



Spring 2016 - Hydrologic Outlook

Red River of the North Basin



Are you a WRN Ambassador?

AMBASSADOR™
WRN
WEATHER-READY NATION

Greg Gust - NWS Grand Forks ND
February 18, 2016



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Hydrologic Outlook

Red River of the North Basin



Bottom line up top: **(largely unchanged from Jan 28th!)**

- 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!





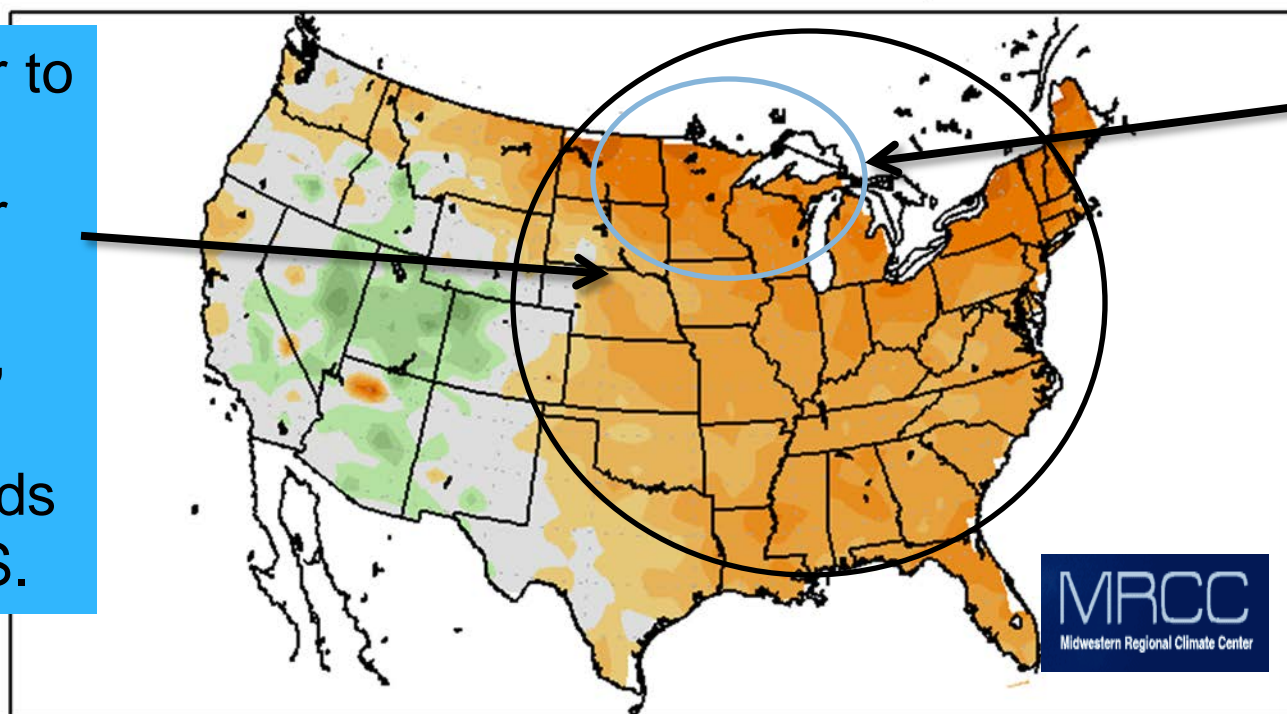
Winter Temperatures [mild]



Departure from Normal Temperatures Since Nov. 1, 2015

Average Temperature (°F): Departure from Mean
November 1, 2015 to February 17, 2016

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



Mean period is 1981–2010.



RRB and
across MN
nearly 8
degrees
abv normal.

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



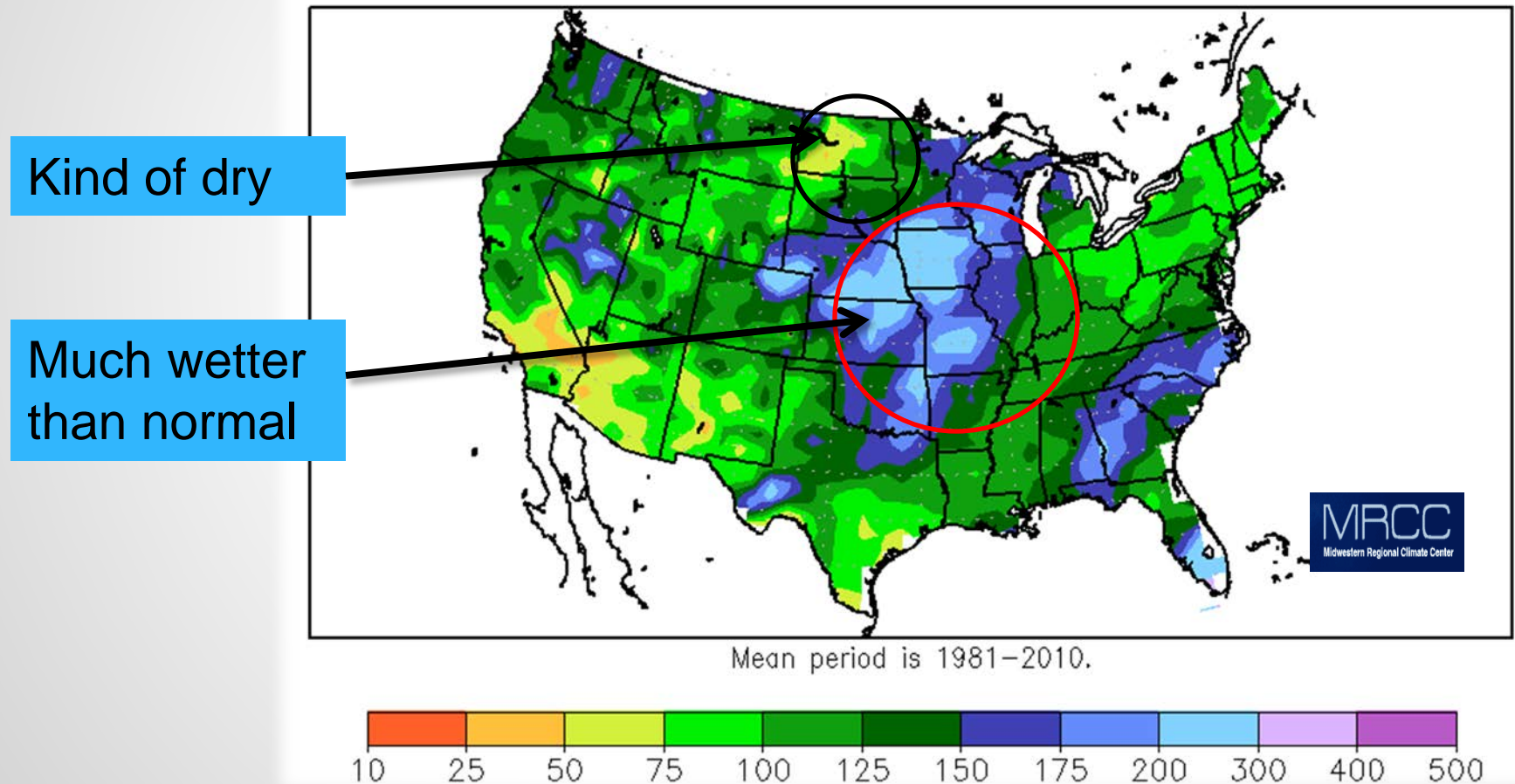


Winter Precipitation [lowish]



Percent of Normal Since Nov. 1, 2015

Accumulated Precipitation: Percent of Mean
November 1, 2015 to February 17, 2016





Winter Precipitation

[lowish]



Precipitation Accumulated Since Nov. 1, 2015

Accumulated Precipitation (in)
November 1, 2015 to February 17, 2016

Kind of dry:

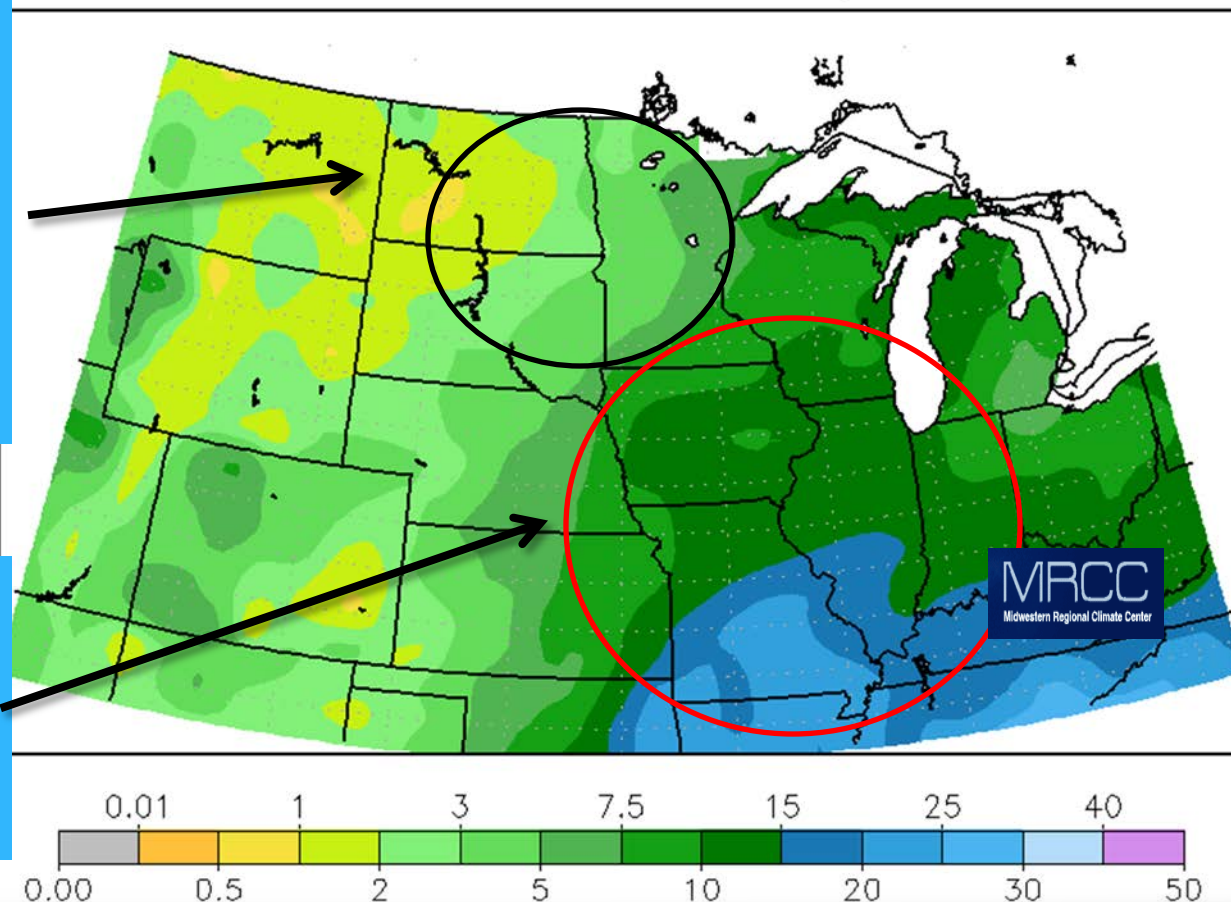
1-2 inches west RRV

2-3 inches east RRV

Snow Content at 40-80% of normal.

Much wetter than normal:

Mississippi below St. Paul ← Ouch!

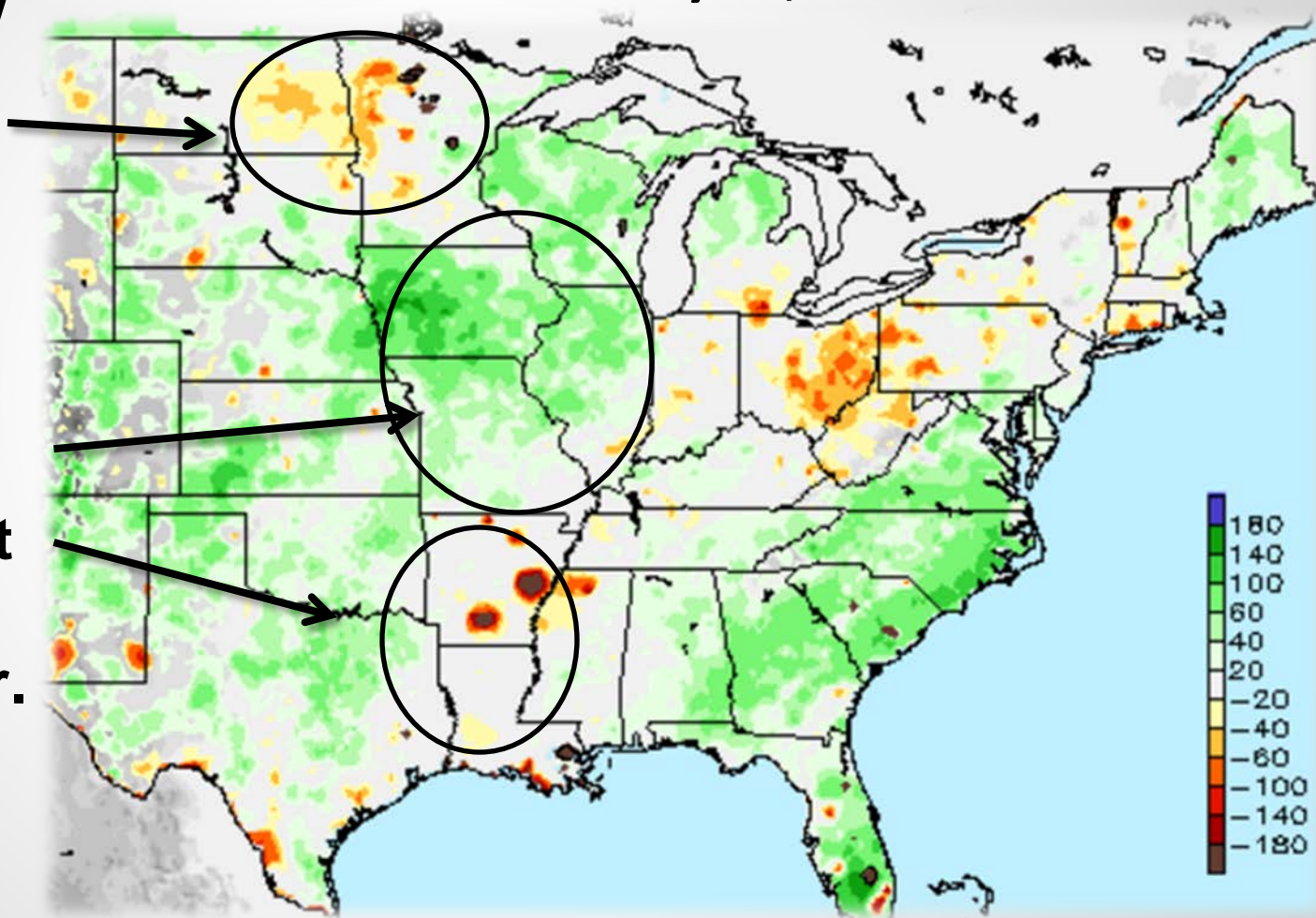


Soil Moisture

[near to below normal]

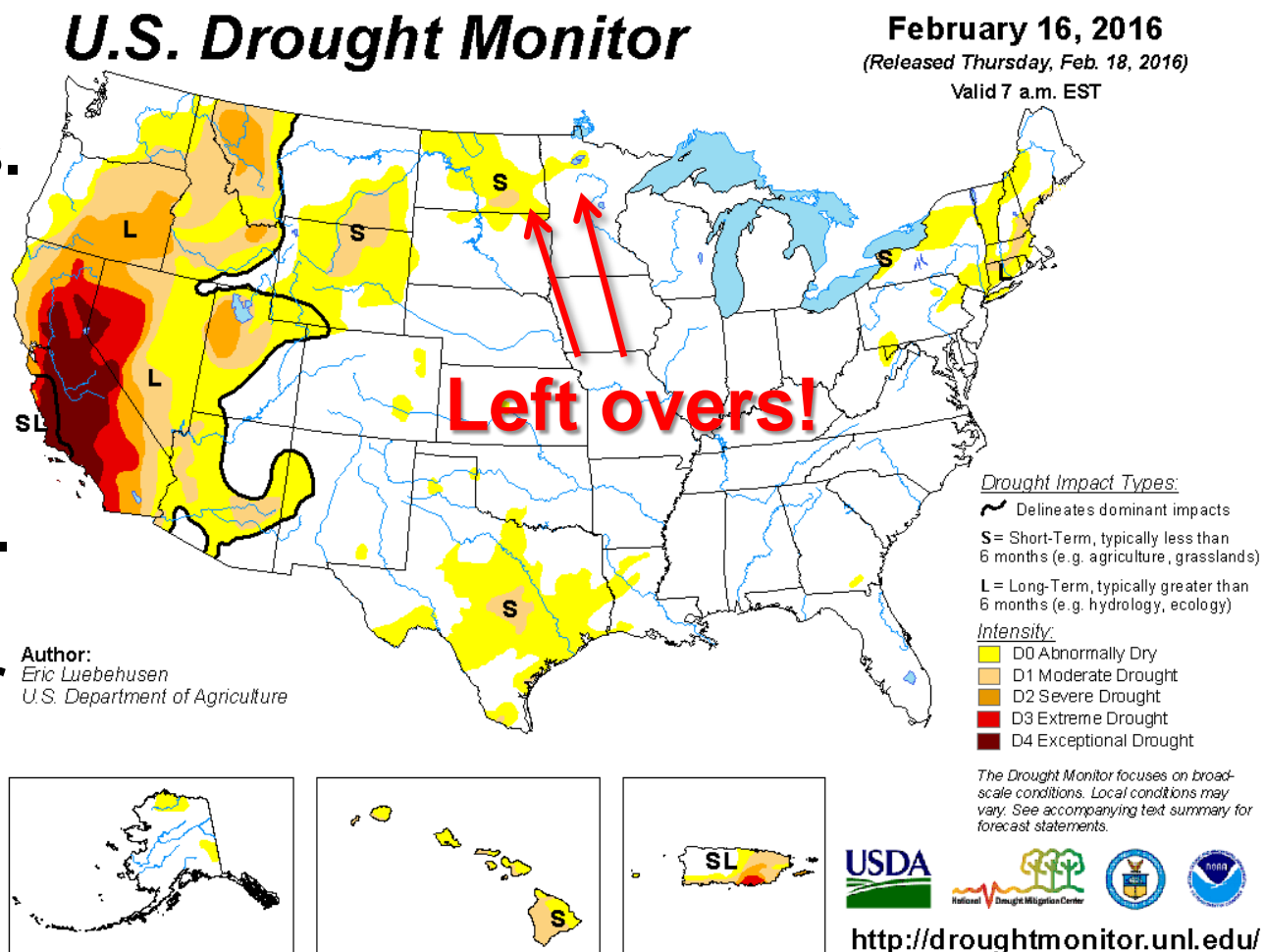
February 13, 2016

- Near to below normal in the RRV and Mid Missouri Basin.
- Midwest is still quite saturated, but So. Plains soils are drier.
- 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.



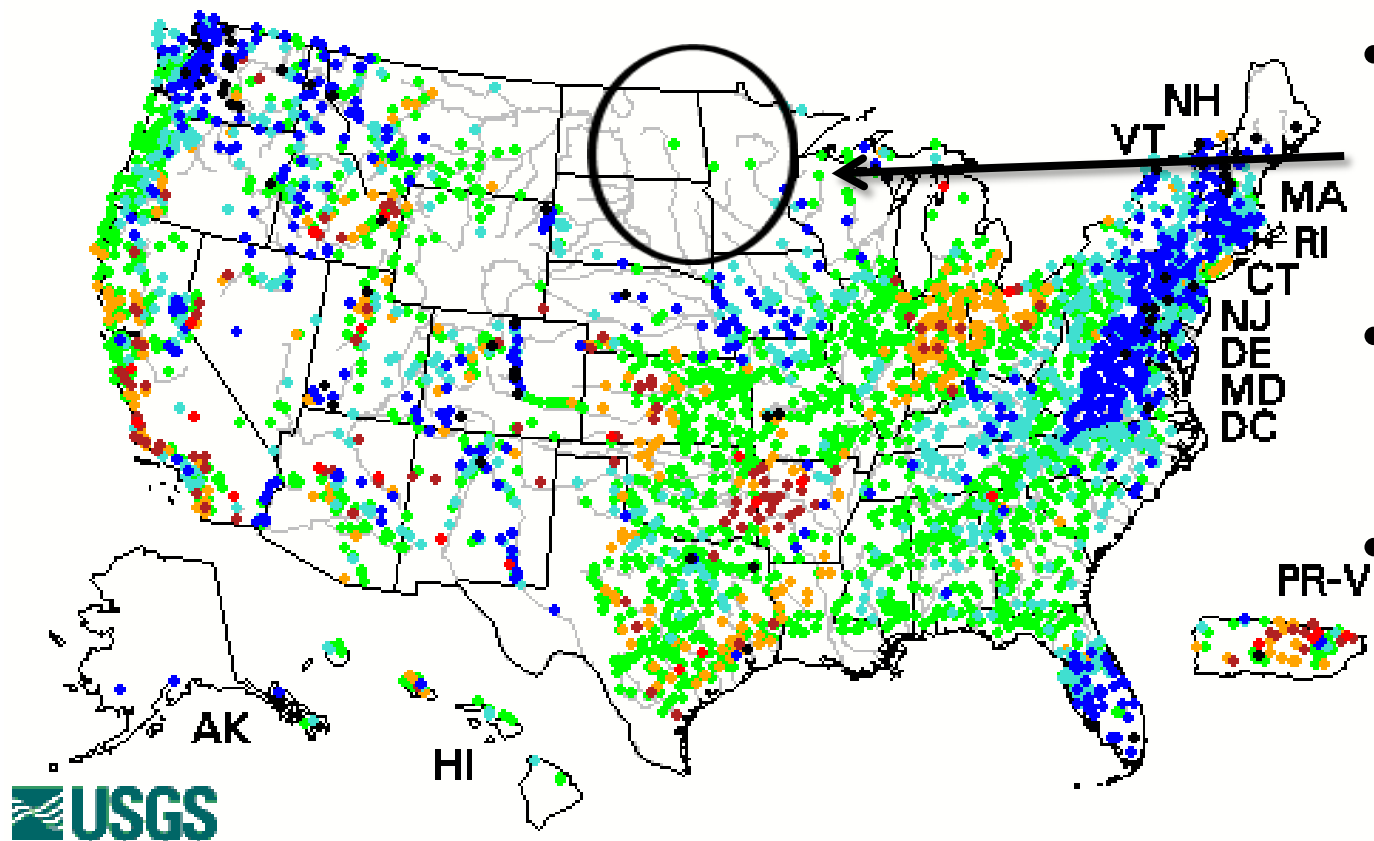


USGS Streamflow Conditions [normal]



As of February 18, 2016

Thursday, February 18, 2016 14:30ET



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



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2016 Snow Depth – Snow Water

[low... 18 Feb 2016]

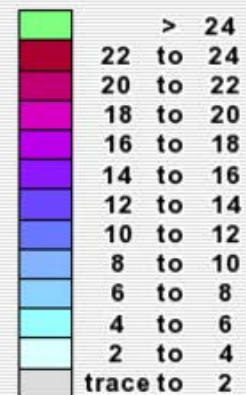


Modeled Snow Depth (Shallow-snow Legend) forecasted for 2016 February 18, 19:00 UTC

368.3 mi

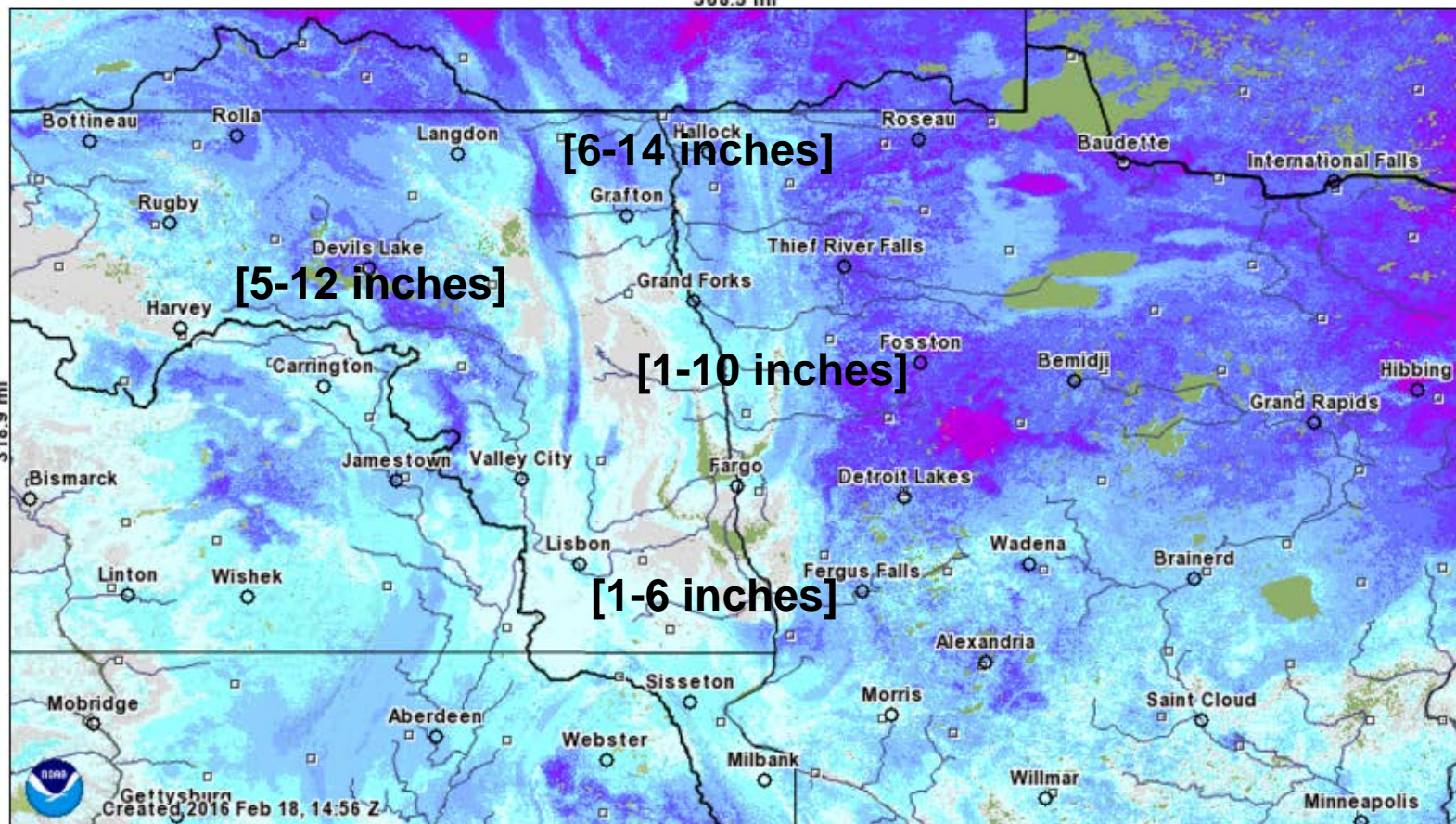
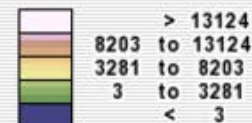


Inches of depth



Not Estimated

Elevation in feet



Snow Depth ranges from 40 to 80 percent of normal across the area. Snow Water Equivalent is generally 0.5 to 1.5 inches.



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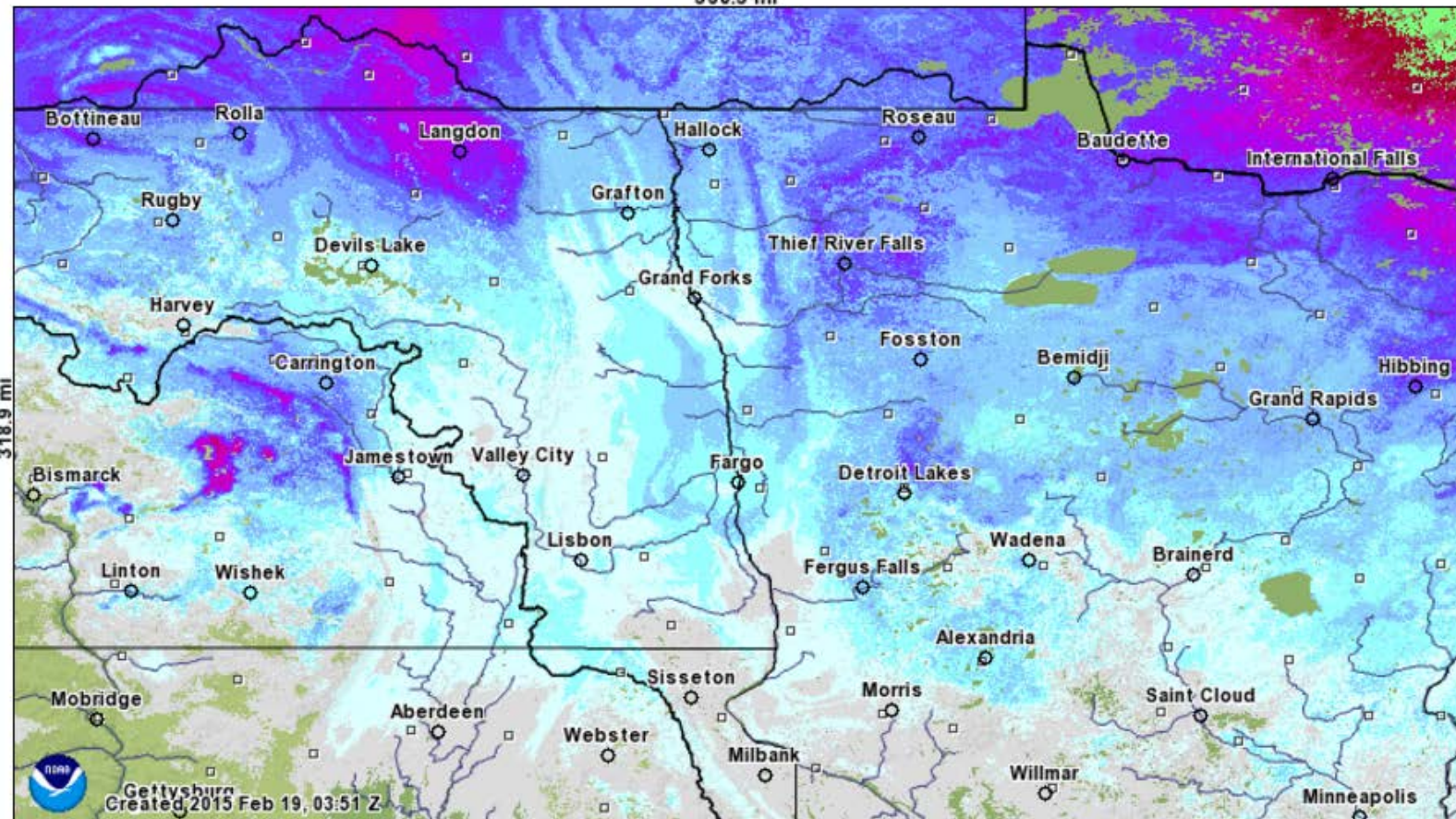


2015 Snow Depth – Snow Water [very similar to 2016!]

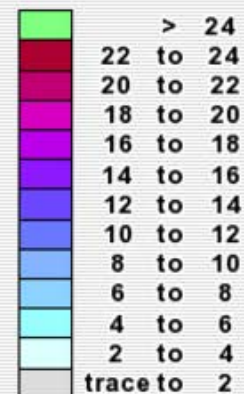


Modeled Snow Depth (Shallow-snow Legend) for 2015 February 18, 18:00 UTC

368.3 mi

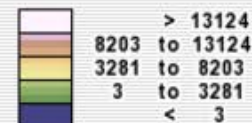


Inches of depth



Not Estimated

Elevation in feet



In Feb of 2015...Snow Depth also ranged from 40 to 80 percent of normal across the area... as did Snow Water Equivalent.



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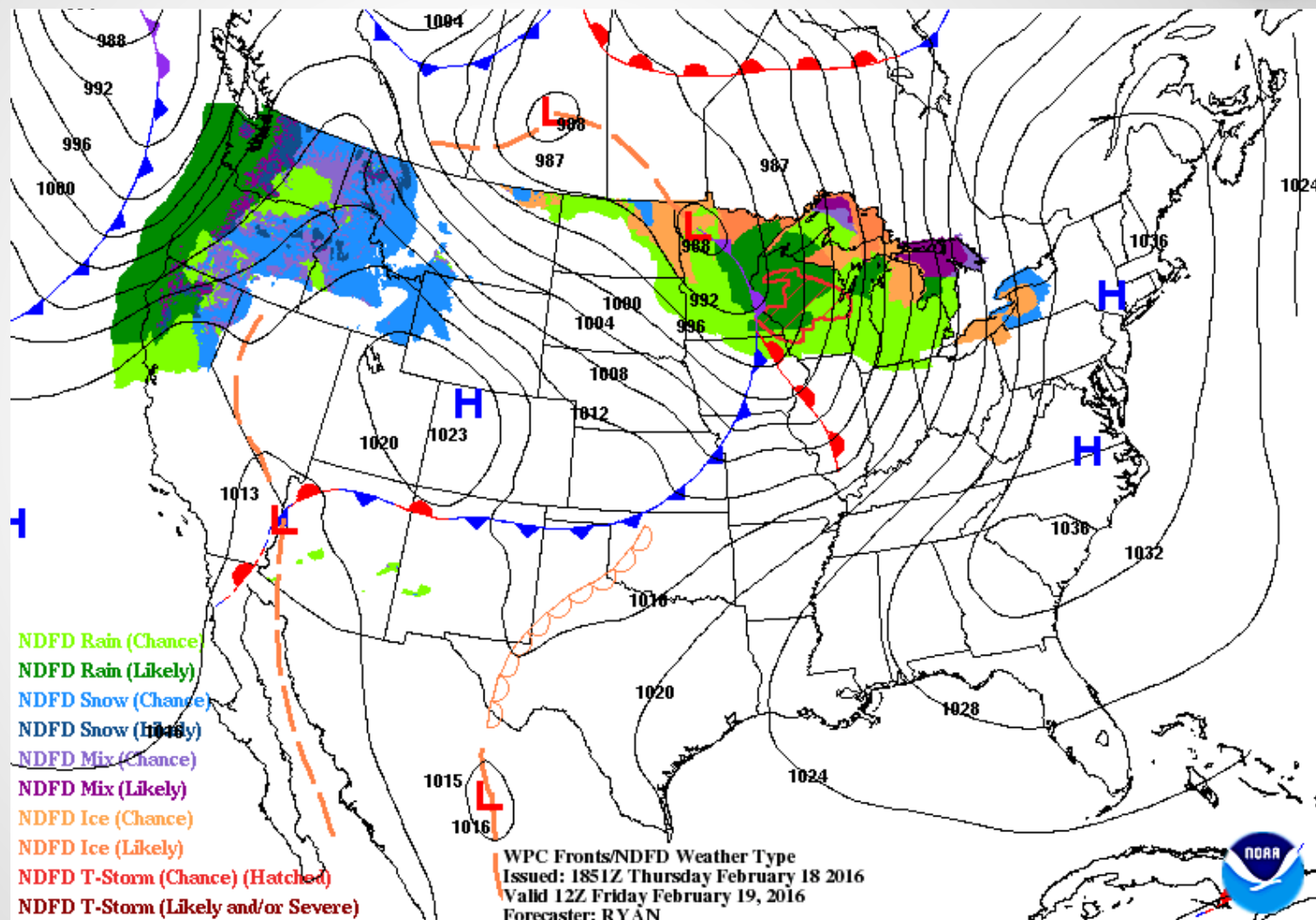


Friday Noon Weather...

Issued Thursday at 12:51pm CDT



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



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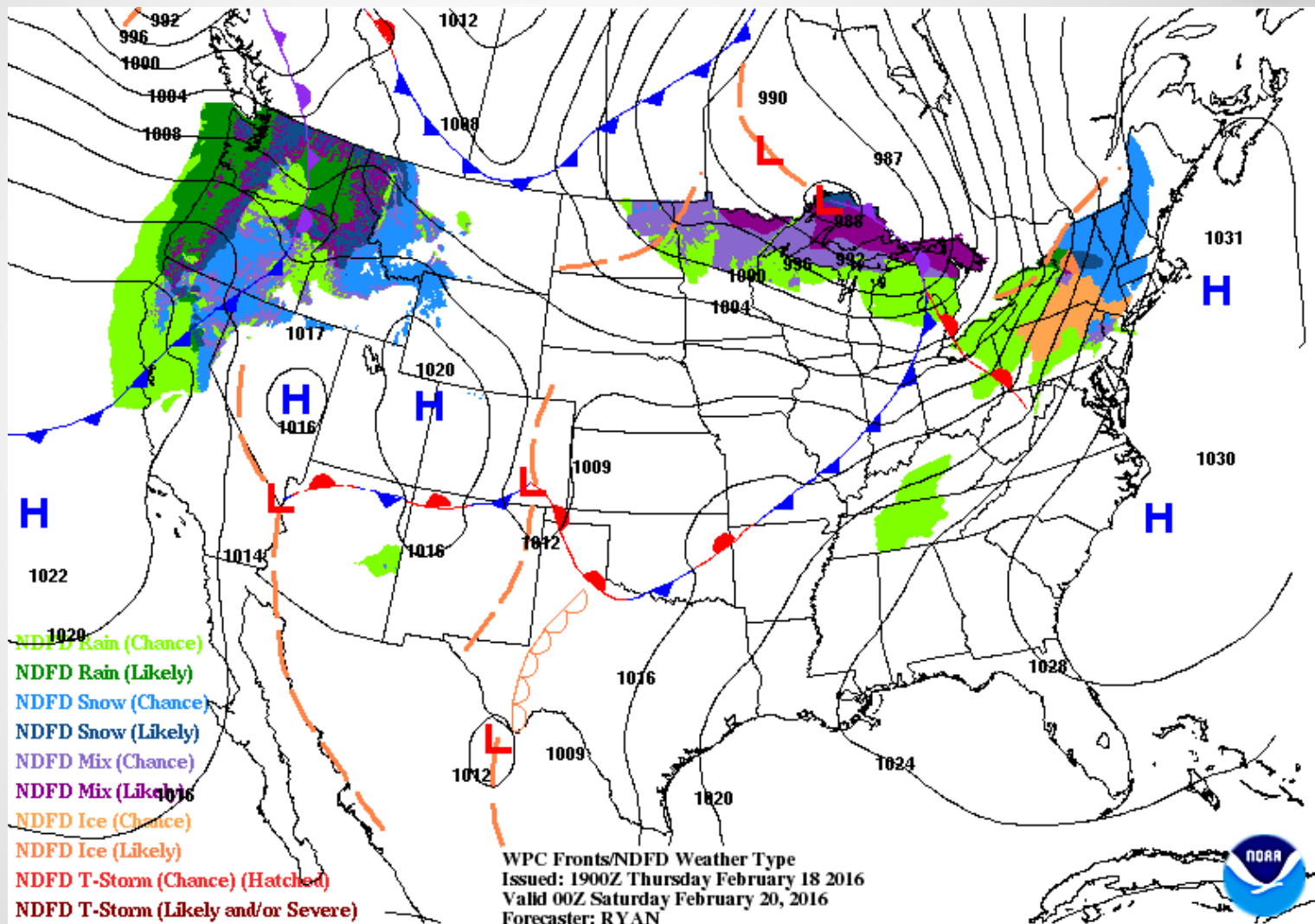


Friday Evening Weather...

Issued Thursday 12:51pm CDT



- Low pressure moves into the Great Lakes.
- Mixed precip lingers across NE ND and northern MN.



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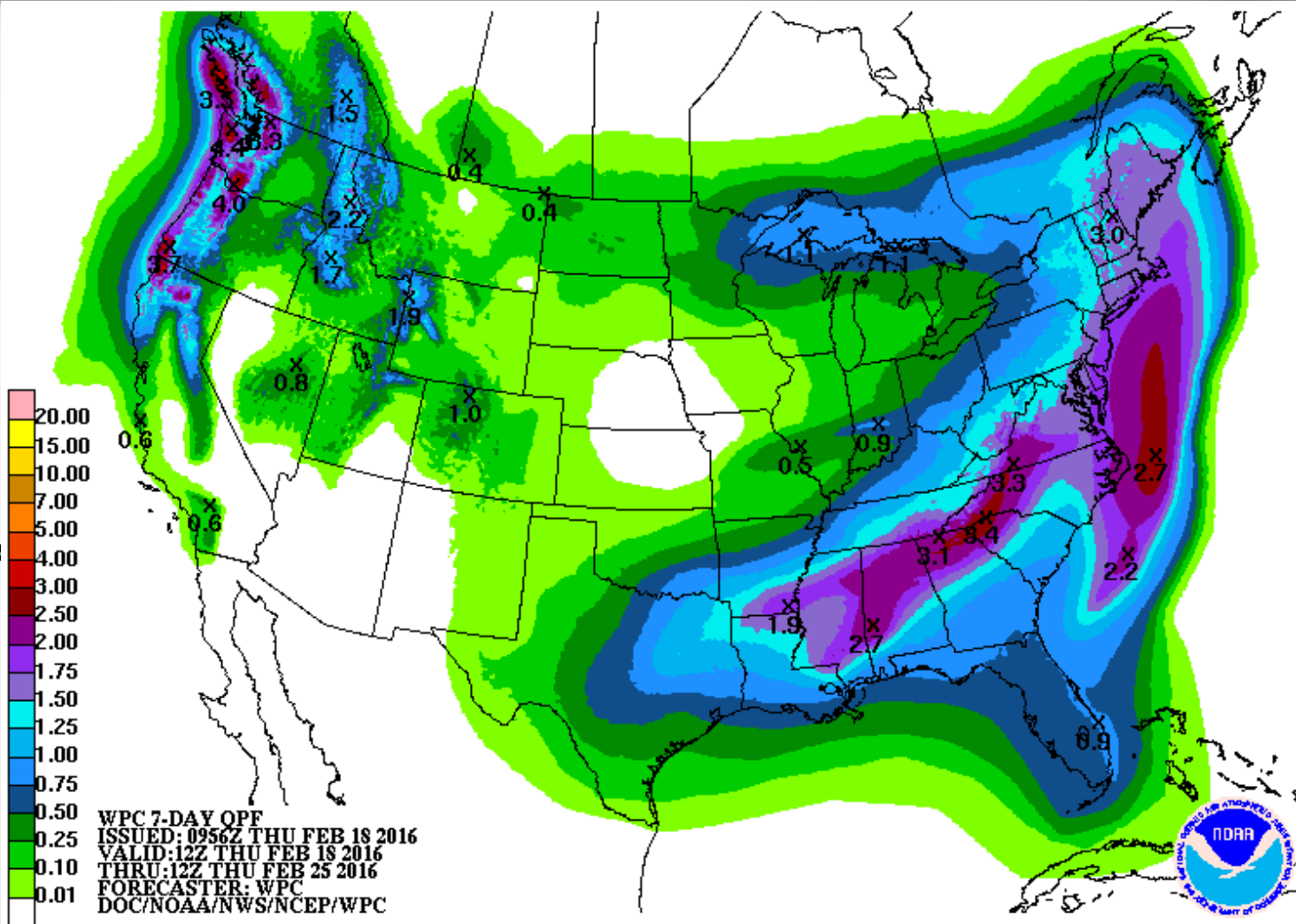


7-Day Precipitation Forecast

February 18 - February 25, 2016



- Only minor events for RRB area next week.
- Hvy Snow across East, Southeast, and the PacNW.



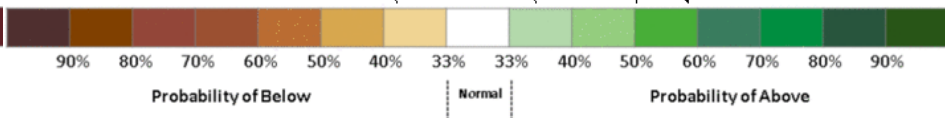
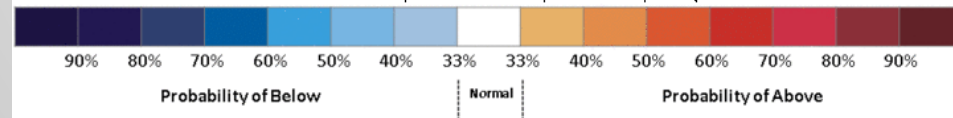
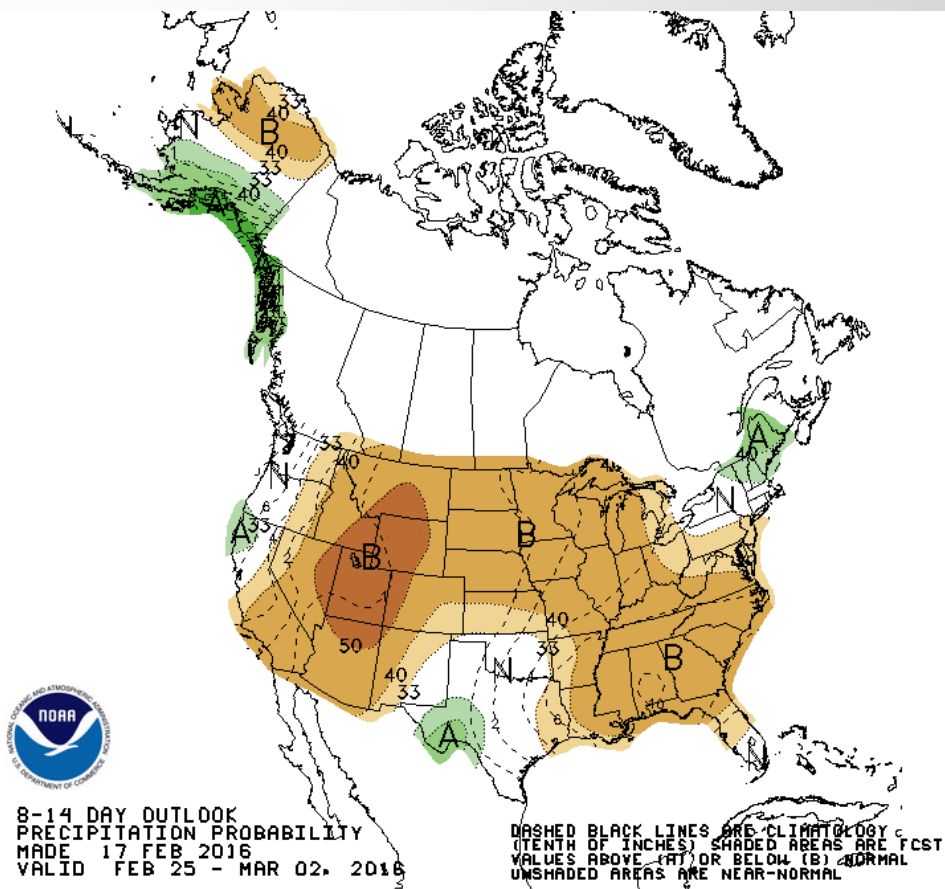
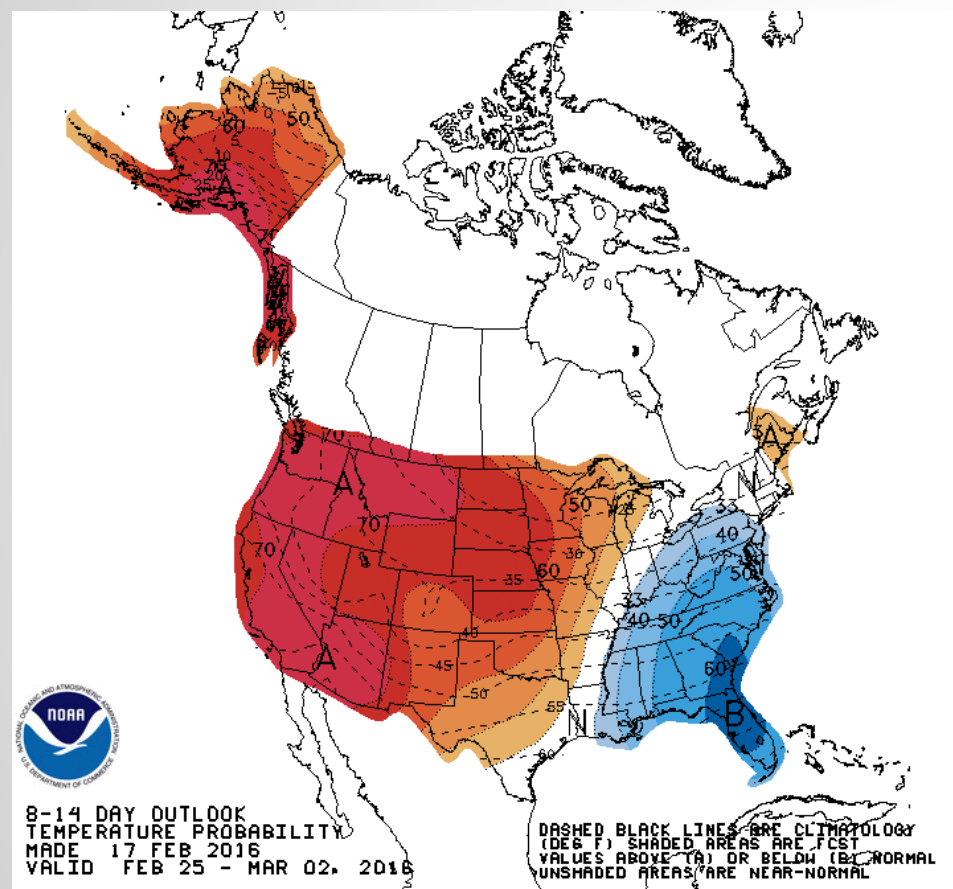
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8-14 Day Outlook [mild and dry]



February 25-Mar 2, 2016... *Relatively Mild and Dryish.*



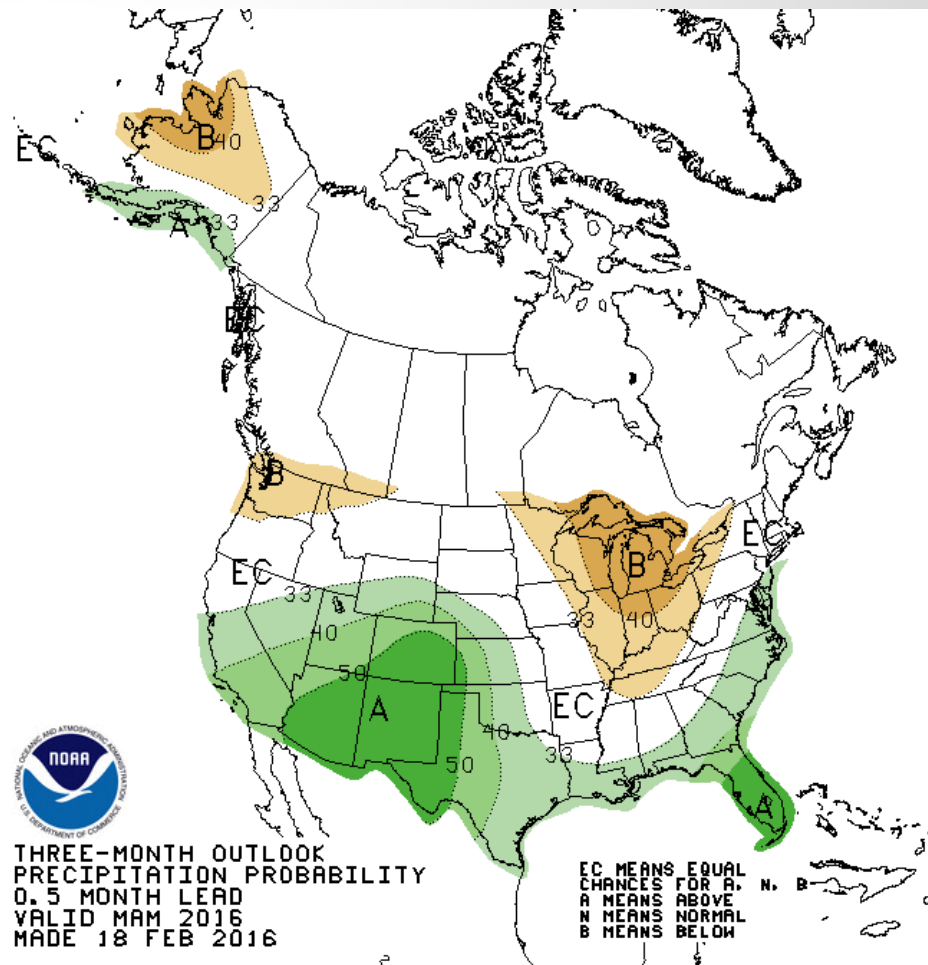
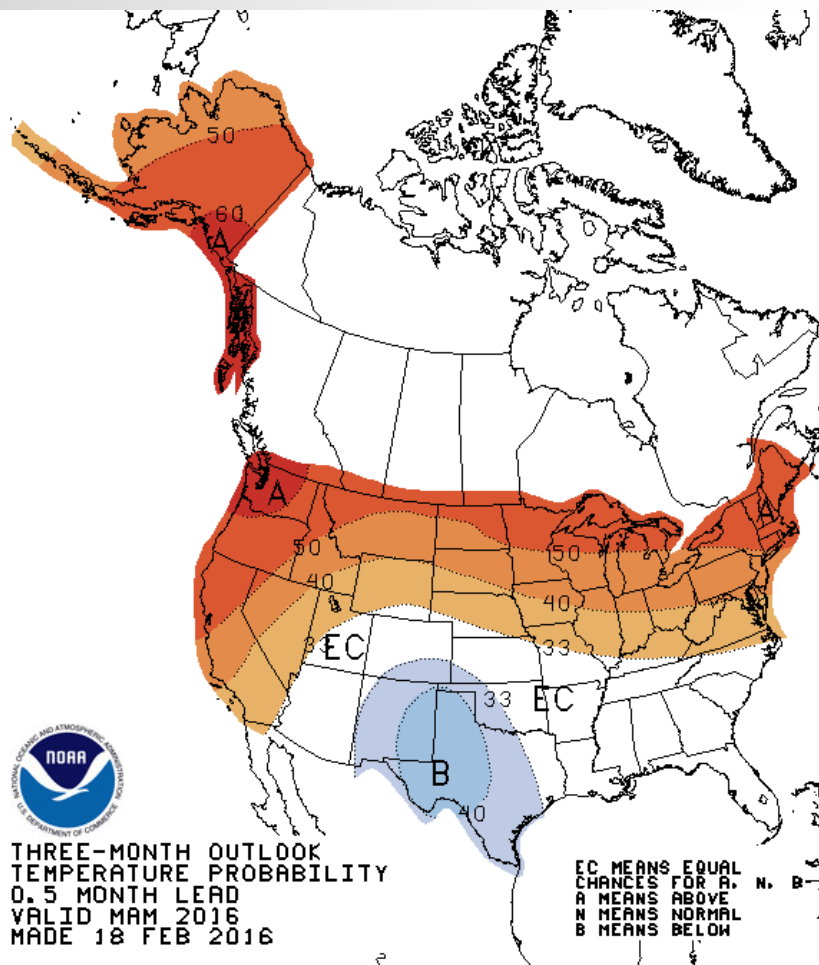
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Spring Outlook [Mar-Apr-May]



Continued mild temperatures with near normal precipitation.



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El Niño as Flood Drivers?

[Historic Risk: N. Plains is Lower, C. Plains is higher]

Courtesy of Steve Buan

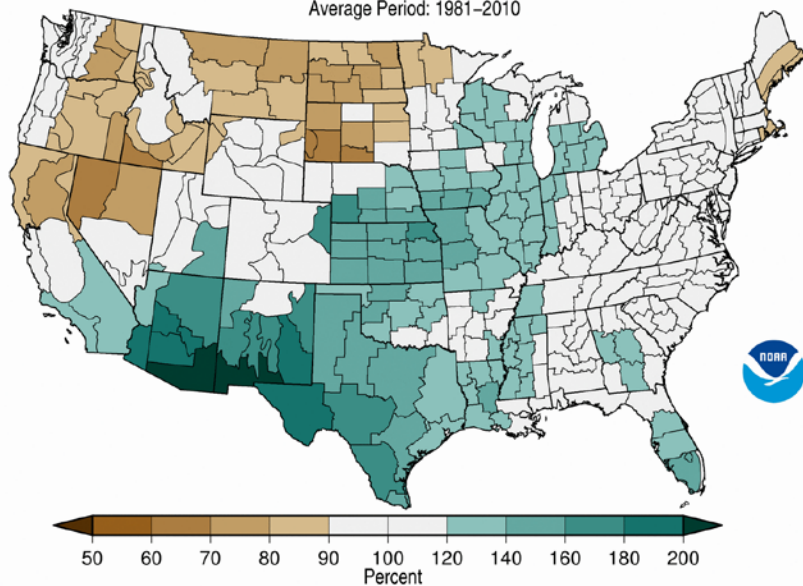


Dec: Dry RRB / Wet Midwest

Strong El Niño Precipitation Percent of Average

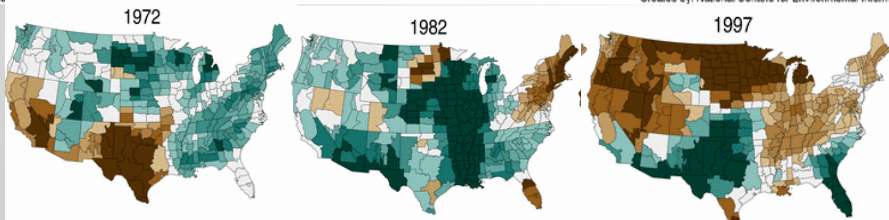
Composite: December 1957, 1965, 1972, 1982, 1991, 1997

Average Period: 1981–2010



Data Source: 5km Divisional Dataset (nClimDiv)

Created by: National Centers for Environmental Information

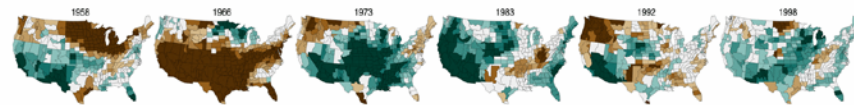
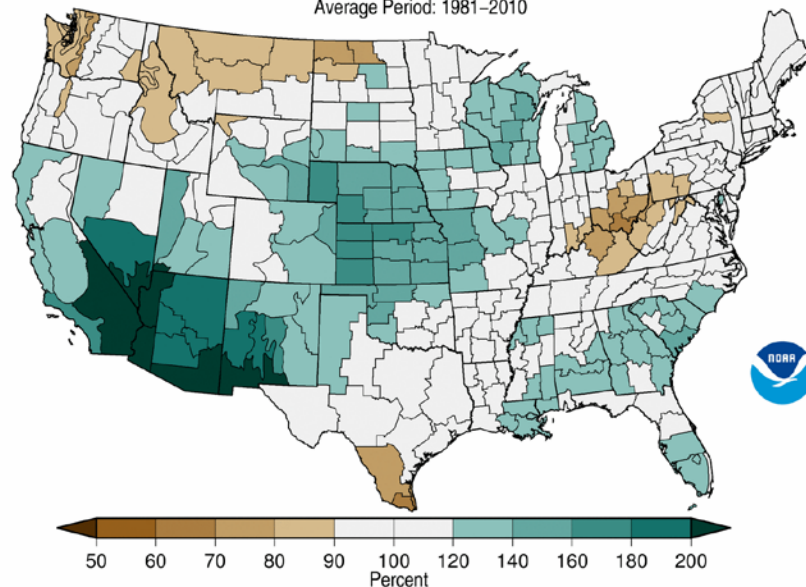


Mar: Neu RRB / Wet Midwest

Strong El Niño Precipitation Percent of Average

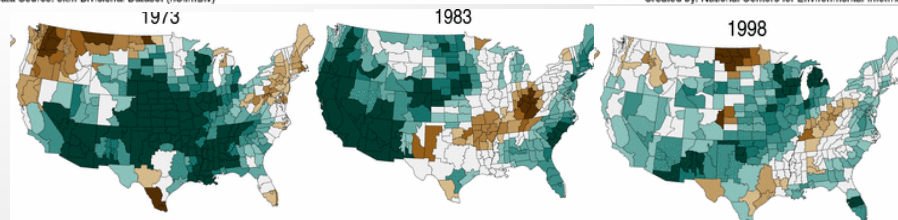
Composite: March 1958, 1966, 1973, 1983, 1992, 1998

Average Period: 1981–2010



Data Source: 5km Divisional Dataset (nClimDiv)

Created by: National Centers for Environmental Information



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Drought Outlook [Nada!]

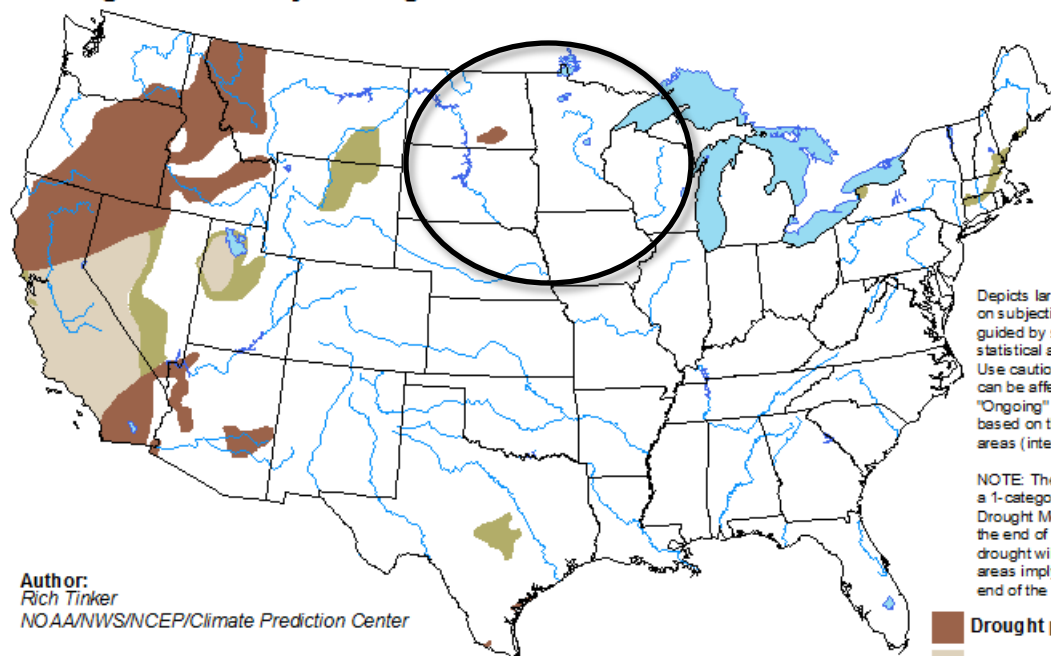


Through May 2016

- 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 February 18 - May 31, 2016
Released February 18, 2016



Author:
Rich Tinker
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>

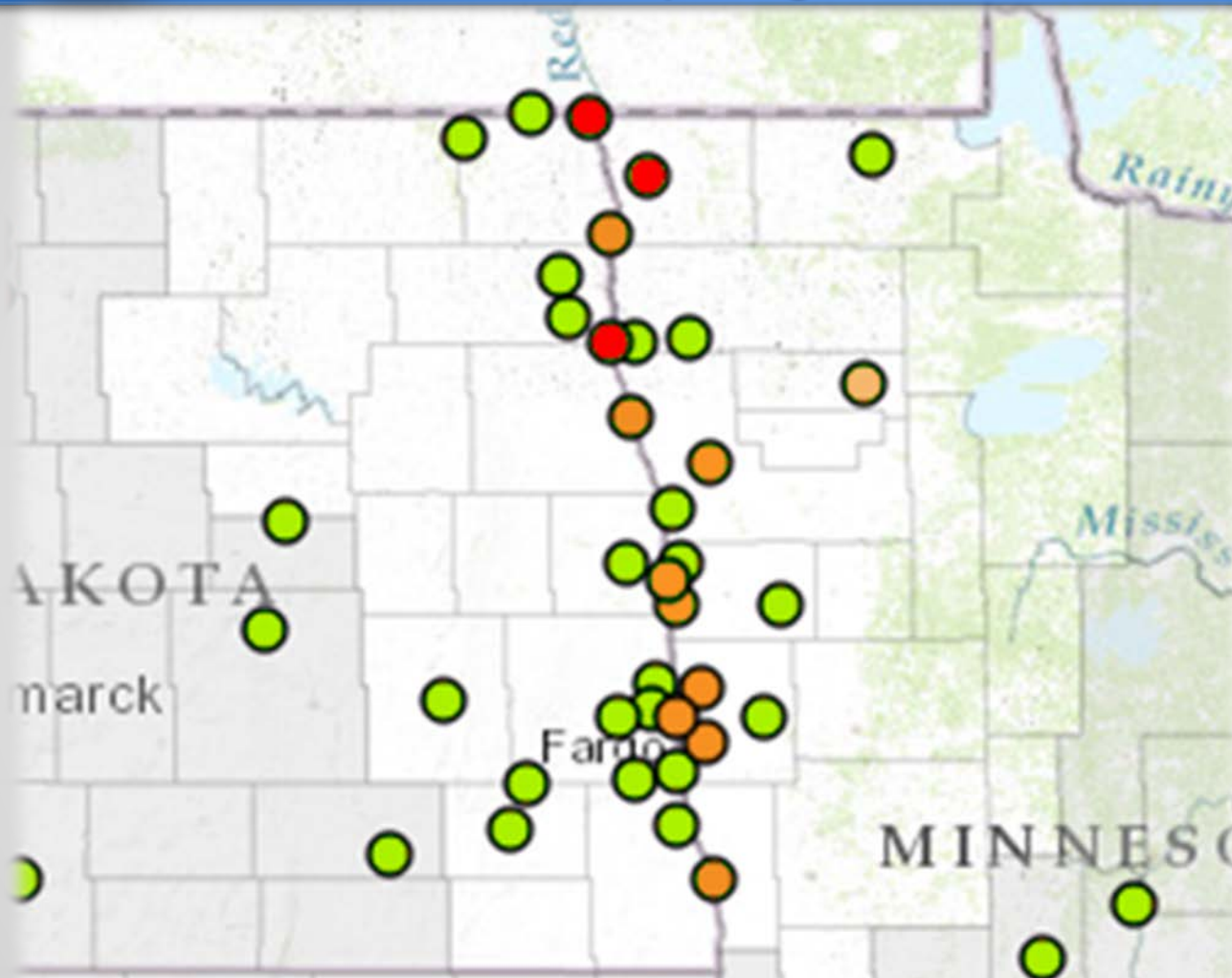


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Red River of the North Basin

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.



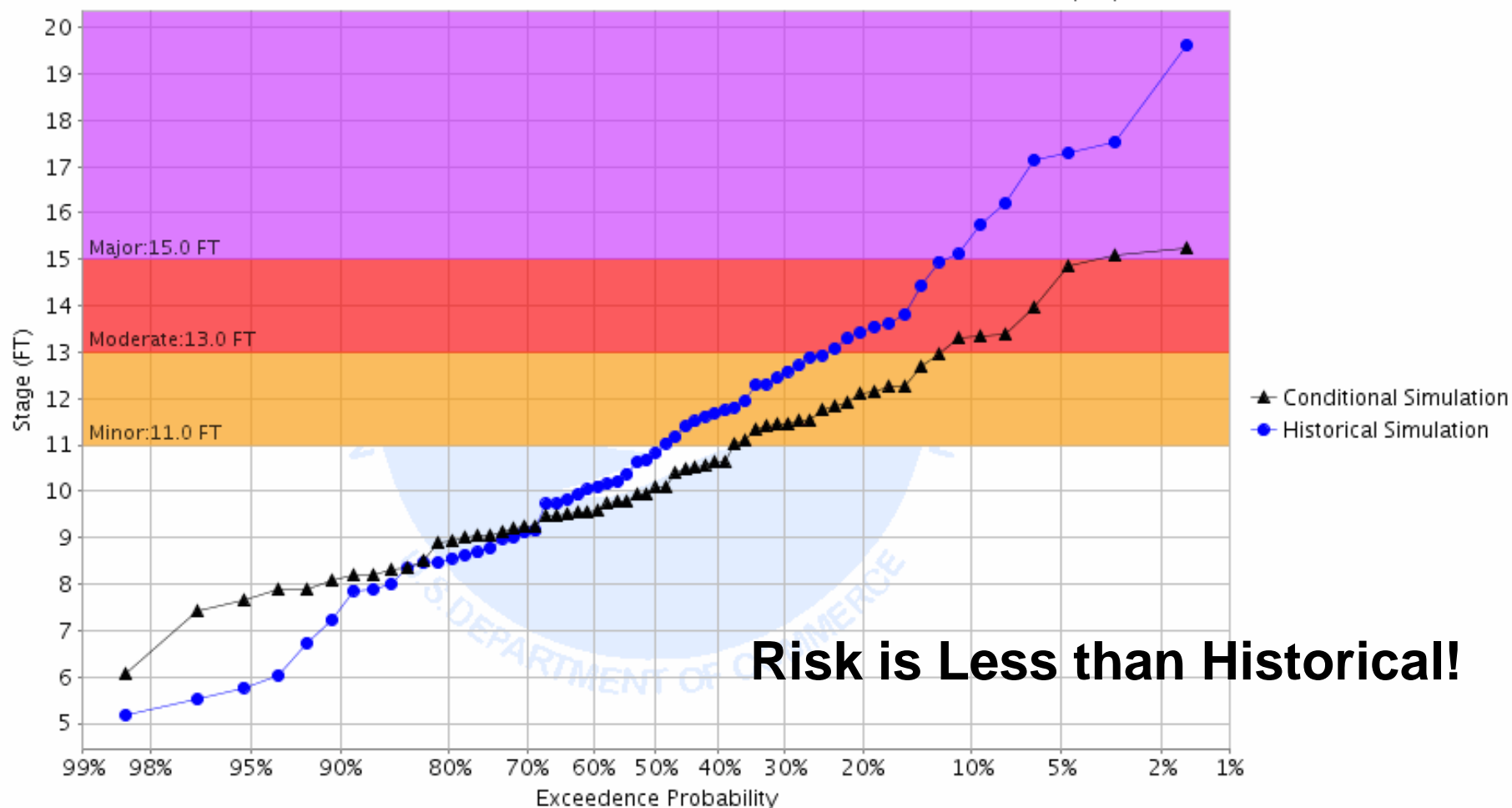
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Wahpeton/Breckenridge

Chance of Exceeding River Stage at WHNN8
Forecast for the period 02/21/2016 - 05/21/2016

This is a conditional simulation based on the current conditions as of 02/14/2016



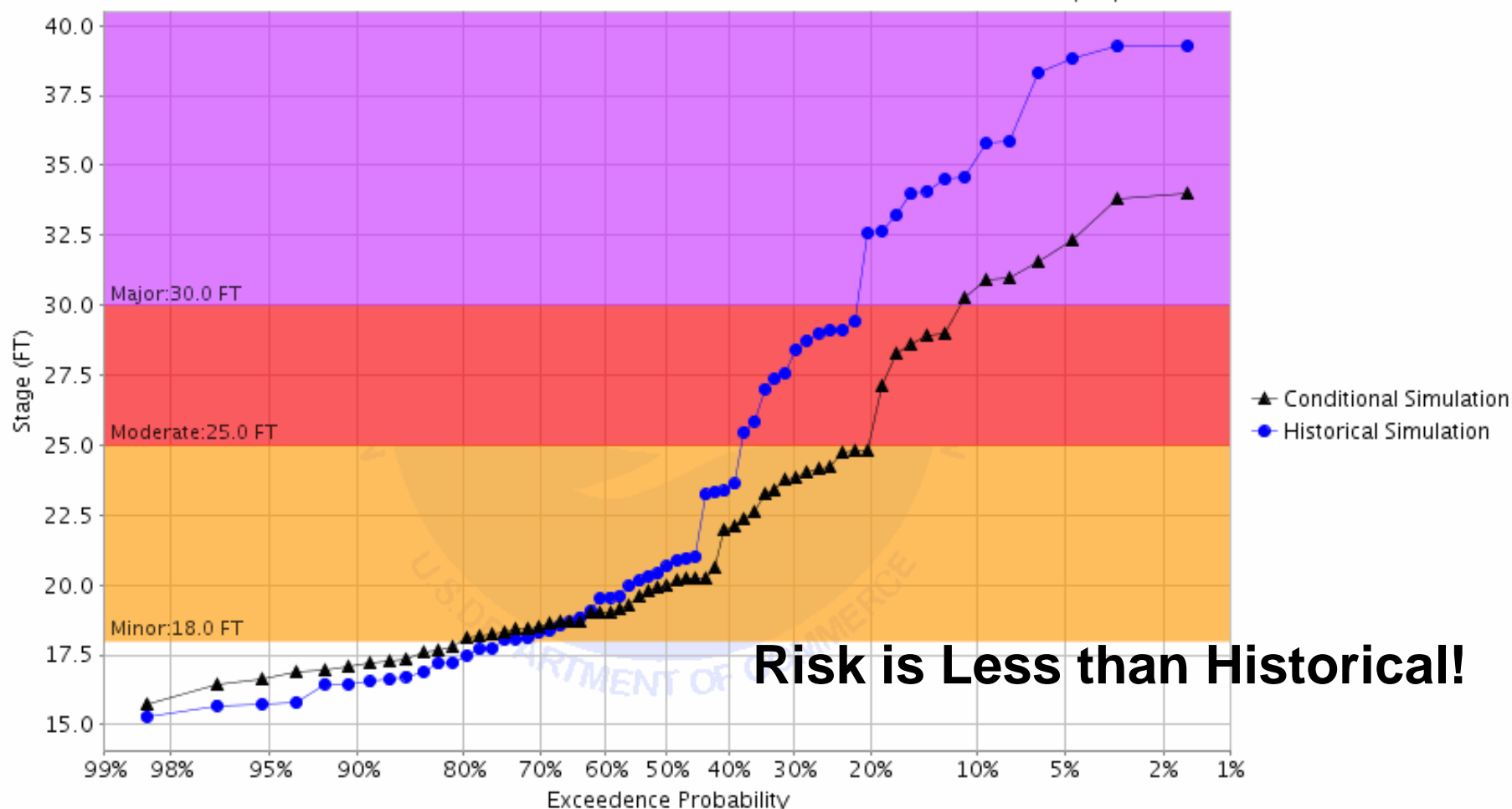
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Fargo/Moorhead

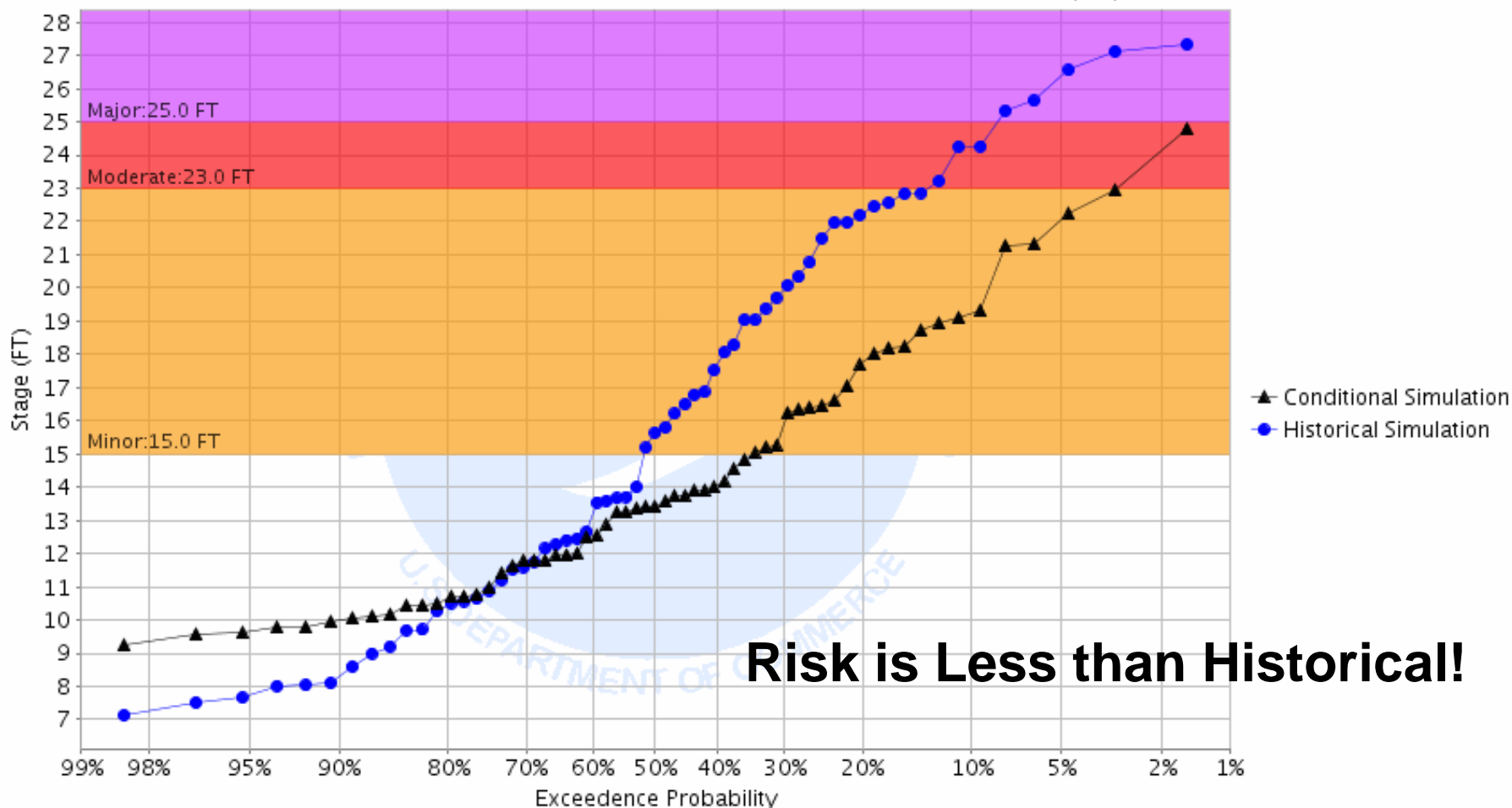


Chance of Exceeding River Stage at FGON8
Forecast for the period 02/21/2016 - 05/21/2016
This is a conditional simulation based on the current conditions as of 02/14/2016



Crookston

Chance of Exceeding River Stage at CRKM5
Forecast for the period 02/21/2016 - 05/21/2016
This is a conditional simulation based on the current conditions as of 02/14/2016

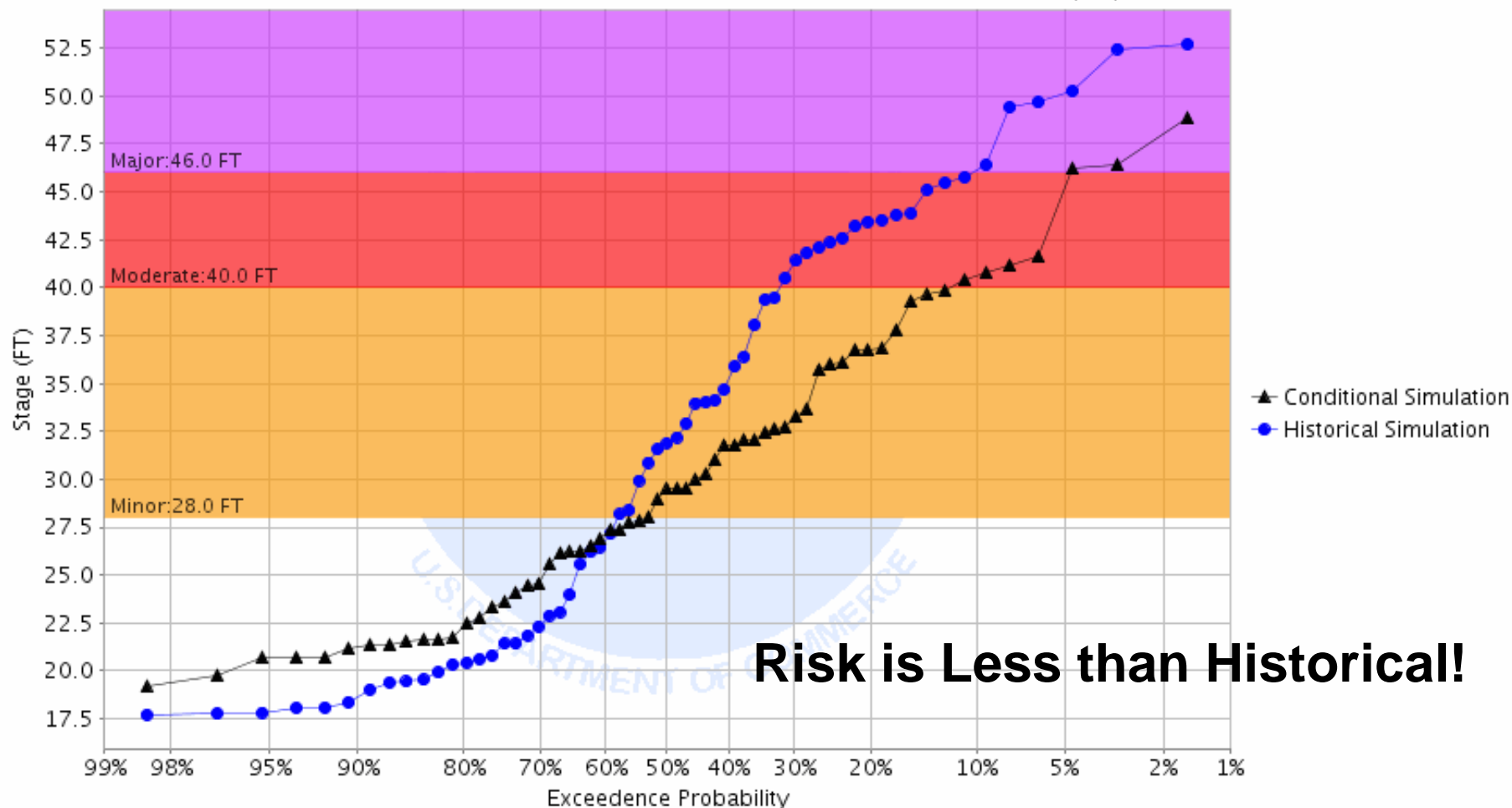




East Grand Forks/Grand Forks

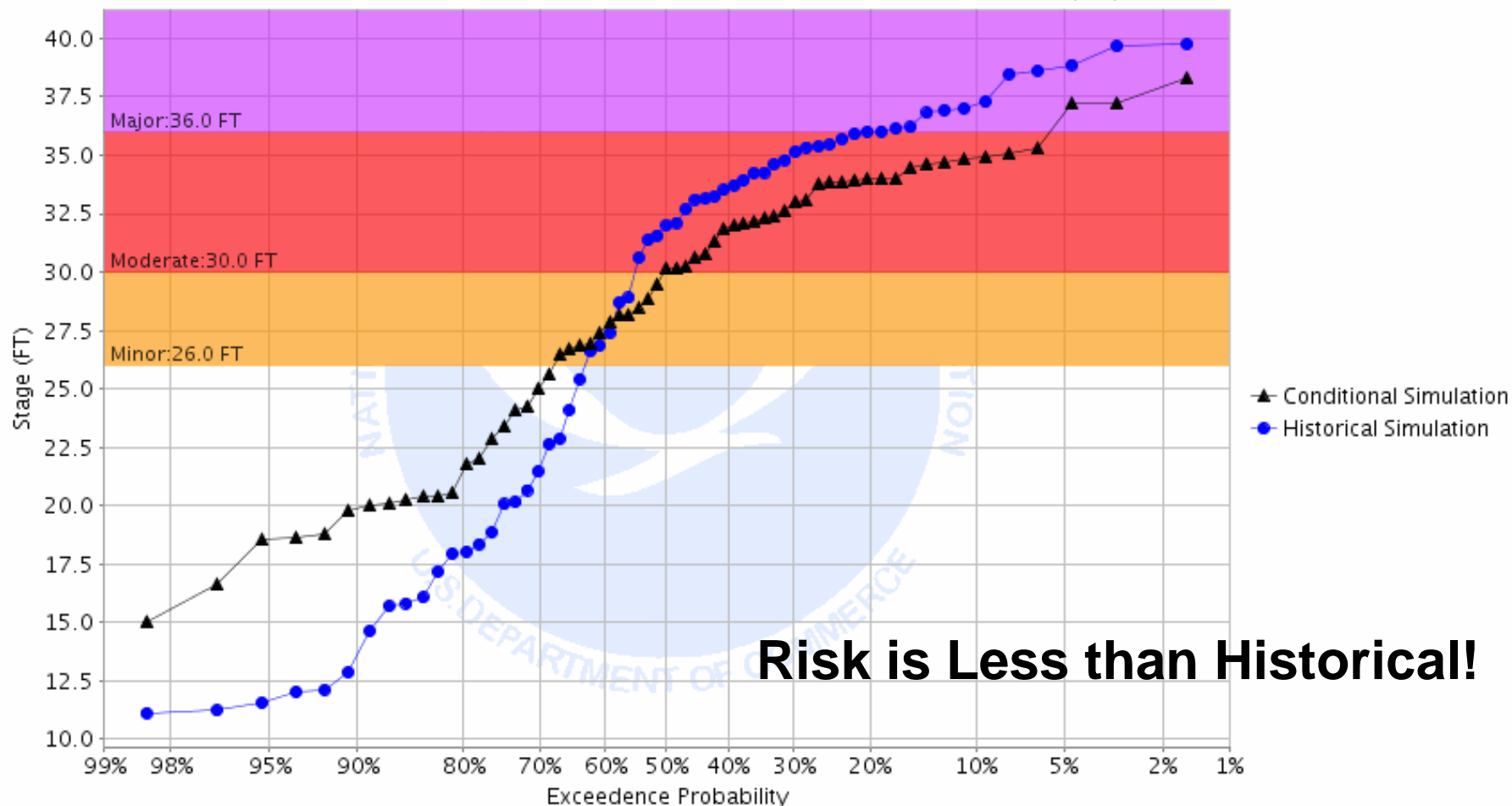


Chance of Exceeding River Stage at EGFM5
Forecast for the period 02/21/2016 - 05/21/2016
This is a conditional simulation based on the current conditions as of 02/14/2016



Oslo

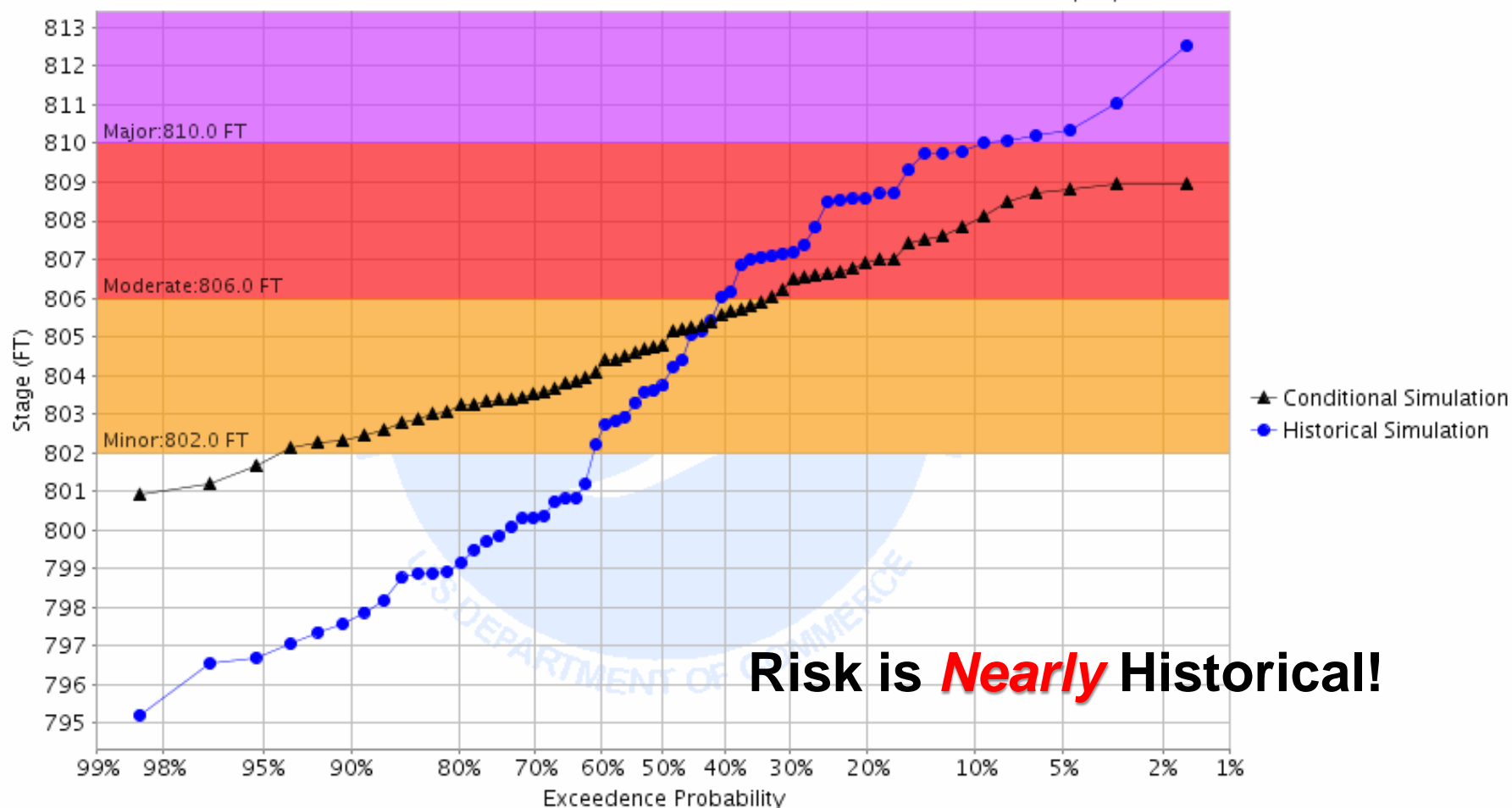
Chance of Exceeding River Stage at OSLM5
Forecast for the period 02/21/2016 – 05/21/2016
This is a conditional simulation based on the current conditions as of 02/14/2016





Oslo? Hallock? Pembina?

Chance of Exceeding River Stage at HLLM5
Forecast for the period 02/21/2016 - 05/21/2016
This is a conditional simulation based on the current conditions as of 02/14/2016

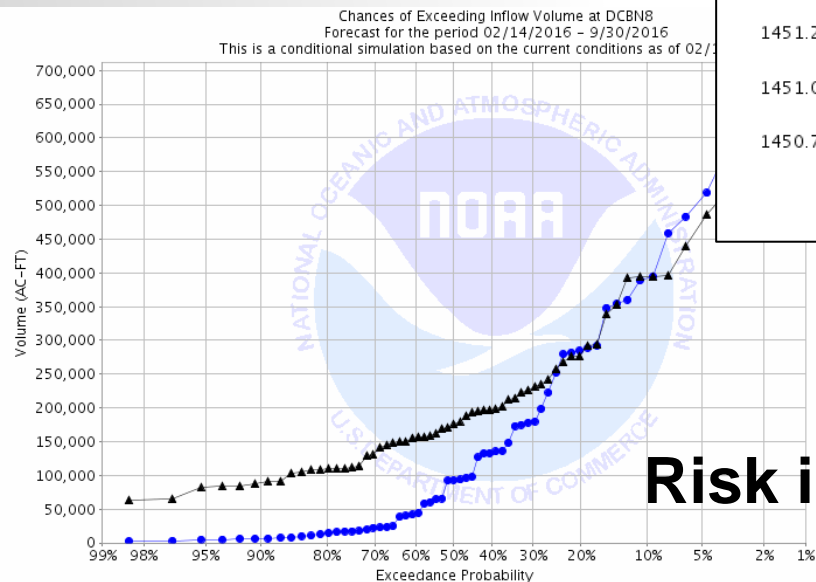
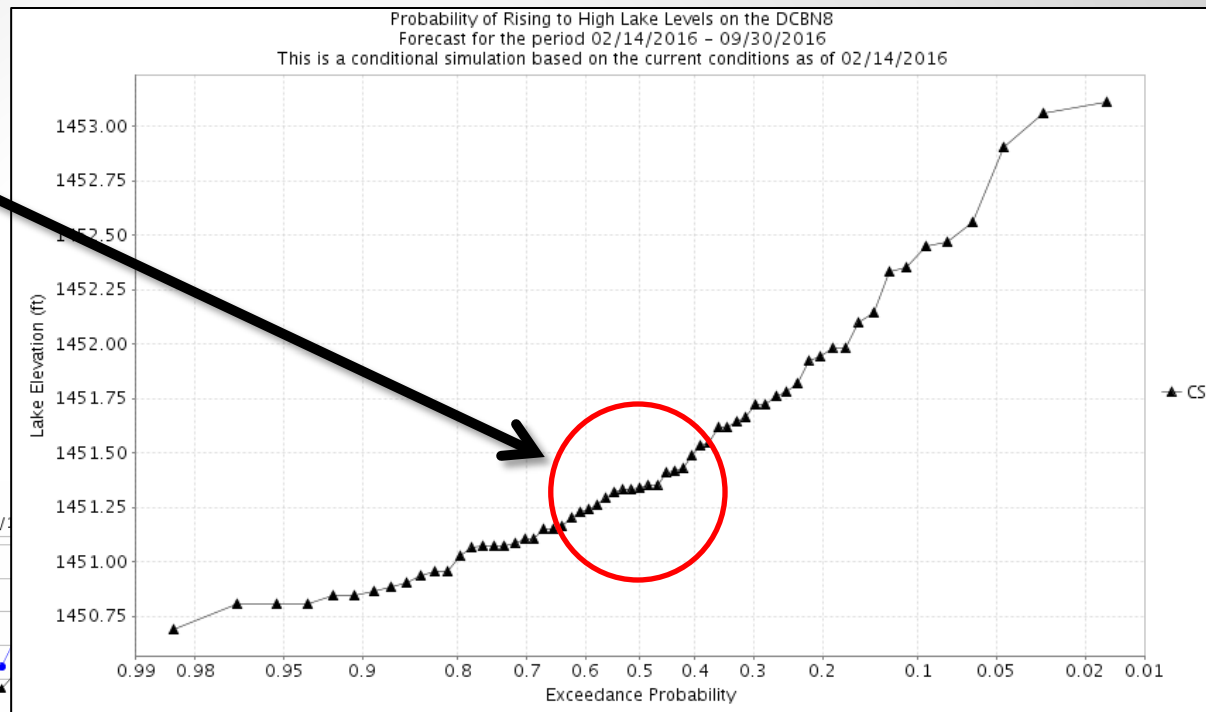




Devils Lake and Stump Lake

**Possible Lake Level
(1 to 1.5 foot rise)**

Inflows (below)



Risk is *Slightly Higher* than Historical!



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Hydrologic Outlook

Red River of the North Basin



Bottom line up top: **(largely unchanged from Jan 28th!)**

- 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!





NWS

Contact Information



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QUESTIONS?



<http://www.weather.gov>



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