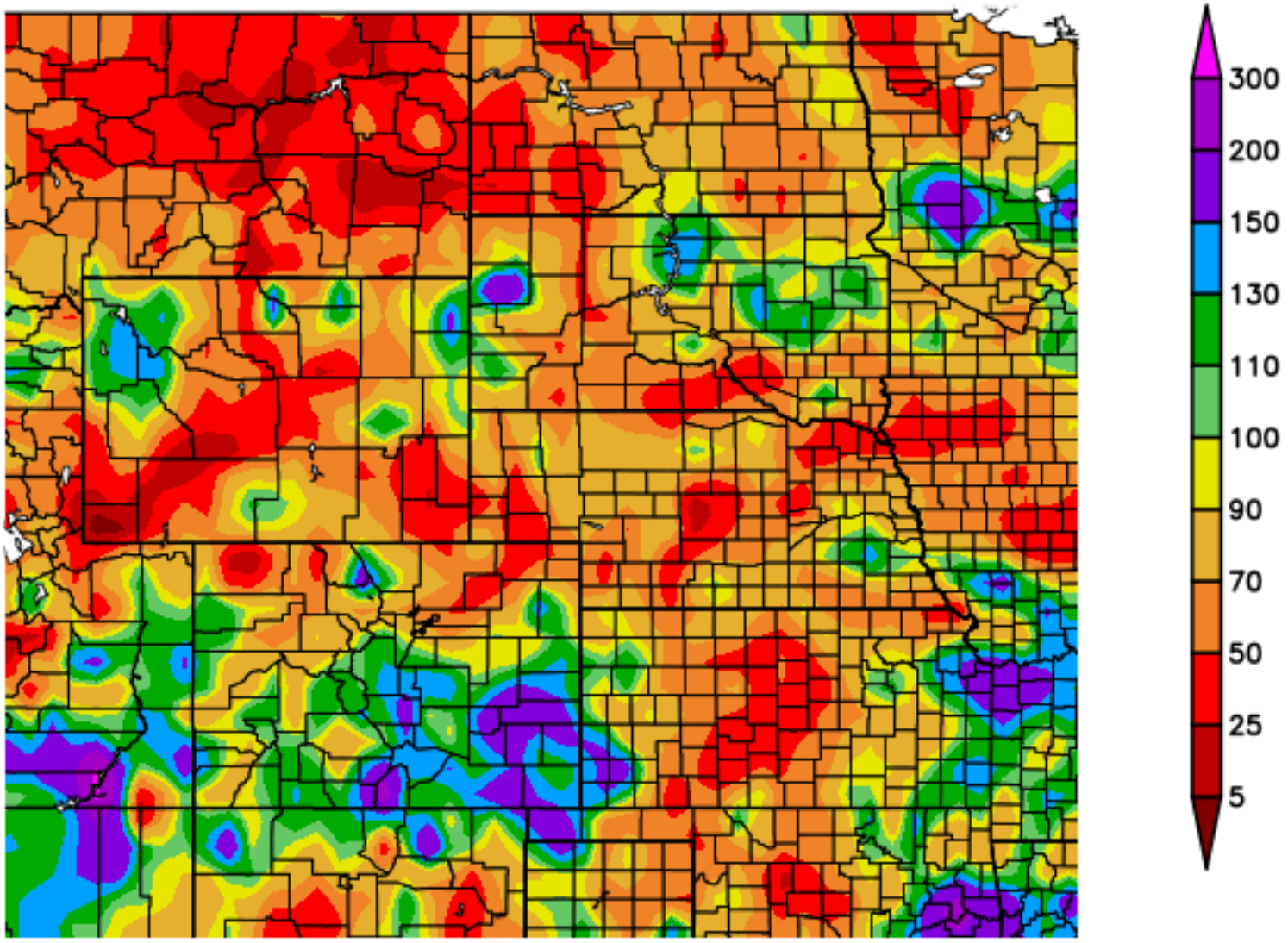
Departure from Normal Temperature (F)
6/11/2017 - 8/9/2017



Generated 8/10/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
6/11/2017 - 8/9/2017

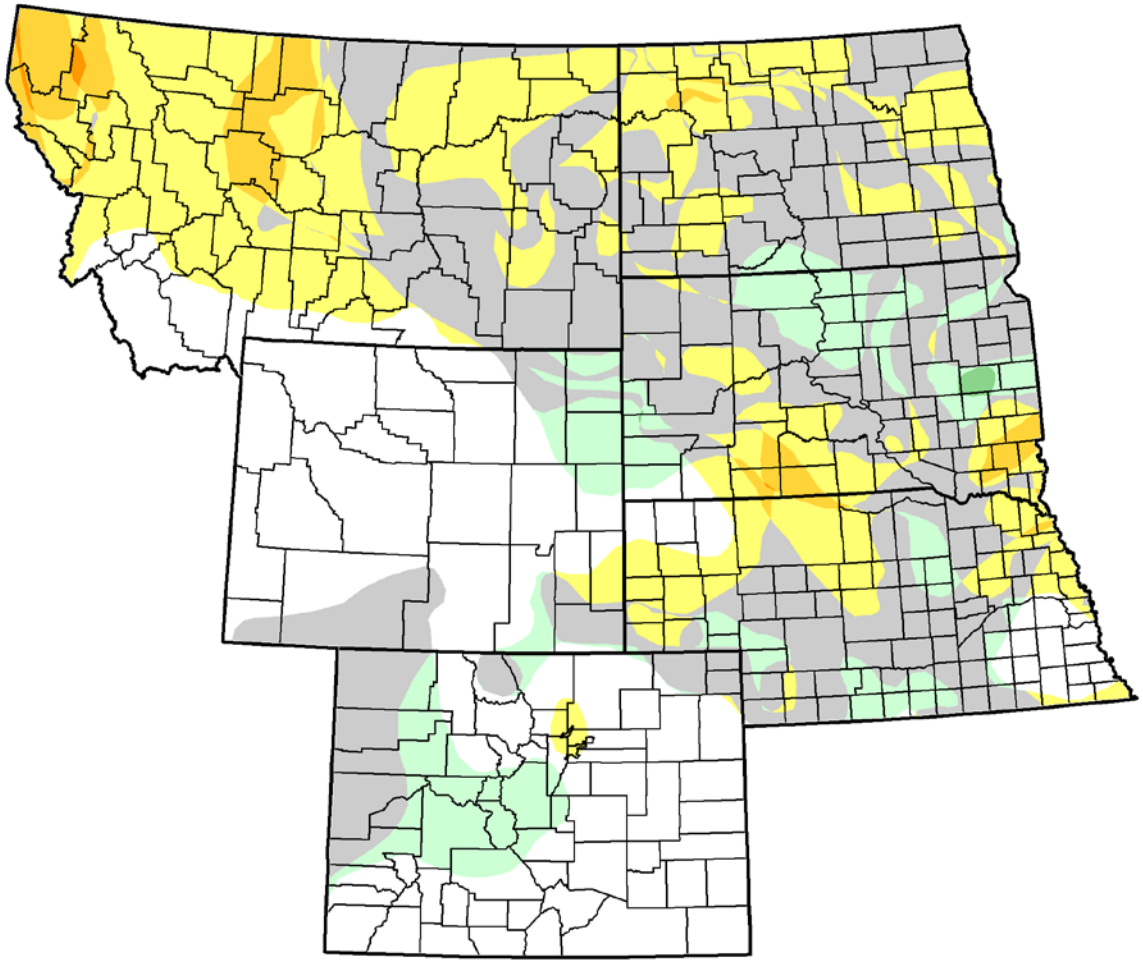


Generated 8/10/2017 at HPRCC using provisional data.

NOAA Regional Climate Centers

U.S. Drought Monitor Class Change - USDA Northern Plains Climate Hub

1 Month



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

August 8, 2017
compared to
July 11, 2017

http://droughtmonitor.unl.edu

2017 Indian Country Wildland Fire

Data through August 7, 2017

- Human caused fires (657 fires) for 10,143 acres
- Natural caused fires (72 fires) for 732 acres
- **Total: 729 fires for 10,875 acres**

Hilltop fire
Cheyenne R.
July 9, 2017
514 acres

Route 8 Fire

Cheyenne River Agency

- 254 acres on July 29
- Most recent large fire

Wildland Fire History

Some recent years

Year	Human-caused	Natural-caused	Total fires	Total acres
2017*	657 fires 10,143 acres	72 732	729	10,875
2014	850 5,951	7 13	857	5,964
2012	1,760 38,889	365 86,496	2,125	125,385
2010	933 4,110	5 23	938	4,133
2006	2,197 14,635	191 61,471	2,388	76,106

*Data through August 7, 2017.

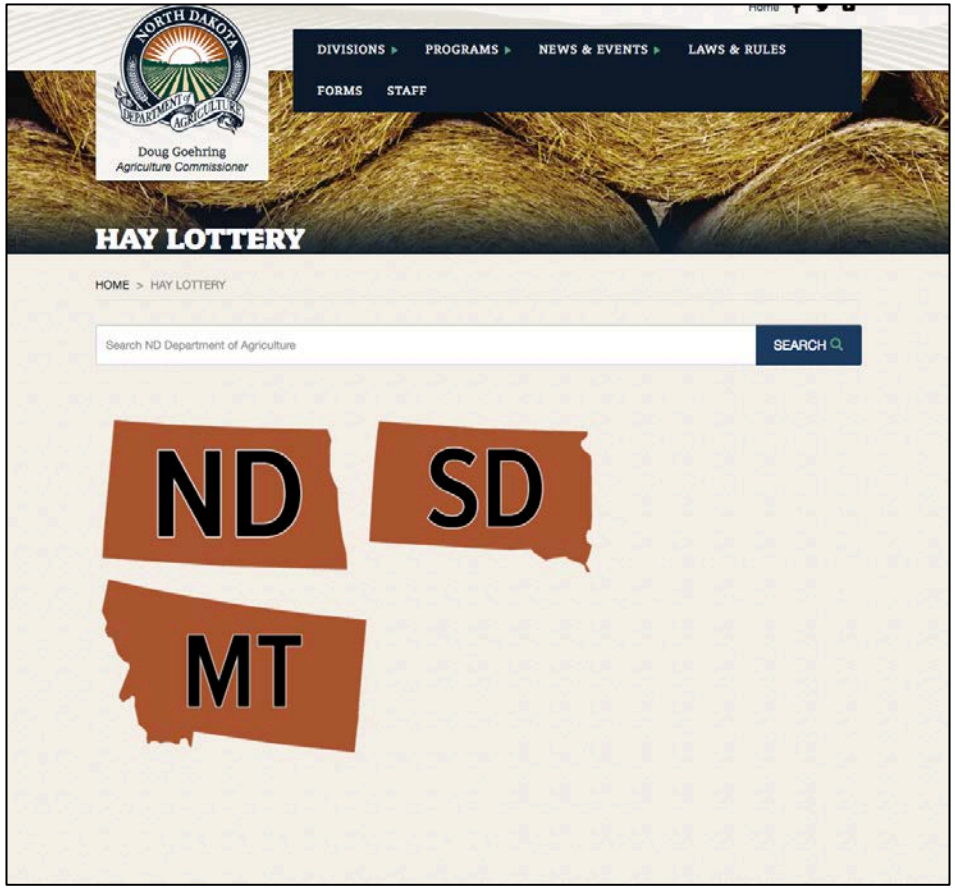
Feed and Hay Wanted/For Sale

- North Dakota:
  NDSU FeedList https://www.ag.ndsu.edu/feedlist
- South Dakota:
  - SDSU Extension Feed & Forage Finder

Hay Lottery

ND, SD and MT

- https://www.nd.gov/ndda/hay-lottery
- Deadline for entry:
  - August 31

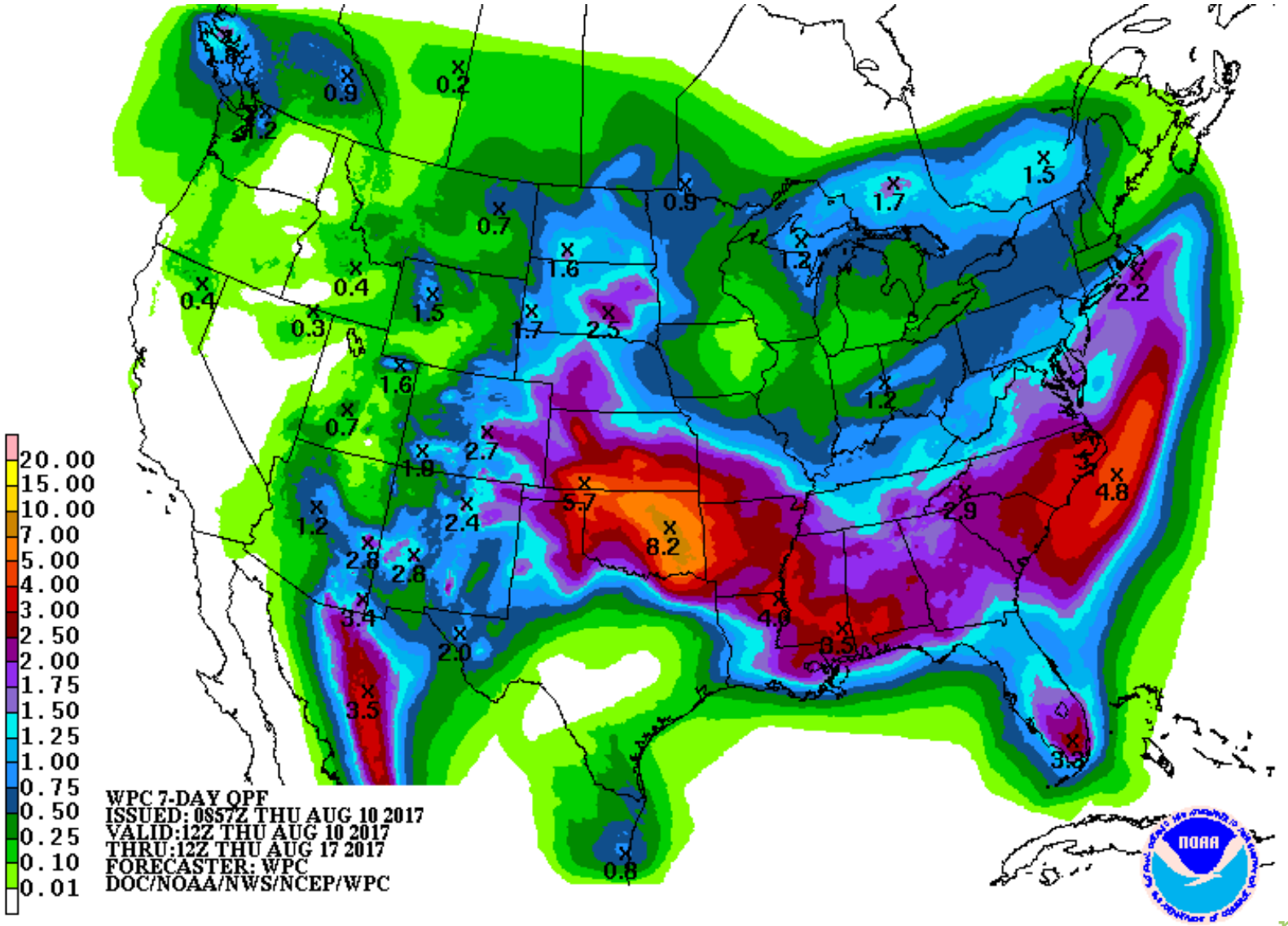


USDA Farm Service Agency

Agricultural Drought Relief Programs

- If you are a part of the farm program…
  - Includes livestock species: cattle, buffalo, sheep, etc.
- Low cost loans for agriculture and small businesses
- Livestock Forage Program
- NAP insurance, etc.
- Call county office for more information

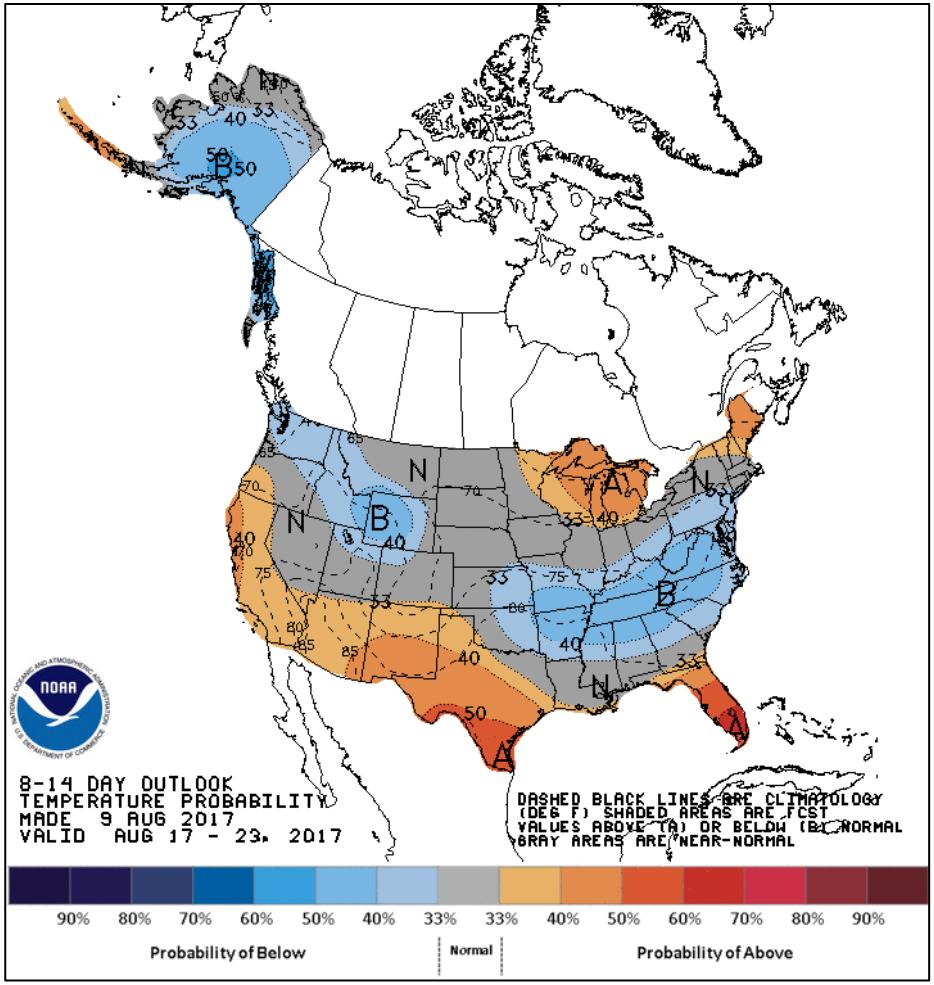
7-day Rainfall Forecast

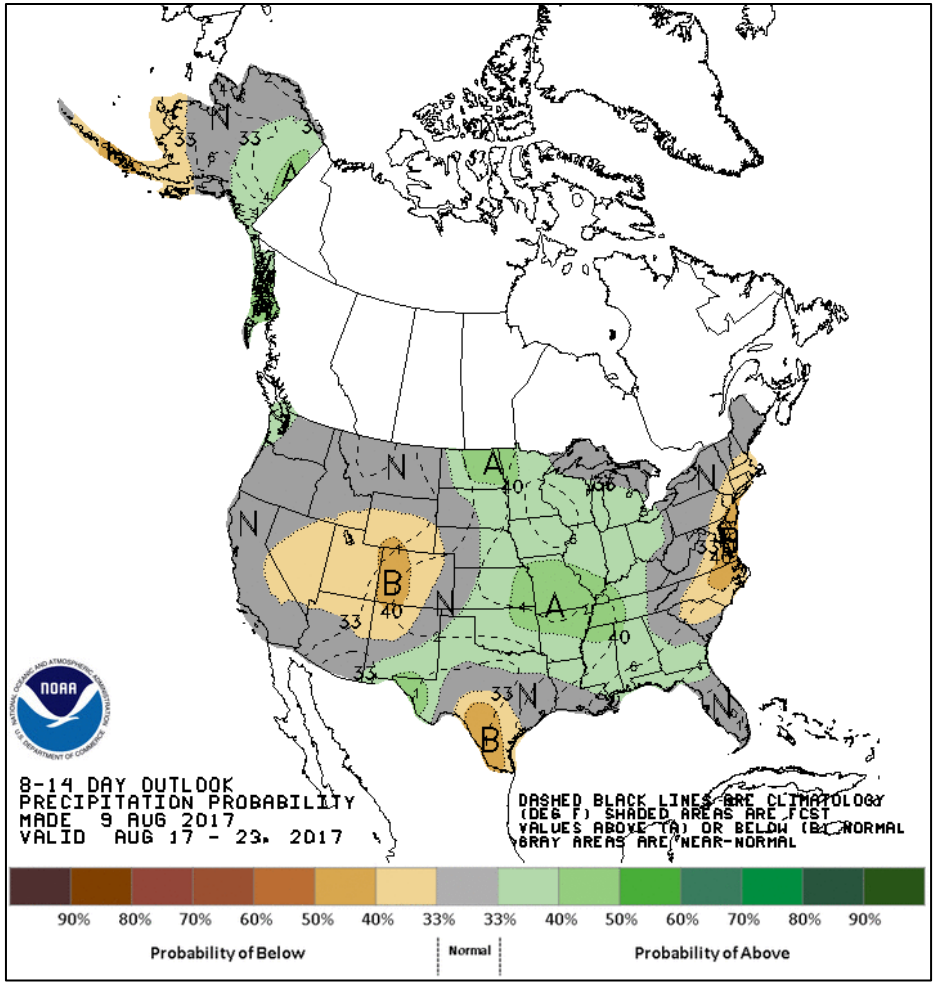


Source: NOAA WPC, http://www.wpc.ncep.noaa.gov/#

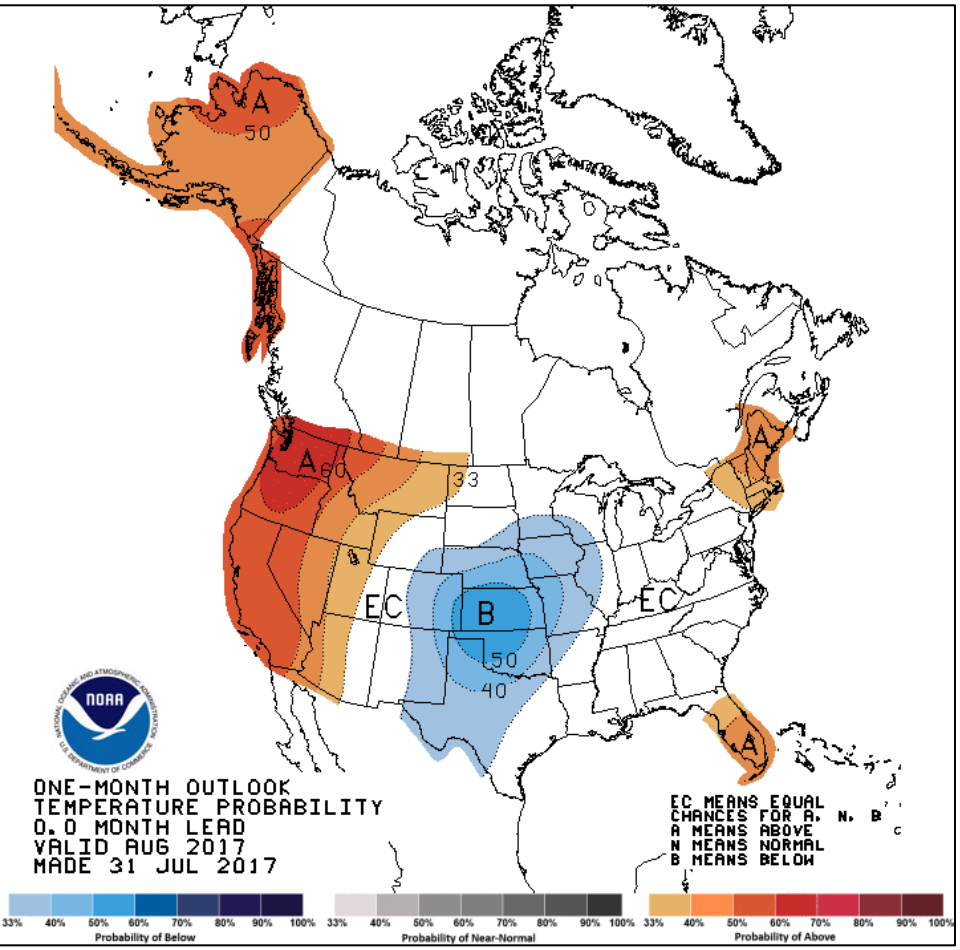
row.org

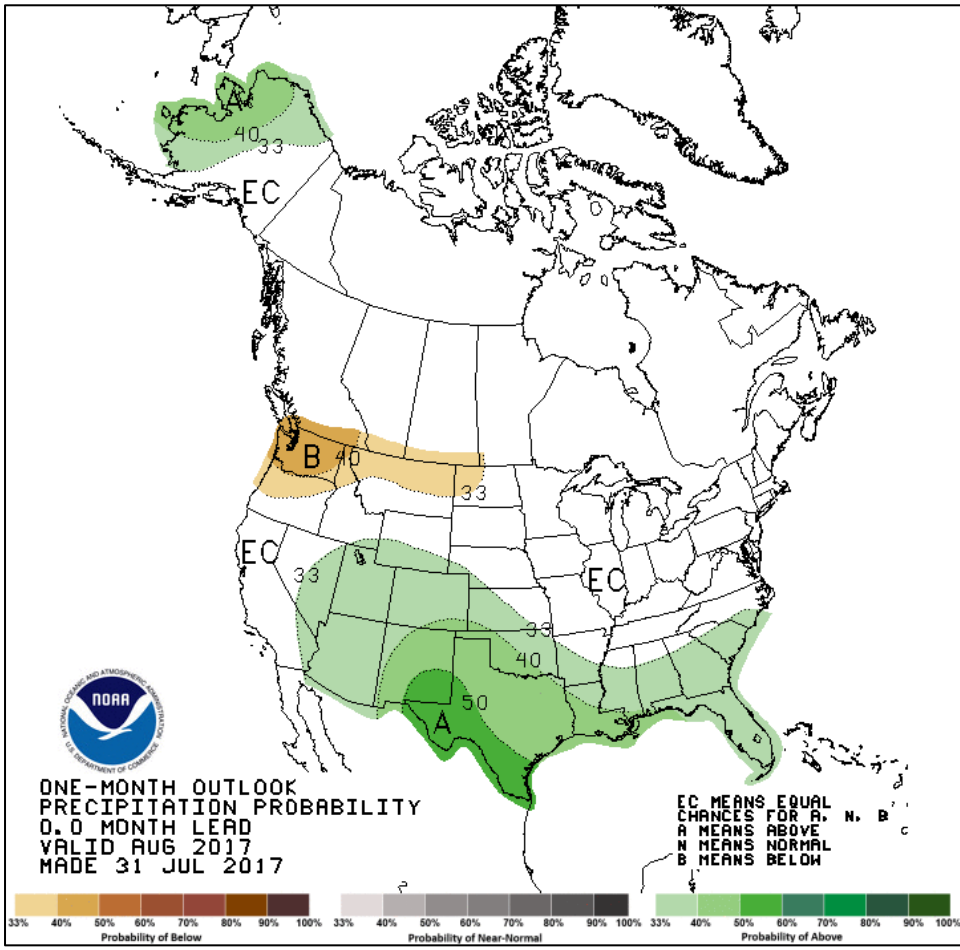
8-14 Day Outlook



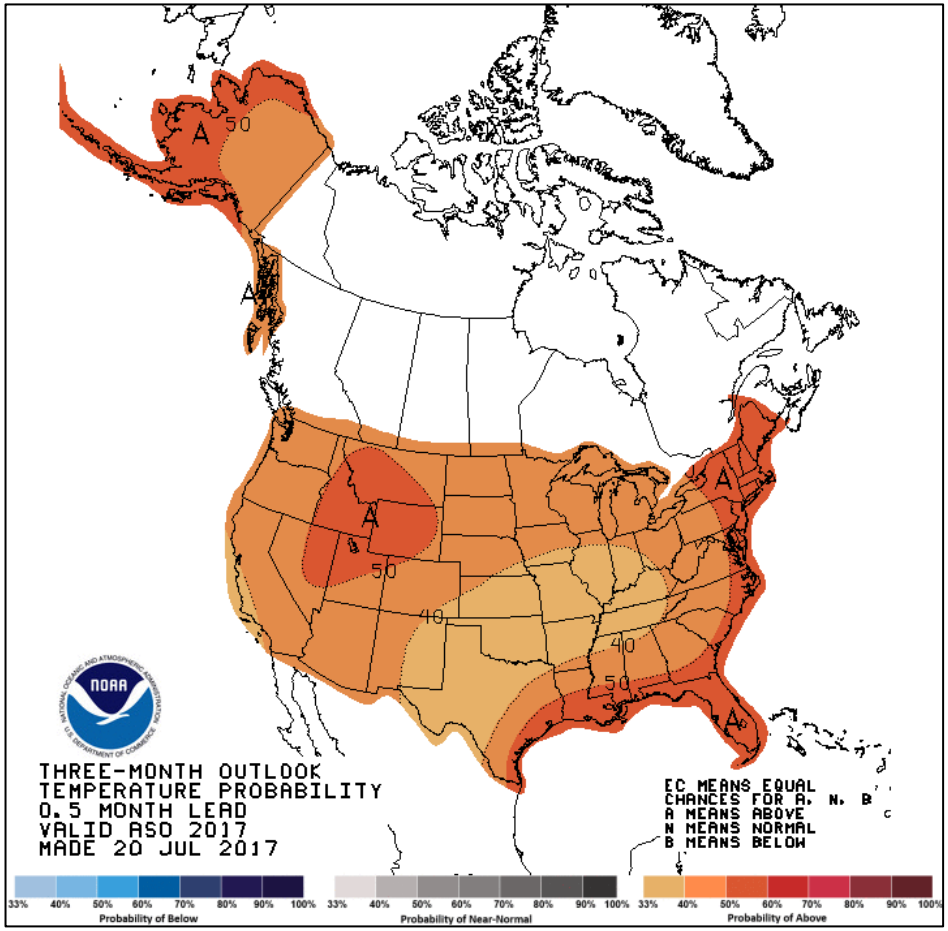


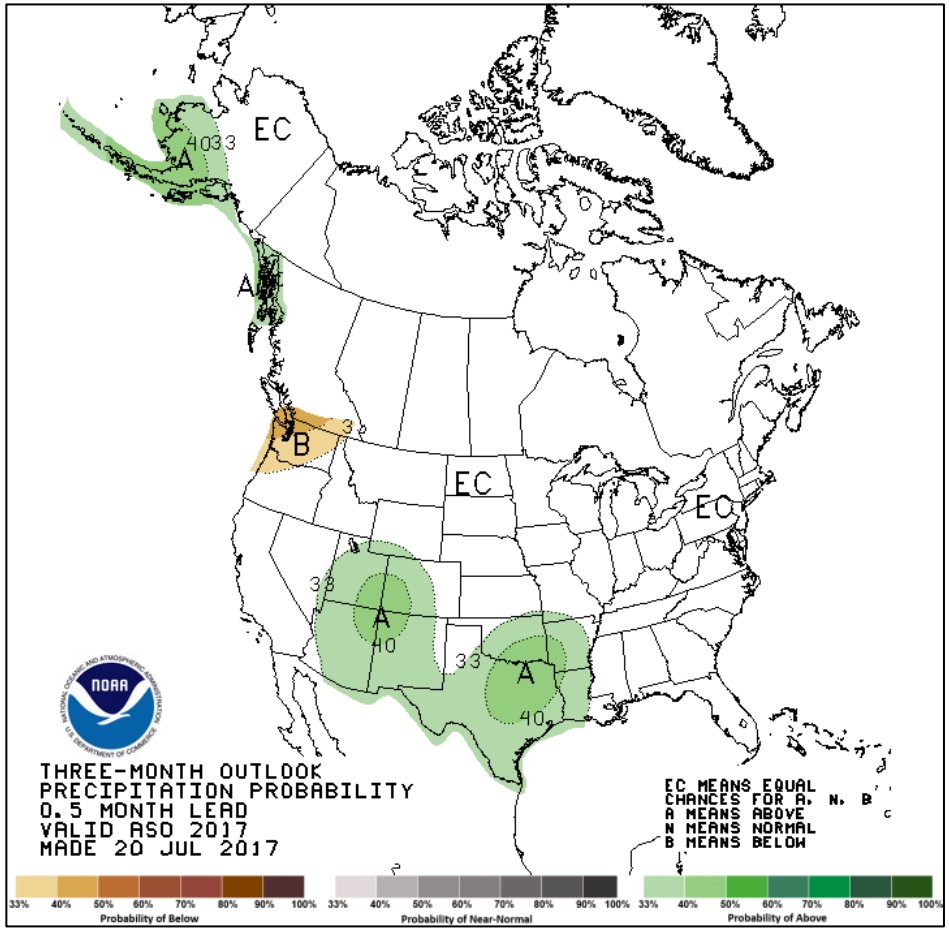
August 2017 Climate Outlook





Aug-Sep-Oct Climate Outlook





For more information:

- US Drought Monitor: http://droughtmonitor.unl.edu/Home.aspx
- NIDIS: drought.gov
- Drought Impact Reporter: droughtreporter.unl.edu
- High Plains Regional Climate Center: hprcc.unl.edu
- Montana Drought: http://dnrc.mt.gov/divisions/water/drought-management
- ND Drought Resources: ndresponse.gov
- SDSU Extension: igrow.org
- SD Climate and Drought Dashboard
  - https://climate.sdstate.edu/tools/dashboard/

Thanks!

Tripp county, SD. Photo: Larson Ranch, A. Stuart

SDSU Extension

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Drought conditions – impacts on wildlife health

Samantha Gibbs, DVM PhD

Wildlife Health office, U.S. Fish and Wildlife Service

Samantha_Gibbs@fws.gov

Drought conditions – impacts on wildlife health

- WATER QUALITY and QUANTITY
  - Water quality declines with lower dissolved oxygen, higher water temperatures, and concentration of contaminants
  - Decreased water quantity results in crowding, inter- and intra-species aggression, and dehydration
  - Harmful algal blooms - toxins produced by the algae sicken and kill wildlife coming into contact with the water source
  - Increased interaction with farms and urban/suburban areas leads to more contact with domestic animals

Harmful algal bloom in Florida

Bears interacting with humans and livestock for water

Drought conditions – impacts on wildlife health

- FOOD QUALITY and QUANTITY
  - Animals may eat poisonous plants and increase intake of sand or soil due to hunger
- MIGRATION
  - Wildlife migration patterns are altered
  - Increased exposure to humans and vehicular traffic
  - Animals must increase travel to water and food sources resulting in higher energy expenditure

Poisonous lichen consumed by hungry elk

Guzzlers (watering sources) provided to wildlife

Drought conditions – impacts on wildlife health

- DISEASE
  - Increased interaction and crowding of animals at water and feed sources leads to increased transmission of parasites and infectious diseases
  - Amplification of mosquito-borne diseases occurs because drought drives the mosquitoes and wildlife hosts into focal contact with one another
    - Areas of dense vegetation such as hammocks and riverine environments concentrate vectors and avian hosts of viruses such as St. Louis encephalitis virus and West Nile virus

Crowding of ducks on limited water sources

Culex mosquito, vector of encephalitis viruses

Drought conditions – impacts on wildlife health

- DISEASE *continued*
  - Avian botulism
    - Fish kills, the maggot cycle, and avian mortalities are associated with a build up of botulinum toxin in warm, stagnant waters

Salton Sea, site of chronic avian botulism outbreaks

Drought conditions – impacts on wildlife health

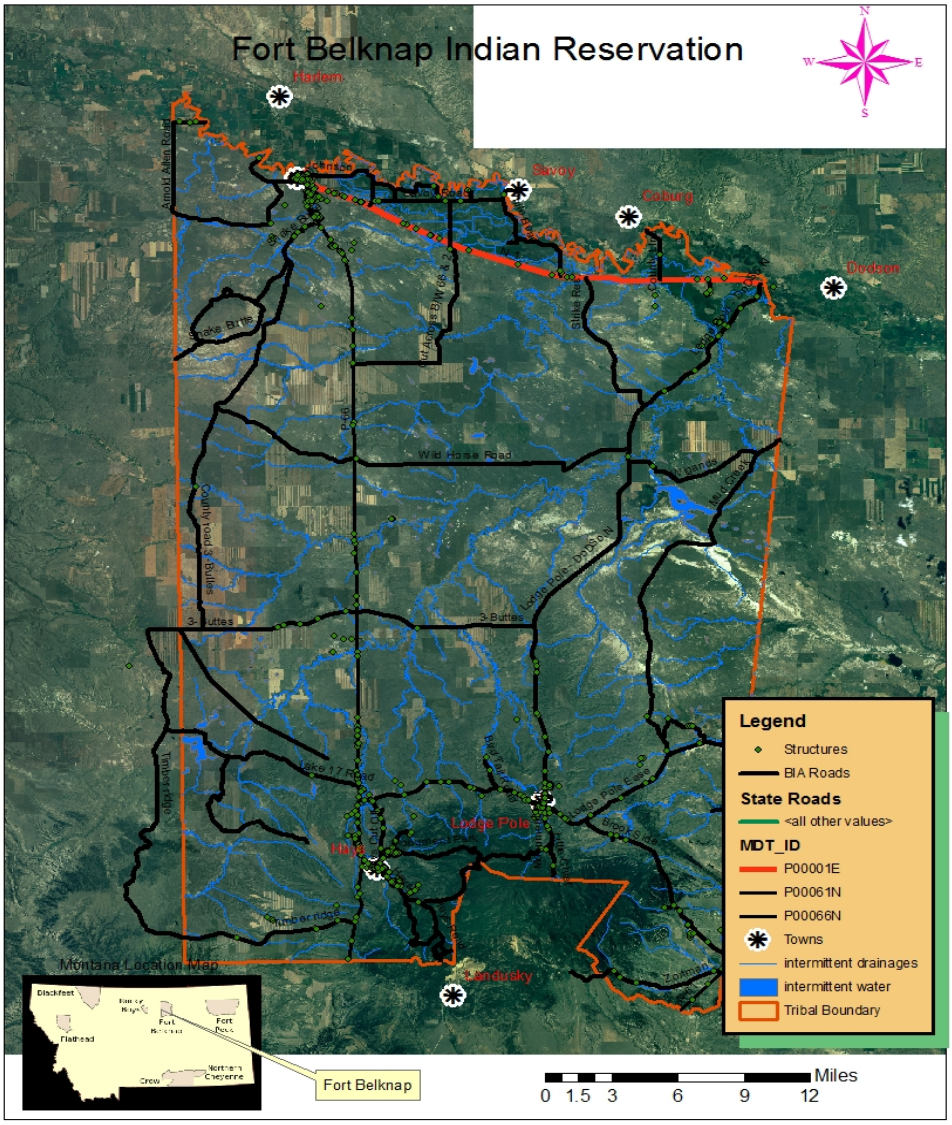
- IMMUNOSUPPRESSION
  - Results from stress and poor quality food resources
  - Increases wildlife's susceptibility to disease

Underweight white-tailed deer

TRIBAL DROUGHT IMPACTS

Webinar: Thursday 12 noon, 2017.

Fort Belknap Indian Reservation-located in North-Central Montana 43 miles from the Canadian border. River-Valley, Prairie-Plains, Mountain-Foothills. Home of the ***Winters Doctrine***, which established Tribal Water Rights throughout Indian Country. *Farmers where pumping water from the Milk River for their water use, and leaving very little for the tribal members that lived across the Milk River, on the Fort Belknap Indian Reservation, this prompted legal action, that shared water use would have to be practiced.*



- **Drought**

  As most of you know, The Missouri River Basin Drought Hubs, Climate and Weather Stations and Drought Information Hubs played a significant part in recording impacts and forecasting the Drought were in....Laura filled us in..Thanks Laura!

- **Agriculture**
  In July 2017, Montana counties east of us were in the Drought stricken area, however two weeks later, our counties of Blaine and Phillips county were added to the list, and most of you know the impacts on our agriculture from that.

- **Fires**
  We are in Fire restrictions as now today, and continue to be in and out of Red Flag Warnings. We did a have a fire last month, called the **"July Fire"** in our Little Rocky Mountains, including several Range Fires. Range Fires are continuing to be our concern.

- **Recreation**
  Hunting, Fishing and Camping will be affected, and we won't know the full impact till Winter comes. Also loss of Recreation monies will be affected.

- **Fish Kills**
  Hot, dry weather, stagnant water, ponds, reservoirs, reduced oxygen, and Cynobacteria are detrimental to Fish Kills.

- **Pathogen Attacks and Vector Borne Diseases**
  I have been informing our tribal communities to watch for any unusual activity our wildlife may be experiencing, this could be a precursor to impacts related to Pathogen Attacks or Vector-borne Diseases.

- **Epizootic Hemorrhagic Disease** (EHD)
  Is a disease that targets White-tailed Deer. In 2012, we had this outbreak along the Milk River Valley, but it mainly targeted the eastern half of the state, beginning here in Fort Belknap and east to Glasgow, Montana. Our Whitetail populations are just now reaching good numbers and recovering, however it is anticipated that this disease (EHD), might play our again. This disease is caused by a virus that is spread by a black fly, called a Midge.

- **Mosquitos**
  Migration Patterns Shifting. Habitat Increasing due to warmer average temperatures. As the former Mosquito Abatement Manager, I can attest to Habitat Shifting and the presence of new mosquito breeding areas in our mountain-foothill areas in our tribal communities of Hays and Lodge Pole. The Drought this year reduced their numbers, however the heat and dry weather is a catalyst for the Vector -borne diseases and the West Nile Virus, which was identified on August 4, 2017, to be in Mosquito Pools that tested positive for the WNV, in both counties that our reservation lies in. (Blaine and Phillips County)

- **Waterfowl**
  Migration Patterns Shifting
  Last year in 2016, we witnessed one of the driest springs in recent years. There was no water at all in our prairie ponds and other depressional wetlands. Some wildlife species never returned from the annual migrations, which include our migratory waterfowl, to breed and nest here. We are in the Central Flyway and most of the waterfowl headed into Canada. We also witnessed that the fall return migration to the south, did not happen in late August , but in December and January, as we seen large flocks of Waterfowl flying overhead from Canada.

  Botulism
  Reduced water resources, increased waterfowl activity, hot and dry weather, and the presence of Blue-Green Algae, can directly affect the birds at any given watering hole and lead to duck die-offs from Botulism.

- **Water Resources**

  This year we had significant levels of water resources, however due to the Drought, our available water resources are just now beginning to dry up, the tribes plans are to explore new options as far as wells are concerned, and funding might play into this plan. Where will our tribes find funding to help with the water shortage, will we get help like some of the farmers and ranchers?

- **Noxious Weeds**
  Habitat is decreasing due to the Drought, and Noxious Weeds already got a firm foothold on our reservation. We do have a Noxious Weed Strategic Plan that I helped develop with the help of the Center for Invasive Species Management in Bozeman, Montana. (Liz-Galli Noble and Kim Goodwin). Weeds are opportunists and this years Drought is just what they love, we need to establish a Noxious Weed Program and Manager, if we are fight back and regain our foothold on the weed epidemic.

- **Avian Birdflu**
  This past winter, on January 9, 2017, the U.S. Department of Agriculture said it had detected a type of Bird Flu in a wild duck in Montana that appeared to match one of the strains found during an outbreak of the disease in 2014 and 2015 that led to the deaths of millions of chickens. No U.S. poultry have been found to be sick or dead from the disease in connection with the latest discovery, the USDA said. The Mallard Duck was harvested by a hunter in Fergus County, Montana is in the Central Flyway for Migratory Waterfowl.

  The full story:
  http://www.reuters.com/article/us-health-birdflu-usa-idUSKBN14T2FV

- **Cynobacteria**
  Are naturally-occurring photosynthetic bacteria found in many habitats, including Recreational Waters, and are a specific type of growth which is sometimes referred to as Blue-green algae or harmful algal blooms, and can be potentially Toxic. Certain environmental conditions, such as elevated levels of nutrients, ***warmer temperatures***, still water, and plentiful sunlight can promote the growth of Cyno. In Montana there is three species of Blue-green algae, and only one of them have produced ***Toxins*** that are detrimental to ***humans*** and ***livestock***.