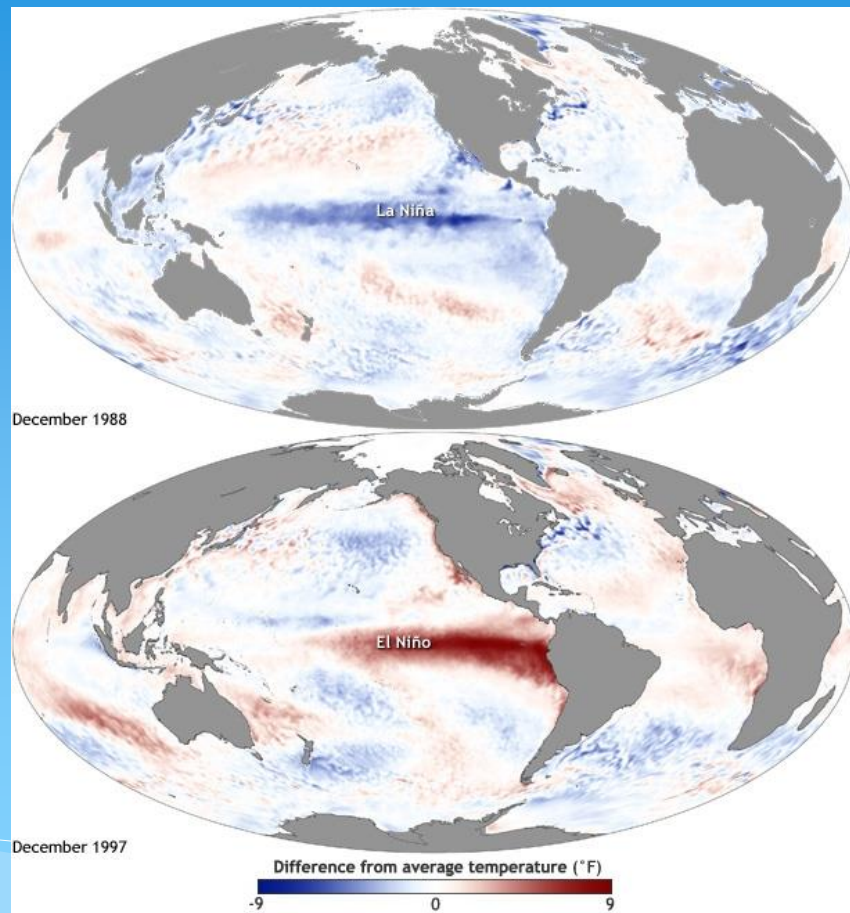


Missouri Basin Climate/Drought Early Warning Webinar: El Niño

MRBIR 2015 Summer Meeting
Bismarck, ND

Allen Schlag & Doug Kluck (NOAA)
Dr. Dennis Todey (State Climatologist
South Dakota State Univ.)



December 1988

December 1997

Difference from average temperature (°F)
-9 0 9

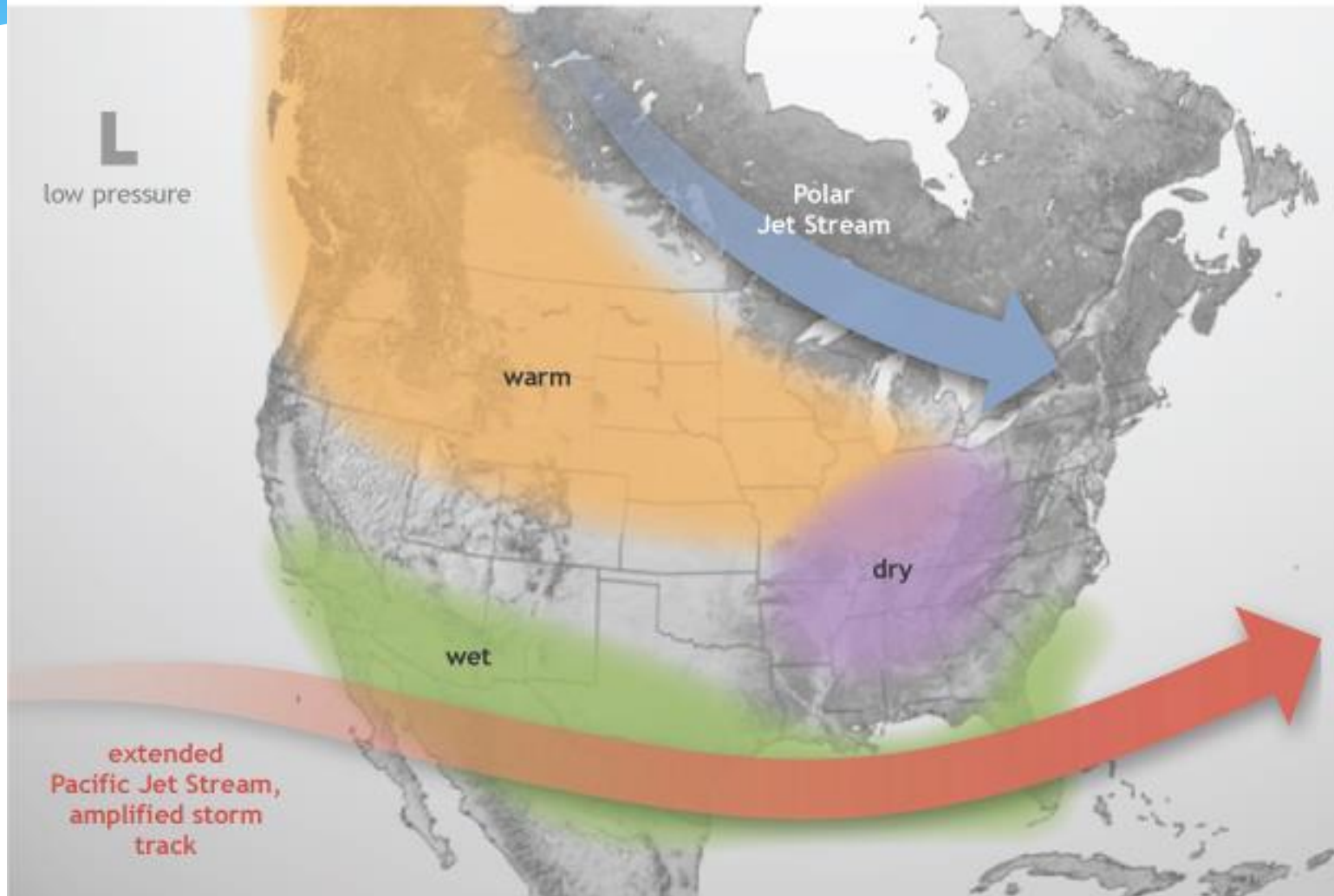


Photo taken Feb. 19, 2015

Sea Surface Temperatures – 1988 La Niña and 1998 El Niño

El Niño – Generalized Image

Wintertime El Niño pattern

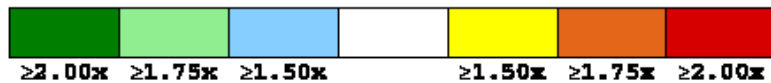
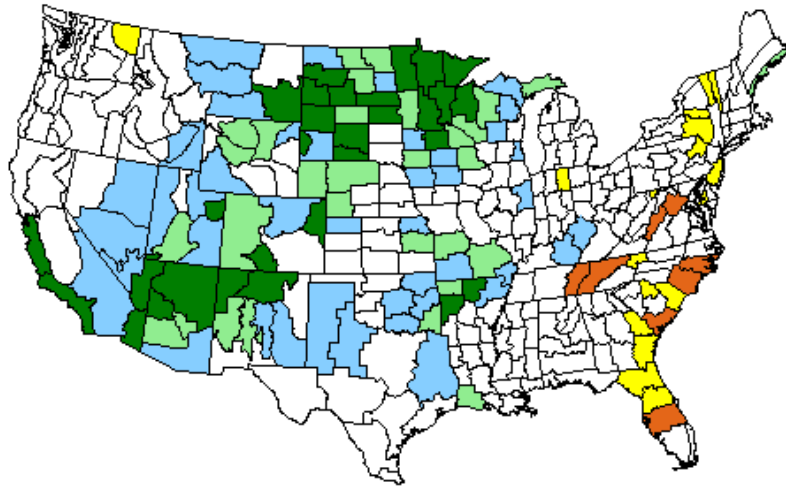


El Nino Extreme Potentials

- * Likelihood of extreme events – precip or temp in highest/lowest 20% of years.
- * <http://www.esrl.noaa.gov/psd/enso/climaterisks/>

Fall (Sep – Nov) Precipitation and Temperature Extremes

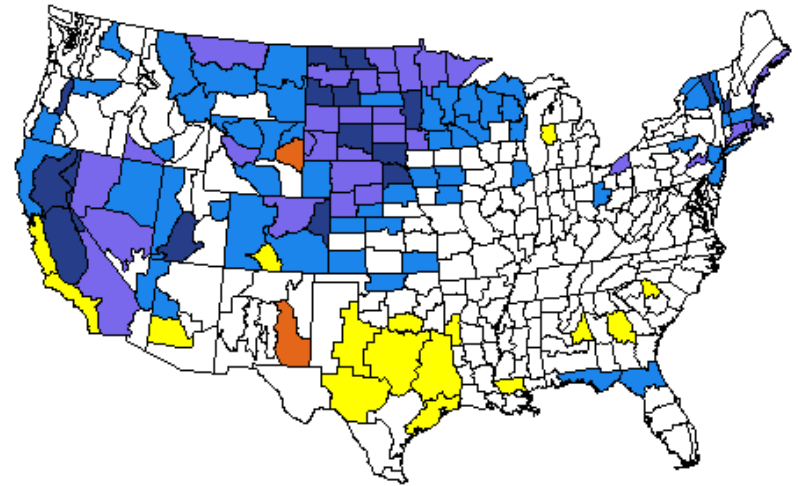
**SON Precipitation Extremes During El Nino
Risk of Extreme Wet or Dry Years**



Wet Extremes **Risk Relative to Climatological Average Risk (20%)** Dry Extremes

NOAA-CIRES/Climate Diagnostics Center

**SON Temperature Extremes During El Nino
Risk of Extreme Warm or Cold Years**

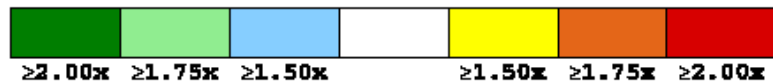
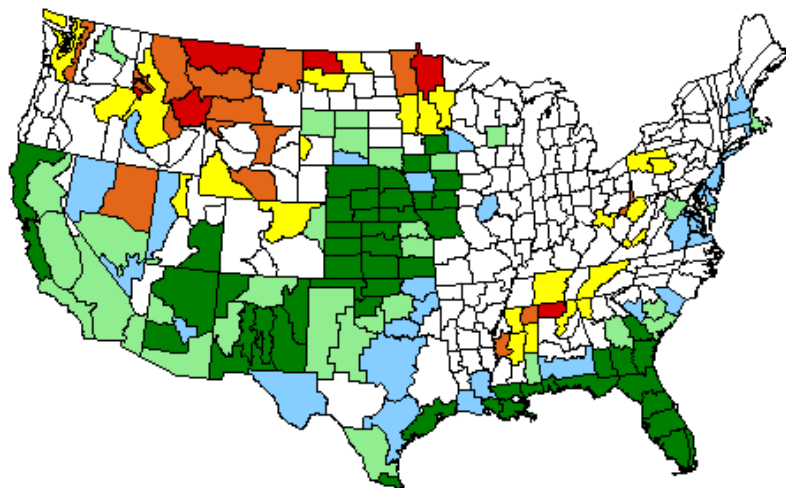


Cold Extremes **Risk Relative to Climatological Average Risk (20%)** Warm Extremes

NOAA-CIRES/Climate Diagnostics Center

Winter (Dec - Feb) Precipitation and Temperature Extremes

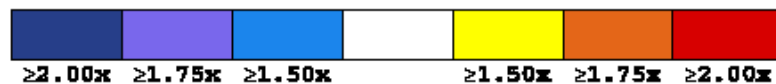
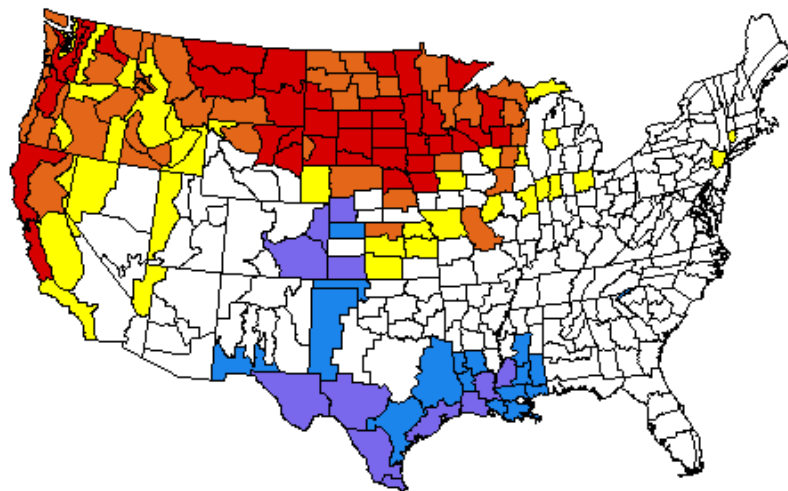
**DJF Precipitation Extremes During El Nino
Risk of Extreme Wet or Dry Years**



Wet Risk Relative to Climatological Dry
Extremes Average Risk (20%) Extremes

NOAA-CIRES/Climate Diagnostics Center

**DJF Temperature Extremes During El Nino
Risk of Extreme Warm or Cold Years**



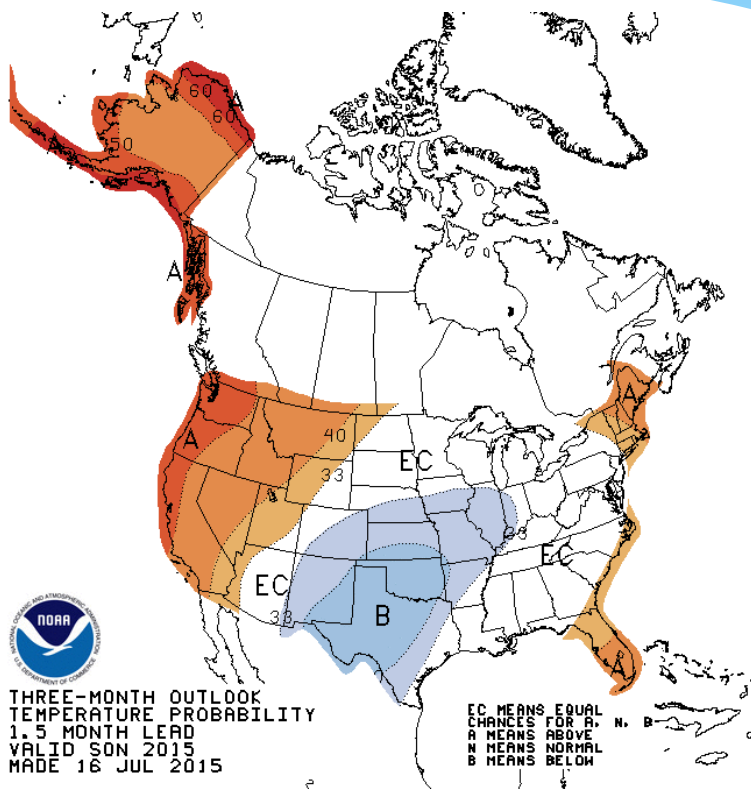
Cold Risk Relative to Climatological Warm
Extremes Average Risk (20%) Extremes

NOAA-CIRES/Climate Diagnostics Center

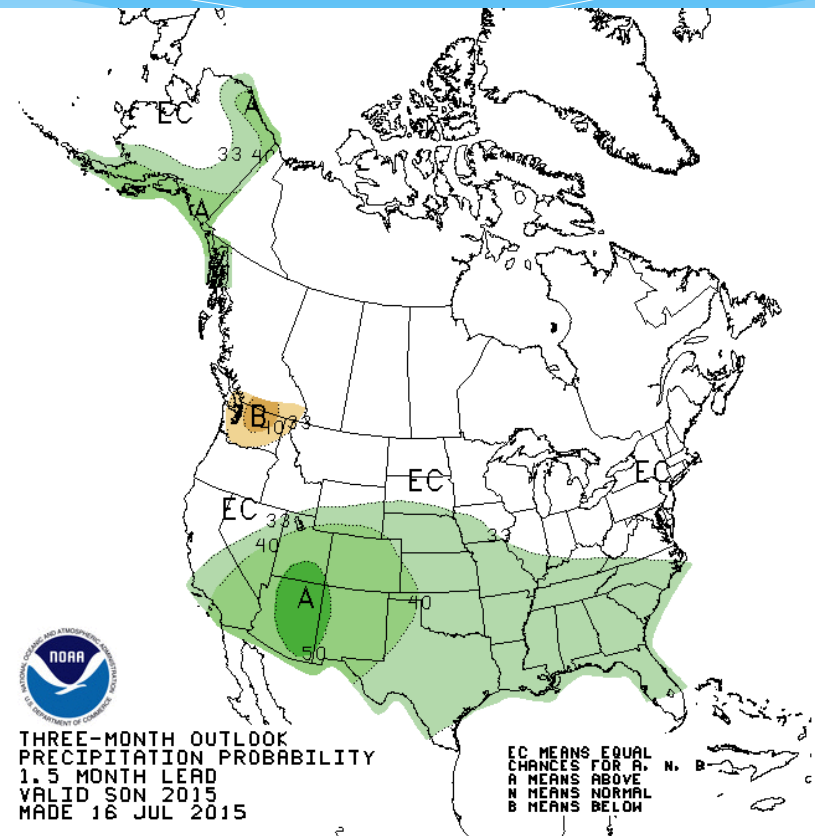
Climate Outlooks

- * **Fall and Winter Outlooks**
- * **Seasonal Drought Outlooks**

3 Month Temperature and Precipitation Probabilities (Sept. – Nov.)

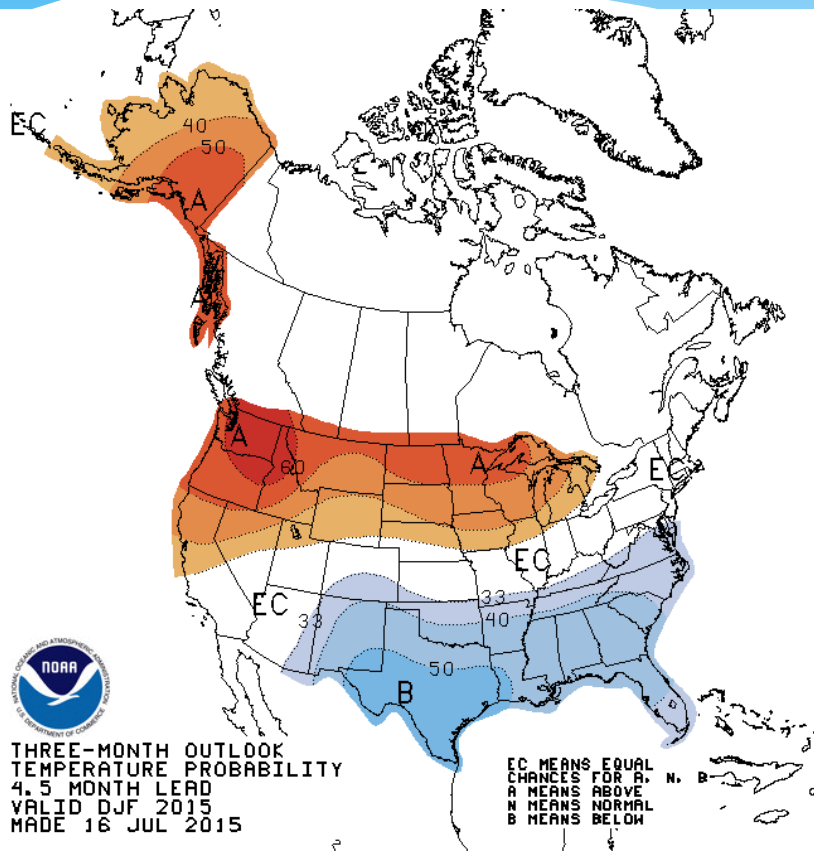


Temperature

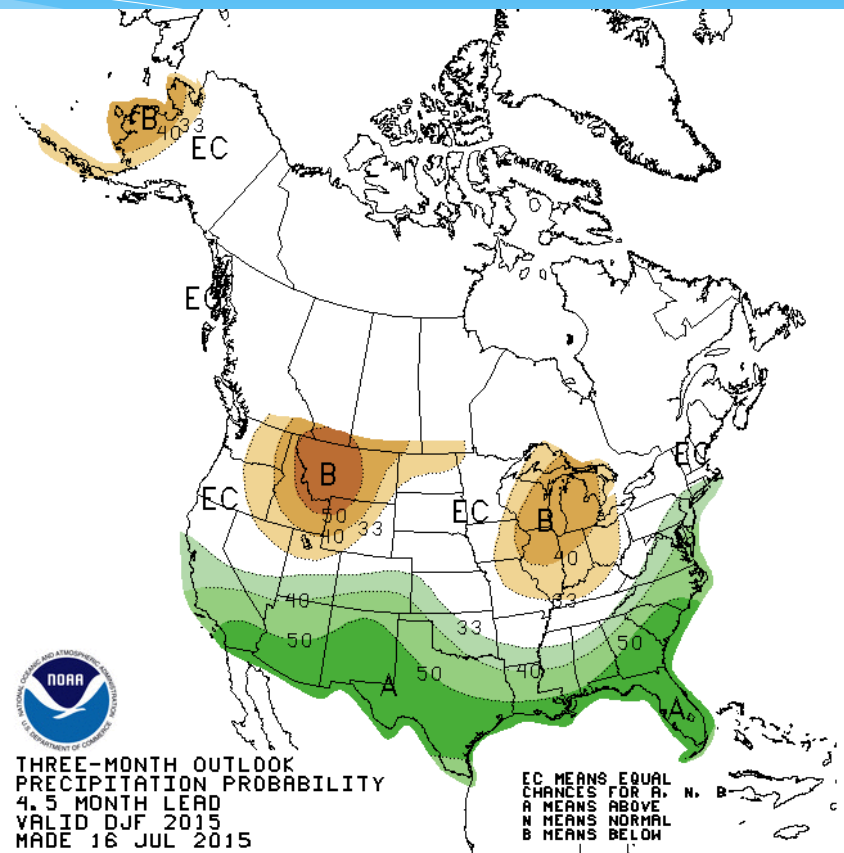


Precipitation

3 Month Temperature and Precipitation Probabilities (December - February)



Temperature

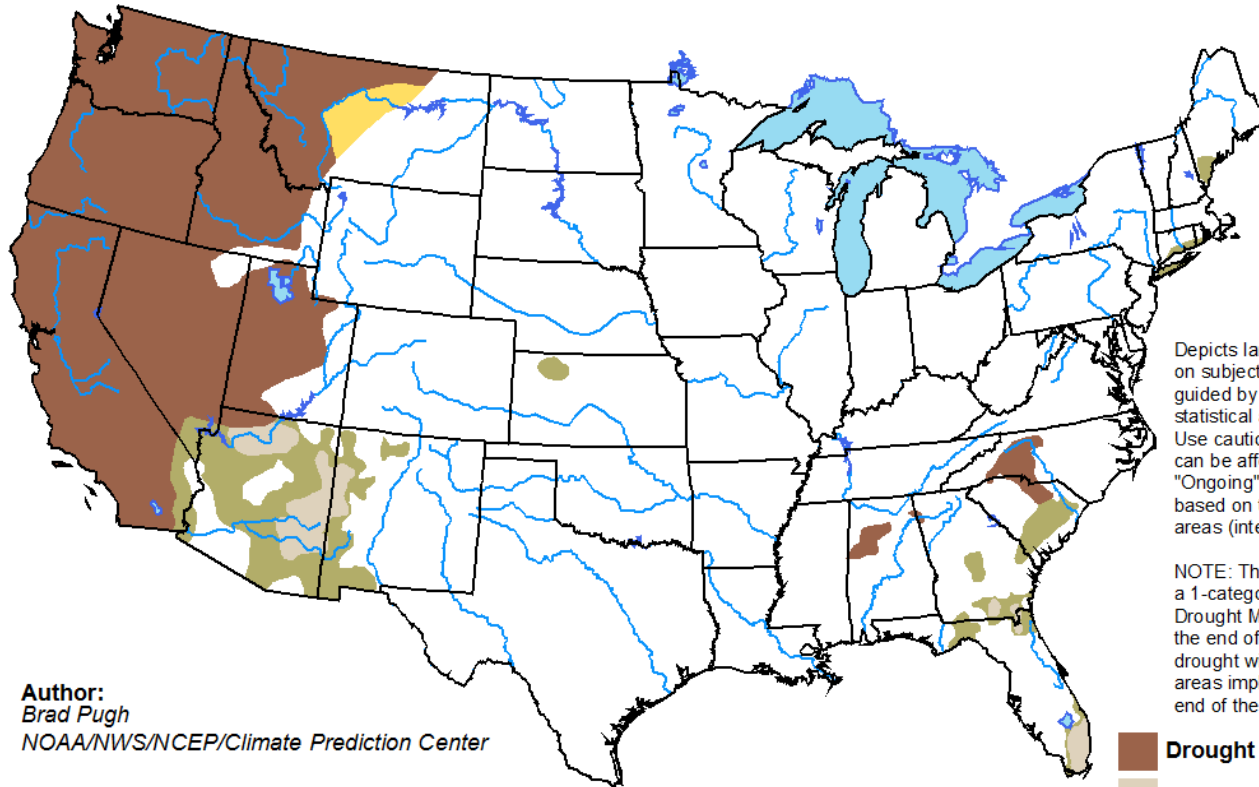


Precipitation

Drought Outlook through Oct 31

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





Valid for July 16 - October 31, 2015
Released July 16, 2015

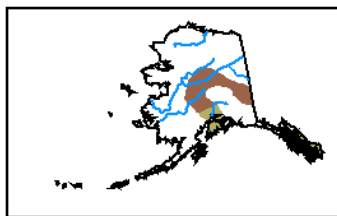


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center

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



<http://go.usa.gov/hHTe>

Summary - Conditions

- * El Niño current and strengthening
- * Some current impacts
- * Very likely to impact winter across nation

- * Mixed Temp. and Precip. currently from some places quite wet to fairly dry
- * Drought in western MT
- * Current ag conditions generally OK

Summary - Outlooks

- * Wetter conditions more likely in the fall central and southern plains
- * Could extend further north (composites and models)
- * Winter likely warmer northern areas of basin
- * Dry quite likely MT/parts WY
- * Less snow accumulation mountains/plains

Ag Issues

- * Currently no major wetness issues (a few minor ones) – some dryness issues in the Missouri Basin
- * Crop development generally OK – rangeland OK
- * Fall Wetness could lead to delayed harvest – if very wet
- * Warmer winter – winter wheat?
- * Rangeland
- * Spring – question mark on shift out of El Niño

Upper Missouri Basin Impacts

- * Water/Missouri River (snowpack, plains & mountains)
- * Agriculture
- * Fire
- * Energy
- * Municipal Costs (storm costs)

In Closing

- * Probabilities, not absolutes
- * Potential pitfalls include AO, PDO, to name a couple

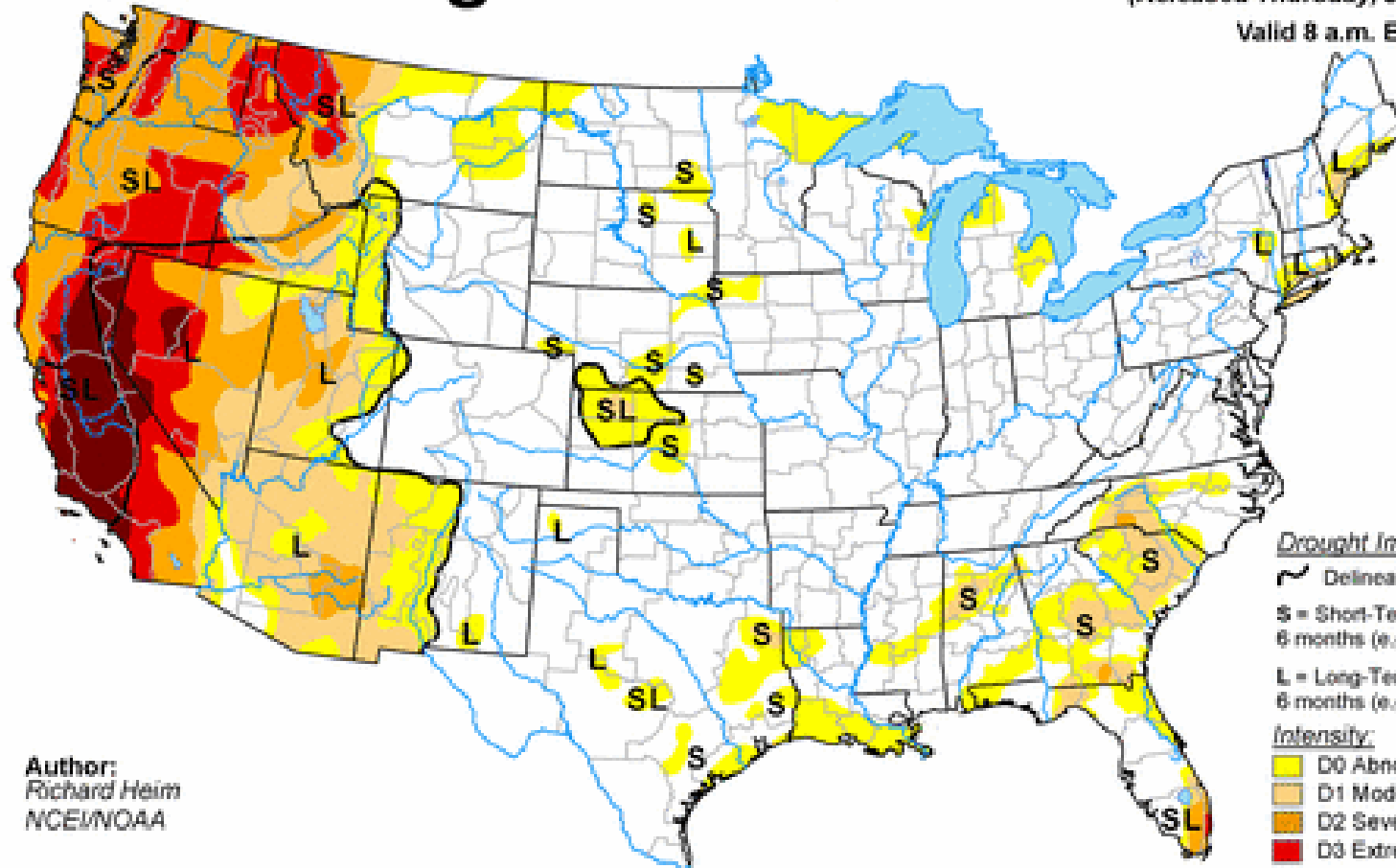


U.S. Drought Monitor


July 28, 2015

(Released Thursday, Jul. 30, 2015)

Valid 8 a.m. EDT



Drought Impact Types:

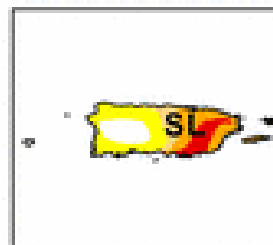
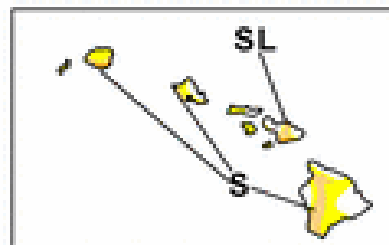
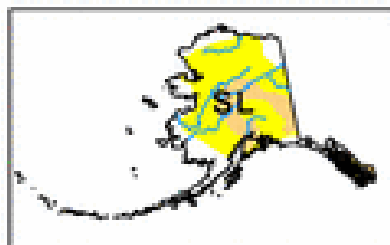
-  Delineates dominant impacts
- S** = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L** = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

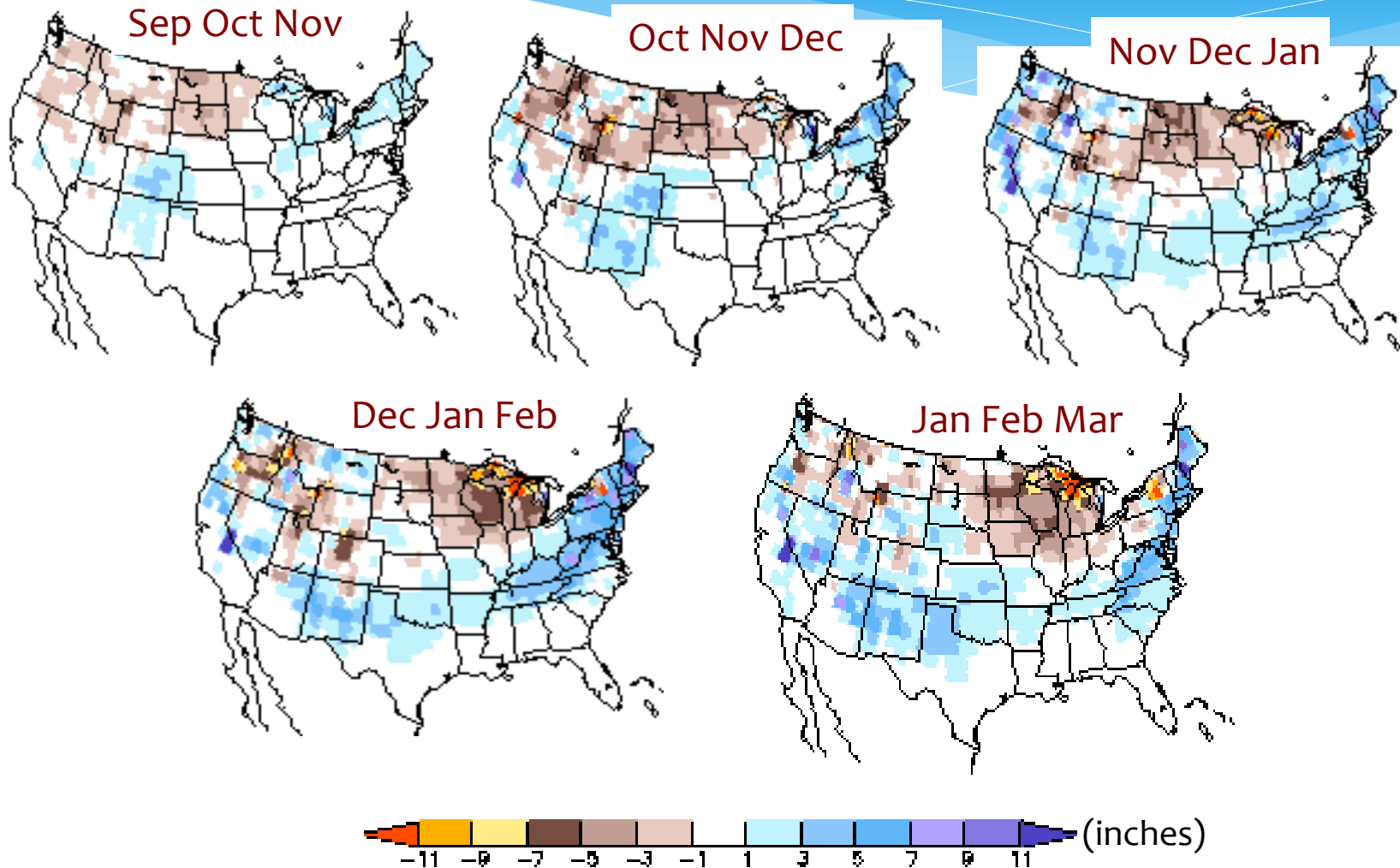
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Heim
NCEI/NOAA



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

Snow under El Niño (1950-2014)



- Potential for below average snowpack and snow cover on the ground in much of the North Central region during El Niño

Fire Issues

- * Complicated issues – what is the problem this year?
 - * Dry surfaces
 - * Less snow
 - * Wet fall?
- * Affected by fall pcp
- * Open winter likely plains quite likely
- * Likely location specific

