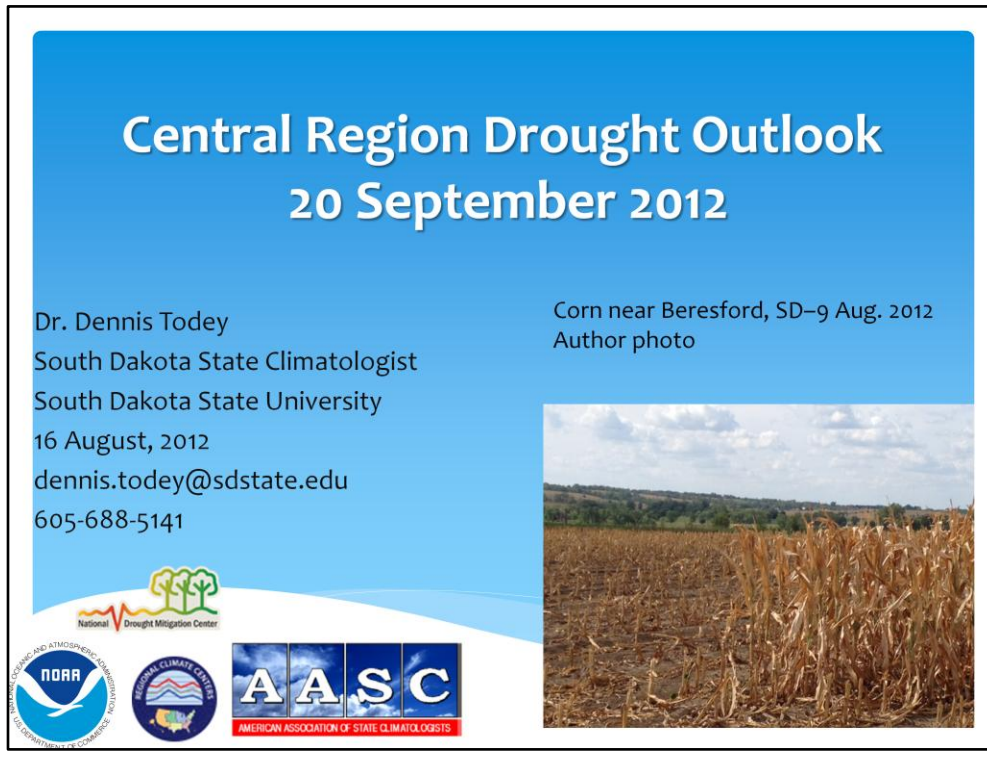
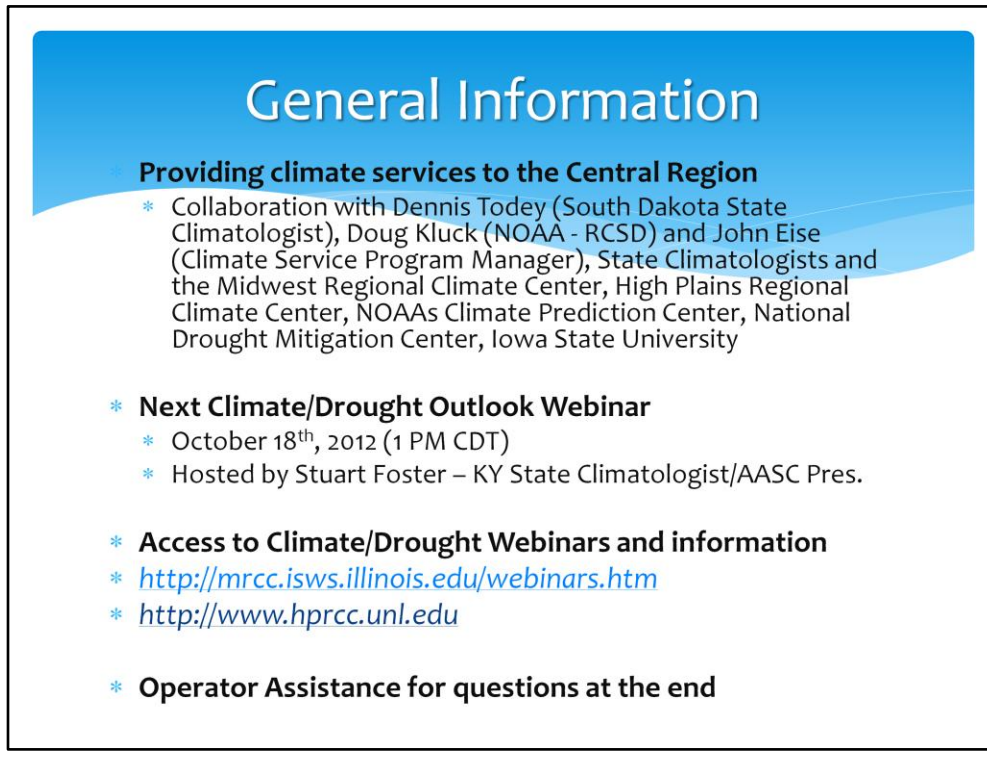


Welcome to the next in the series of central US drought status and outlook webinars through the cooperation of several regional partners including NOAA/USDA/RCCs/SCs and several other partnering groups. These webinars are intended to provide a status update and present what we see as the most like directions weather/climate issues are going from here.

We are taking the opportunity to address some of the longer term weather and climate concerns in the central US to help you all plan a little better in the upcoming months. We hope to deliver information pertinent to your decision making needs. So thanks to those other agencies and organizations for your input to this presentation.

This Webinar is meant to be an overview of the current climate situation and what we may expect in the coming months. It is also meant primarily for stakeholders and partners in other agencies, tribes, state and local governments, universities and various interests from agriculture, water resources, natural resources and ecosystems.



1) Our continuing series of central region climate/drought Outlook of this series responding to ongoing drought conditions in the central port of the country including the Corn Belt and Great Plains. We will continue as conditions warrant to address issues with the drought and fires.

2) The next webinar will occur on October 18th at 1 PM CDT. The next webinar presenter is Stuart Foster the Kentucky State Climatologist and president of the American Association of State Climatologists as we are sharing responsibilities among several of the partners across the region.

3) A recording of this webinar will be available within 1-2 days at the links listed below at the Midwest Regional Climate Center and the High Plains Regional Climate Center

4) At the end of this presentation we have an operator that will organize the Q & A's.

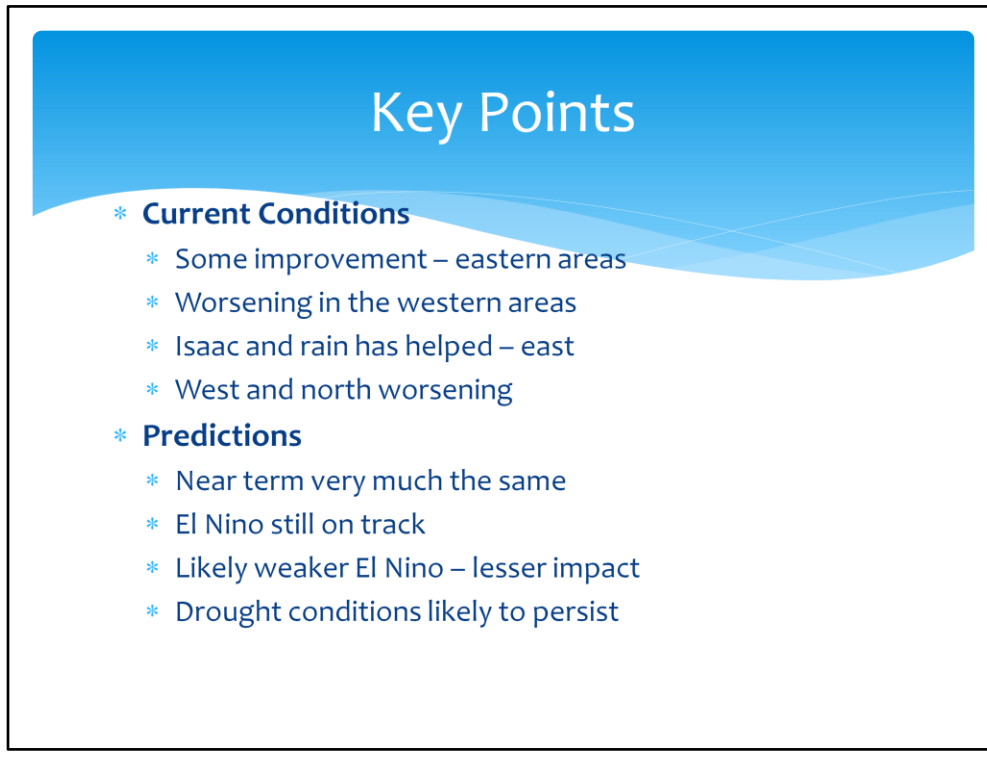
5) We will appreciate your feedback on these and other climate services at that time or at any time. We will provide contact information at the end.

Agenda

* Current conditions & historical context
* Current impacts
* Predictions
* Questions/Comments

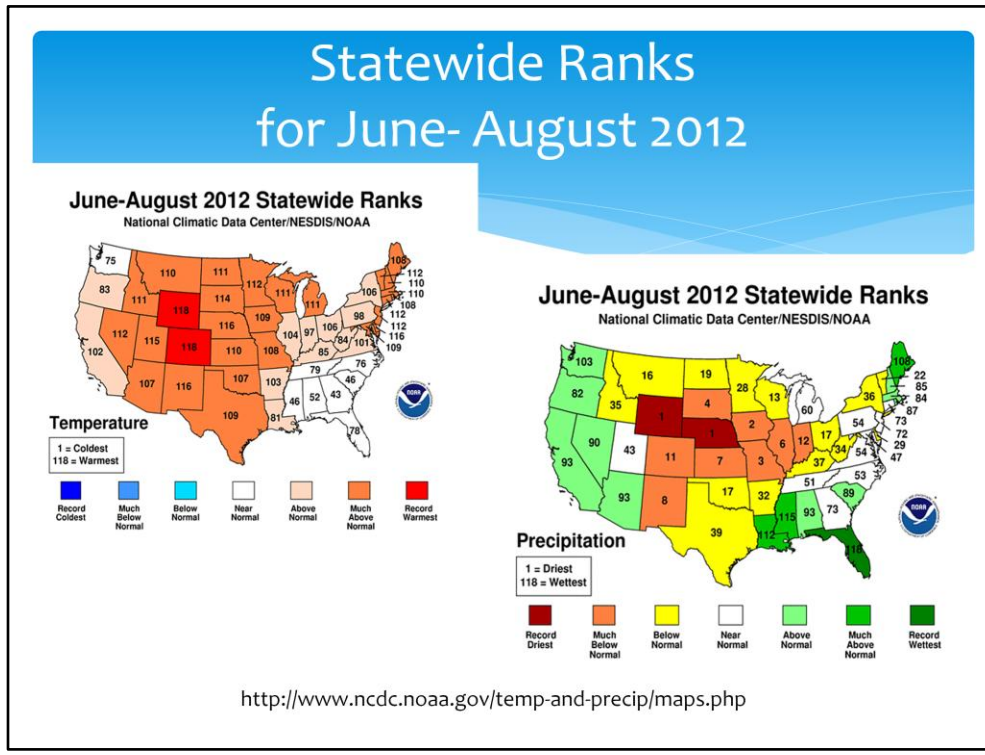
Dewitt County, IL

The structure of the webinars is to review current climate conditions and put them in some historical context. We will look back at what has led up to the situation we are in and then look ahead using the Climate Prediction Center Outlooks and Drought Monitor Outlooks. Pictured here is am ear of corn from a field in Dewitt County IL passed on by Jim Angel the Illinois State Climatologist.

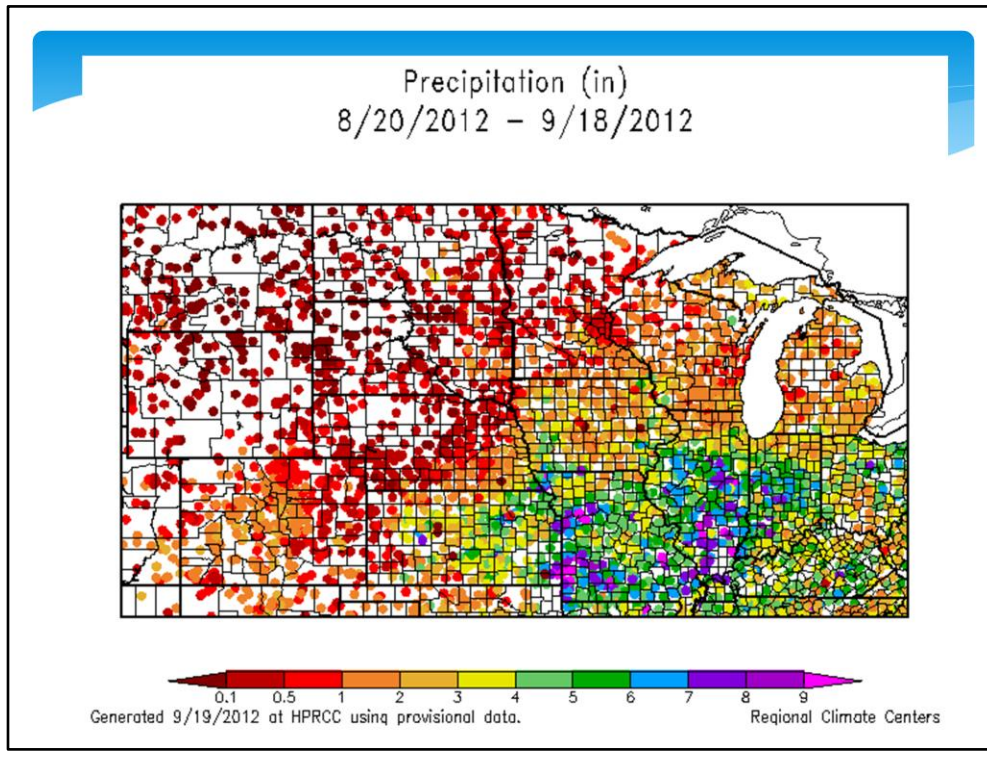


Somewhat we are seeing a tale of two areas. Isaac and some other rain has helped areas from Missouri into Illinois and Indiana. The plains area has maintained conditions or worsened with much of the area still in D4 exceptional drought. Northern areas (which had not been so serious during the summer have joined the drought party with late season impacts showing up.

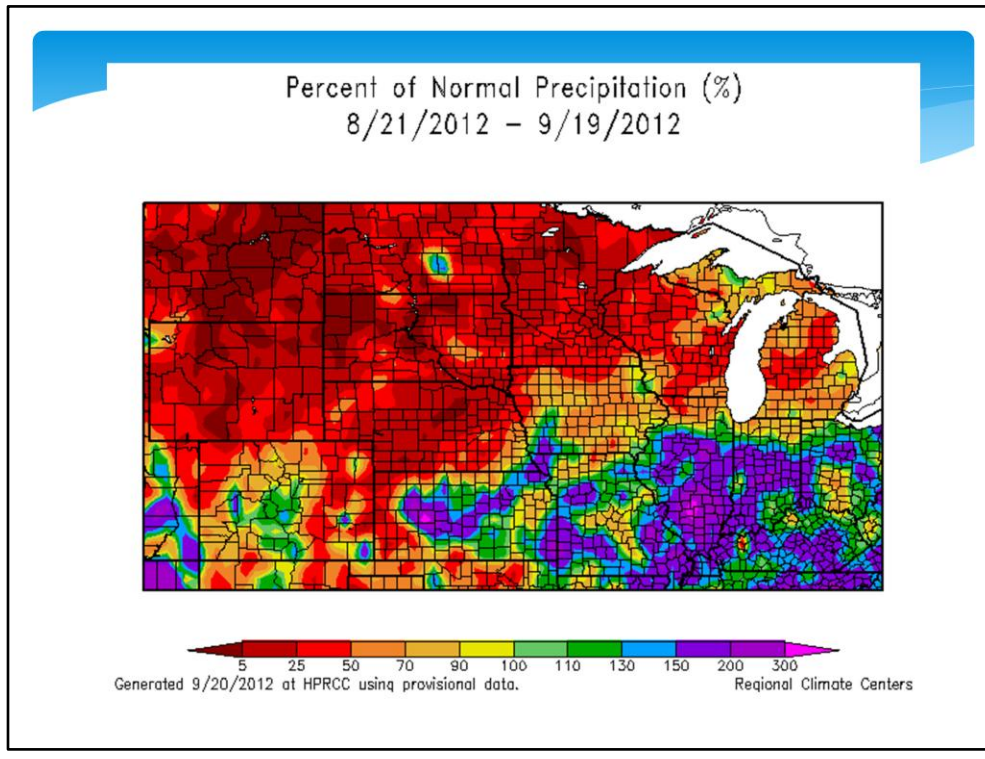
El Nino will be impacting future outlooks. El Nino is still likely this fall and reflected in the outlooks. Though it is likely to be weaker and the impact from El Nino may be weaker because of it.



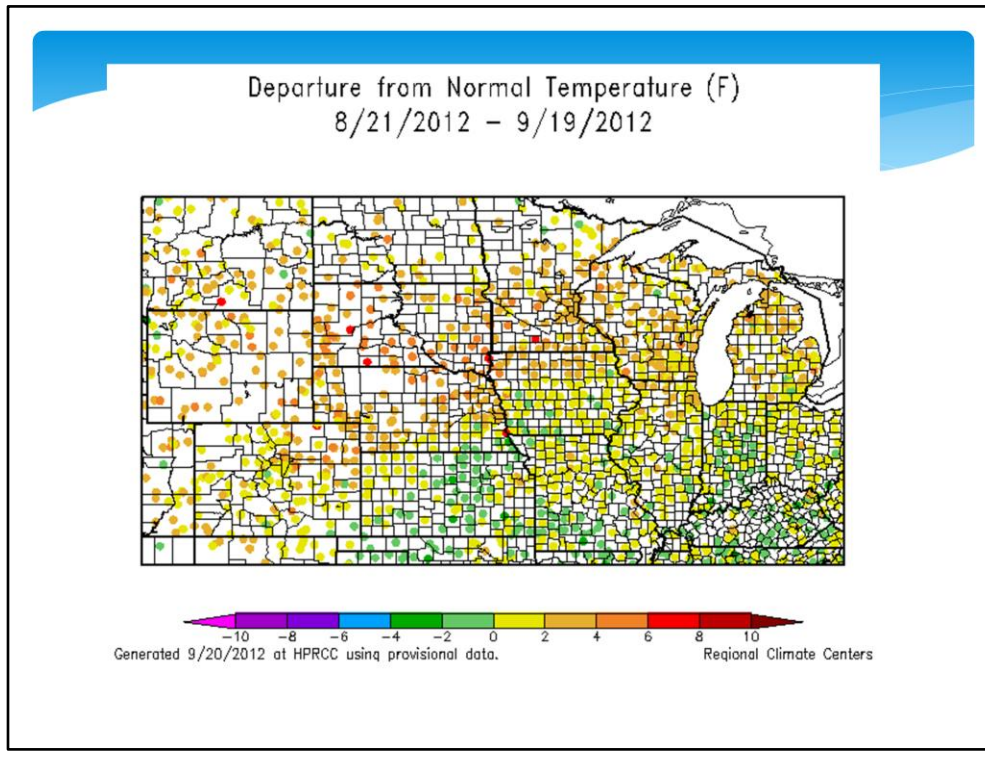
The summer of 2012 will obviously go down as one of the major droughts of the last 100 years rivaling many other drought years. Rankings of the state totals for temperature and precipitation from the National Climatic Data Center are shown here. Colors show the relative ranking along with the legend at the bottom. The exact year ranking of the 118 years is shown for each state. All the states in the middle of the country were in the top 5-10 warmest summers. Wyoming and Colorado were the warmest in the 118 year record. Precipitation totals were somewhat more variable with the very clear region worst hit over the central plains and midwest. Again several top 10 driest years show up with Wyoming and Nebraska as the driest.



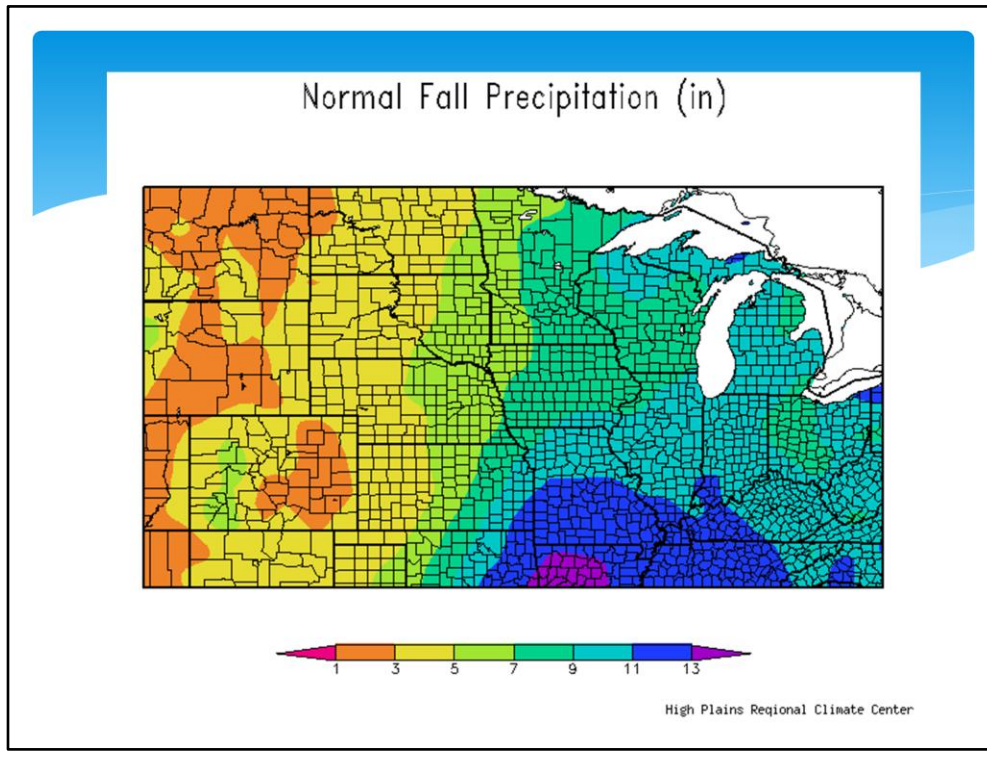
Over the last 30 days, drought recovery has started in some areas of the region because of some storms and the remnants Isaac moving through the area. Over the last 30 days precipitation has occurred from storms and remnants of Hurricane Isaac to Missouri, Illinois and Indiana helping improve conditions there. The lack of precipitation has not allowed improvement and actually made conditions worse in the plains. Precipitation over the last 30 days has been much less than an inch over the area.



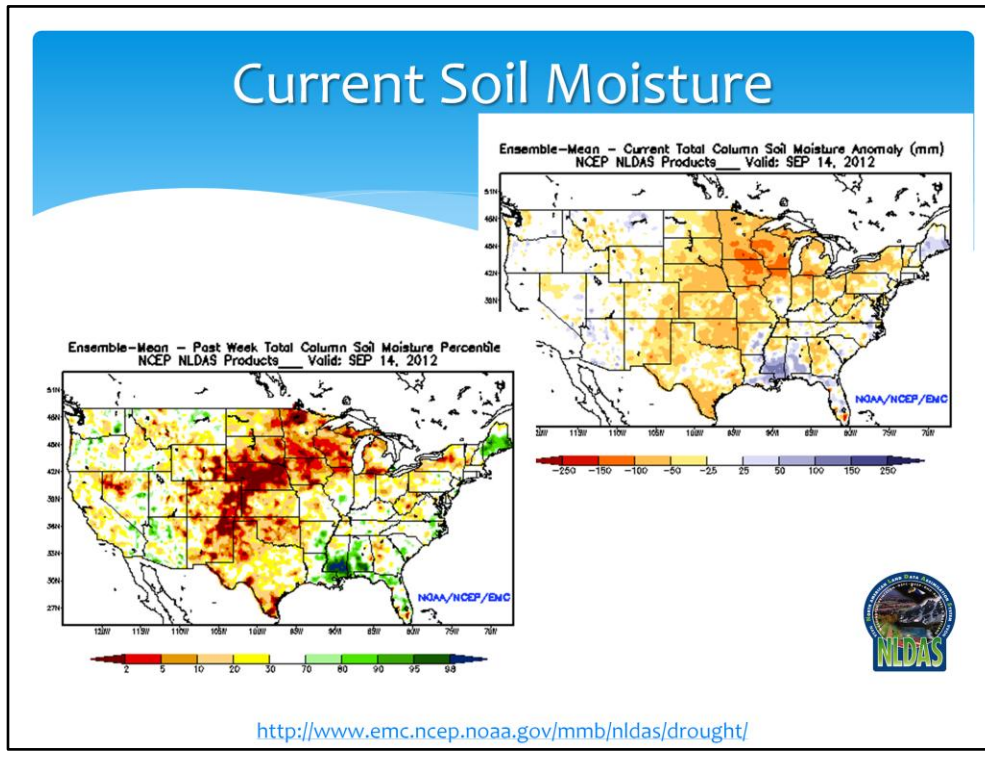
Following the last map showing the percent of average precipitation over the last 30 days really indicates the winners and losers over the time. While the plains do not expect large amounts at this time of year, the lack of any recovery is very concerning on several levels because of the need to fill soil moisture for next year and to replenish water resources for livestock and other wildlife purposes. Much of the plains area has received less than 50% and significant areas less than 25% of average. Fire issues are also a concern with the continuing dry conditions (which we will cover in a couple slides).



Temperatures over the last 30 days have been largely below average in the wetter locations. The northern areas, being devoid of precipitation have been very warm with still a number of days reaching 100 F. The impact has continued to pressure surface conditions. Crops are nearly completely mature. But the warmth still stressed any live vegetation, evaporated water and added to the fire potential.

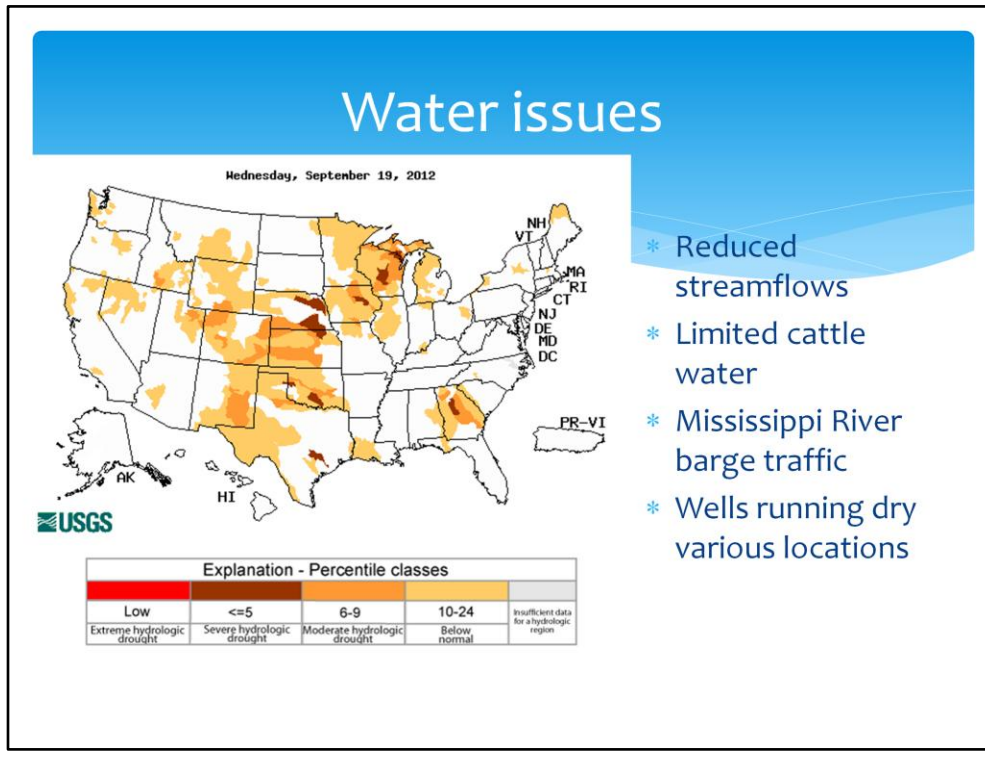


Thanks to Natalie Umphlett at the High Plains Regional Climate Center for this. To give you some perspective you can see what average fall precipitation is like and what the chances for soil moisture recovery are. A rule of thumb is that about 75% of precipitation can enter soil moisture. This can vary greatly by total amount of precipitation, rainfall rate and soil wetness. But this can be used as a guide to how much soil can recover during the fall.



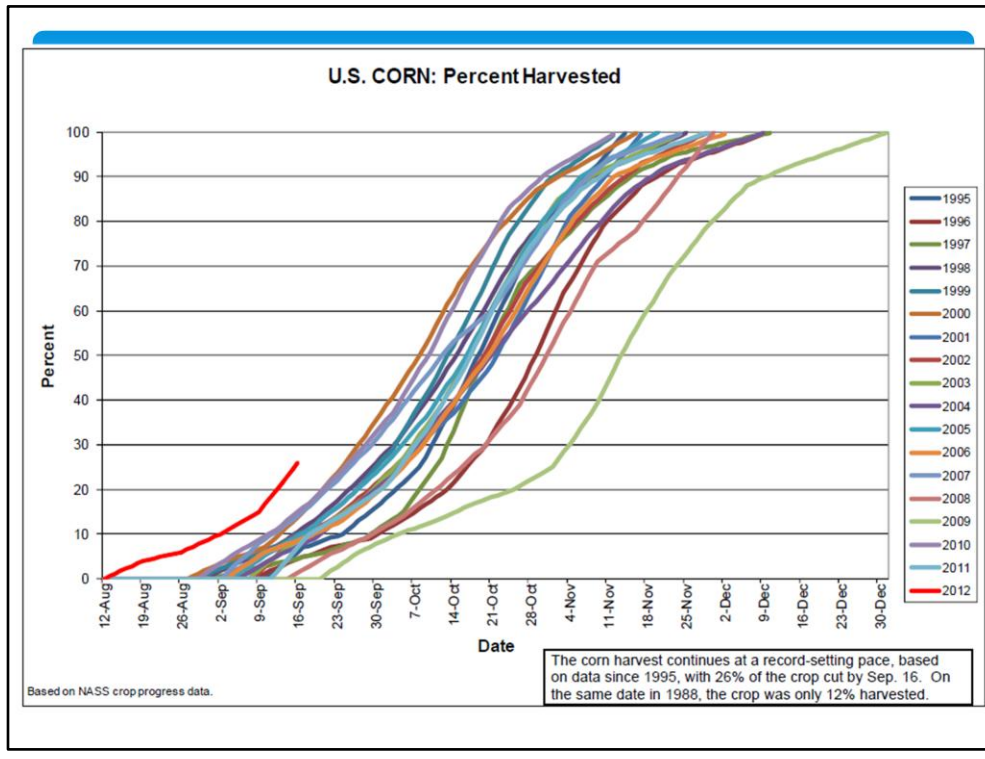
Soil moisture recovery associated with the recent precipitation. This is from NLDAS model showing much better soil moisture conditions in Missouri to Indiana and much worse from Colorado into MN and WI based on the percentile ranking in the left image. This will be the topic of much discussion during the fall and looking forward to next year. The lack of soil moisture recovery would put crops at risk again next year.

To put some perspective on this I have included a percentile image from August 2. This is like a ranking scale from 0 to 100. 0 being driest on record, 100 the wettest. The brown areas on the map on the left would come in below the 2nd percentile

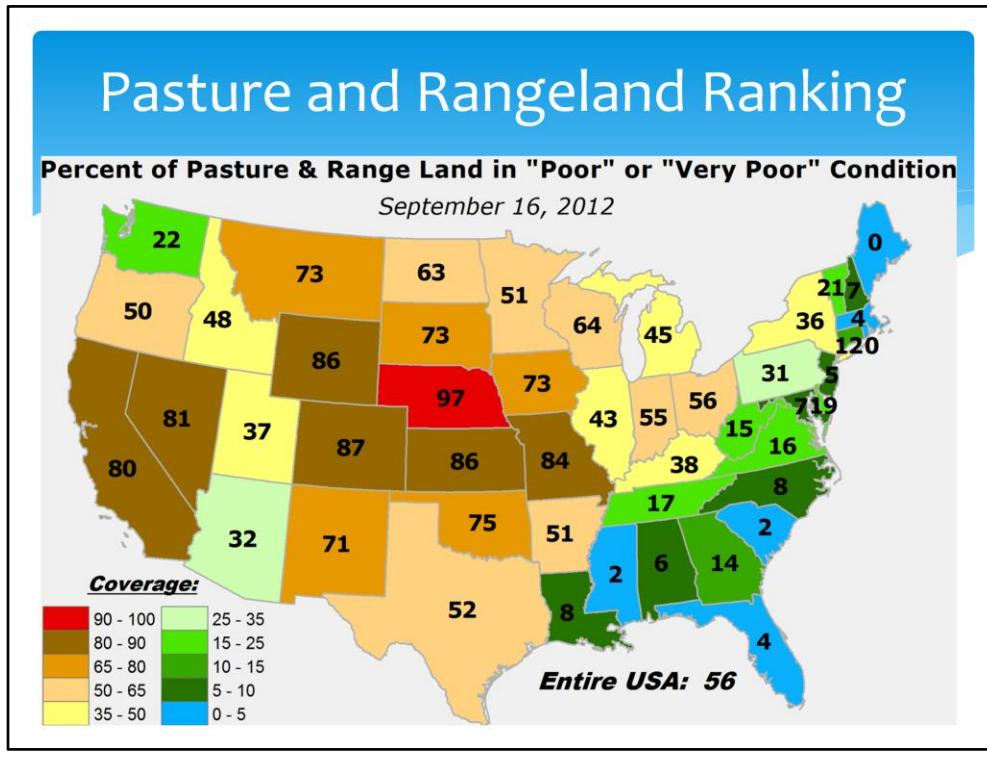


One piece of information we have not talked much about in the drought webinars has been the water issues, which have become varying and more prevalent over the course of the drought. The drought falling after a wet period masked some of the water issues for a while (as in some ways the drying out was a positive). Over the course of the summer various different water issues became apparent. Reduced streamflow shown on the map from USGS indicating areas of hydrologic drought. Some of the major drought areas typically have lower streamflows at this time of year masking the overall impact.

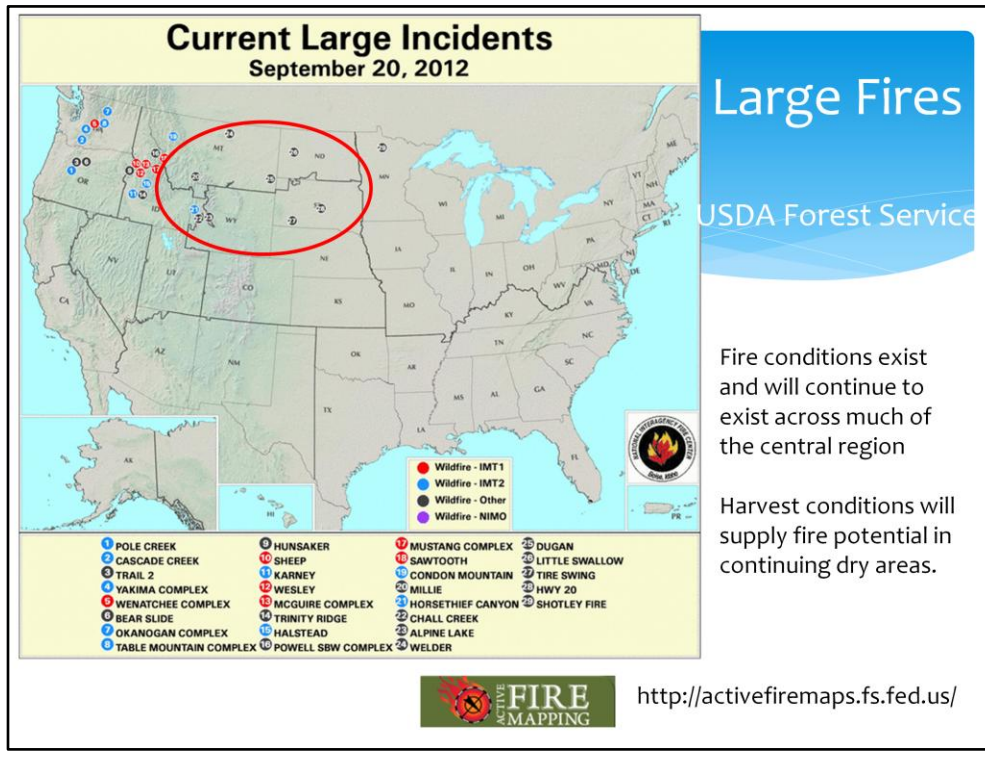
Cattle water has been short or of poor quality for much of the summer. Barge traffic on the Mississippi has been slowed or forced into reduced loadings because of shallower depths. Shallower depth wells have been running dry as well as some aquifers in the Dakotas which support irrigation.



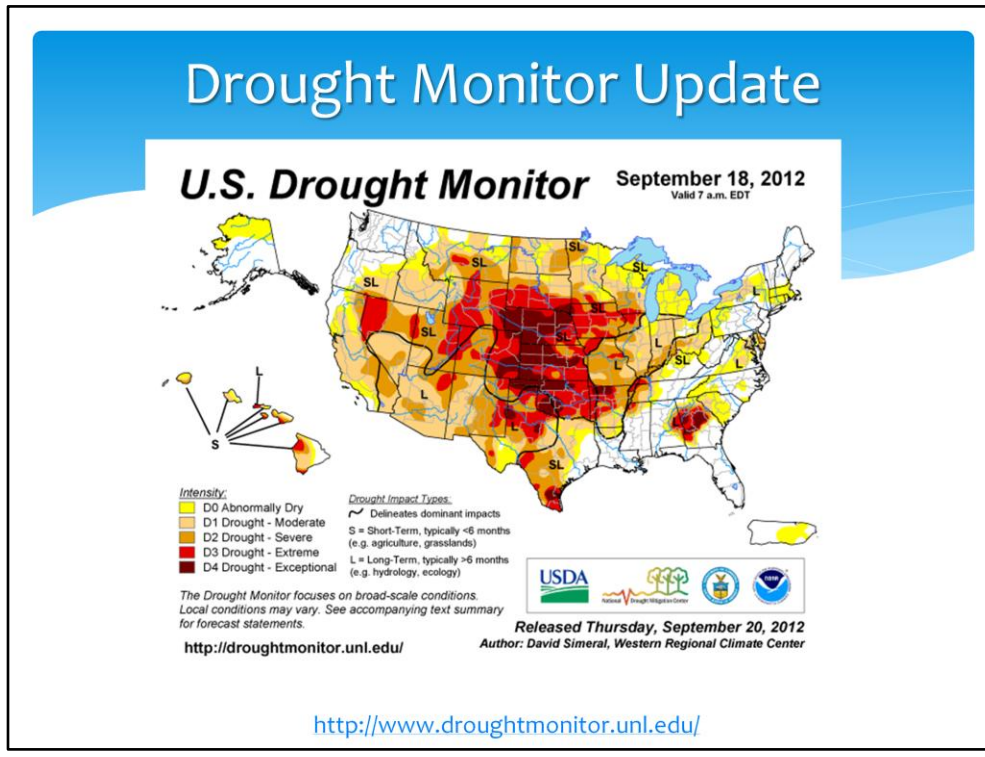
Percent corn harvested courtesy Eric Luebheusen – USDA.



Pasture and rangeland conditions across the country from USDA show the severity of the drought conditions and widespread impacts. This is the percent of rangeland listed in Poor to Very Poor according the USDA-NASS. Many livestock people are having to search for supplemental feed from outside this area of bad drought. Hay is being hauled for large distances to cover this need. Several of us coming to the meeting in Bismarck noted trucks hauling hay from the less impacted areas of the north and likely Canada being moved southward.

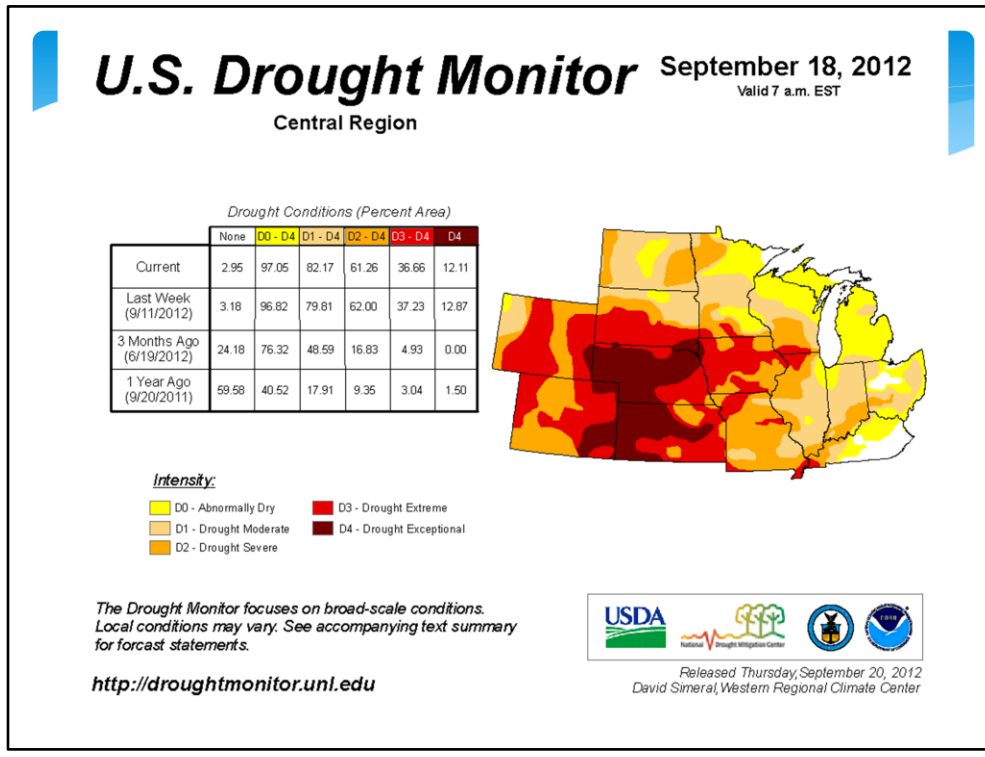


Current fire conditions from the USDA Forest Service Fire Mapping Program show the main areas of fires are mainly in the northwest. The northern High Plains have a few in MT and WY and the Dakotas. Other grass fires have been fairly common across the plains. Until precipitation returns to much of the plains and midwest fire potential will continue. The dry crop conditions and low RHs into the fall are going to continue to produce fire conditions. Red flag warnings have been common in the plains states. Fire officials are concerned about the ongoing potential thoughout the fall.

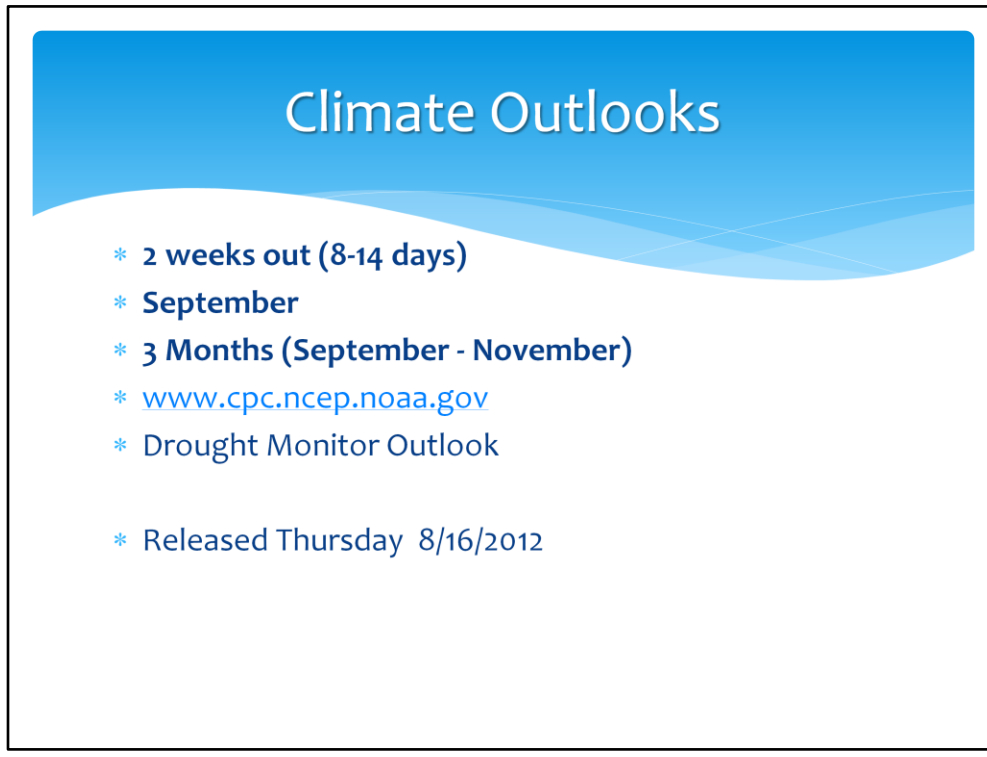


Combining all the previous discussion we get to the current situation on the US Drought Monitor from today. This map updates on Thursday mornings at 7 AM EDT. Conditions are shown from D0 (yellow- abnormally dry) to D4 (brown exceptional drought). The national extent of the drought is still extremely apparent with large sections of the country cover by the DM. Currently 65% of the continental US is in D1 or worse. This is a reduction in size from earlier this year. Large areas are still clearly in the grip of the summer's drought.

Note that there are several categories on the USDM which have some specific guidelines. These are included on the link on the slide. What is most important is local input. We encourage everyone on the webinar to pass on location-specific comments observations to your state climatologist, regional climate centers or directly to the National Drought Mitigation Center. These reports are necessary to track local conditions.



A zoomed in version over the central part of the US shows in better details the improved areas of the east versus the more heavily impacted areas of the west. Over 12% of the region is in D4 and over a third in combined D3-D4. Only 3% is not covered by any category from D0-D4. The northern band which had not been bad much of the summer has seen a later onset with D-conditions increased over the Dakotas and Minnesota during the last few weeks.

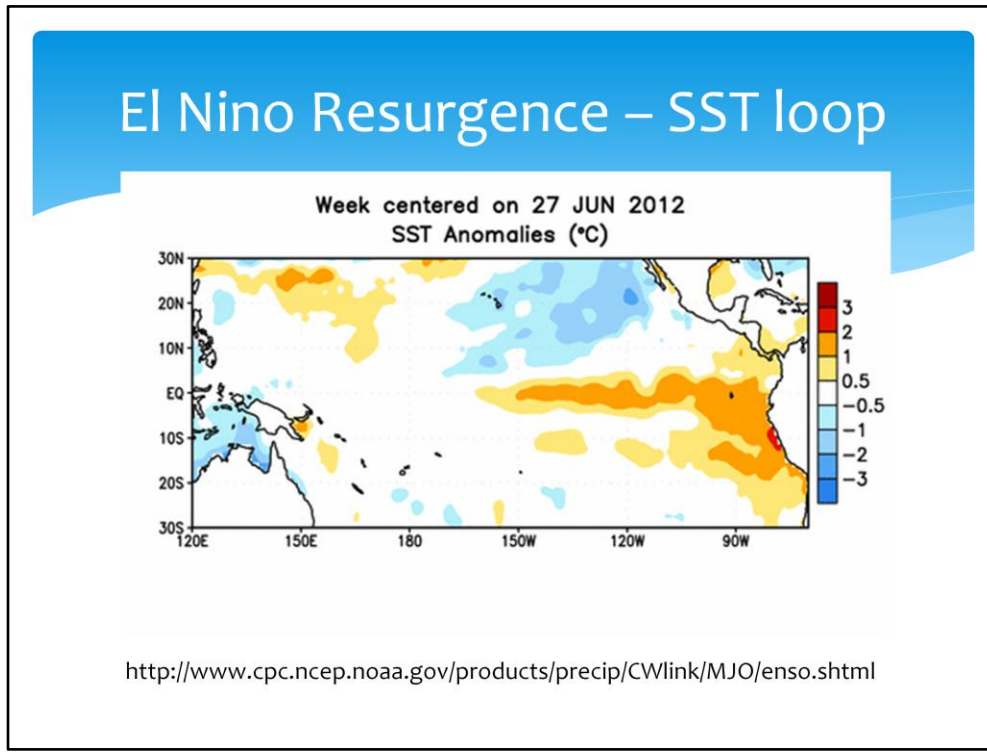


Now let's turn our attention to the outlooks. In the next few slides we will look at outlooks that are routinely issued as part of NOAA's operations. These figures come from the Climate Prediction Center. As we go through them you will see that they all use the same method and colors to describe the forecast.

The maps all are based on probabilities. These probabilities show increased chances toward below or above average conditions at various locations or equal chances where there is not enough skill to change the outlook. More about understanding these outlook will occur in future webinars.

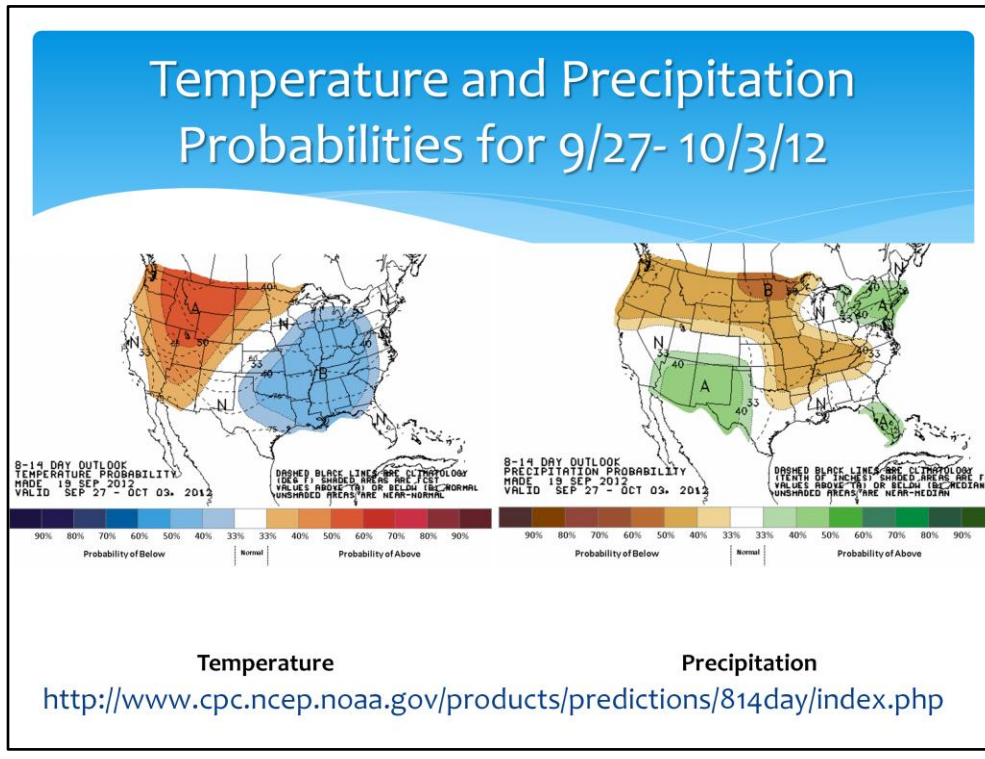
One other note is that predictive skill during the warmer times of the year tend to be based less on large ocean connections like El Nino/La Nina and more on regional and even local conditions like soil moisture, elevation and many other effects. We can also look at trends over regions to help us determine if temperatures and precipitation has tended to rise or fall over time.

We will also talk about some things we can say that are not depicted specifically in the outlooks, but can be inferred from conditions and potential changes/persistence/climatology for the fall.



We continue our shifting to El Nino. The area shown here is the central Pacific Ocean. South America is on the right with Australia on the left. The differences from average (or anomalies) in sea surface temperatures is what we watch for ENSO status. The scale is in degrees C. To get degrees F, multiply by 1.8. The brown areas (warmer than average water) appear along the equator off the coast of South America, indicative of El Nino.

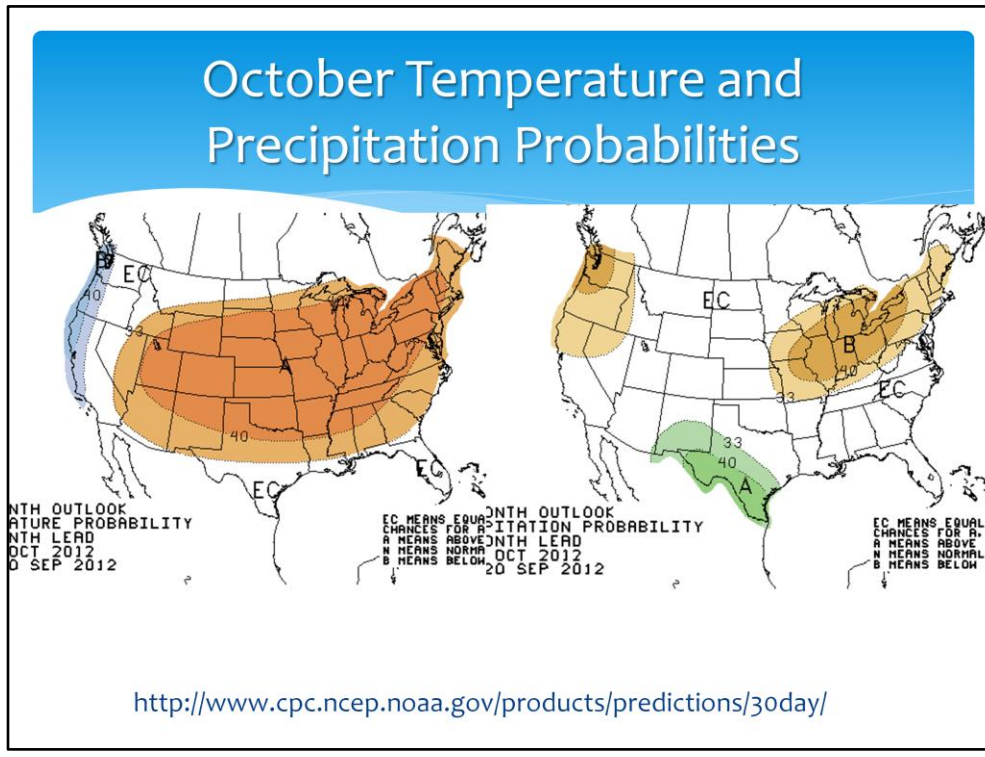
Outlooks expect us to officially transition to El Nino conditions still this fall month. SSTs are not as strong as they were about a month ago and the El Nino outlooks are not as strong as indicated this summer. The think is still to be entering El Nino conditions this fall. The impact of this is to give direction on the long range outlooks particularly during the winter. The longer range outlooks reflect this influence. El Nino have varying strengths which have some impact on the result of El Nino conditions. This version of El Nino is likely to be weak to moderate. The impacts of which should not be potentially as significant.



Here is a depiction of temperature, on the left, and precipitation probabilities on the right. For the temperature map the brownish colors indicate better chances for warmer conditions and blue colder. On the precipitation map the brown colors mean better chances of drier conditions and green wetter. White indicates near normal conditions most likely. The timing as you can see is for the week after next or days 8 through 14 in the future.

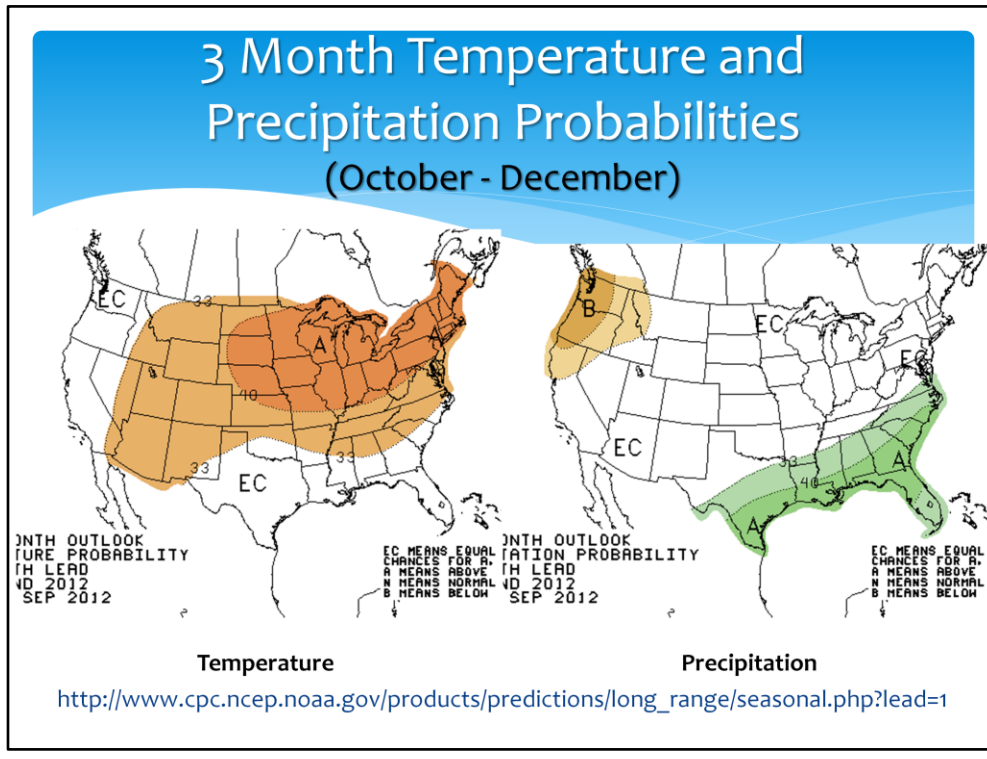
A recent pattern has had a ridge of high pressure across the western US leading to warmer than average conditions there and allowing cooler air into the eastern US. This relative pattern looks like to continue into early October. Warm conditions seem likely to continue especially in the northwestern US. Cooler conditions are more likely into the southeastern US.

The ridge will reduce chances in the northwest and central US. Air leading out of Canada is drier leading to reduced chances for precipitation. This will continue to limit precipitation recovery across much of the drought areas.



October outlook, temperatures probabilities (left) precipitation probabilities (right). Temperatures are likely to continue warm throughout the month over nearly all the central US according to the Climate Prediction Center. The probabilities are not as strong as recent outlooks, only slightly increased chances. Given the recent pattern change that is something that should be watched closely.

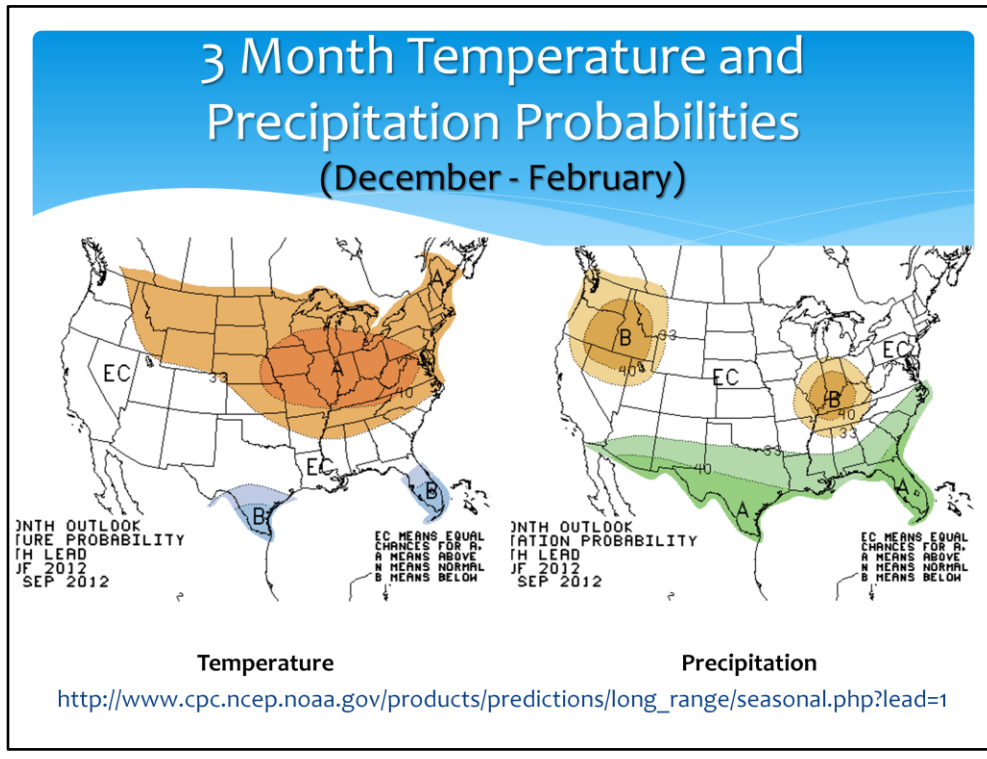
An area of drier than average conditions is still included over the central states – around the Ohio Valley.



The same color scheme applies again as with the previous maps for the 90 day outlook (October - December).

The Climate Prediction Center continues the likely warmth condition over a large part of the US through the fall and early winter. The highest likelihood is over the Great Lakes area with the highest chance of above average temperatures. The latter part of this is due likely to El Nino setting in, which usually leads to warmer than average surface temperatures in the winter.

Precipitation chances show no major indications. Most of the area is included as EC – equal chances for below or above average precipitation. This is due to no strong signal from most of the inputs and varying signals from some guidance materials.

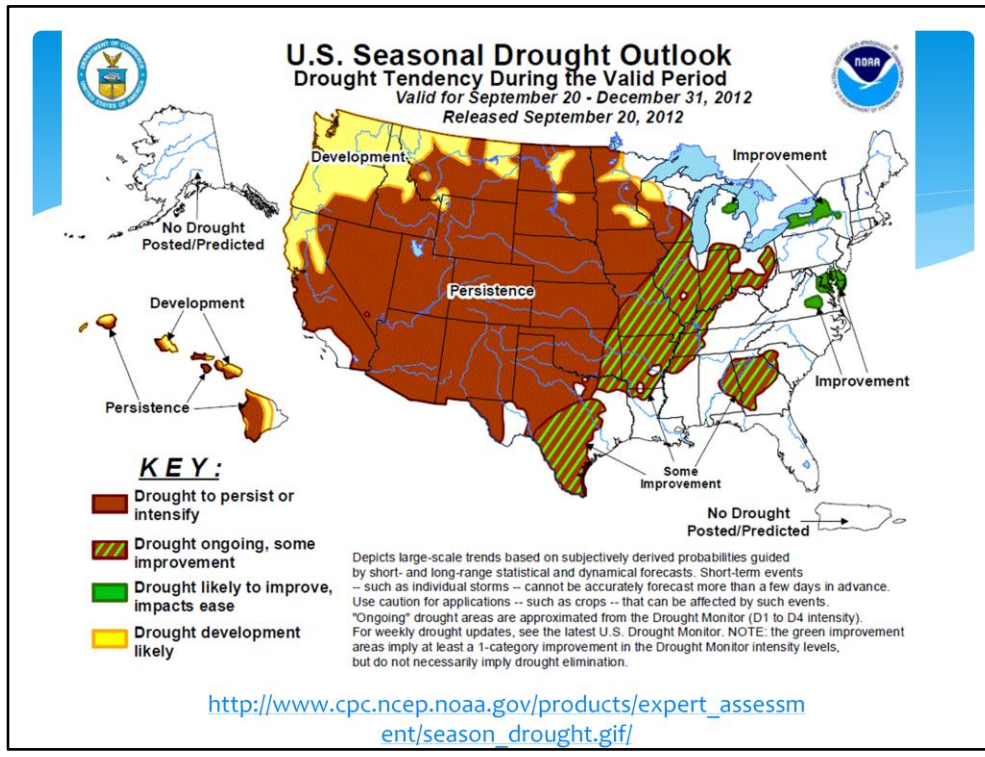


The same color scheme applies again as with the previous maps for the winter outlook (December - February). I wanted to include this as an early look at the winter outlook.

The Climate Prediction Center continues the likely warmth condition over a large part of the US through the fall and early winter. The pattern reflects the thinking that El Nino will develop this fall and impact winter conditions before weakening early next year. The El Nino is expected to be weaker and therefore have less overall impact. Even with a weaker El Nino the composite signal is still warmer than average across much of the northern US. For precipitation dry areas in the northwest and Ohio Valley are more likely. Note that much of the central US has a non-signal related to winter moisture.

This precipitation signal is more an impact of other shorter term oscillations and location of the jet during the winter, which are not forecastable at this time scale.

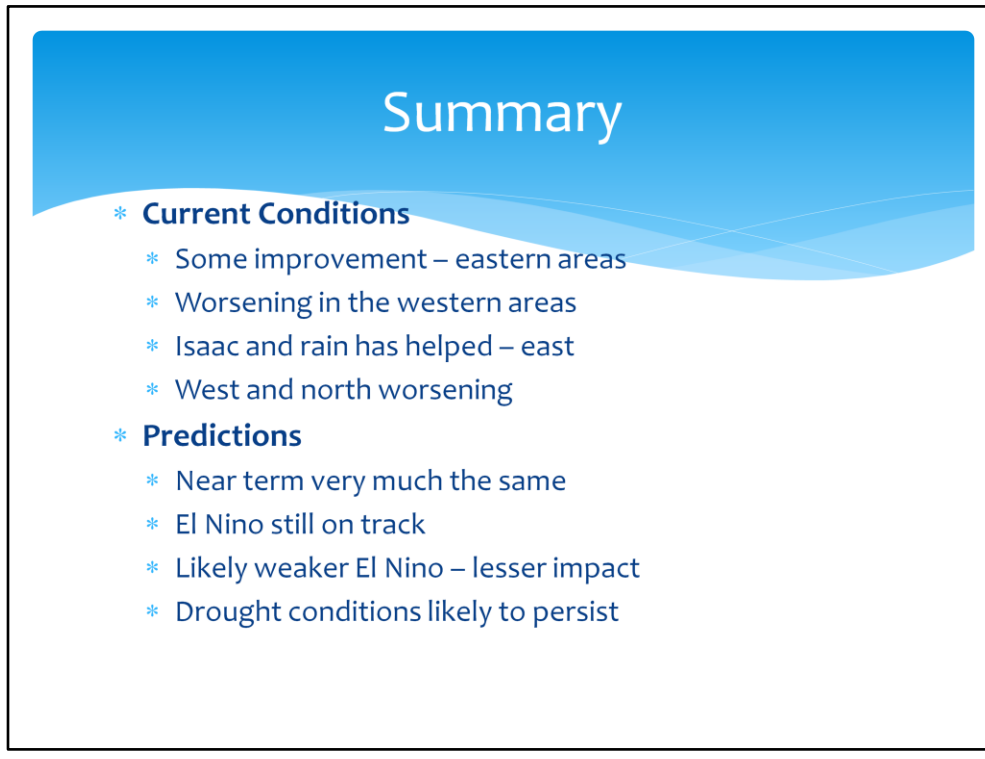
As a look into next summer, there are no strong indications of particular conditions. The one most likely indicator at this point is that much of (at least the western) the corn belt and the plains will go into next year with drier than average soils. This would increase the risk of crop issues carrying over.



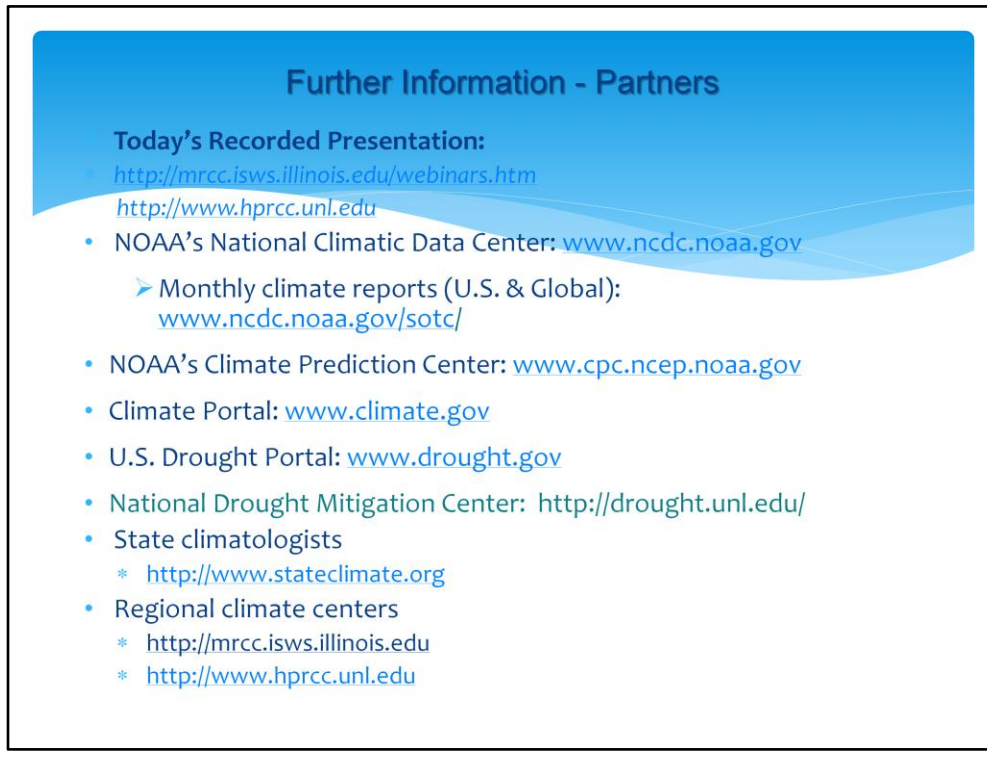
http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif/

Another product of the US Drought Monitor and the Climate Prediction Center is the Seasonal Drought Outlook. This map shows expected changes in areas that are already D1 or worse or expected to enter D1 or worse. Green areas show expected improvement, hatched areas ongoing, but some improvement and brown areas persisting drought for the period through the end of November.

Persistence of the drought is expected across a large portion of the central US. This is along with the reasoning we have seen from the previous maps where the likelihood of precipitation is not so great at this point. While lighter rains are going to continue. No widespread storms are on the horizon over much of the area. The eastern part of the Corn Belt which has had access to some moisture is listed as some improvement as some storm systems seem to be possible over this area, alleviating the drought somehwhat.

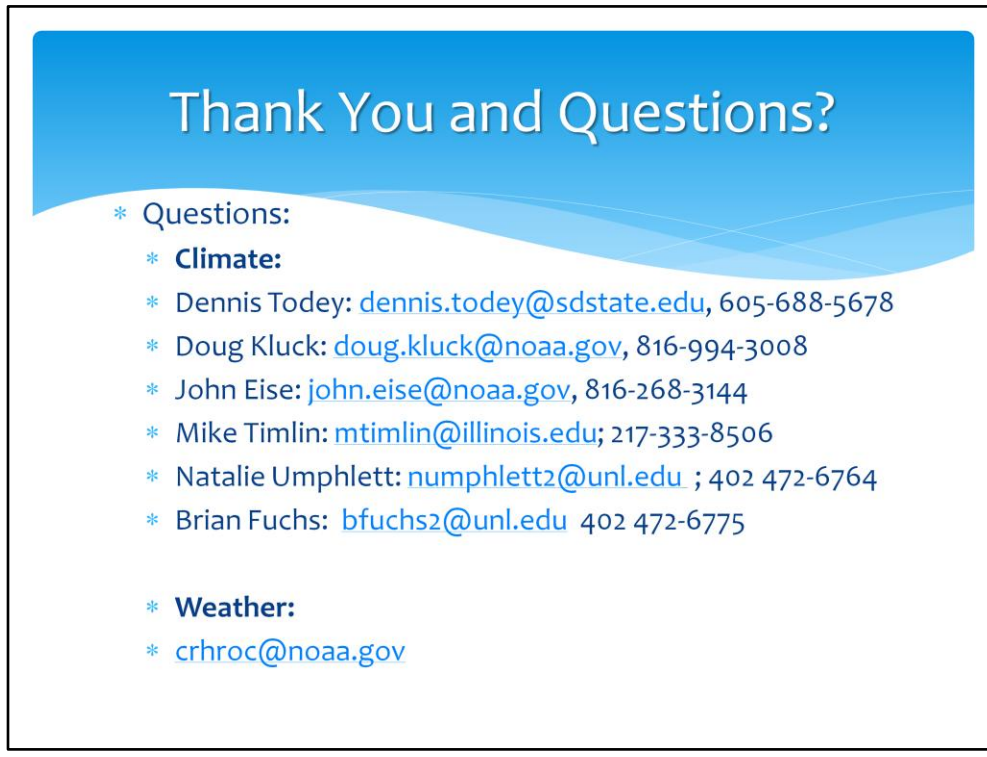


Rehash from earlier.



We will load the recorded Webinar as quickly as we can at the web site mentioned on this slide.

Several other links are included here as were emailed after the webinar last month.



Thank you for coming everyone. What questions do you have at this point?

I/We would like your feedback on the Webinar and it's worth to you. Please do not hesitate to email your suggestions or questions to me at dennis.todey@sdstate.edu or doug.kluck@noaa.gov. We will be doing a more formal survey and evaluation. That is in process currently.

We will now open it up to questions