



Flood Ex: Hydrologic Outlook Red River of the North Basin



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WEATHER-READY NATION

Greg Gust - NWS Grand Forks ND
January 29, 2016



Building a Weather-Ready Nation



Hydrologic Outlook

Red River of the North Basin



Bottom line up top:

- Sig runoff **risk** is low... below seasonal averages.
 - expect more than 2015, *perhaps less* than 2014!
- **Mild** thaw cycle is expected... slight risk remains.
 - expect some snow and rain!
- Climate Outlook is for mild and dryish... **El Niño** rules!





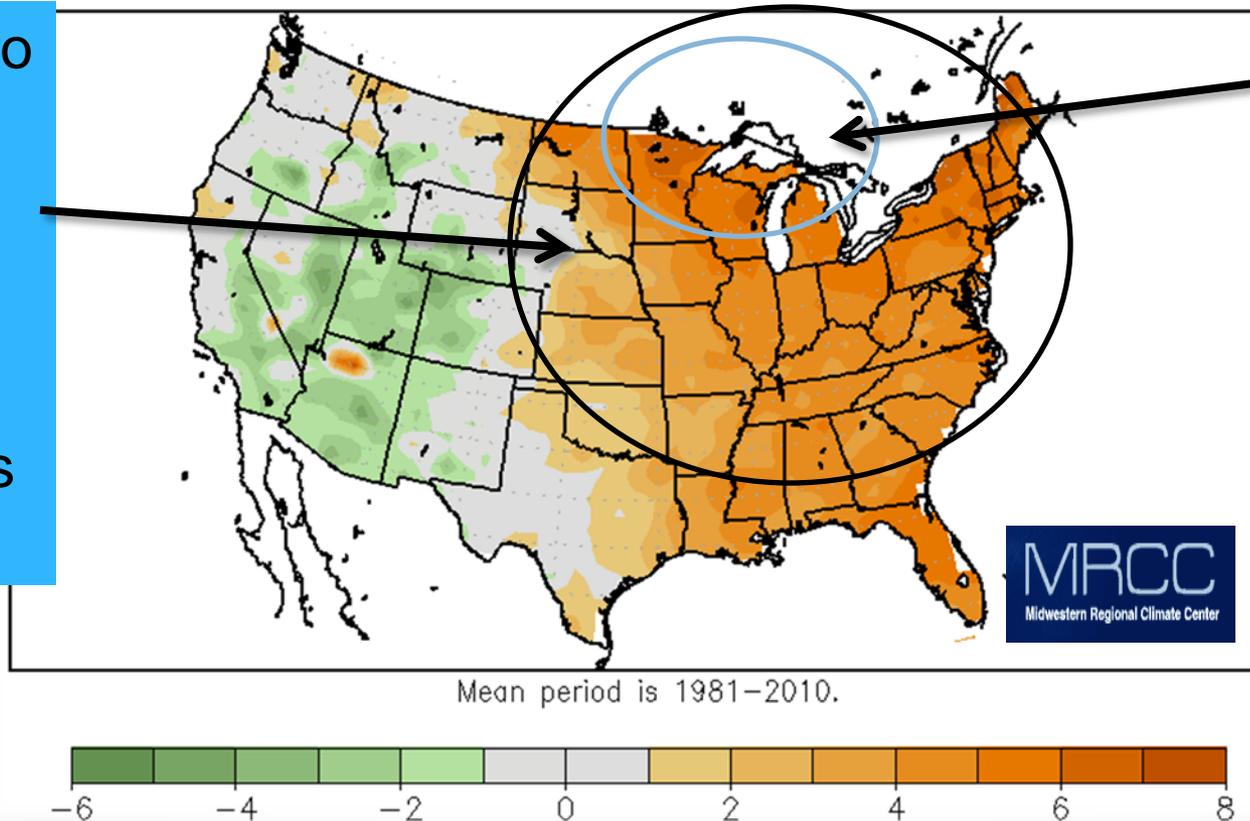
Winter Temperatures [mild]



Departure from Normal Temperatures Since Nov. 1, 2015

Average Temperature (°F): Departure from Mean
November 1, 2015 to January 27, 2016

Warmer to
Much
Warmer
than
Normal,
eastern
two-thirds
CONUS.



RRB and
across MN
nearly 8
degrees
abv normal.

Less ice
formation
and frost
depth, due
to mild
temps and
early
snowcover.



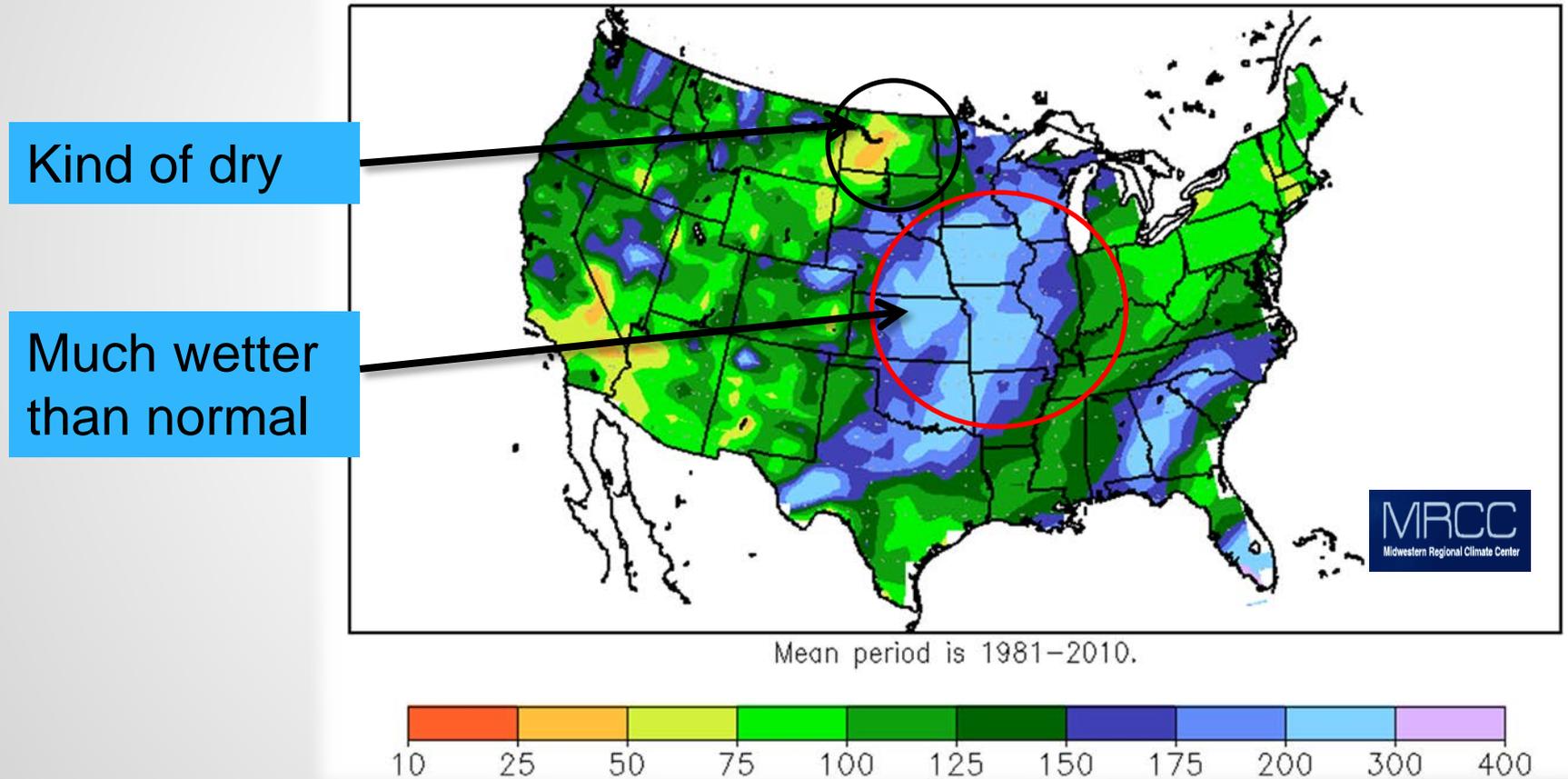


Winter Precipitation [lowish]



Percent of Normal Since Nov. 1, 2015

Accumulated Precipitation: Percent of Mean
November 1, 2015 to January 28, 2016



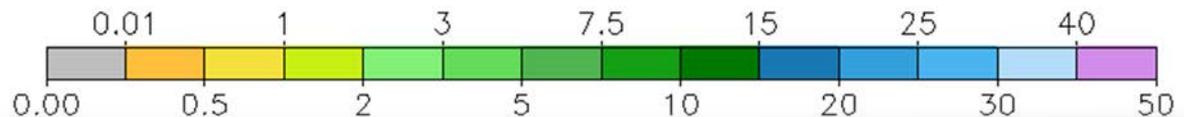
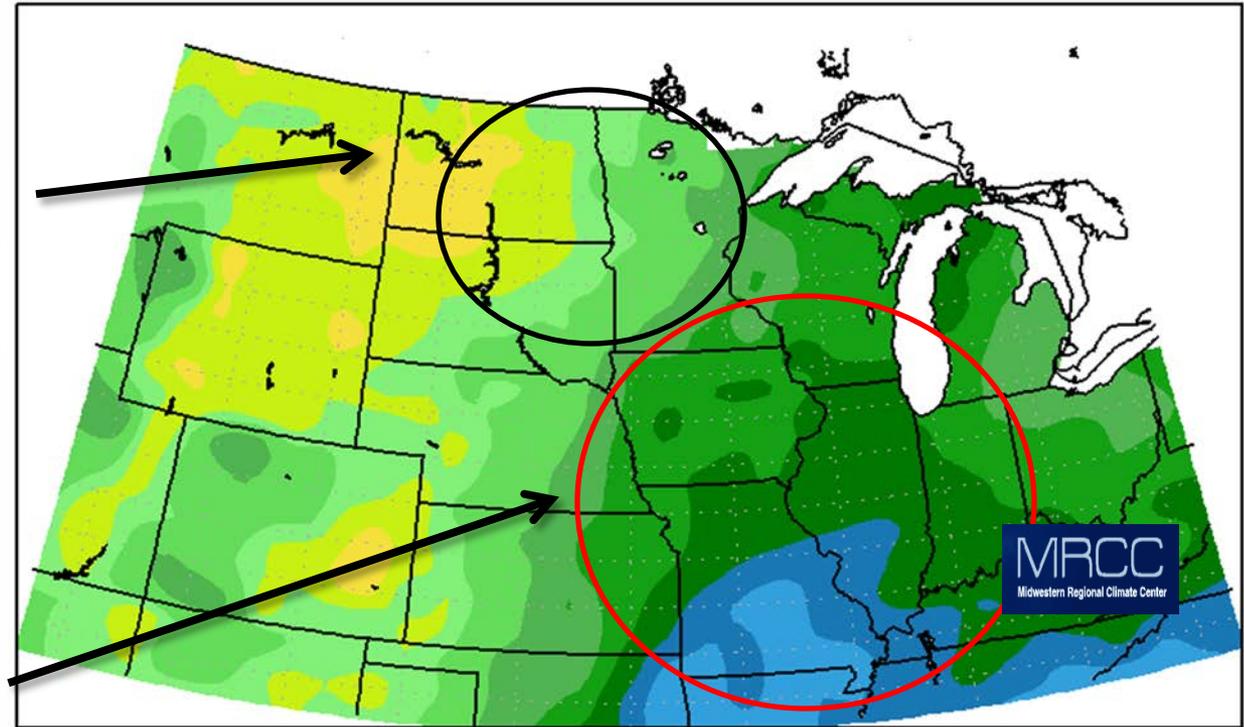


Winter Precipitation [lowish]



Precipitation Accumulated Since Nov. 1, 2015

Accumulated Precipitation (in)
November 1, 2015 to January 28, 2016



Kind of dry:
 1-2 inches west
 2-3 inches east

Snow Content at
 60-90% of normal.

Much wetter than
 normal:
 Mississippi below
 St. Paul ← Ouch!





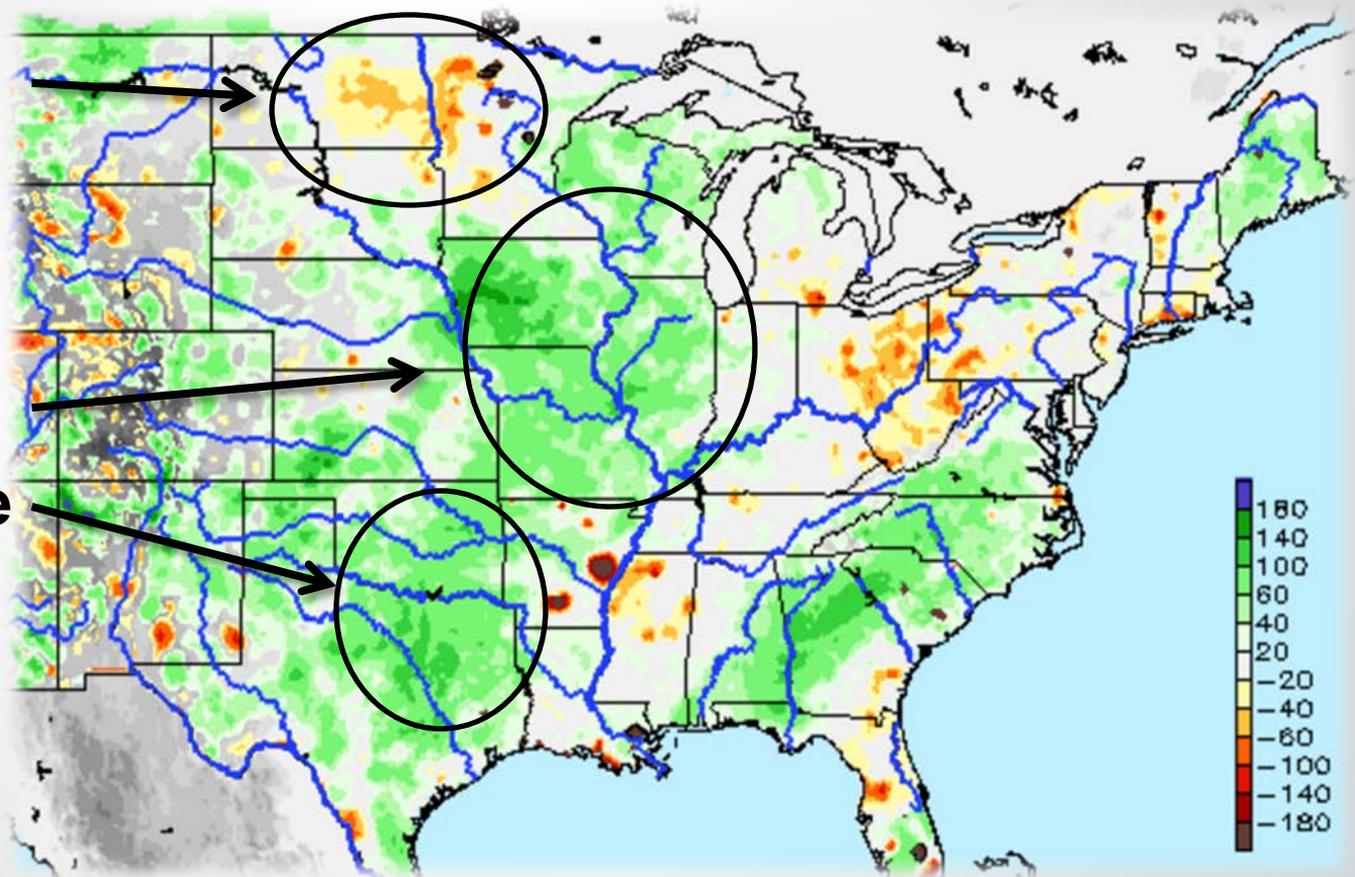
Soil Moisture

[near to below normal]



January 12, 2016

- Near to below normal in the RRV and Mid Missouri Basin.
- Midwest and So. Plains soils are quite saturated.
- Frost depths in north less than normal.





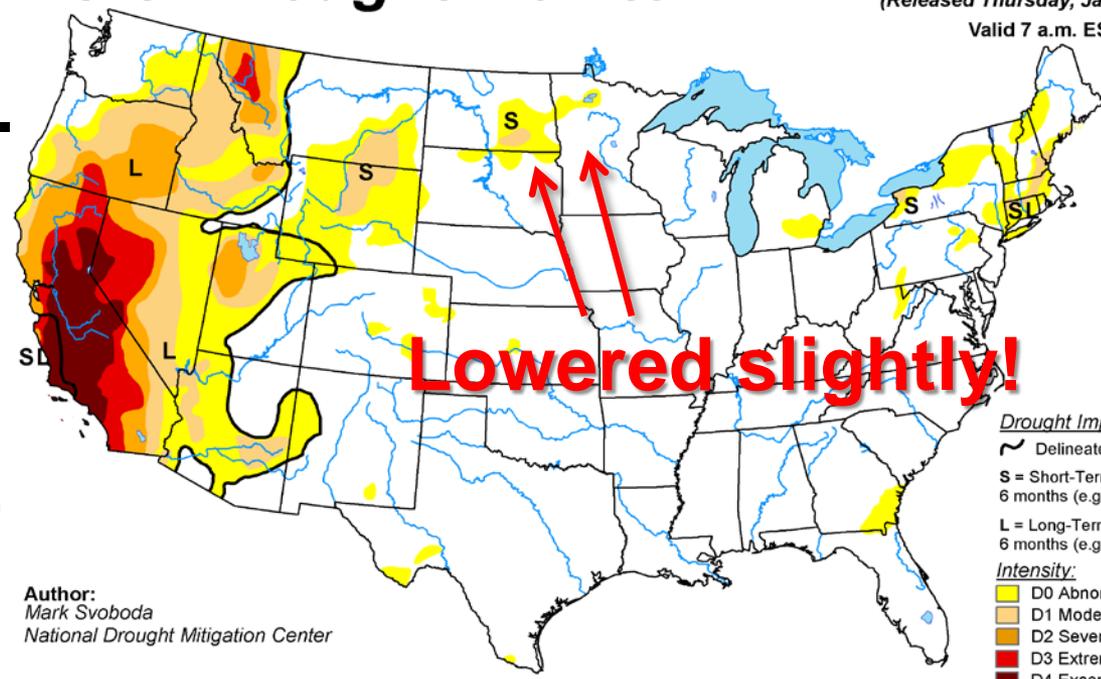
Drought Status [done!]



- Western U.S. (western NOAM) drought persists.
- Dry pockets in southern Red River Basin and southcentral ND.
- Mainly carryover deficit from low snow winter of 2014-2015.

U.S. Drought Monitor

January 26, 2016
(Released Thursday, Jan. 28, 2016)
Valid 7 a.m. EST

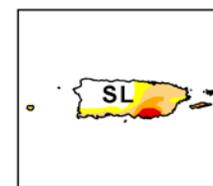
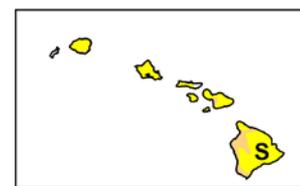
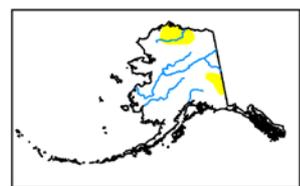


Author:
Mark Svoboda
National Drought Mitigation Center

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
National Drought Mitigation Center

<http://droughtmonitor.unl.edu/>



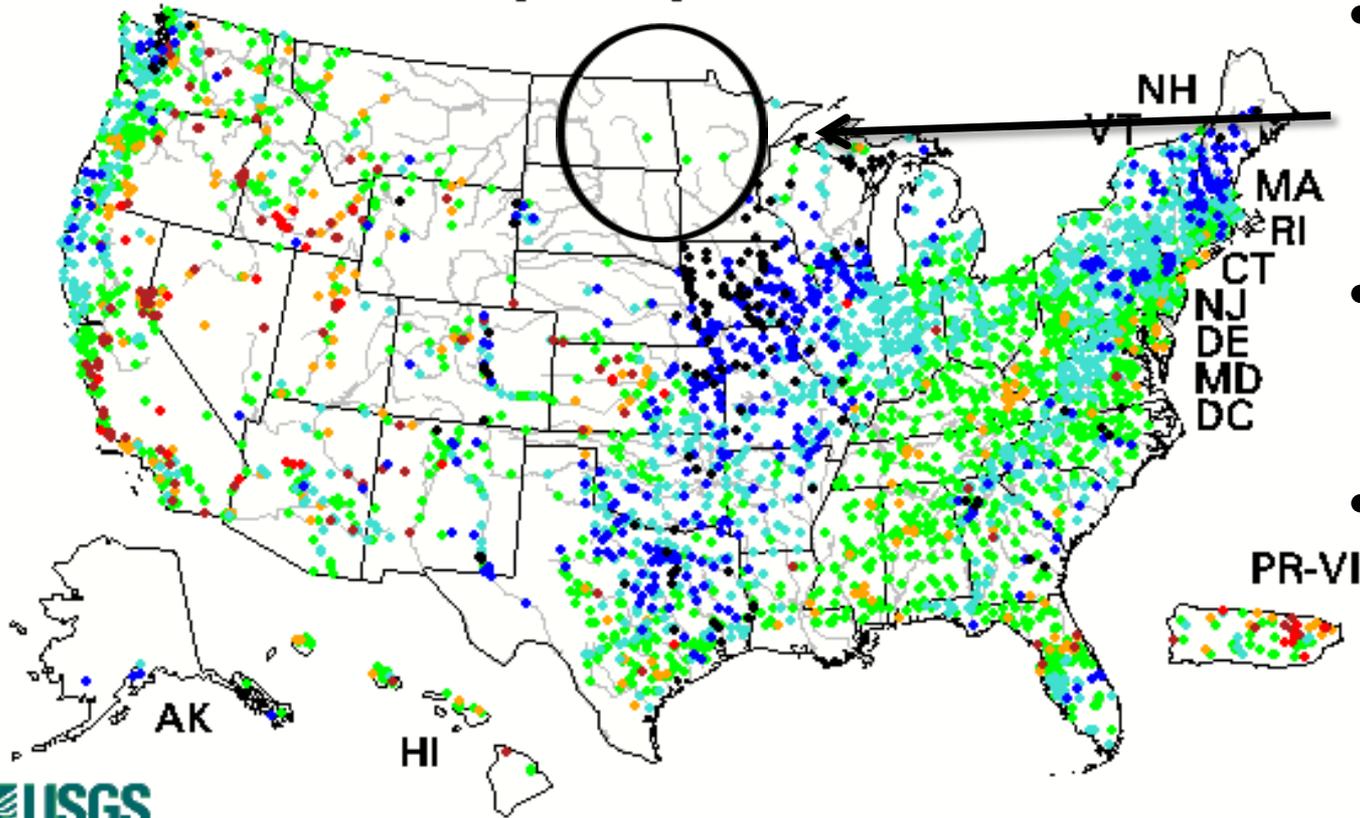


USGS Streamflow Conditions [normal]



As of January 13, 2016

Wednesday, January 13, 2016 19:30ET



- RRB/Souris flows at 25-75th percentiles.
- Ice thicknesses below normal.
- High flows persisting in the Central and Southern Plains.



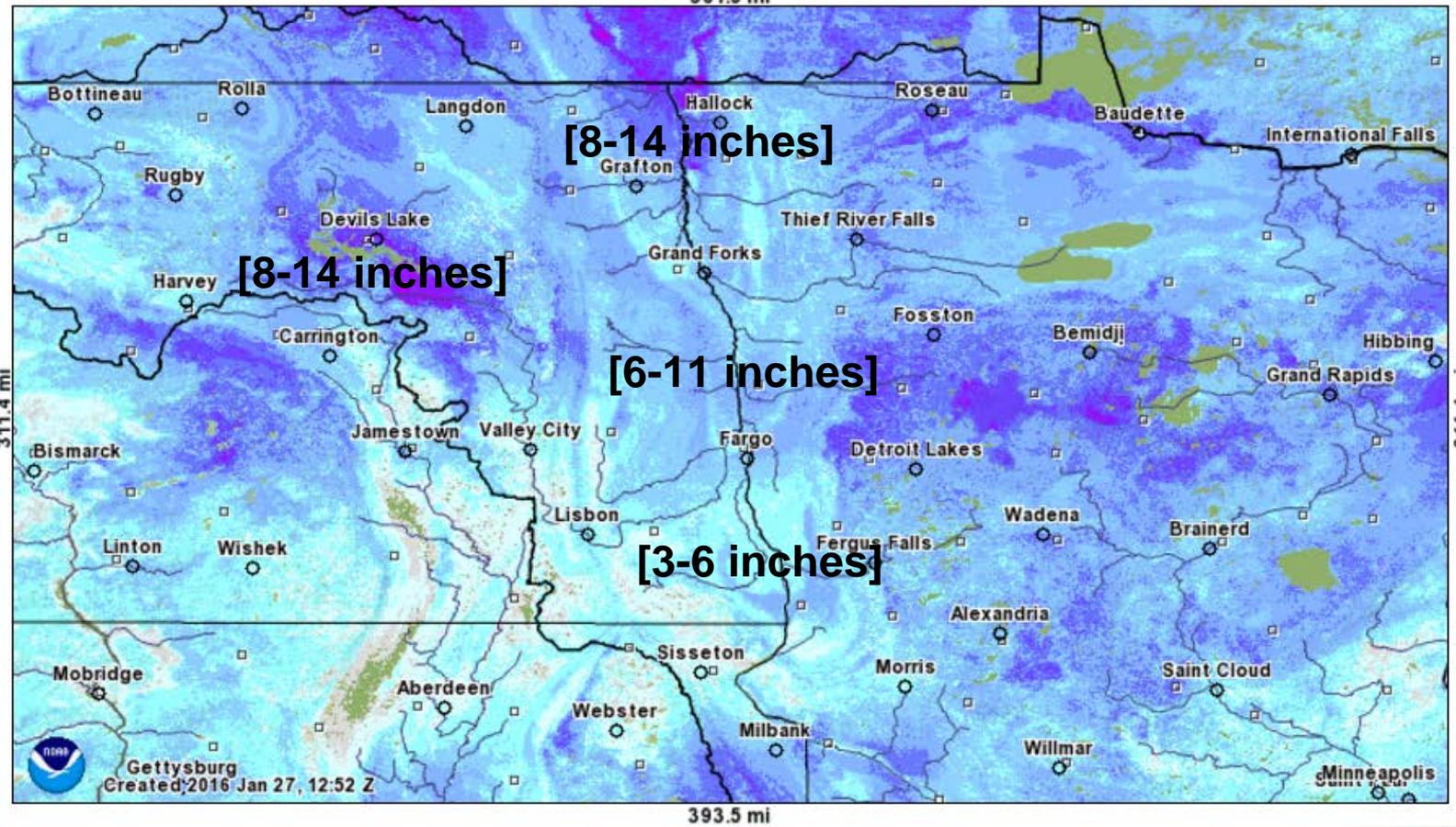


2016 Snow Depth – Snow Water

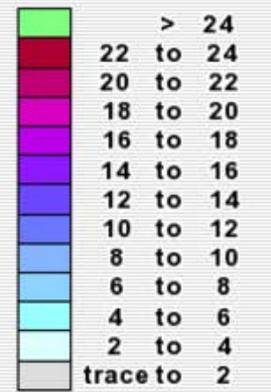
[low... 27 Jan 2016]



Modeled Snow Depth (Shallow-snow Legend) for 2016 January 27, 6:00 UTC
361.5 mi

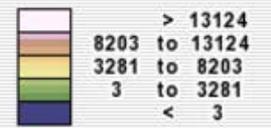


Inches of depth



Not Estimated

Elevation in feet



Snow Depth ranges from 60 to 90 percent of normal across the area. Snow Water Equivalent is generally 0.5 to 2.5 inches.



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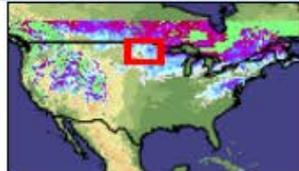
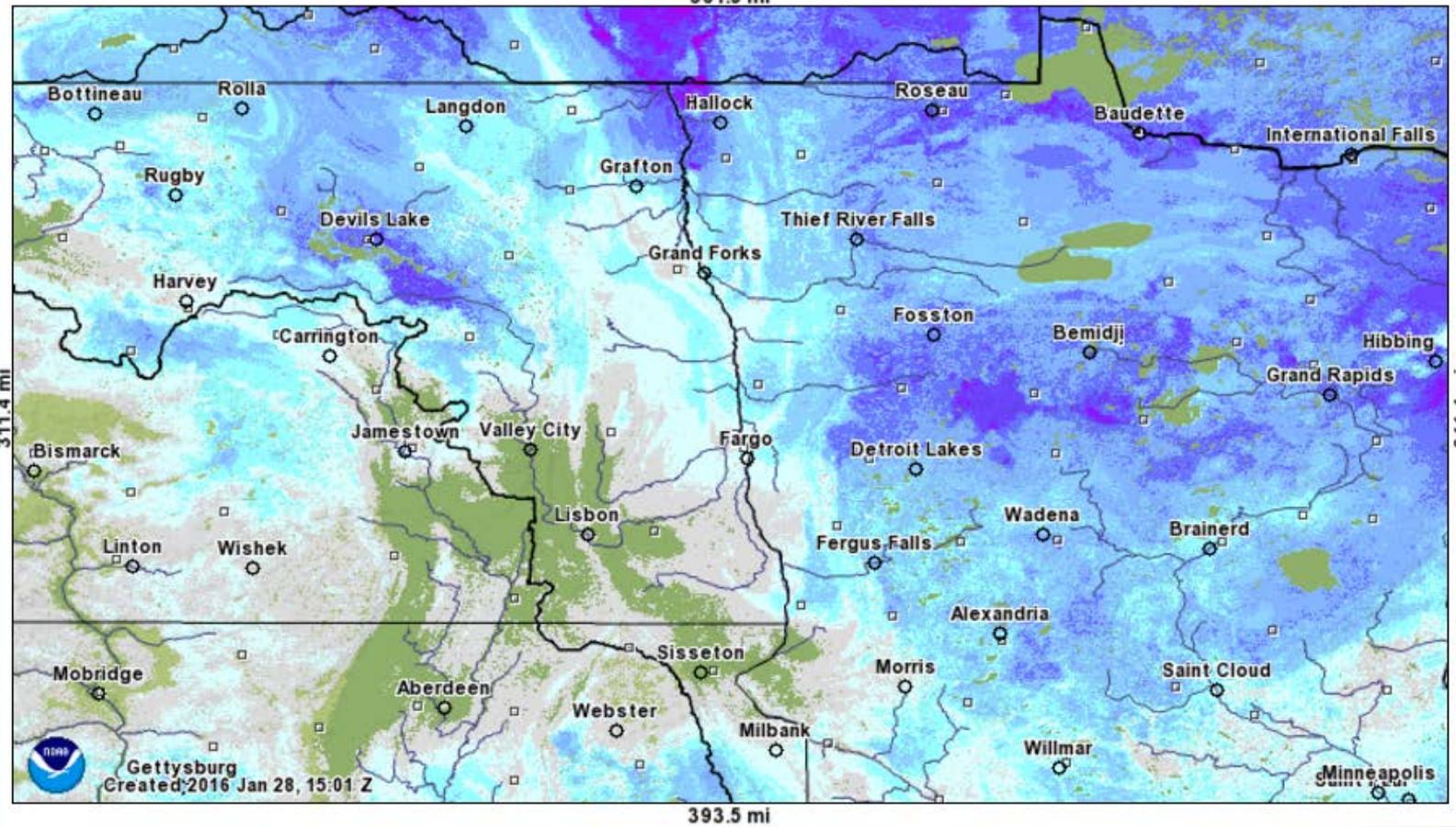


2016 Snow Depth – Snow Water

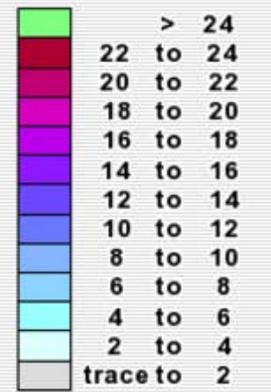
[Lower... 29 Jan 2016]



Modeled Snow Depth (Shallow-snow Legend) forecasted for 2016 January 29, 3:00 UTC
361.5 mi

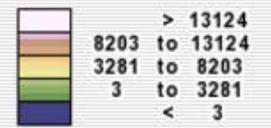


Inches of depth



Not Estimated

Elevation in feet



Snow Depth ranges from 60 to 90 percent of normal across the area. Snow Water Equivalent is generally 0.5 to 2.5 inches.



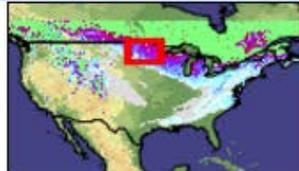
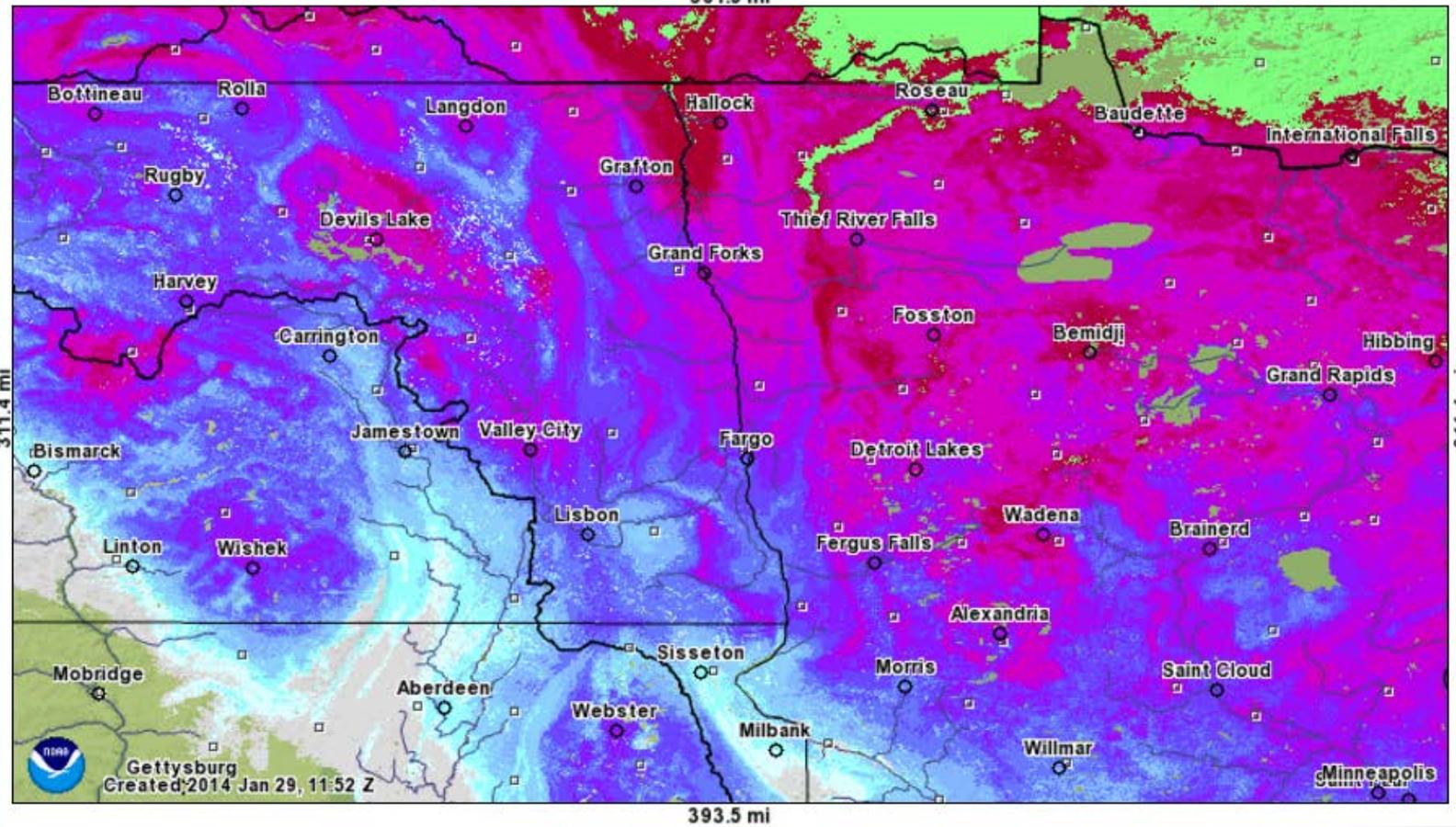
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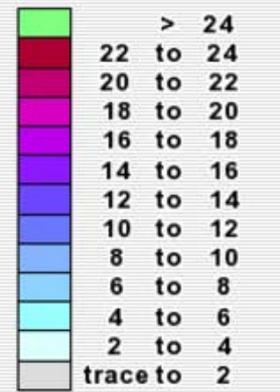
2014 Snow Depth – Snow Water [Higher]



Modeled Snow Depth (Shallow-snow Legend) for 2014 January 29, 6:00 UTC
361.5 mi

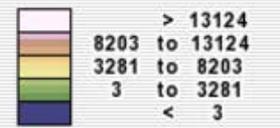


Inches of depth



Not Estimated

Elevation in feet



In Jan of 2014...Snow Depth ranged from 80 to 120 percent of normal across the area... as did Snow Water Equivalent.



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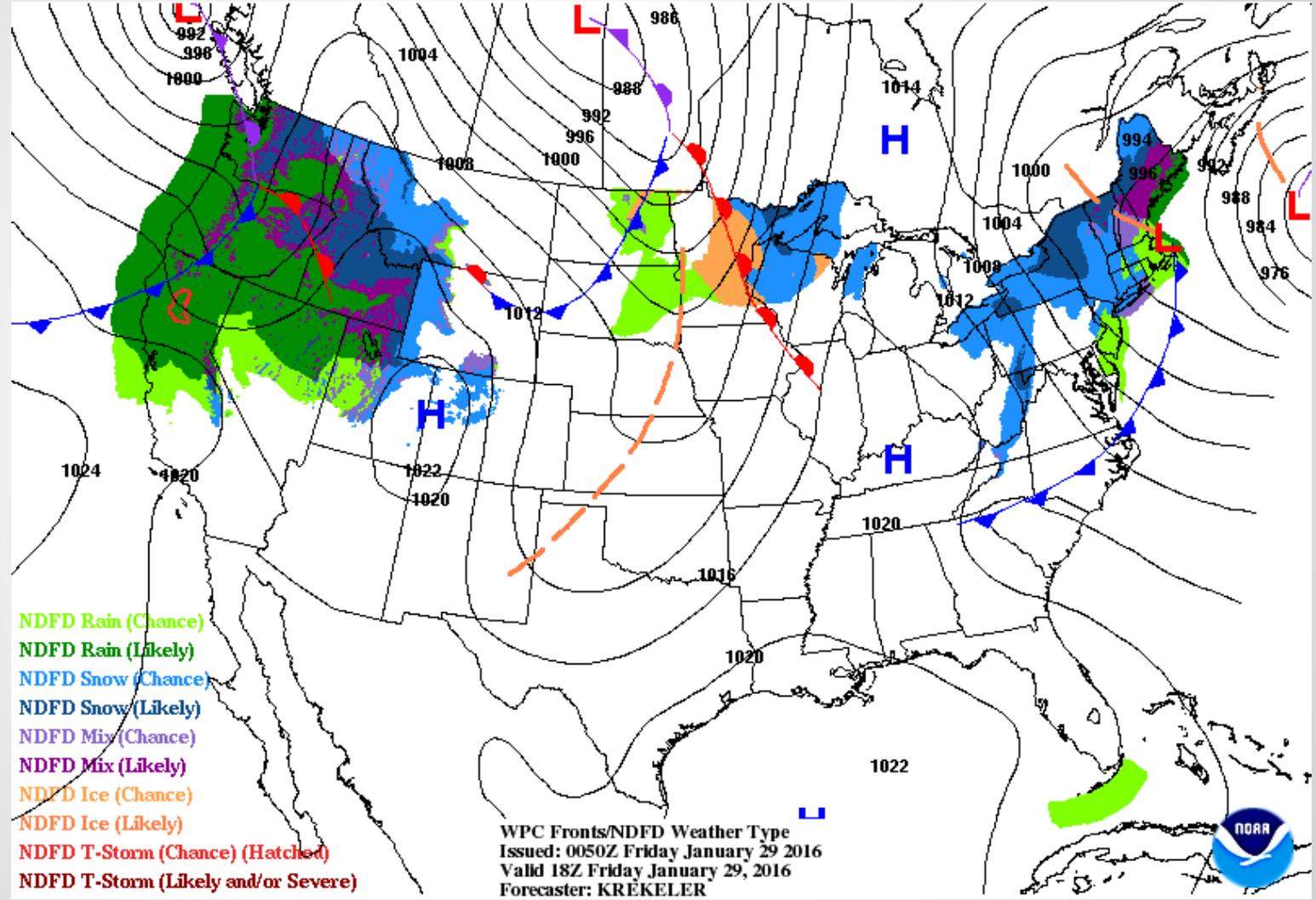


Friday Noon Weather...

Issued Thursday night at 6:50pm CDT



- A mix of lgt rain, ice, and snow across northern MN.
- Heavy rains /snow moving into the PacNW.



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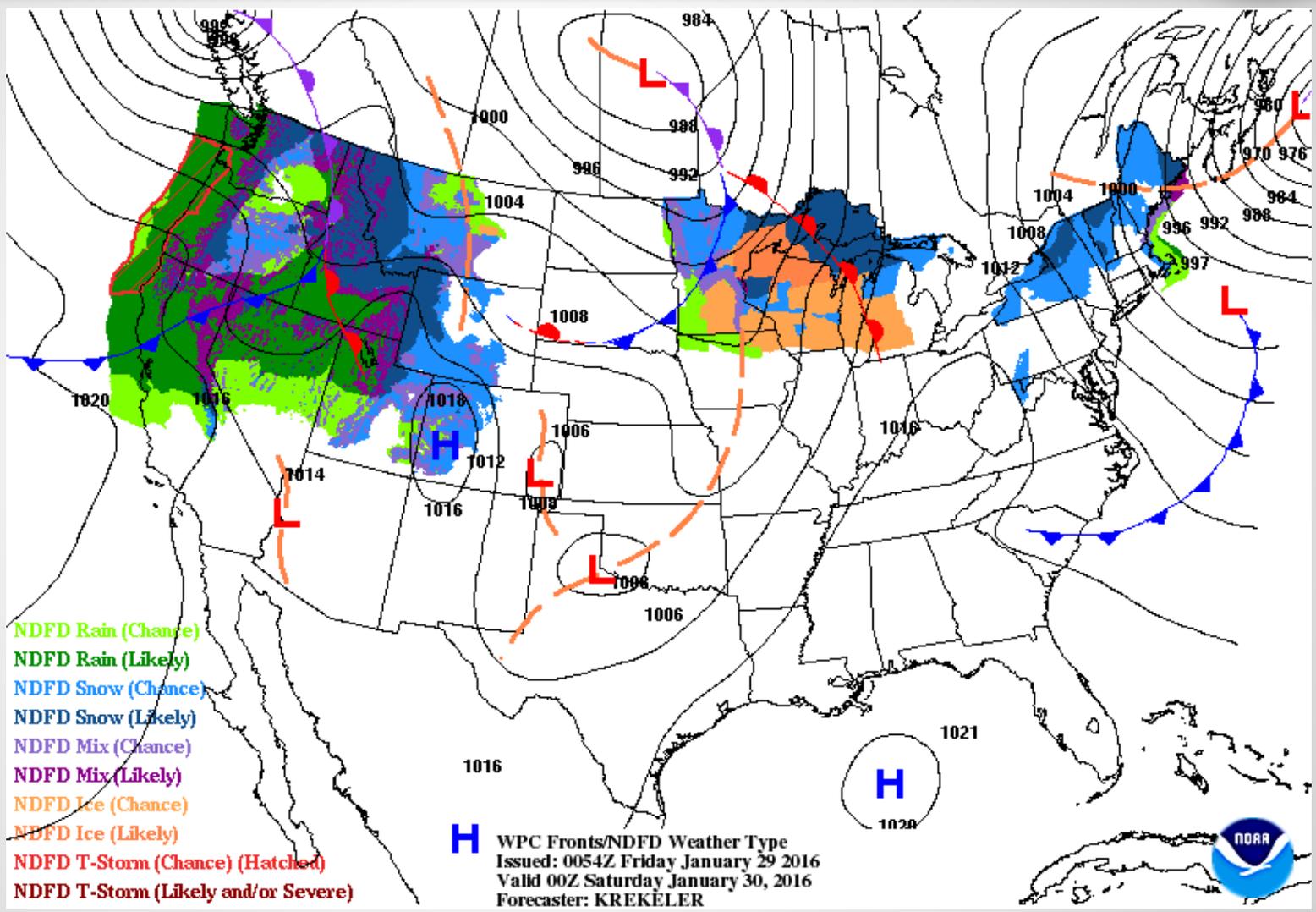


Friday Evening Weather...

Issued Thursday night at 6:50pm CDT



- Cold front through the RRV.
- Light mixed pcpn or snow across much of MN.



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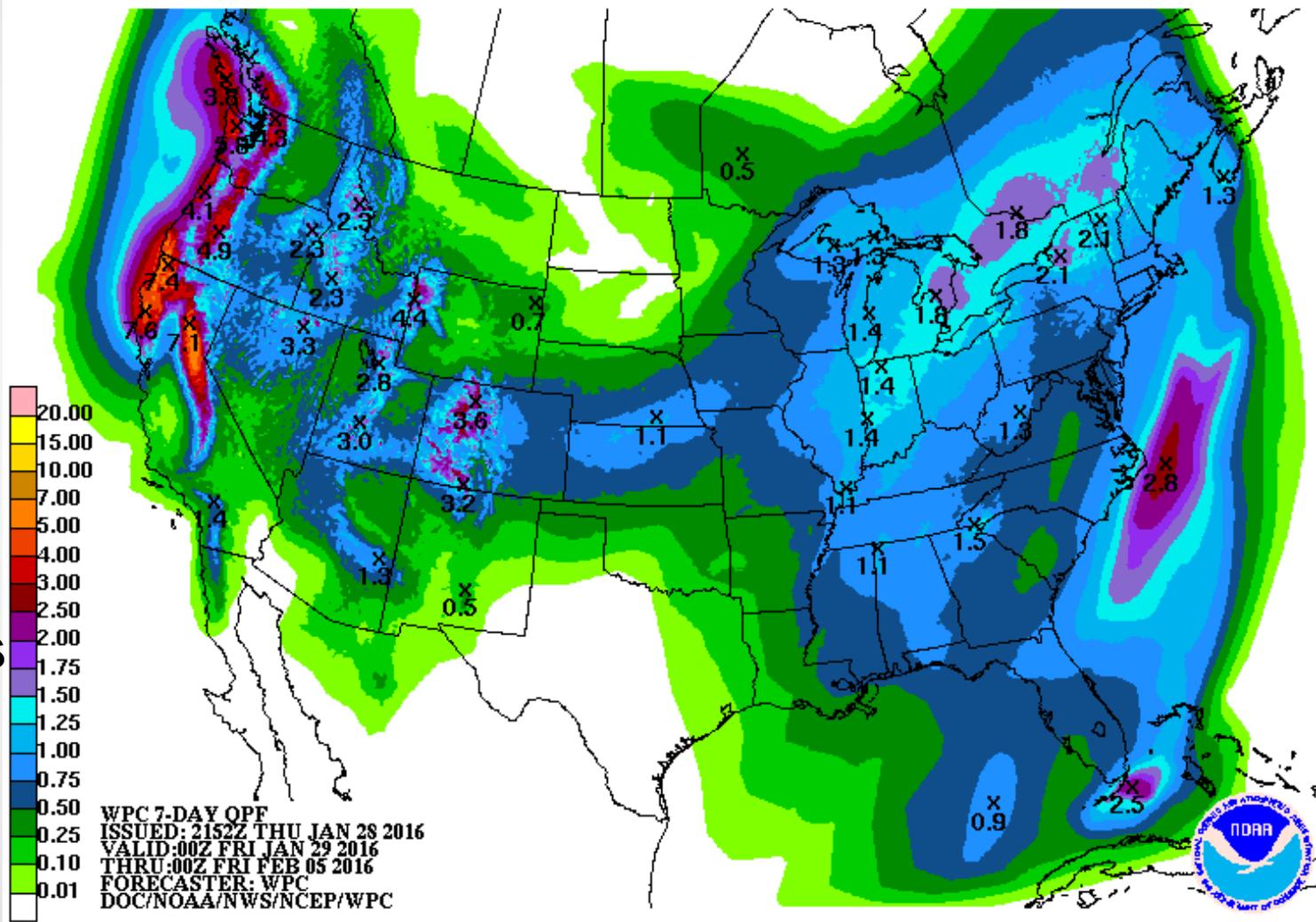


7-Day Precipitation Forecast

January 29 - February 5, 2016



- Only minor events for RRB area next week.
- Hvy Snow Central Plains into Great Lakes early next week.



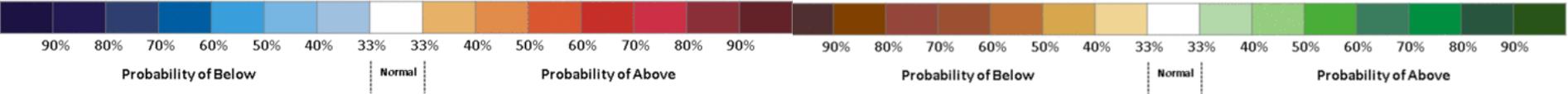
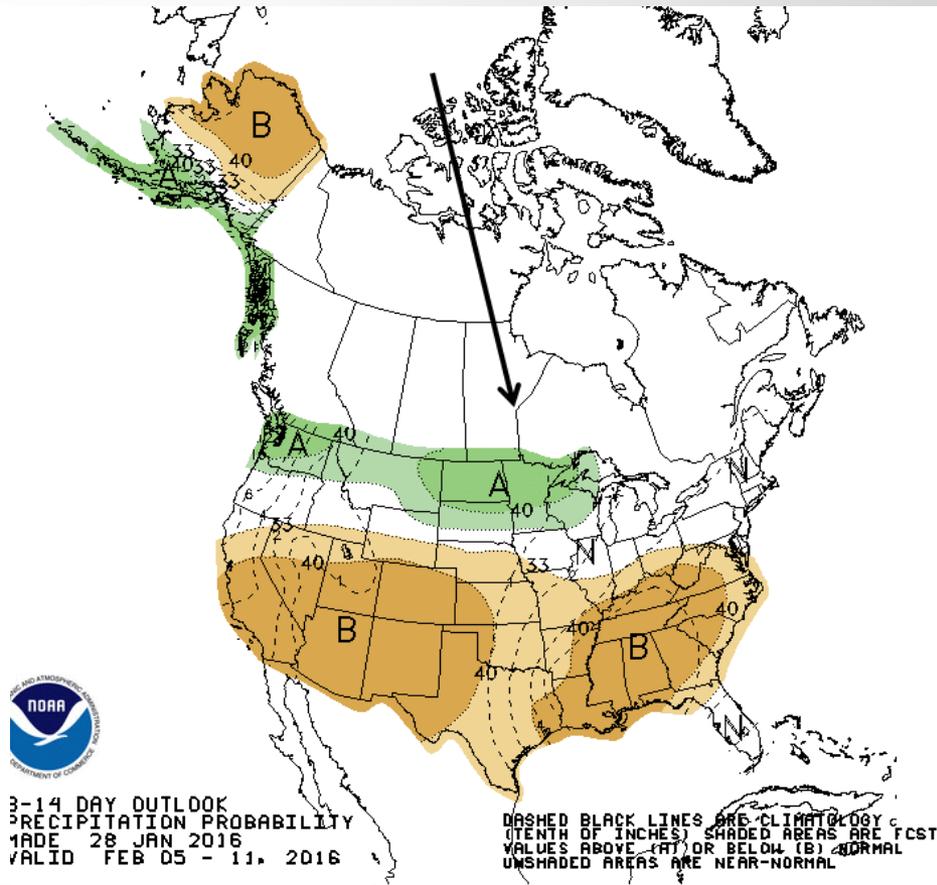
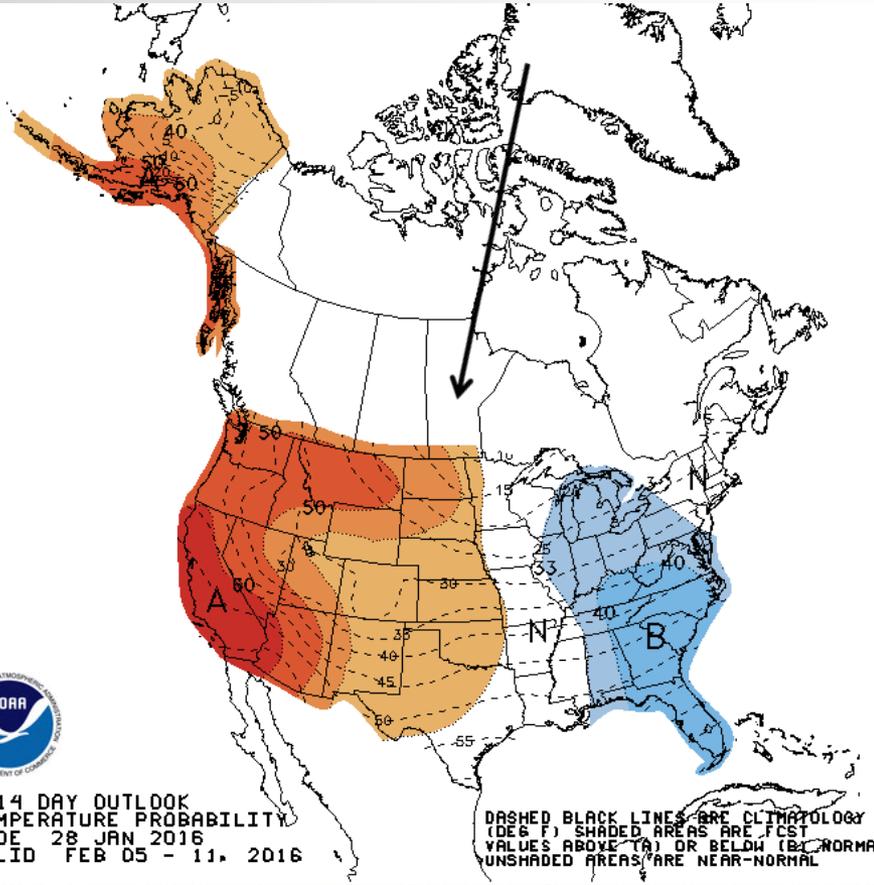
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8-14 Day Outlook [mild and dry]



February 5-11, 2016... *Relatively Mild but Wetish.*



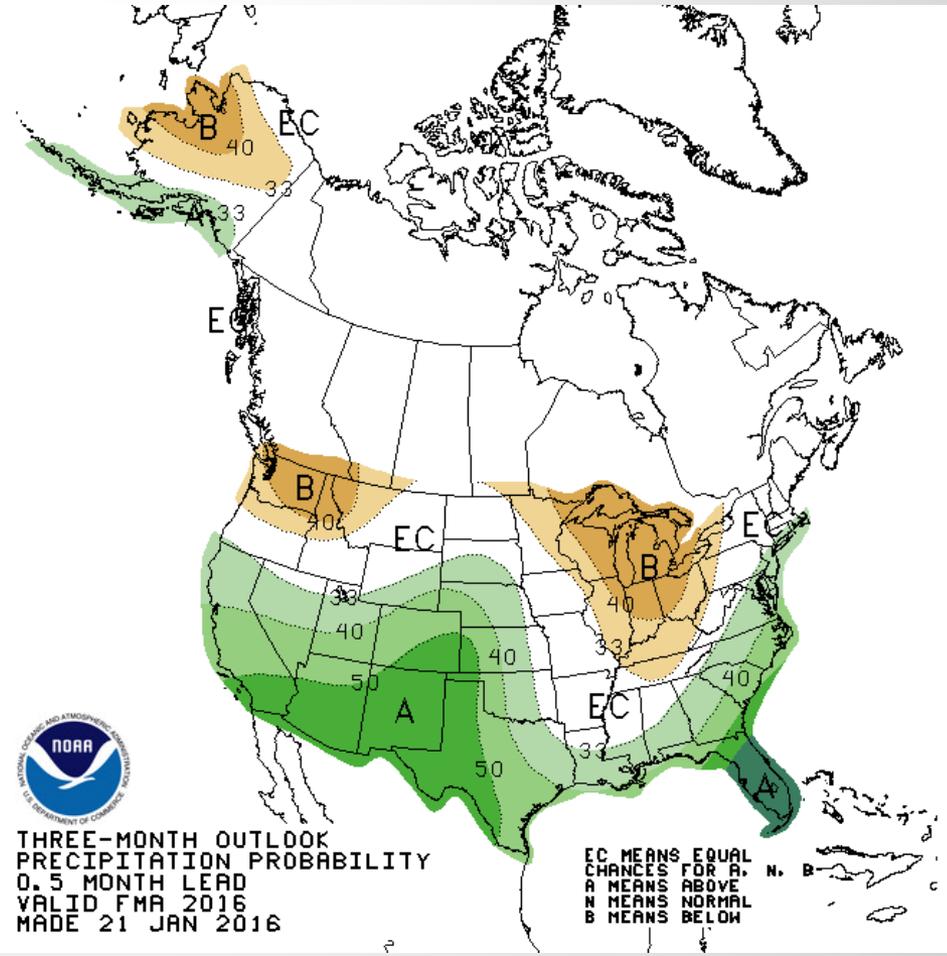
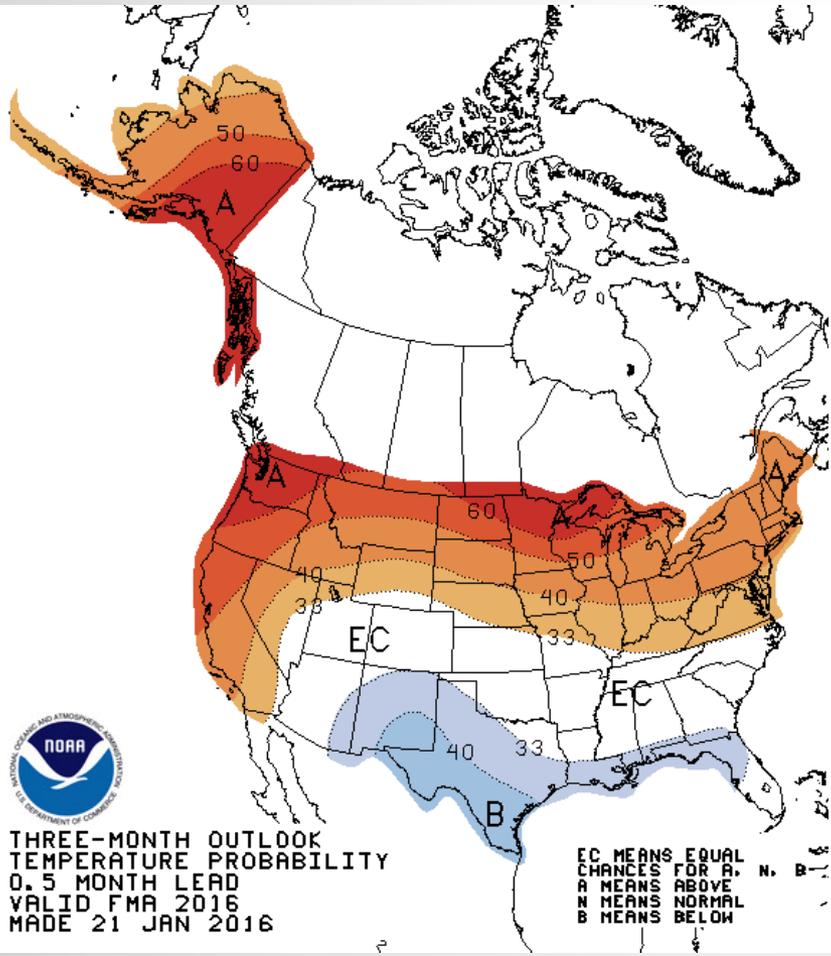
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Winter-Spring Outlook [Feb-Mar-Apr]



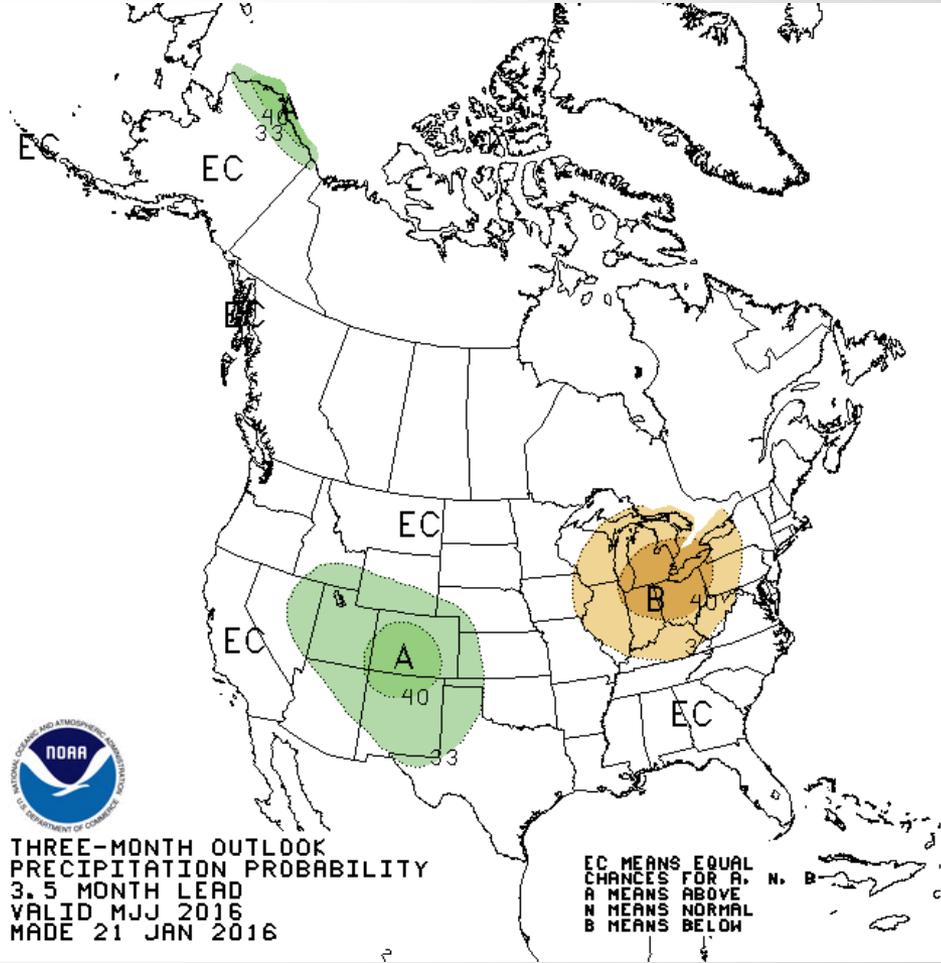
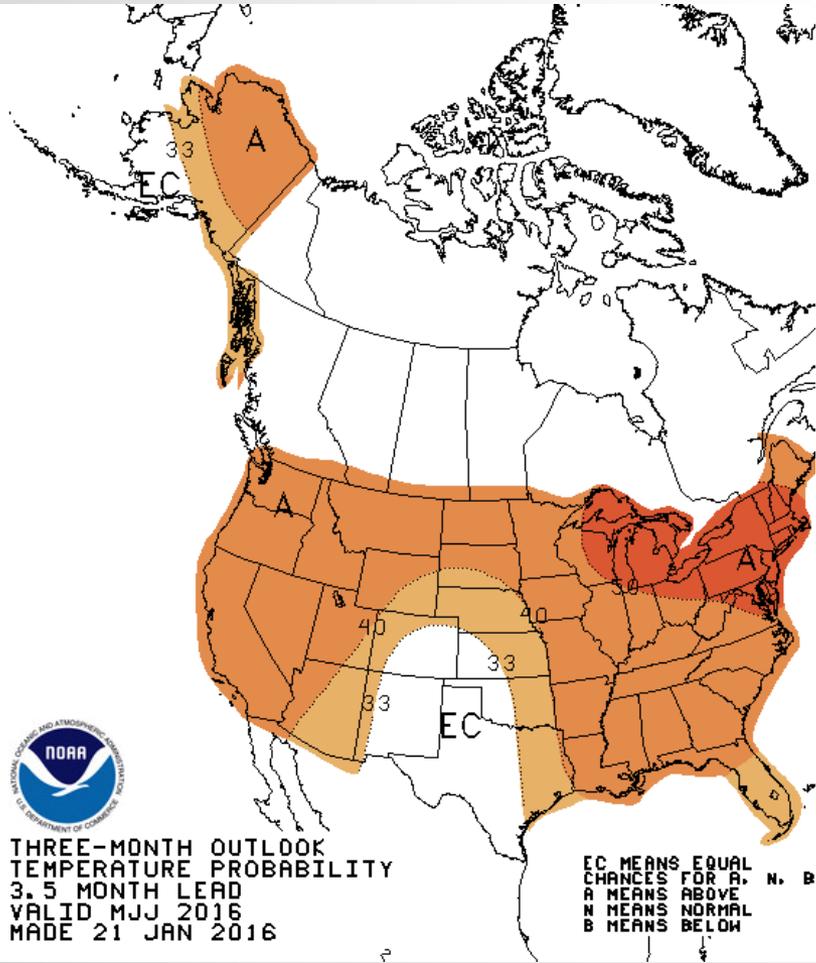
Continued mild temperatures with near to below normal precipitation.





Late Spring into Summer... [May-Jun-Jul]

Warmer than normal... but with near normal precipitation.
Maybe somewhat *dryish*... like early last summer?





El Niño Flood Drivers?

[Not up here!]

Courtesy of Steve Buan

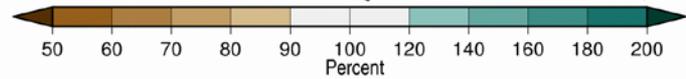
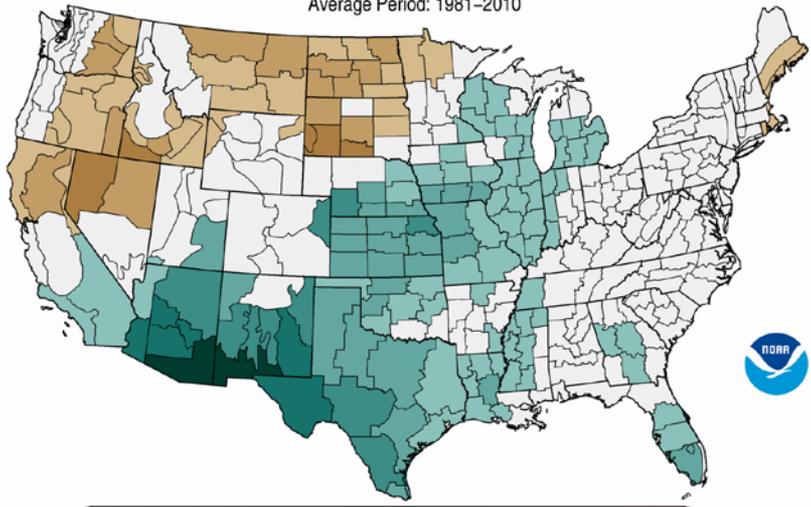


Dec: Dry RRB / Wet Midwest

Strong El Niño Precipitation Percent of Average

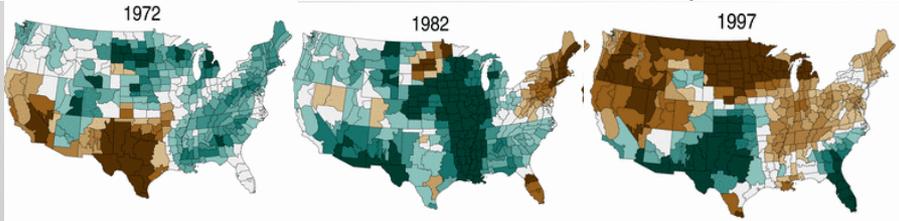
Composite: December 1957, 1965, 1972, 1982, 1991, 1997

Average Period: 1981-2010



Data Source: 5km Divisional Dataset (nClimDiv)

Created by: National Centers for Environmental Information

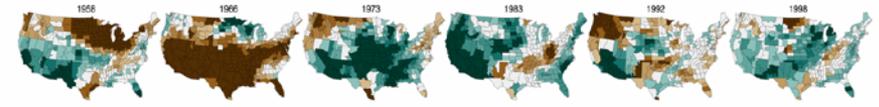
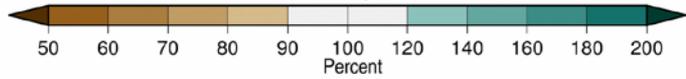
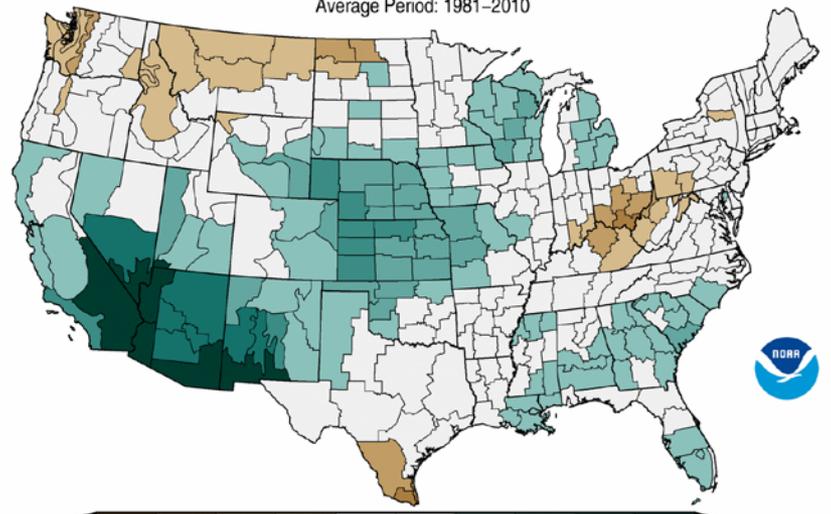


Mar: Neu RRB / Wet Midwest

Strong El Niño Precipitation Percent of Average

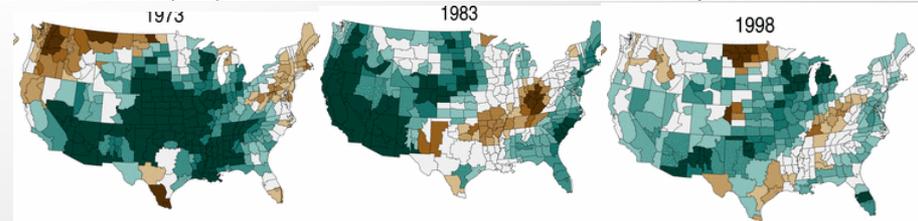
Composite: March 1958, 1966, 1973, 1983, 1992, 1998

Average Period: 1981-2010



Data Source: 5km Divisional Dataset (nClimDiv)

Created by: National Centers for Environmental Information



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Drought Outlook [Nada!]

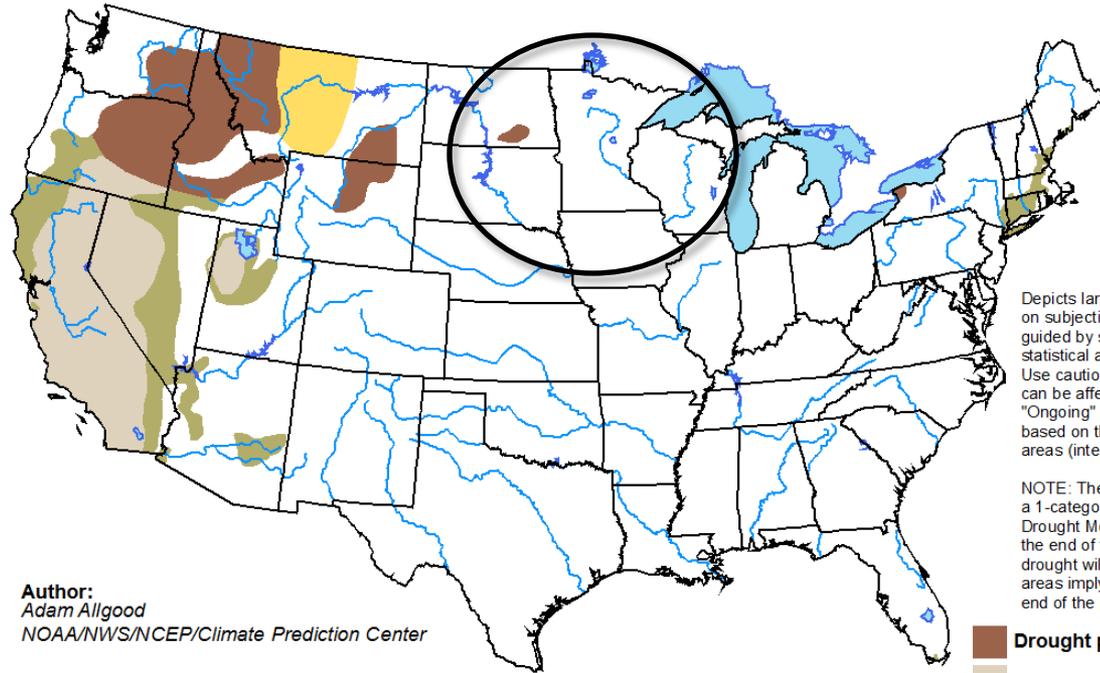


Through April 2016

- Drought is not forecast to develop or persist over most of our Northern Plains region.
- Drought persists across portions of the northwest.
- Drought improves in the southwest.

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for January 21 - April 30, 2016
Released January 21, 2016

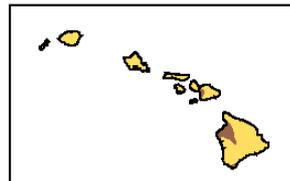
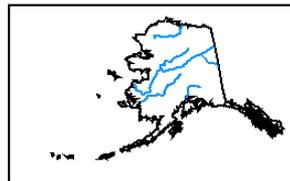


Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely

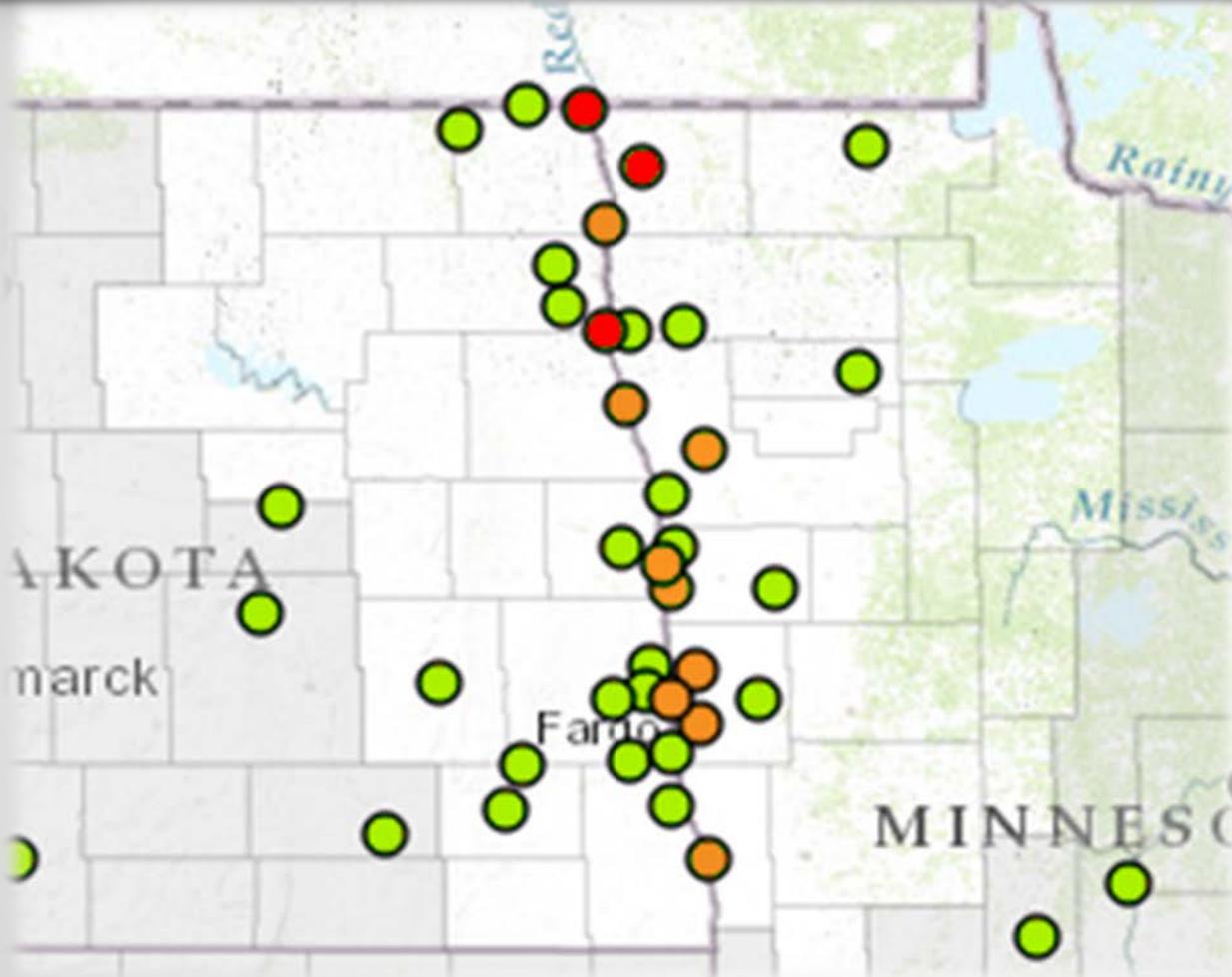


<http://go.usa.gov/3eZ73>





Red River of the North Basin Spring Flood Risk



> 25% Major Flooding
> 25% Moderate Flooding
> 25% Minor Flooding
< 25% Chance of Flooding
Long-Range Flood Risk Not Calculated

Note: the Minor Flood Stages along the Buffalo River near Sabin, Hawley and Dilworth have adjusted upward by one foot at each location as of March 5th, 2015. This graphic reflects those changes.

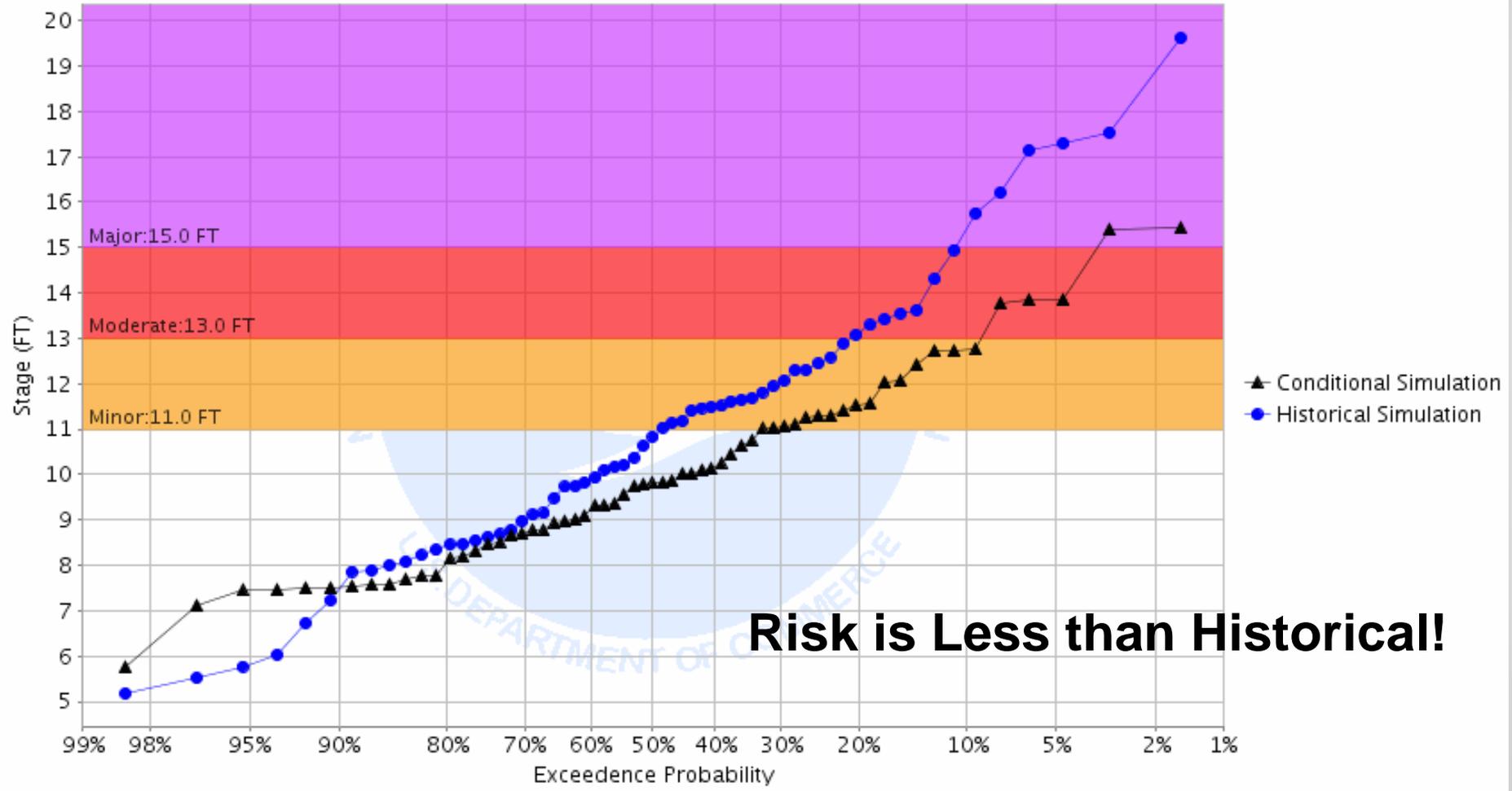
At this point... Minor to Moderate spring flooding is indicated for the Red River near Oslo And the Two Rivers near Hallock. Otherwise Minor flooding or less is expected.





Wahpeton/Breckenridge

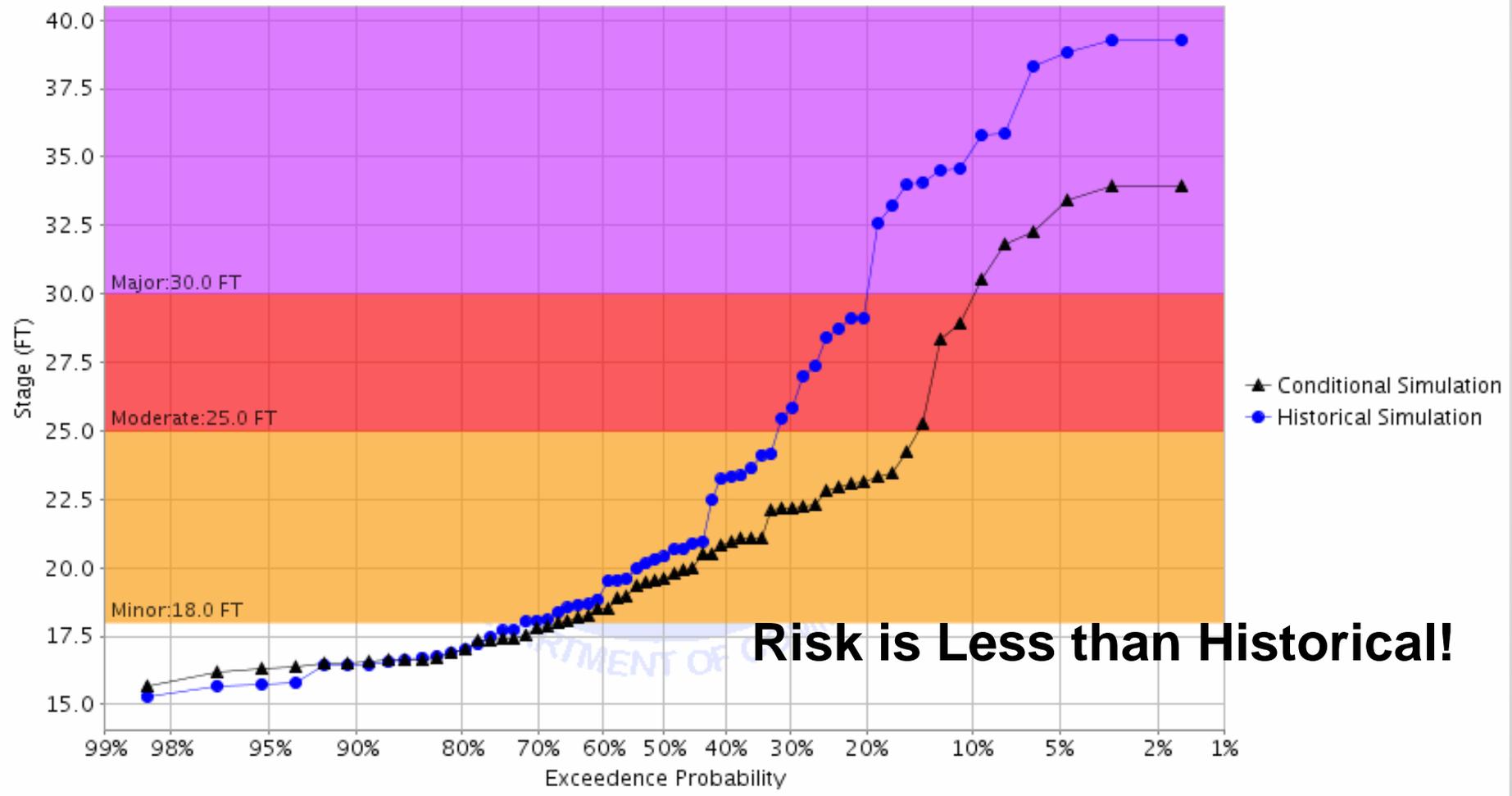
Chance of Exceeding River Stage at WHNN8
Forecast for the period 01/31/2016 - 04/30/2016
This is a conditional simulation based on the current conditions as of 01/24/2016





Fargo/Moorhead

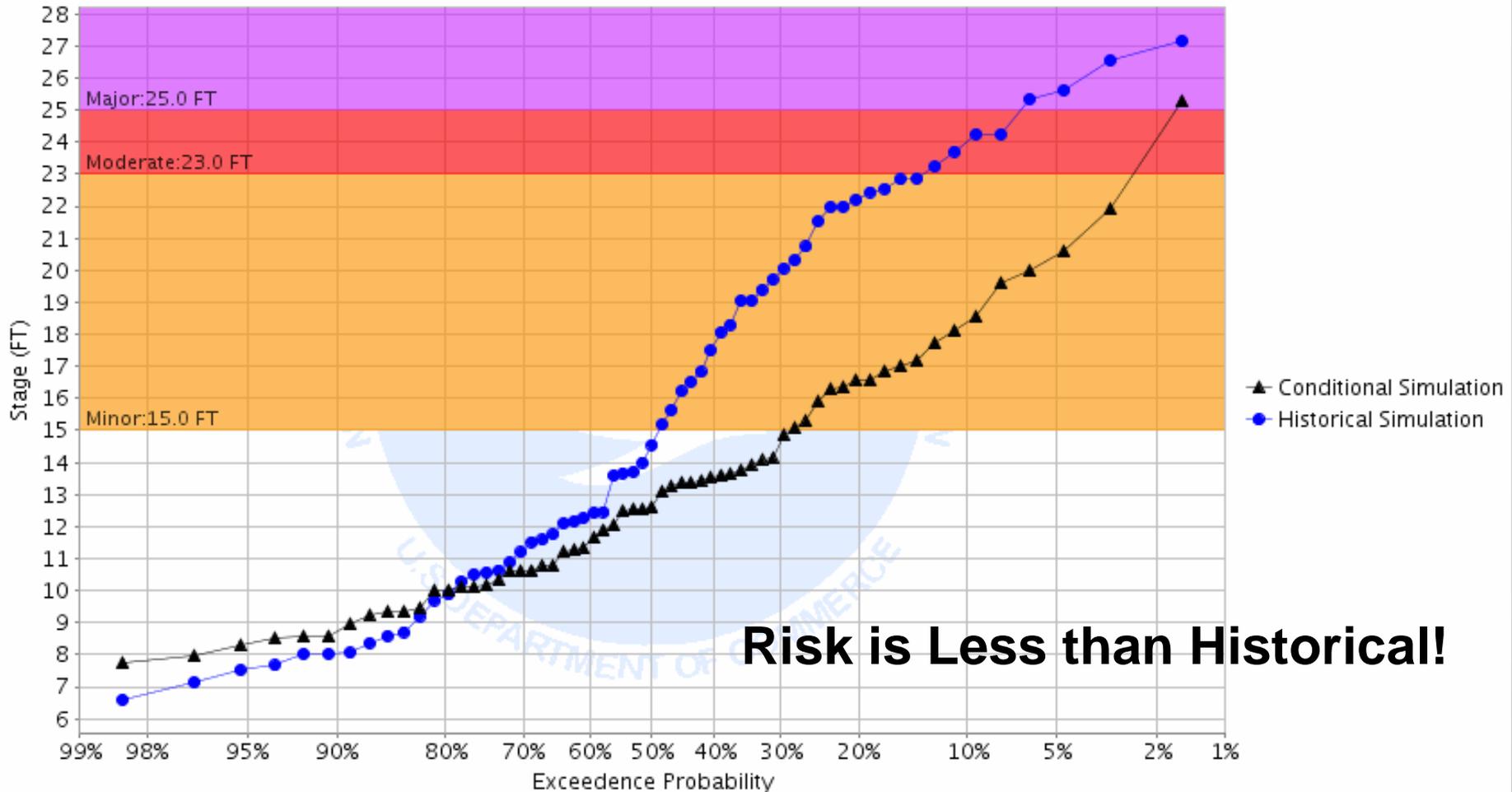
Chance of Exceeding River Stage at FGON8
Forecast for the period 01/31/2016 - 04/30/2016
This is a conditional simulation based on the current conditions as of 01/24/2016





Crookston

Chance of Exceeding River Stage at CRKM5
Forecast for the period 01/31/2016 - 04/30/2016
This is a conditional simulation based on the current conditions as of 01/24/2016

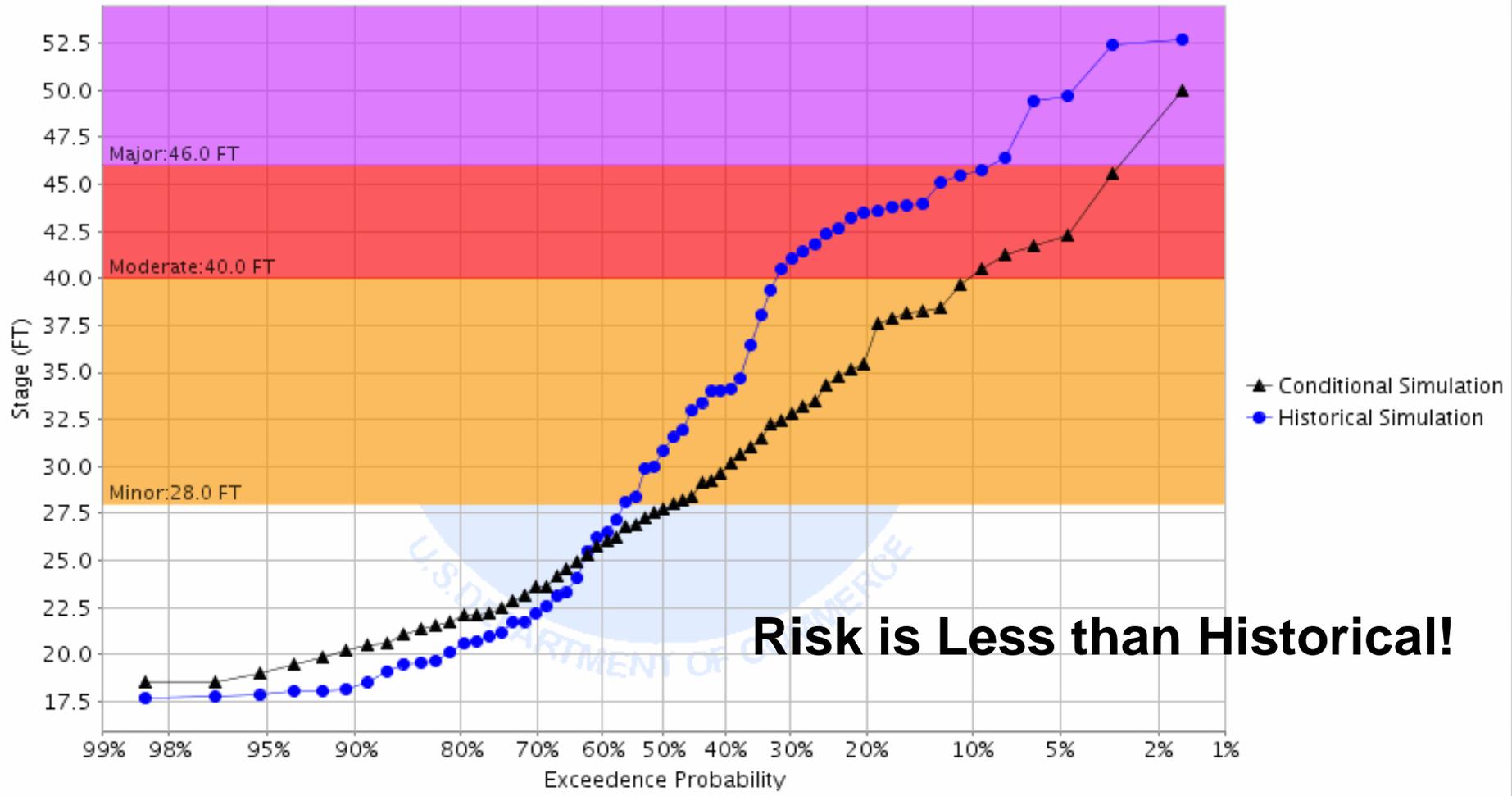




East Grand Forks/Grand Forks



Chance of Exceeding River Stage at EGFMS
Forecast for the period 01/31/2016 - 04/30/2016
This is a conditional simulation based on the current conditions as of 01/24/2016



Risk is Less than Historical!





Oslo? Hallock? Pembina?



Risk is Less than Historical!

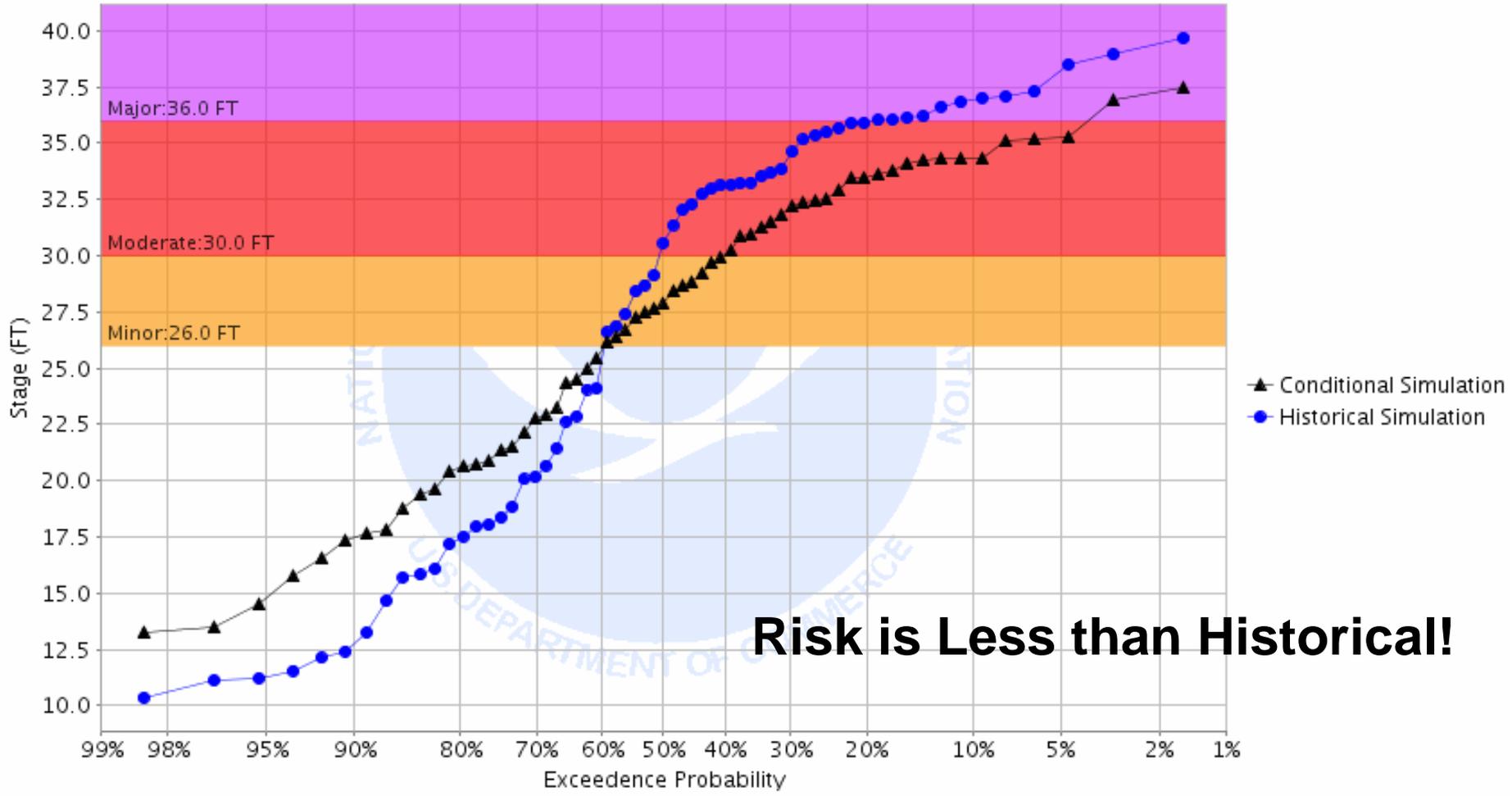


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Oslo? Hallock? Pembina?

Chance of Exceeding River Stage at OSLM5
Forecast for the period 01/24/2016 - 04/23/2016
This is a conditional simulation based on the current conditions as of 01/17/2016



Risk is Less than Historical!





Recap: Hydrologic Outlook

Red River of the North Basin



Bottom line up top:

- Sig runoff **risk** is low... below seasonal averages.
 - expect more than 2015, *perhaps less* than 2014!
- **Mild** thaw cycle is expected... slight risk remains.
 - expect some snow and rain!
- Climate Outlook is for mild and dryish... **El Niño** rules!





Flood Ex: Hydrologic Outlook Red River of the North Basin



Are you a WRN Ambassador?

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WRN
WEATHER-READY NATION

Greg Gust - NWS Grand Forks ND
January 29, 2016



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NWS

Contact Information



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Michael.Lukes@noaa.gov**

NWS Chanhassen – Steve.Buan@noaa.gov

QUESTIONS?



<http://www.weather.gov>



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