



# THE RADAR POST

NWS GOODLAND'S NEWSLETTER SINCE 2017



Volume 3, Issue 1

September 2020



## Message from the MIC



It is an honor to serve the people of the Tri-State Region as the Meteorologist-In-Charge (MIC) of the National Weather Service Forecast Office in Goodland, Kansas.

The weather patterns in this region are some of the most active in the entire country. Helping people in an active weather area is one of the reasons why I wanted to come to the Goodland office.

I am excited about the future as we explore new ways to better serve our communities. Our office is working on bringing some of the latest cutting-edge technology and research to enhance our capabilities. This will provide better forecasts, warnings and services to the area. We will also be improving communications to our partners and the people that we serve. Our staff are excited to assist anyone in the Tri-State Region and look forward to serving you.

Even as the COVID-19 pandemic moves through our communities, our dedicated staff continue our mission 24/7. Over the past year serving as the MIC, I have enjoyed meeting our partners and appreciate the people on the High Plains. I am excited to be here and look forward to serving you in the future.

Ed Holicky  
Meteorologist-In-Charge

### INSIDE THIS ISSUE

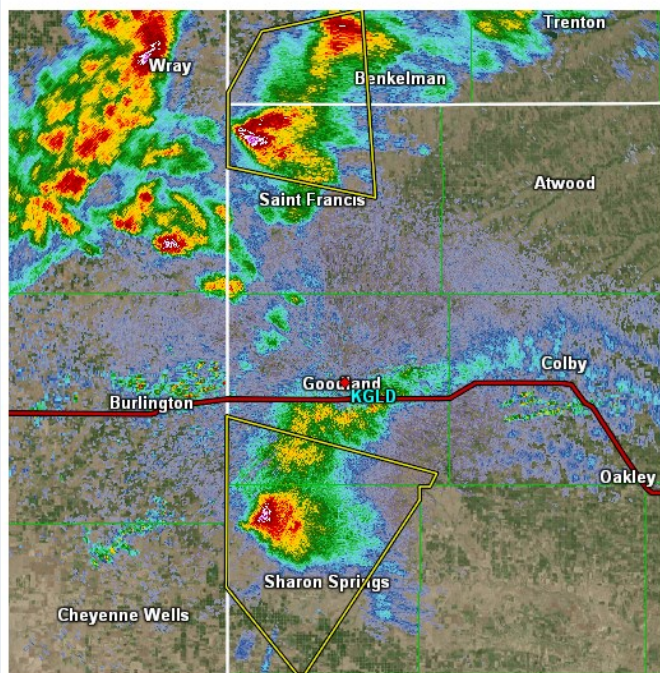
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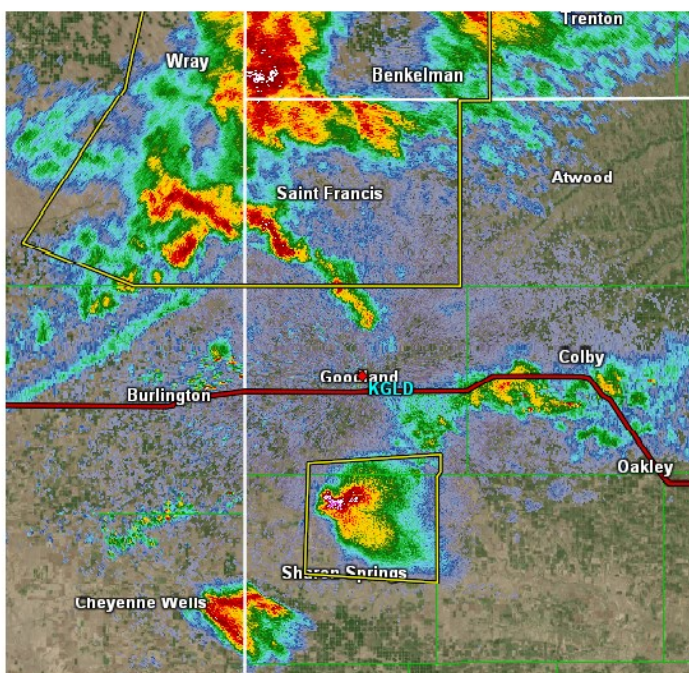
Image taken by Ed Holicky on June 2, 2020 just north of Goodland. Ed was relaying information about the storm back to the local weather office.

### July 13th Hail Storm

On the night of July 13<sup>th</sup> it looked like another missed chance of rain for Goodland. The city was grazed by a storm around 7:30pm MDT that left behind a trace of rain. At 8 p.m., the radar showed the main part of the system in Cheyenne (Kansas) and Dundy counties where hail up to the size of golf balls and wind gusts around 60mph were occurring with some of the storms. To the south, storms in Wallace County were producing hail up to the size of quarters.

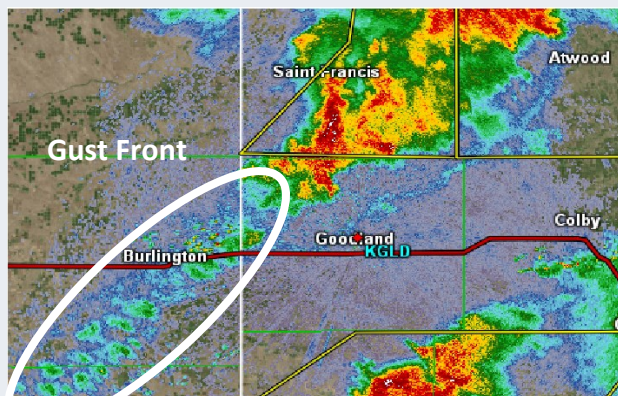


Goodland Radar Image at 7:31PM



Goodland Radar Image at 8:00 PM

By 8:38 PM, a gust front had moved into Burlington, bringing showers and a few small storms. Gust fronts are prone to kicking up new storms as they tend to act like miniature cold fronts. As they travel ahead of the storm, they tend to force air up - which can form new storms or contribute to strengthening existing storms. In regards to this gust front, it continued its path east and arrived in Goodland between 8:45pm and 8:50pm. While it hadn't recently contributed much to the storms, the gust front was not weak by any means. Goodland observed a 10 to 15°F drop in temperature in about 15 minutes, and had a wind shift to the north with gusts up to 45mph.

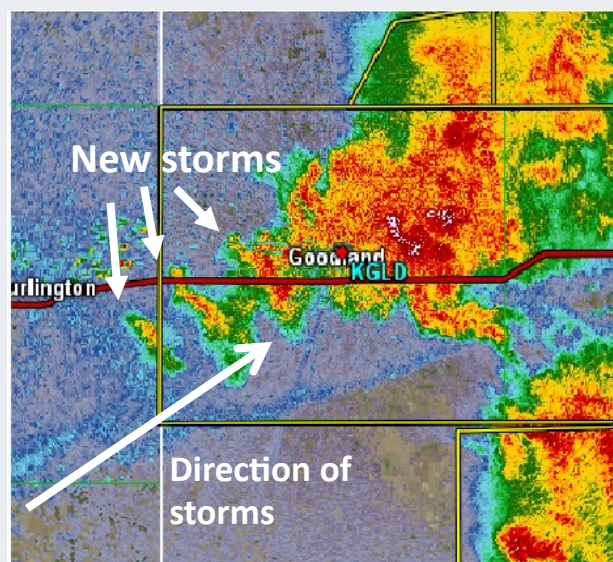


Goodland Radar Image at 8:45 PM



*Hail Storm, cont.*

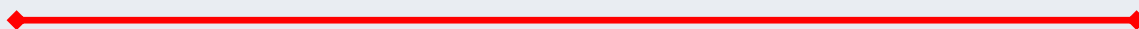
Within a few minutes of the gust front moving through Goodland, the relatively weak storm west of Goodland intensified. Multiple new storms developed to the southwest where the gust front passed through. These storms moved to the north and east, combining with the original storm. What developed was a train of storms moving through the Goodland area. For the next hour, the storms brought -pulses of quarter to half-dollar sized hail along with nearly two inches of rain.



Goodland Radar Image at 9:20 PM

So why call out this day and storm? The short answer is, it was a great example of some different processes and phenomena that occur in this area. Gust fronts are common in our area and can end up being the biggest contributor to forming storms and keeping them going. But when and where they are going to really help form or intensify storms often depends on the conditions right near the gust front. Air that is lifted by a gust front still needs the moisture and instability that most storms use to survive, so a gust front cannot be the sole contributor to forming a storm. This also showcased training storms which is when storms form and go over the same area, often in rapid succession.

As seen in the previous images, the gust front moved southeast but the storm motion was east. This allowed the storms to form at different points, yet move into and over the same area. As was the case on July 13<sup>th</sup>, this often leads to high rain totals and can lead to hail as updrafts continue to move in and support hail growth. The final point of this article is that seemingly weak and poor storms can quickly gain strength with the right conditions. As mentioned prior, that same gust front passed over many other cities, including Burlington, and only produced light rain. Goodland and Brewster saw a stronger storm before the gust front continued on and proceeded to fade away. Weather is always about the combination of conditions, not just the one feature to start them all.

***Did you know...***

The Harvest Moon is the full moon occurring closest to the fall equinox in September.

### ***Become a Storm Spotter***

Weather is a part of our everyday lives and it impacts everyone differently. At the National Weather Service, meteorologists work around the clock to provide the most accurate weather information possible to protect life and property. However, we need your help!

We need volunteers across the Tri-State area to report what type of conditions they are seeing when storms occur. When storm reports are submitted, the information is combined with radar and satellite data, along with observations to gauge how severe a storm is. Your eyewitness reports give forecasters information critical to warning decisions such as:

- Issuing a new warning
- Continuing a warning
- Cancelling an existing warning
- Changing the type of warning



### **How to Estimate Wind Speed:**

Estimating wind speed can be very difficult, especially in open areas. The table below provides some helpful guidelines!

| Wind Speed | Description  |
|------------|--|
| 25-38 MPH  | Whole trees in motion. Difficulty walking into the wind. Light-weight loose objects toppled. |
| 39-46 MPH  | Twigs broken. Cars veer on road.   |
| 47-54 MPH  | Light structural damage. Shingles blown off roof.  |
| 55-63 MPH  | Tree and light structural damage possible.   |
| 64-73 MPH  | Tree and structural damage.  |
| 74-95 MPH  | Considerable/widespread tree and structural damage.  |

*Spotter, cont.*

### What Should You Report?

Storm reports should be detailed and concise including the location and time the weather event occurred. The table below briefly describes what should be reported.

| What to report            | Description   |
|---------------------------|---|
| Blowing Dust              | Reductions to visibility. Is the dust localized to a small area such as a field or does it cover a large area?  |
| Dense Fog                 | Reductions to visibility.   |
| Flooding                  | Flooding that impacts roads, rivers, creeks, homes or businesses.   |
| Freezing rain/icing       | Provide the estimated or measured amount and period of time the ice accumulated.  |
| Funnel Cloud / Wall Cloud | Organized, persistent and sustained rotation.   |
| Hail                      | Provide the estimated or measured size of the hailstones, and if there is any accumulation provide the depth. Use the largest stone. Avoid comparing hail with objects that have varying sizes (marbles, bars of soap, etc.). |
| Heavy Rain                | Provide the estimated or measured amount and period of time the rain fell.  |
| Snow                      | Provide the estimated or measured amount and period of time the snow fell. Avoid measuring snow drifts.   |
| Storm Damage              | Be as descriptive as possible!  |
| Tornado                   | Violently rotating column in contact with the ground.   |
| Wind Gusts                | Any strong wind gusts.  |

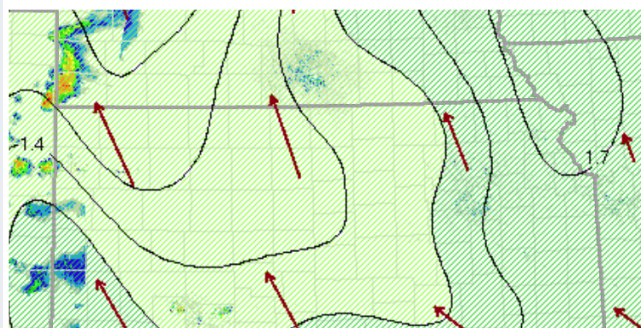
### Want to learn more?

The NWS Goodland office offers storm spotter training across the Tri-State region during the spring. The training focuses on severe weather and spotter safety. If you missed this year's training, visit NWS Goodland's Youtube Channel for spotter training videos (<https://www.youtube.com/user/NWSGoodland>).

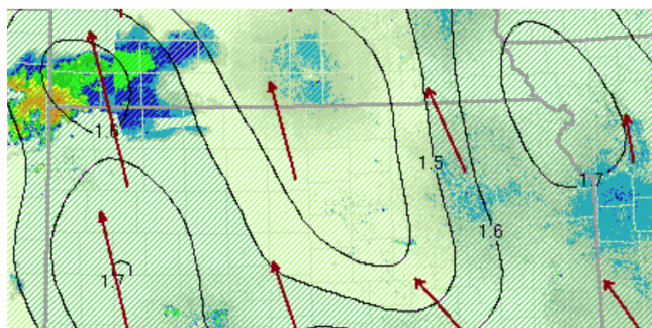
### ***July 23rd Flooding***

The events of July 23<sup>rd</sup>, 2020 will go down as one of the more recent major flooding events in the Goodland National Weather Service area of responsibility. Models and environmental factors showed agreement in the potential for thunderstorm development in Eastern Colorado during the afternoon. Environmental indices we look at to determine potential severe weather hazards indicated that any storms that developed would have the capability of producing severe wind gusts (58+ mph) and locally heavy rainfall.

Higher than normal moisture was present in the area as seen on the images below. Precipitable water (PWAT) is the total amount of water in a given column of air extending from the bottom of the atmosphere to the top. The 850mb moisture transport is the transportation of moisture in the lower levels of the atmosphere. The average PWAT value for this time of the year in the area is around 1.10 inches. This means that if the moisture in a given column of air were to be wrung out completely (like from a wet rag), that area could expect to see around 1.10 inches of rain. On July 23<sup>rd</sup>, precipitable water values were as high as 1.70 inches over a portion of the area.



**PWAT and 850mb Moisture Transport at 6 pm MDT**

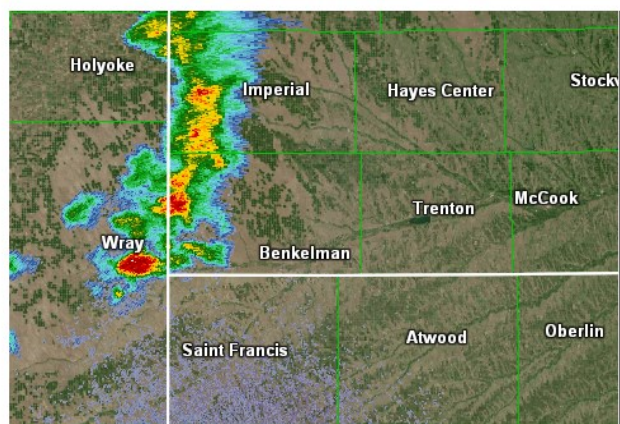


**PWAT and 850mb Moisture Transport at 10 pm MDT**

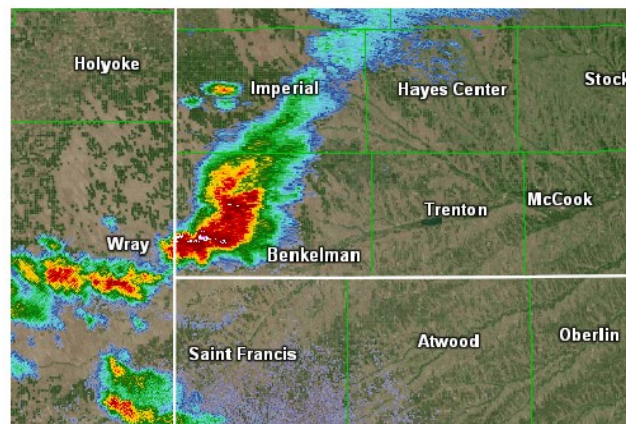
As seen on the two images, the darker green shaded areas indicate higher precipitable water values while the red arrows indicate the direction moisture is moving into. On the evening of July 23<sup>rd</sup>, warm, moist gulf air was being moved into the region from the southeast which added to the amount of available moisture in the region and allowed for heavier rainfall.

Storm development began with initial storms producing wind gusts around 35 to 40 mph and around one quarter of an inch of rain. As the afternoon progressed, storms congealed into a line by around 5:30 pm. Around 5:45pm, a stronger storm developed south of Laird which was south of the line of storms. As the storm moved into Dundy County, a Severe Thunderstorm Warning was issued for the southwestern portion of the county. As storms continued to progress eastward, the southern storm merged with the previously mentioned line of storms.



*Flooding, cont.*

Radar Image at 5:45 PM



Radar Image at 7:00 PM

The storm in Dundy County developed an outflow boundary, which is a small-scale boundary separating thunderstorm cooled air from the surrounding air. Outflow boundaries can aid in strengthening existing thunderstorms and can help fire off new storms. As the boundary moved away from the Dundy County storm, it kicked off additional storms near Wray, Colorado and to the south. With storms traveling to the northeast, this allowed rainfall to continue over the same area for several hours.

Storms continued across Yuma and Dundy counties through the evening, with the heavy rain spreading into northern Cheyenne County in Kansas. Rain continued through the late evening and into the overnight hours, eventually tapering off. Storm total rainfall reports ranged from four to nine and one-half inches across portions of Yuma, Dundy and Cheyenne counties. Widespread flooding was reported across the counties. US Highway 34 was closed and two AMTRAC trains were delayed due to flooding. The Republican River reached flood state in Benkelman, cresting at 9.3 feet.

Flooding events like these are a good reminder to not try to enter floodwater of any kind, especially at night. Attempting to drive into a flooded road can put yourself, your passengers and emergency responders into harm's way. Remember, Turn Around Don't Drown.



### ***Goodbye***



For the last six years, Brian Warren has been the Observation Program Leader for NWS Goodland. Because of his hard work and dedication he has received a promotion and is now the Western Region Headquarters Data and Observation Program Manager.

He will be managing the upper-air (weather balloon) and Cooperative Observer Program (COOP) of the 24 Weather Forecast Offices in the Western Region, covering the states of Arizona, Utah, Idaho, Montana, Washington, Oregon, Nevada and California.

Congratulations, Brian!

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### ***Hello***

This year also brought us six new employees. Welcome to WFO Goodland!

**Matthew Chyba**, Meteorologist

**Hometown:** Chicago, IL

**Education:** Northern Illinois University and Mississippi State University

**How did you get interested in meteorology?** I cannot say there was one particular moment, but I grew up in an area that had some interesting weather and excellent TV meteorologists to help explain the weather phenomena that I found interesting.

**Did you ever have an interesting weather experience?** The most interesting weather experience I've had to date was when I went on a storm chasing trip in May of 2014 as part of a graduate level course. My group was able to track and view an EF-3 tornado in eastern Nebraska. It was a good learning experience as I was able to apply my studies in the field during this trip.

**What are some things you like to do?** In my spare time, I enjoy watching sports, gaming, reading and spending time with friends and family.



*Hello, cont.*

**Kalitta Kauffman**, Meteorologist

**Hometown:** Cullman, AL

**University:** The University of Alabama in Huntsville

**How did you get interested in meteorology?:** I became interested in meteorology during the 2005 Atlantic hurricane season, particularly Hurricane Dennis. I would make my own weather maps while tracking the hurricane, then give updates to my 3rd grade class. Living in North Alabama, I was exposed to all types of weather growing up including the April 27th, 2011 tornado outbreak. I enjoy sharing my passion for weather and educating others about this ever-changing part of our planet!

**What are some things you like to do?:** I enjoy traveling and experiencing history, reading, watching sports (especially hockey and football) and spending time with my two pets.

**Did you ever have a crazy weather experience?:** I launched weather balloons for my university and we traveled to Hopkinsville, KY for the 2017 Solar Eclipse for research. Right after totality we launched a balloon and the balloon kept floating back to the ground due to a downdraft of air that was only seen using one of our instruments. I think we released that same balloon five times before it actually went up.



**Kyle Knight**, Meteorologist

**Hometown:** I've lived in many places but I say I'm from McKinney, TX as that is where I have lived the longest.

**School?** I graduated from Iowa State University with a degree in Meteorology and extra classes in environmental sciences and basic computer programming.

**Do you have any hobbies?** Most of my days are spent playing video games and going to the gym. However, I also enjoy traveling when I can. Especially visiting National Park sites and hiking.

**Do you have a crazy weather experience?:** I don't have any crazy weather experiences, but I do have a typical chasing story. I was chasing in Texas with a friend and we met up with a bunch of other chasers. While talking, we heard a thud in the grass nearby us and it was a 2" hail stone. We quickly got in our cars and managed to get to a gas station as the large hail passed through. Mighty kind of the storm to give us a warning of what was to come.

*Hello, cont*

**Tyler Trigg, Meteorologist**

**Hometown:** Concordia, KS

**College:** The University of Kansas in Lawrence, Kansas

**How did you get interested in Meteorology?** : I don't recall how I got interested in meteorology; it's something I have always had a passion for. I remember as a kid watching countless hours of The Weather Channel and getting excited and running outside whenever my parents' weather radio went off in the spring time.

**What are some things you like to do?** : I enjoy watching all types of sports, mainly NASCAR and football. I am a huge Denver Broncos fan and am excited to live closer to Denver so I can actually go to games. I am also a huge movie fanatic; I have over 1000 DVD's/Blu Rays in my collection. Mostly in my free time I like to spend it with my wife and our two kittens (Belle and Sophie).

**Do you have a Crazy Weather Experience?:** The first tornado that I ever saw was a 1.5 mile wide EF-3 near Beaver Crossing , Nebraska on Mother's Day weekend in 2014. Besides that I have lived in two tornado emergencies. The first was the April 14<sup>th</sup>, 2012 high risk day for the EF-3 that hit south Wichita and the second was the EF-4 Douglas County, Kansas tornado in 2019.



**Drew Mantei, Electronics Technician**

**Hometown:** Newton, KS

Oklahoma Air National Guard from 2009 to 2016 where he worked on aircraft electronics for the KC-135 and B-52. Most recently he was an electronics technician for ICBMs.

He enjoys spending time with his family and keeping up with current events.

He is very excited to be in the area serving the community.



Hello, cont

**Ed Holicky**, Meteorologist-In-Charge

**Hometown:** Round Rock, TX

**Degrees from:** University of Nebraska, University of Illinois, Park University

**How did you get interested in meteorology?** I was fascinated with meteorology at a young age while living in Texas. The state was impacted with hurricanes and large tornadoes. We did not live too far from Jarrell, TX which was hit a few times by large tornadoes.

**What are some things you like to do?** Some things that I enjoy in my off time are going out and watching storms and posting images on my new Twitter account, spending time with my wife, three children, their spouses and traveling to the Caribbean and the Rocky Mountains.

**Do you have a crazy weather experience?**

I was in the Caribbean when a tropical storm passed through. It was an ominous sight and luckily the resort did not suffer significant damage.



Inside the NOAA Hurricane Hunter, "Kermit"

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### ***Partner Familiarity Webinars***

During this pandemic, meteorologists from NWS Goodland are no longer able to travel to meetings, exercises, hold spotter talks, or conduct familiarity visits, similar to what we did last fall. This hurts our ability of building and maintaining relationships with our closest partners.

Therefore, as a way to remain close to you, our partners, we will be hosting a webinar on the 3rd Wednesday of each month to discuss NWS happenings, updates, and get your feedback on anything you may have.

Please contact Ryan Husted, 785-899-2360, for more information.



### ***Winter Spotter Training Classes are Getting a Makeover!***

NWS Goodland is pleased to announce that we are creating an online curriculum for our winter spotter training classes. You will be able to take these web-based courses from the comfort of your own home.

We don't yet have a roll-out date for these classes, so stay tuned. We will have more information in upcoming issues of the newsletter.



### ***Winter Weather Travel and Preparedness***

Living on the High Plains, the weather seems to be constantly changing. As we saw at the start of September, temperatures were in the 90s one day with measurable snow falling in several areas just two days later. As we move into the fall, now is a good time to start thinking about winter safety. Here are a few things to keep in mind when preparing for winter travel.

Freezing rain, freezing fog and ice can all cause slick spots on surfaces that may go unnoticed until it is too late. Often, it is difficult to distinguish between a wet road and black ice. This can result in accidents. Safety precautions such as wearing your seatbelt may not reduce your chances of getting into an accident, but it can help you in the event of an accident. Putting away the cell phone and slowing down will help to focus your attention on weather and road conditions. For current road conditions and closures in Colorado, Kansas and Nebraska, dial 511.

Preparing for an emergency ahead of time can save headaches in an actual emergency. Preparing a winter weather kit for your car can not only help you should you need to utilize it, but it can also bring a bit of comfort during an actual emergency. Packing items such as jumper cables, a shovel, and sand or cat litter will provide for some of the needs that may arise for a vehicle. In addition to packing a kit for your vehicle, don't forget to pack a kit for your own comfort such as a sleeping bag or blanket, food, water and a weather radio. Additional items to include in a kit can be found at: <https://www.ready.gov/car>

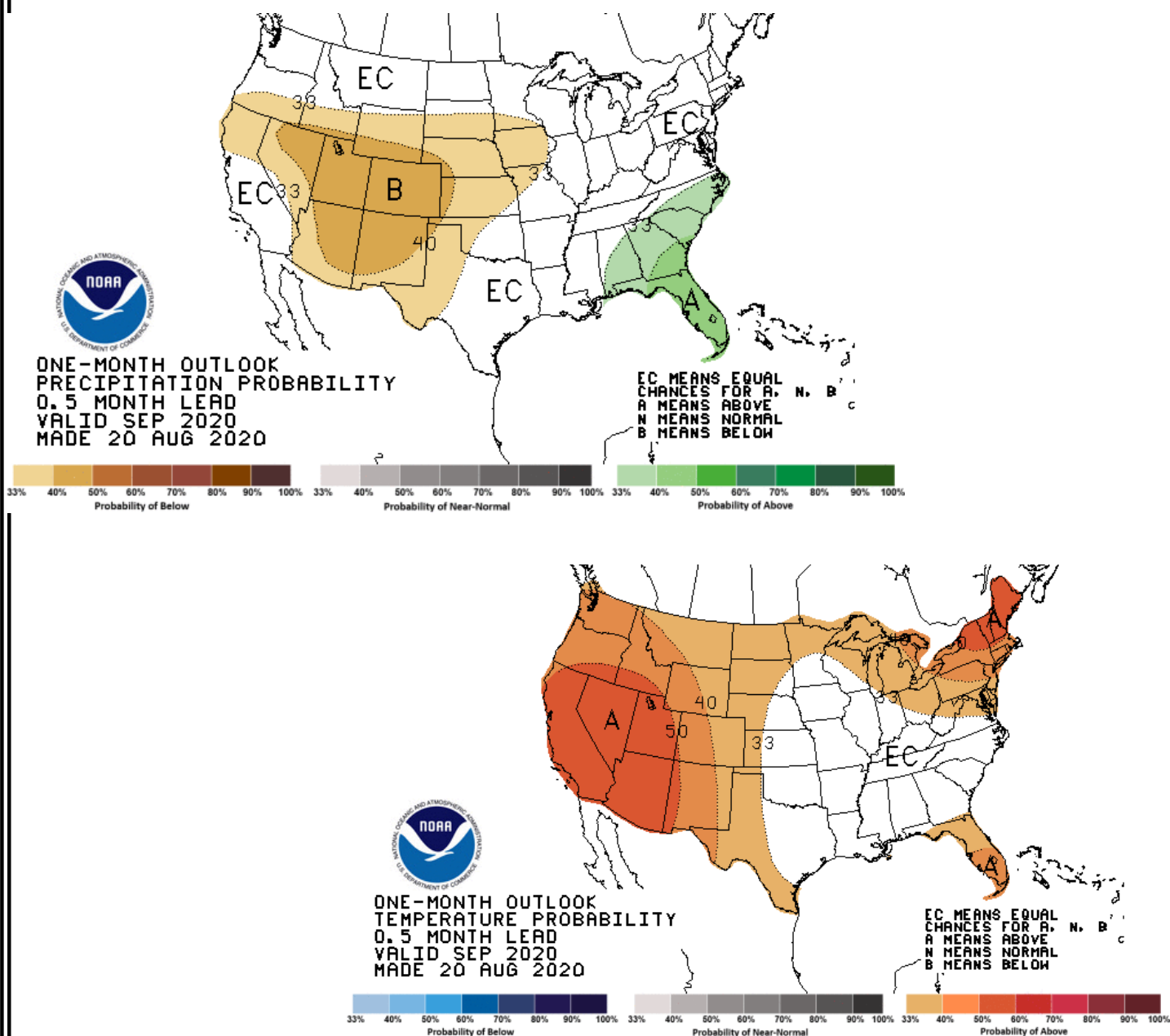
### **Safety Tips if You Become Stranded**

Becoming stranded in a vehicle during a storm is not an ideal situation, however it does happen on the High Plains. Here are a few tips for how to stay safe:

- Do not leave the vehicle. Blowing snow and wind may be enough to disorient a person.
- Run your car about ten minutes each hour for warmth. While the vehicle is running, open the window a little for some fresh air and to reduce the risk of carbon monoxide poisoning.
- Clear snow away from the exhaust pipe to further reduce the risk of carbon monoxide poisoning.
- Put a brightly colored object such as a piece of cloth or a piece of a pool noodle onto your antenna.

The Goodland National Weather Service office is open 24 hours a day. For current weather conditions, warning information or to call in a storm report, you can call our office or visit our webpage at <https://www.weather.gov/gld>.

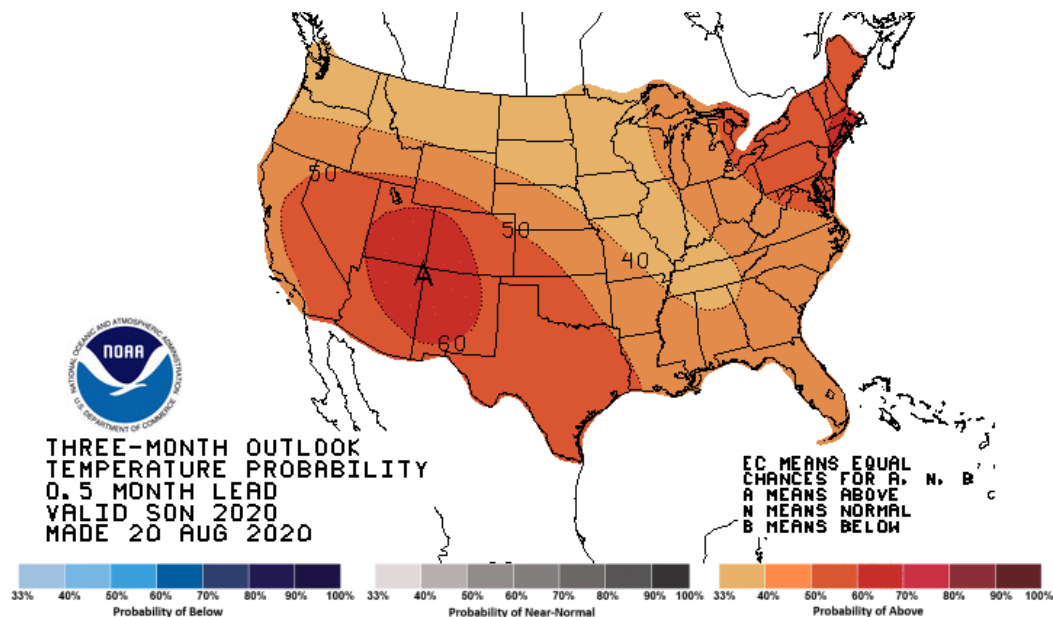
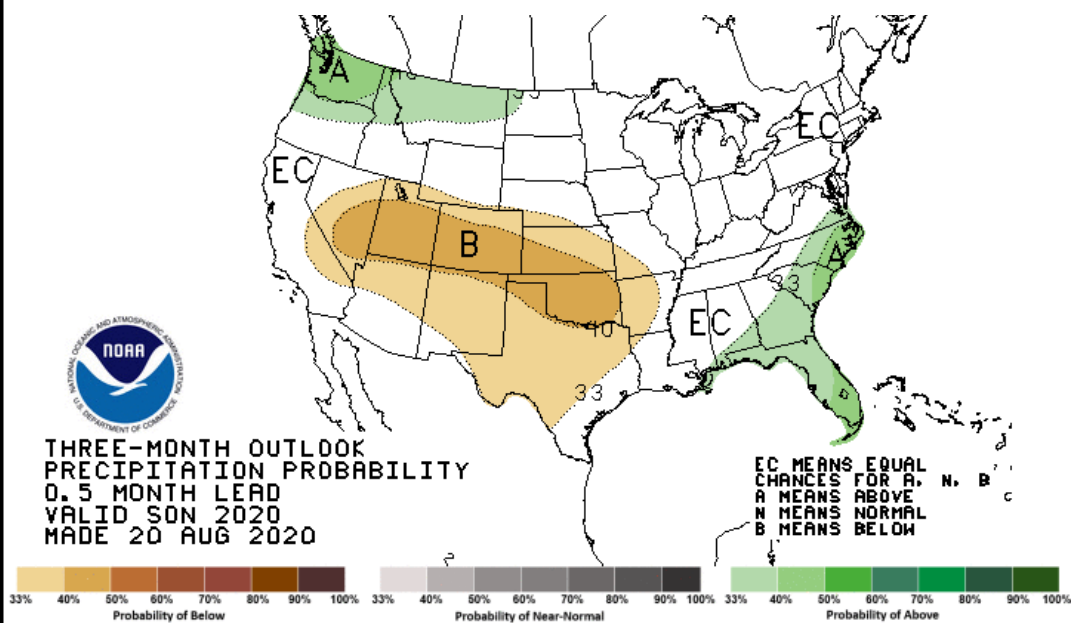
# *Climate Corner*



## One Month Summary

Our area may see below normal amounts of precipitation. As for temperatures, our area has good chances of seeing above normal temperatures.

# *Climate Corner*



## Three Month Summary

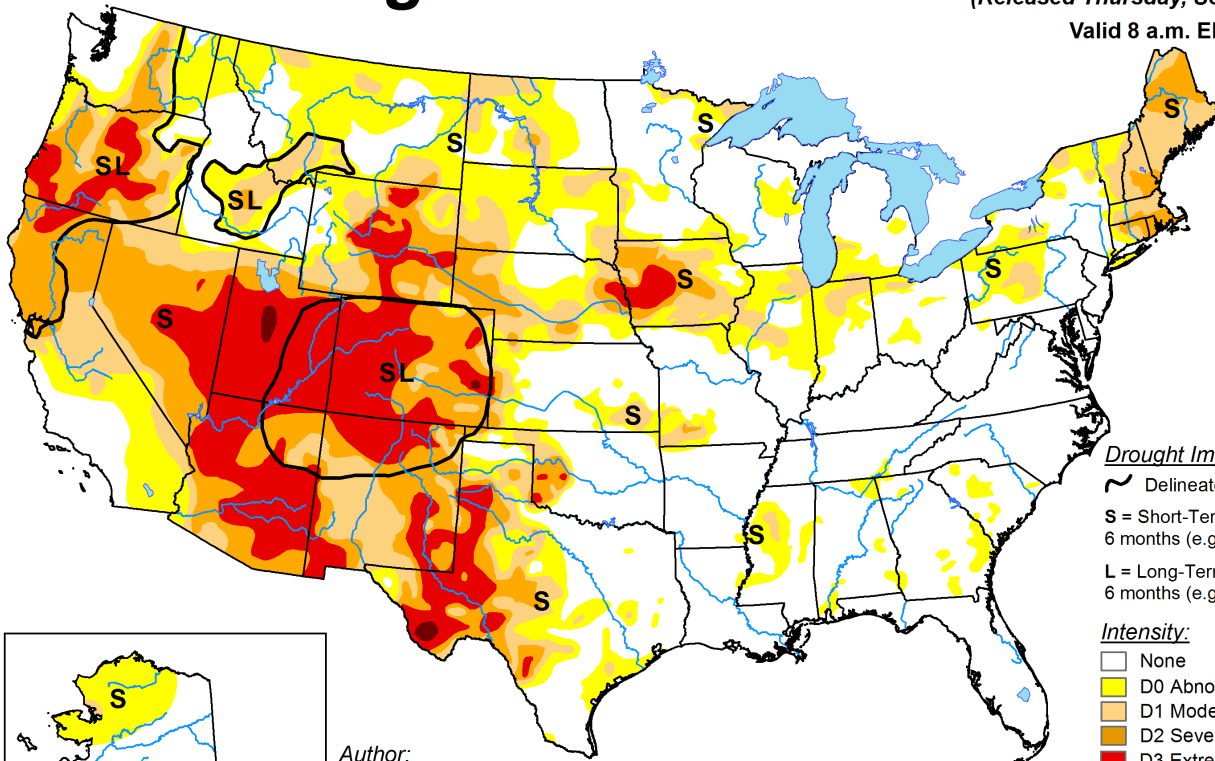
Our area may see below normal amounts of precipitation and above normal temperatures.



# U.S. Drought Monitor

September 8, 2020  
(Released Thursday, Sep. 10, 2020)

Valid 8 a.m. EDT



## 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)

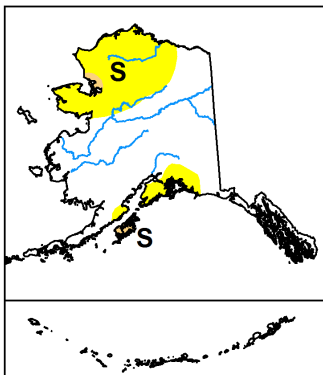
## Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

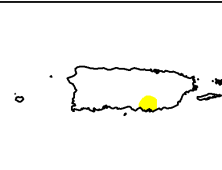
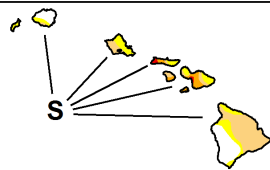
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



Author:  
Richard Tinker  
CPC/NOAA/NWS/NCEP



| City**     | Precip to Date (in.) | Normal to Date (in.) | Departure From Normal (in.) |
|------------|----------------------|----------------------|-----------------------------|
| Goodland   | 14.51                | 15.95                | -1.44                       |
| Burlington | 12.84                | 14.20                | -1.36                       |
| McCook     | 14.08                | 17.77                | -3.69                       |
| Hill City  | 13.56                | 17.97                | -4.41                       |

\*\*Data as of September 1, 2020

### Useful Links

- Storm Prediction Center
  - [www.spc.noaa.gov](http://www.spc.noaa.gov)
- Weather Prediction Center
  - [www.wpc.ncep.noaa.gov](http://www.wpc.ncep.noaa.gov)
- Climate Prediction Center
  - [www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)
- Climate Data
  - [www.ncei.noaa.gov](http://www.ncei.noaa.gov)
- CoCoRaHS
  - [www.cocorahs.com](http://www.cocorahs.com)
- Weather Models
  - [www.ncep.noaa.gov](http://www.ncep.noaa.gov)
- Space Weather
  - [www.swpc.noaa.gov](http://www.swpc.noaa.gov)



# SKYWARN

### Contact Us

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785-899-7119

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#### **Website:**

<http://www.weather.gov/gld>

#### **Facebook:**

<http://www.facebook.com/nwsgoodland>

#### **Twitter:**

<https://twitter.com/NWSGoodland>