

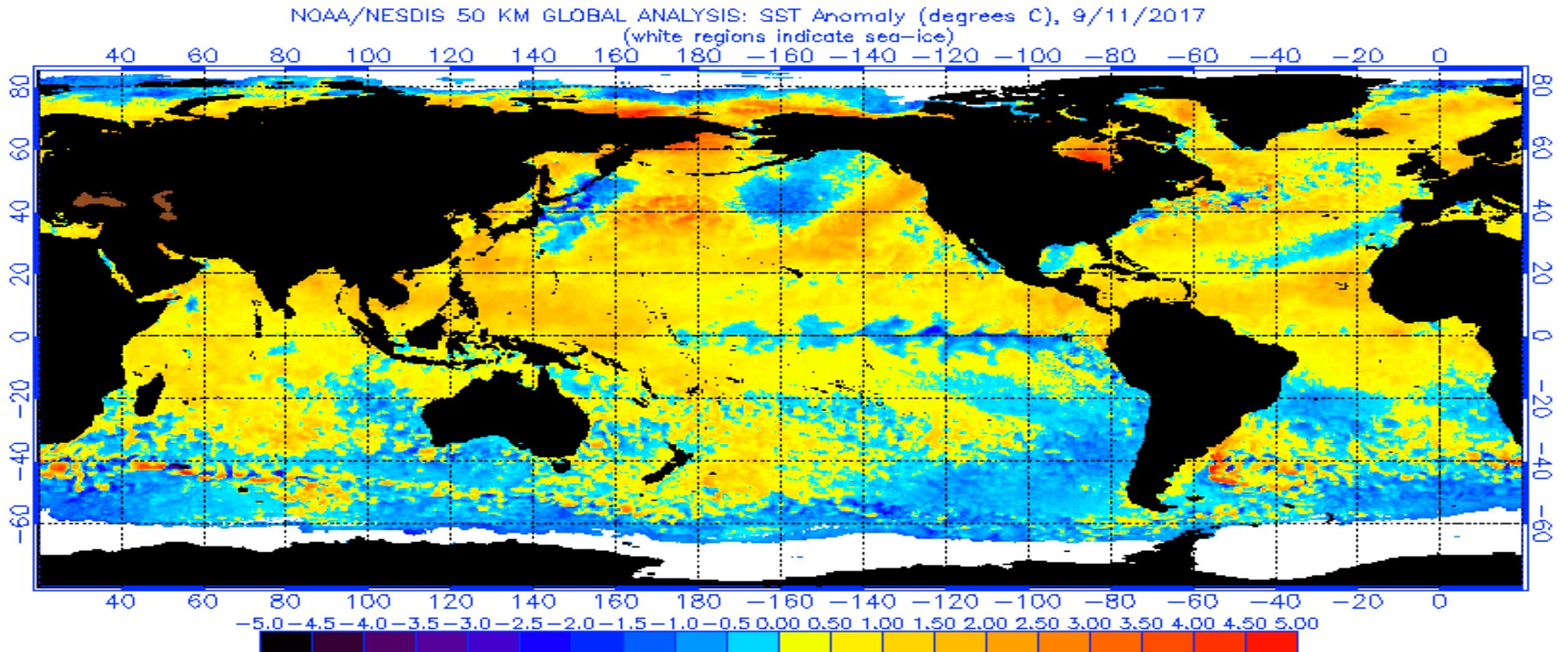
January 4, 2018

How Long will the Impacts of La Nina Last and what Role will it Play with the 2018 Crop Production Season

Allen Dutcher
Agricultural Extension Climatologist

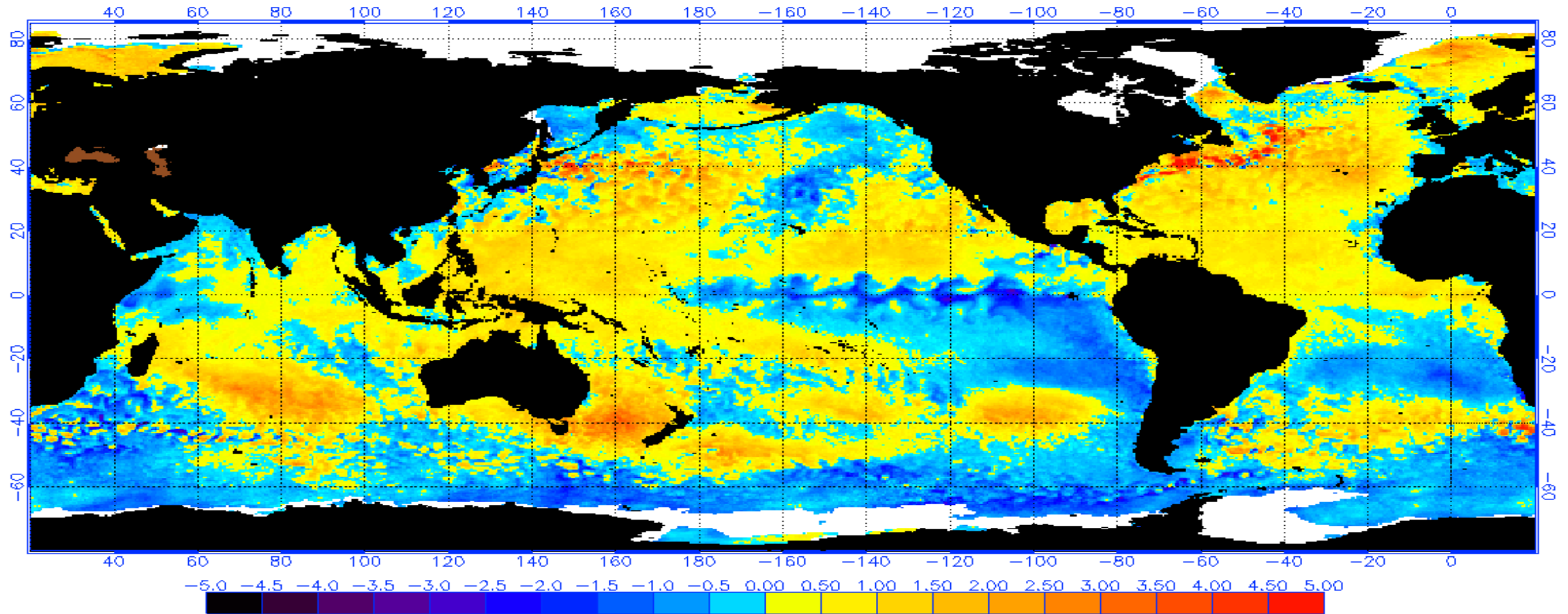
Email: adutcher1@unl.edu Phone: (402)-472-5206

Four Month Global SST Anomalies



Current Global SST Anomalies

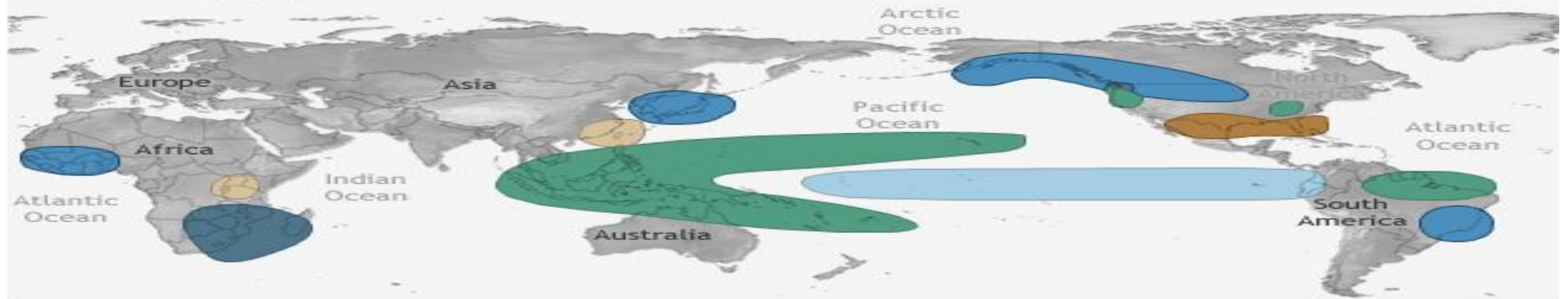
NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 1/1/2018
(white regions indicate sea-ice)



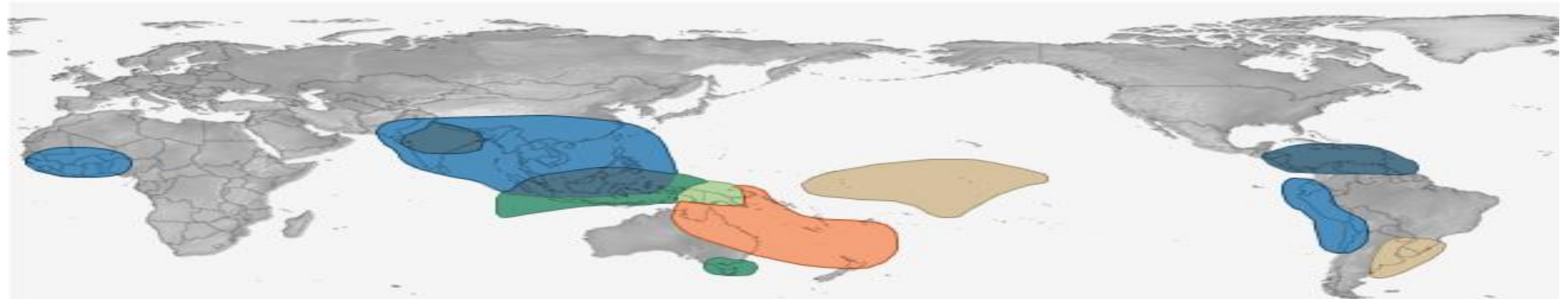
Global La Nina Anomalies

LA NIÑA CLIMATE IMPACTS

December-February

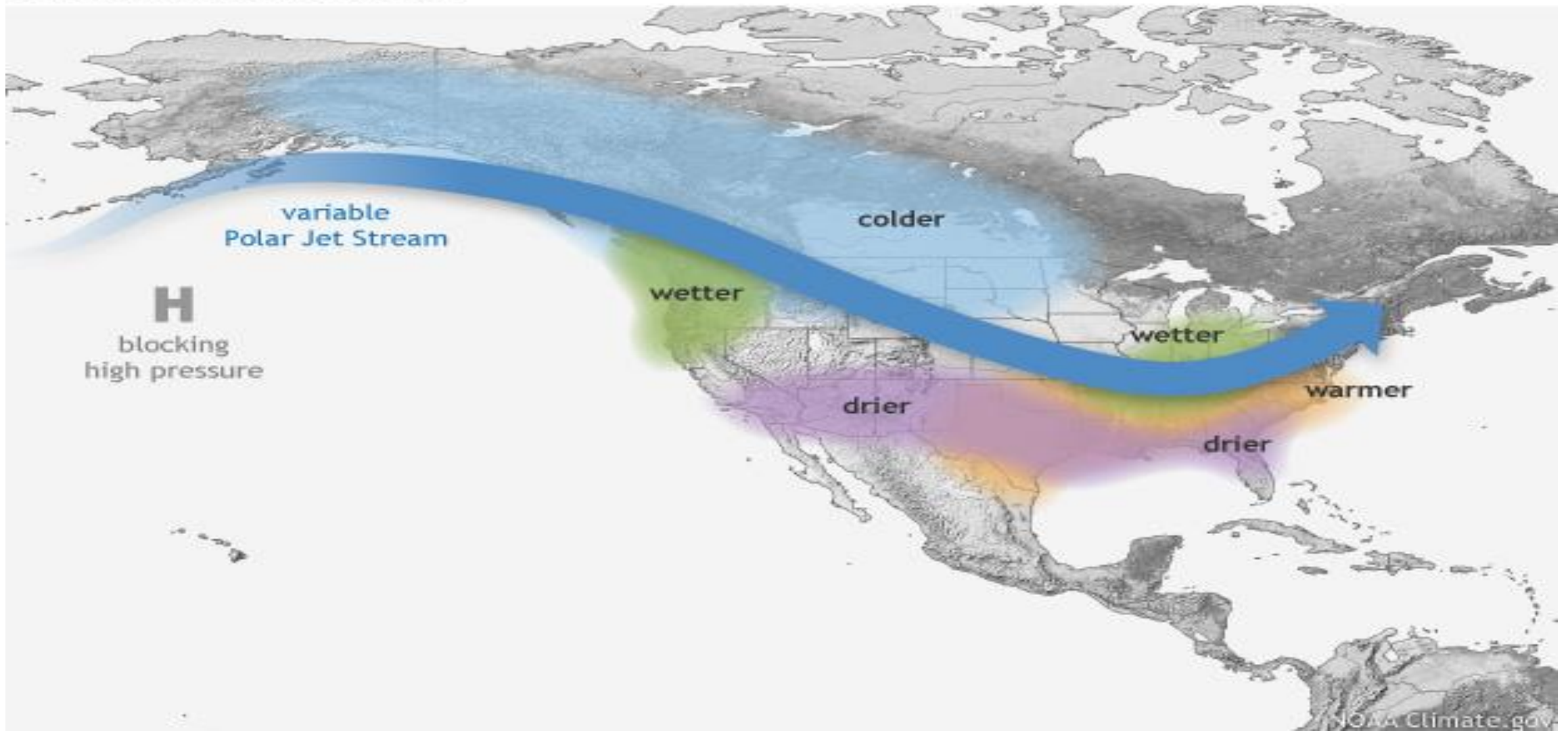


June-August



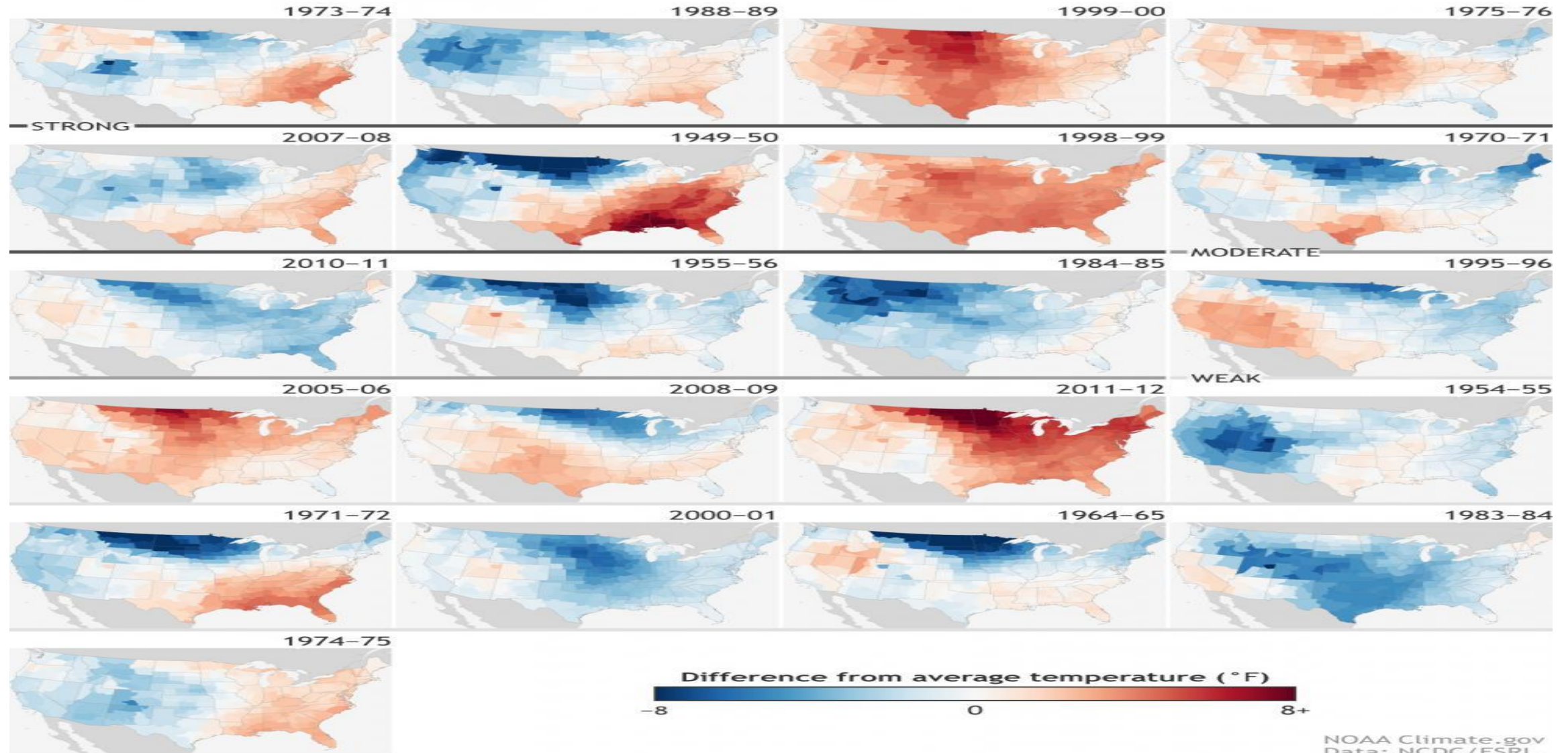
Mean La Nina Winter Jet Stream Pattern

WINTER LA NIÑA PATTERN



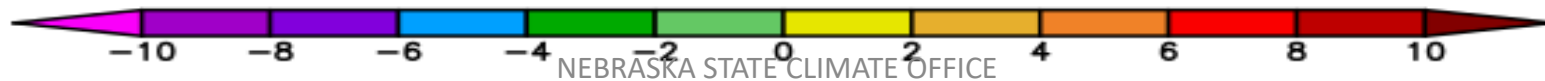
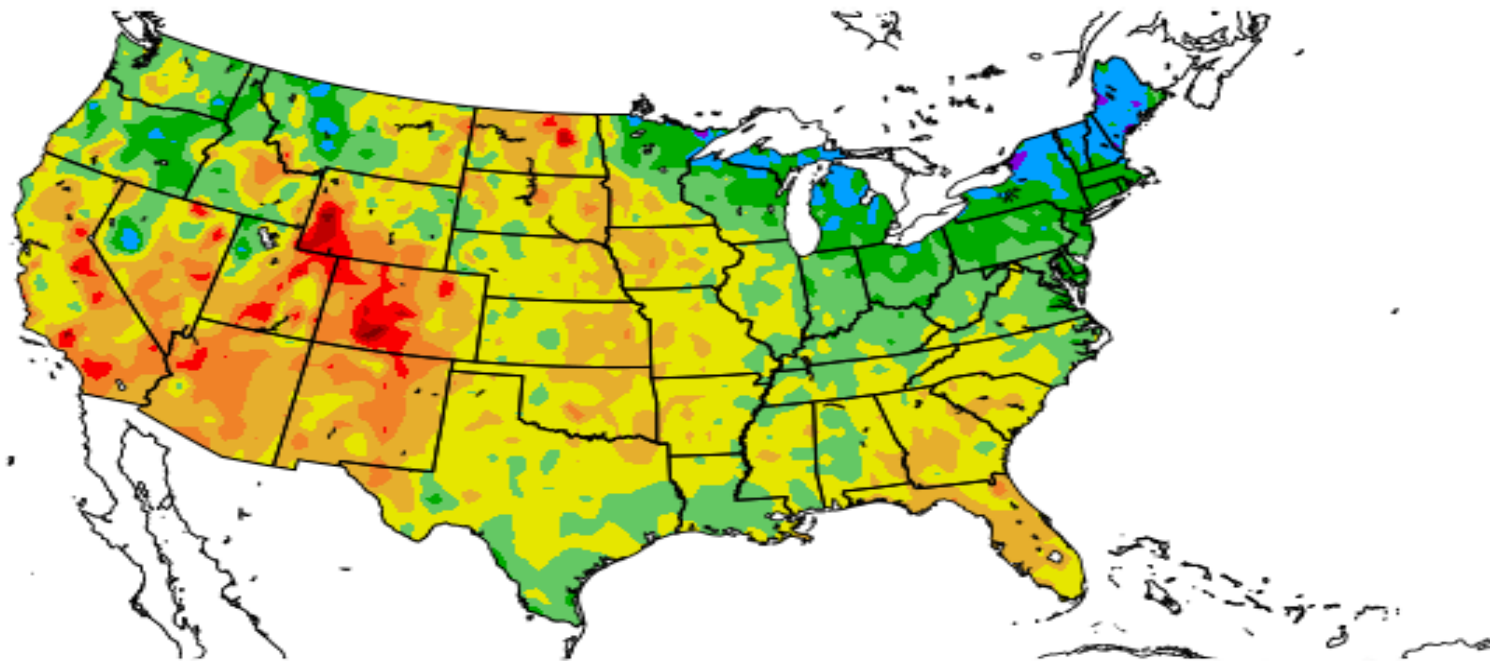
Winter Temperature Response to La Nina

Winter (December-February) temperature during strong, moderate, and weak La Niñas since 1950

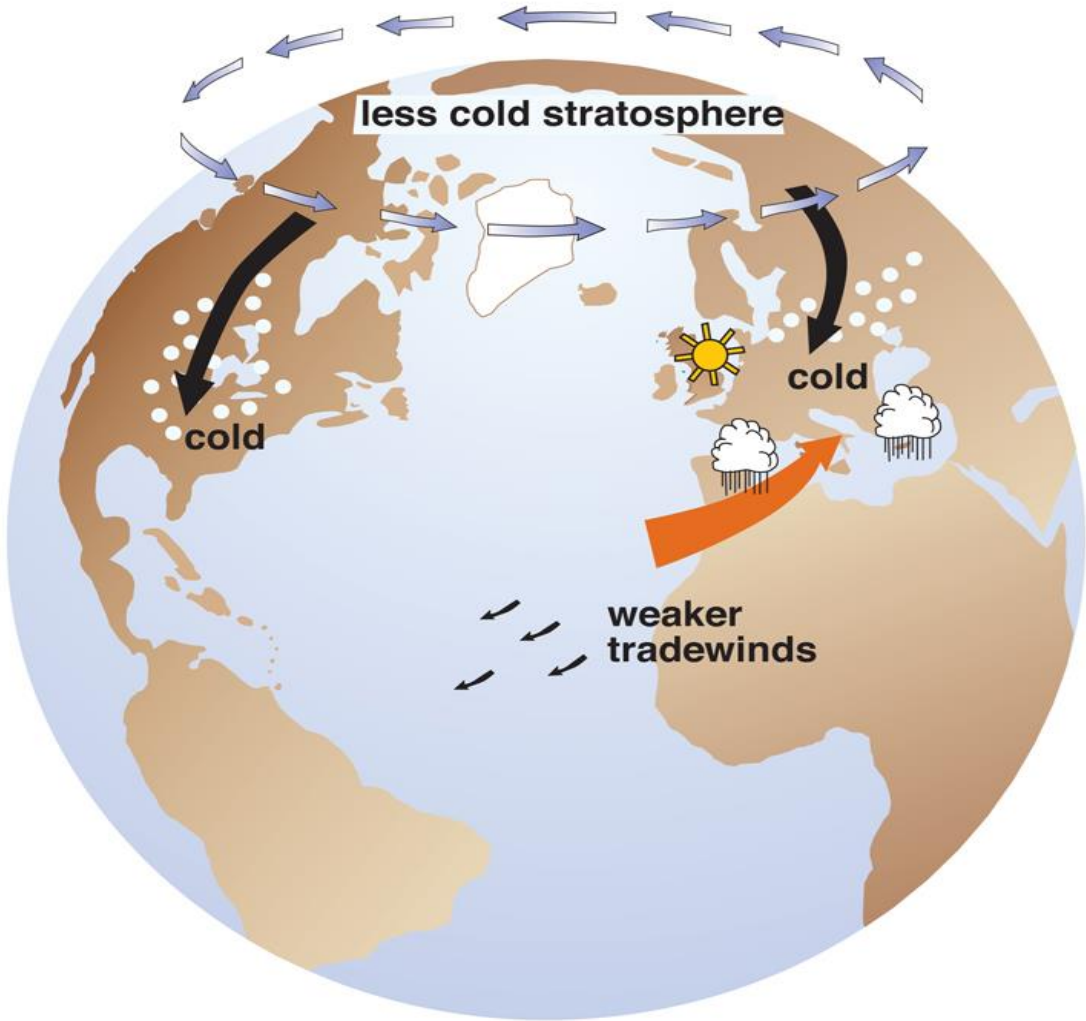
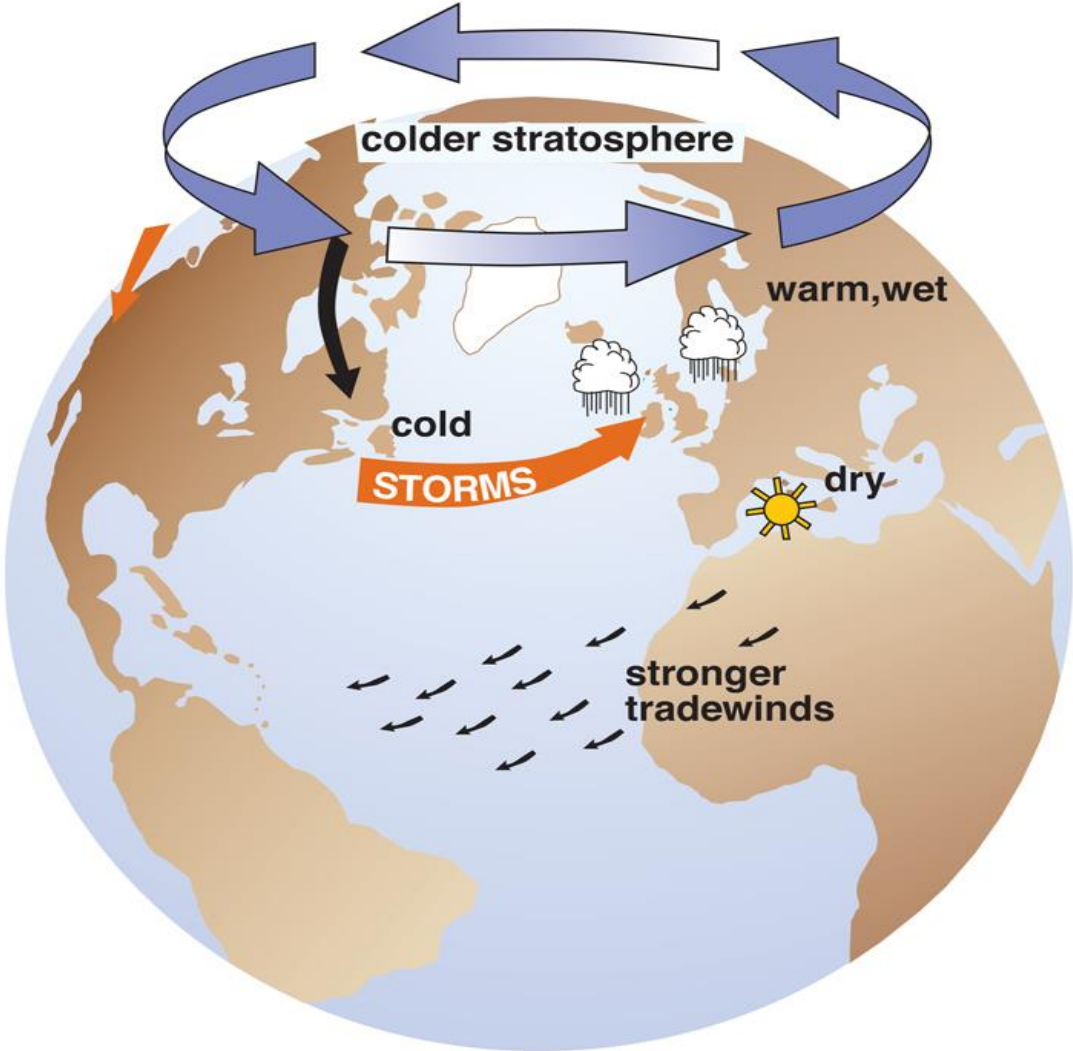


Preliminary December Temperature Trend

Departure from Normal Temperature (F)
12/1/2017 – 12/31/2017

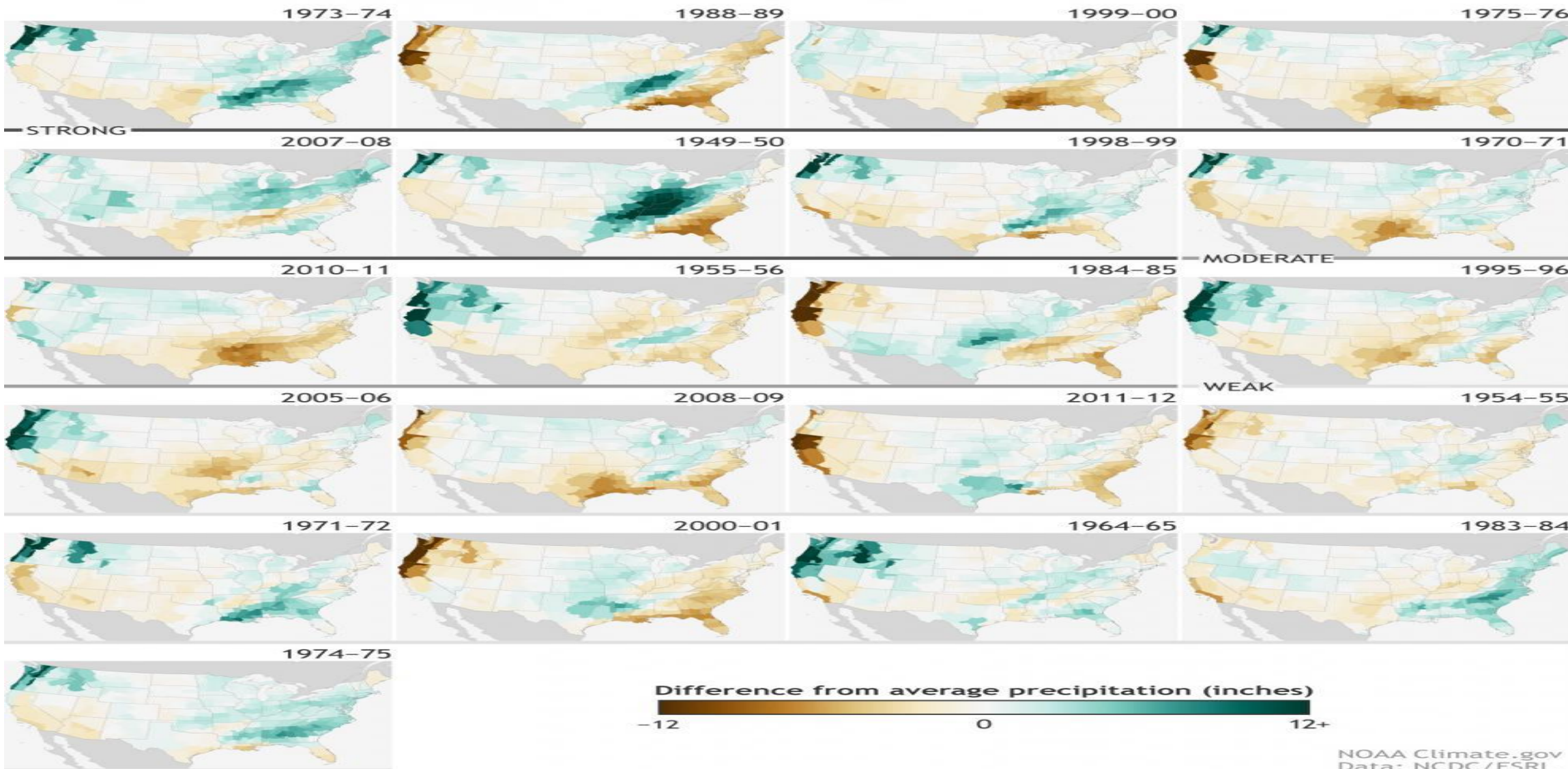


Arctic Oscillation (Polar Vortex)



Winter Precipitation Response to La Nina

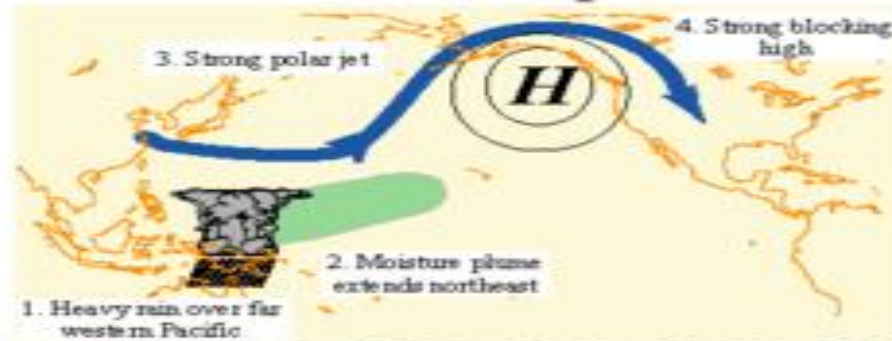
Winter (December-February) precipitation during strong, moderate, and weak La Niñas since 1950



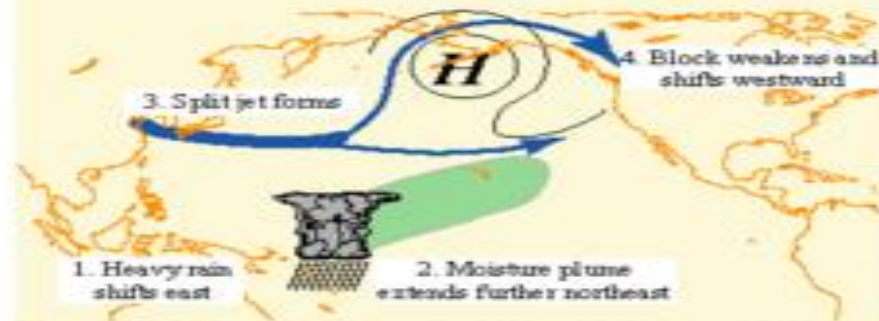
Madden Julian Oscillation

Typical Wintertime Weather Anomalies Preceding Heavy West Coast Precipitation Events

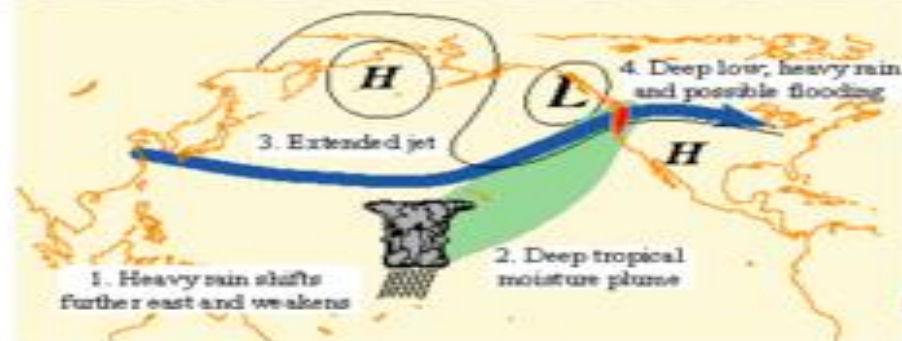
7-10 Days Before Event



3-5 Days Before Event

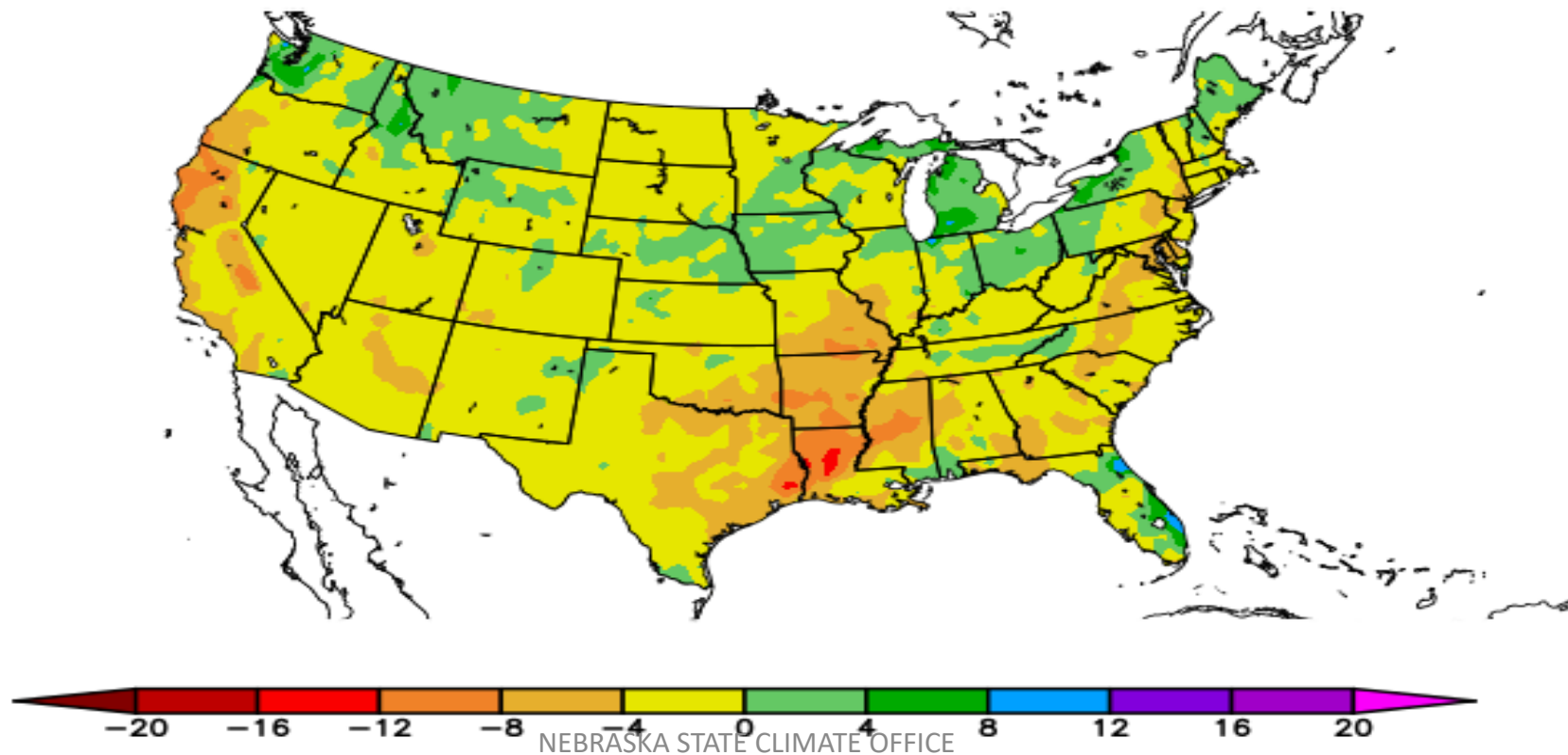


Precipitation Event



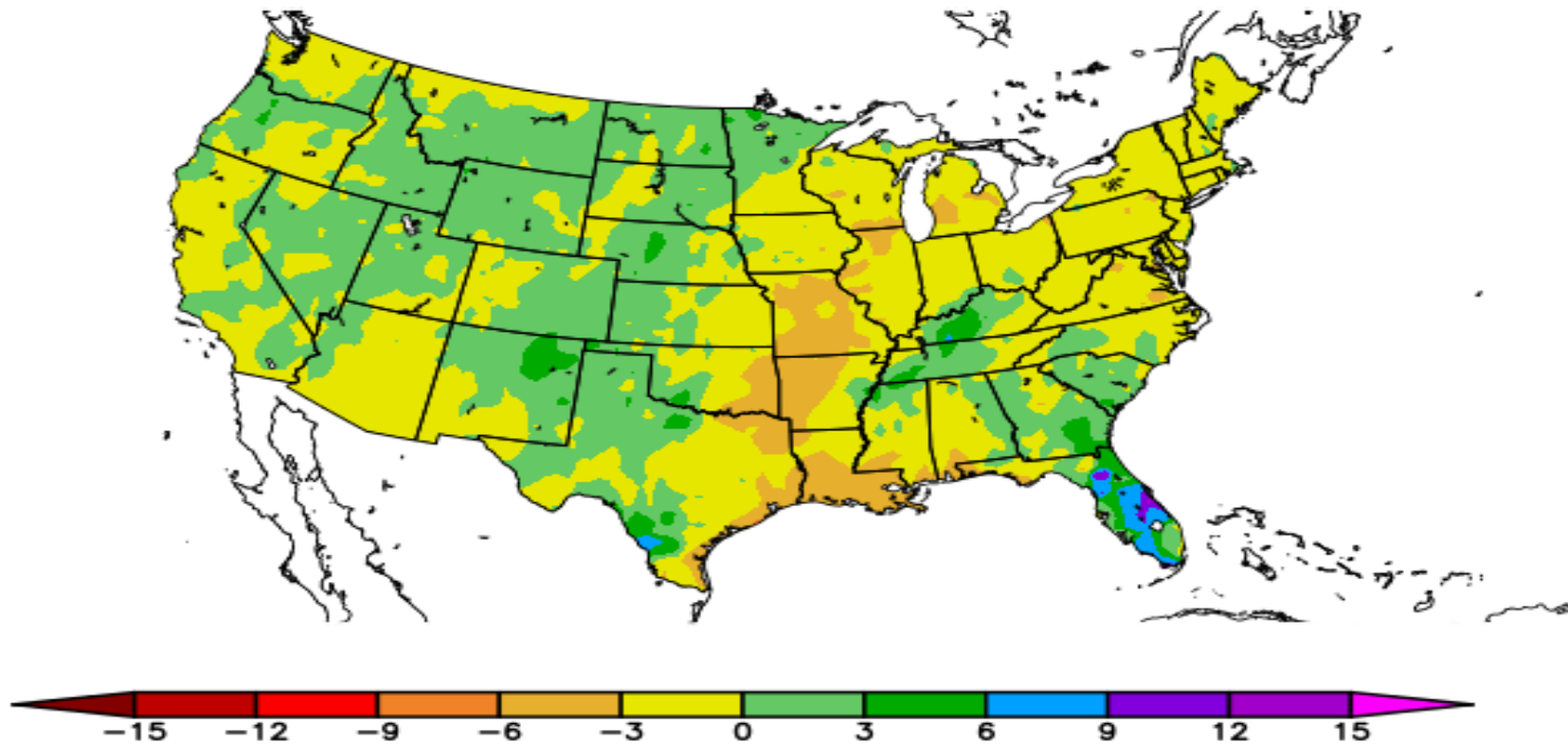
Soil Moisture Recharge Period Trend

Departure from Normal Precipitation (in)
10/1/2017 – 1/3/2018

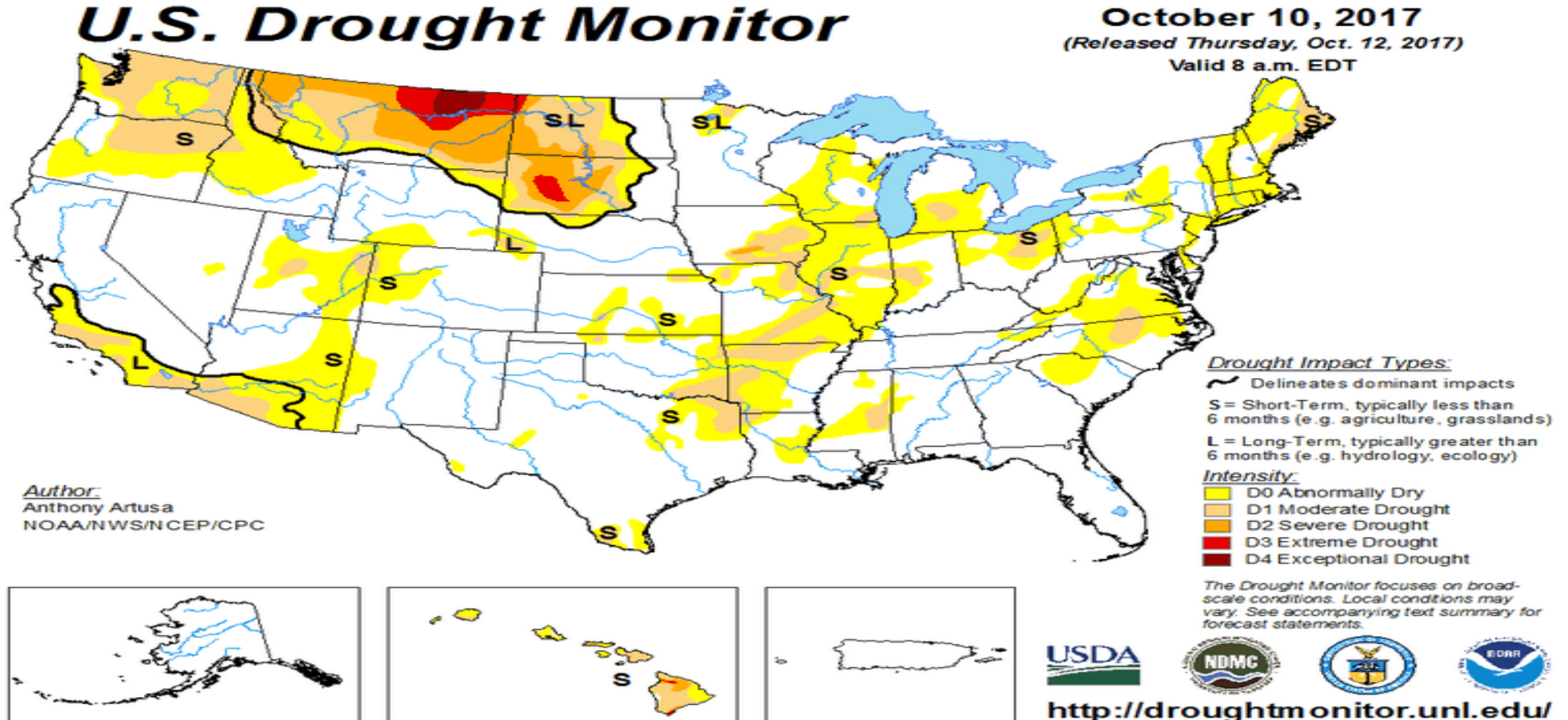


September Precipitation Trend

Departure from Normal Precipitation (in)
9/1/2017 – 9/30/2017



12 week U.S. Drought Monitor Animation



U.S. Snow Depth Map – 1/3/18

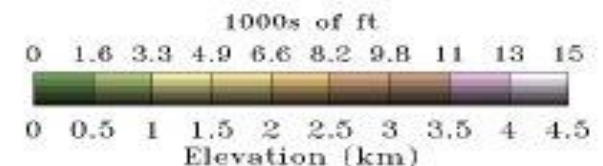
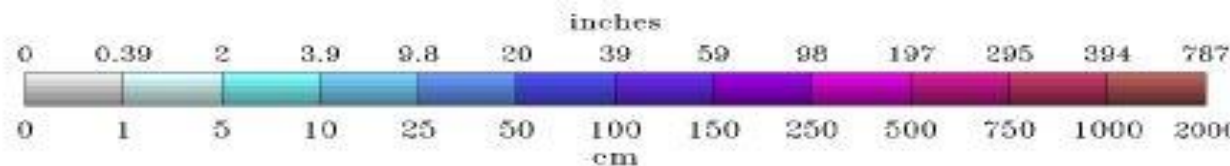
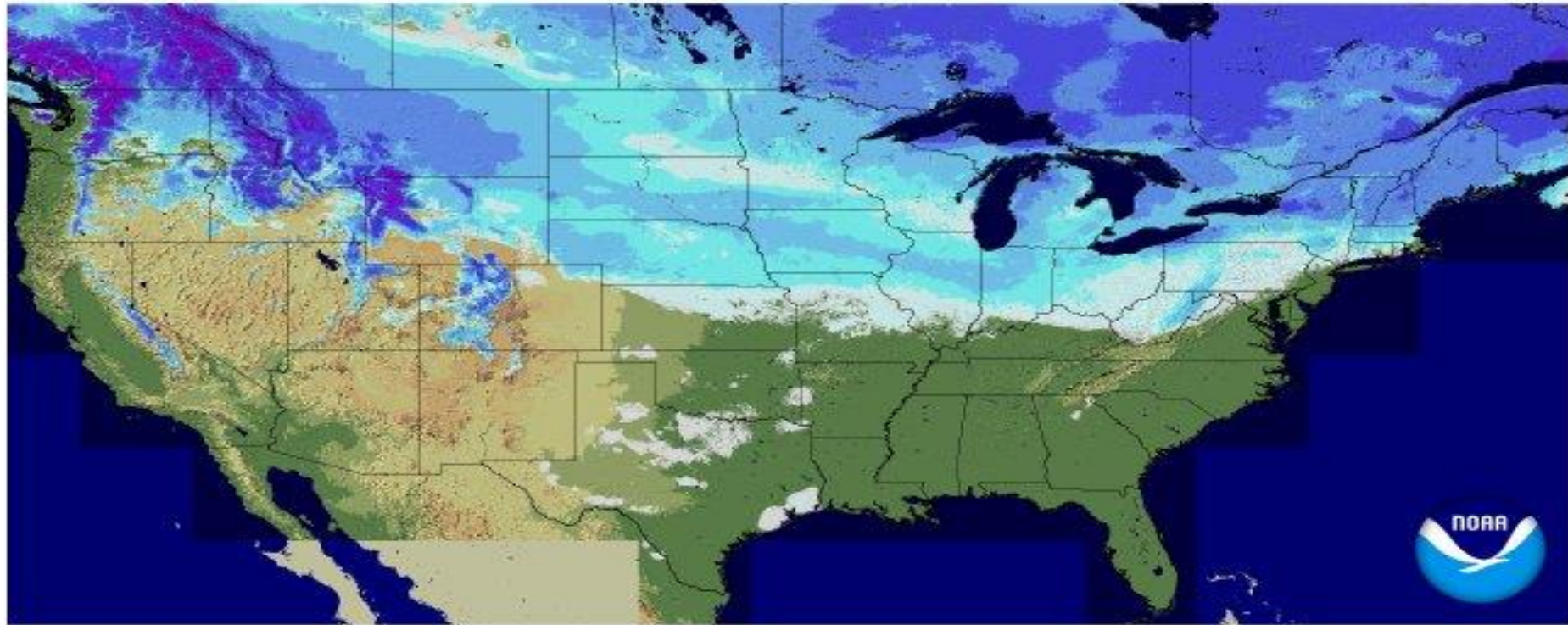
National Snow 2016-
Analysis 2017

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PREDICTION

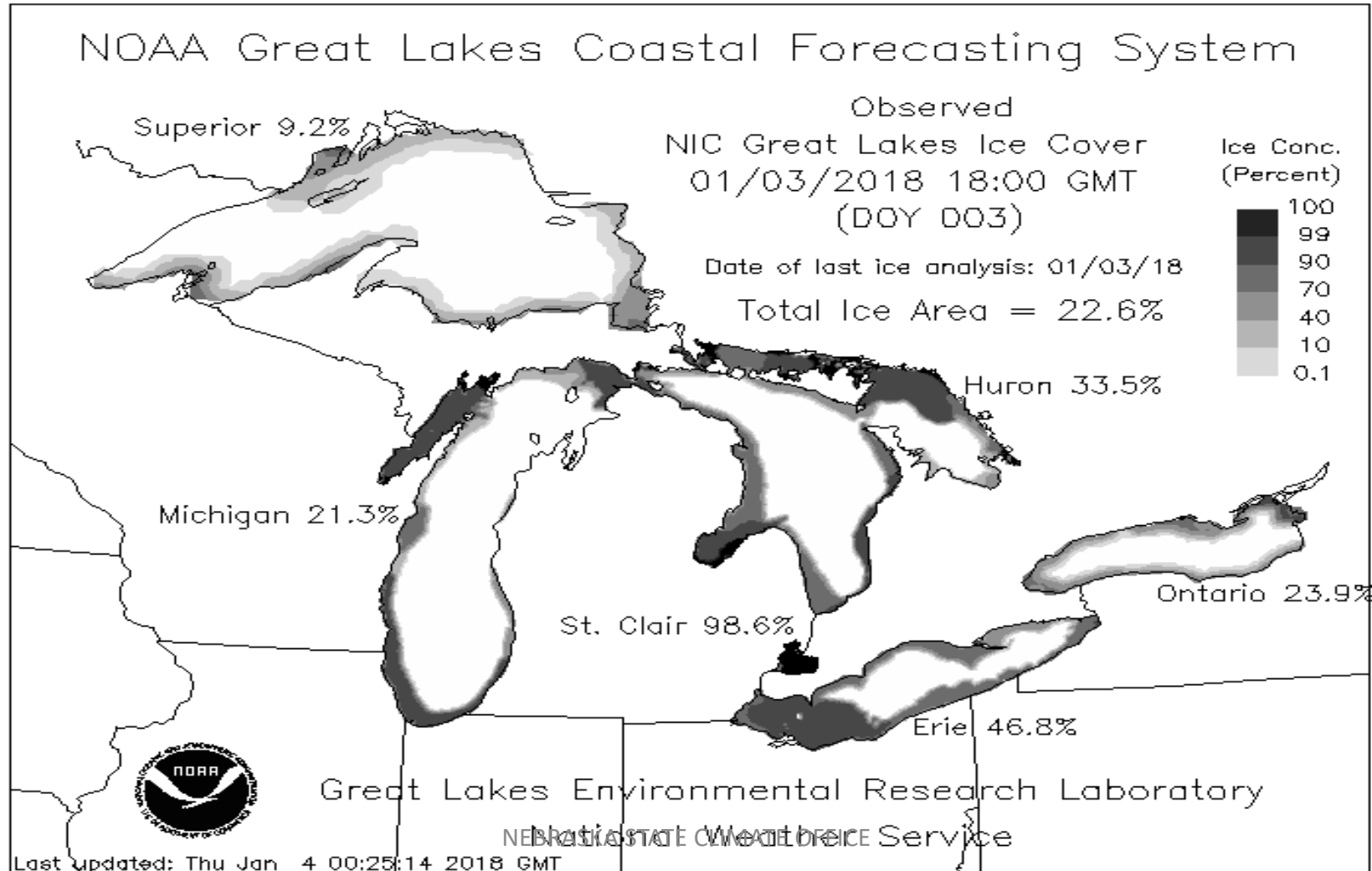
OWP

Snow Depth

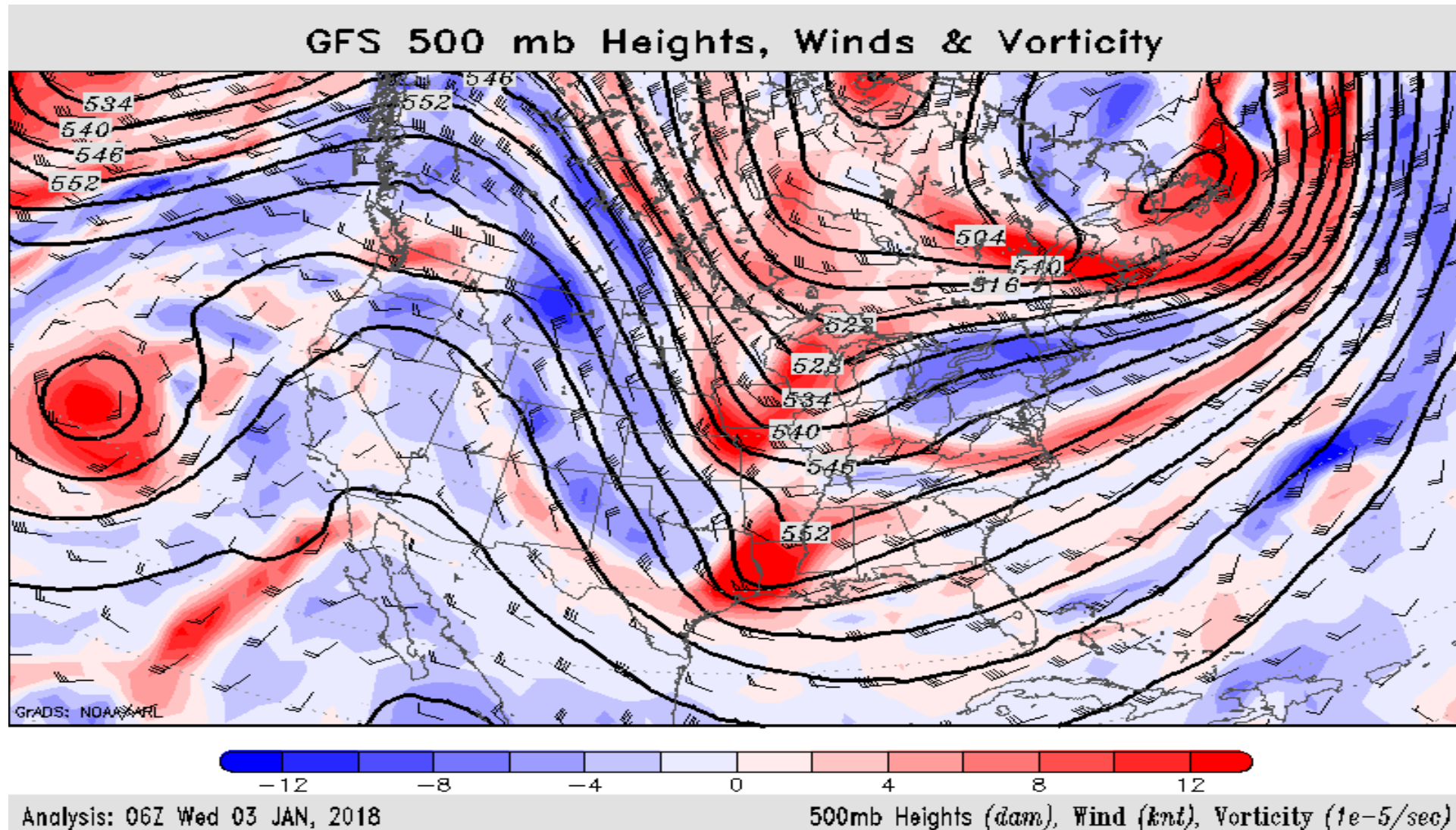
2018-01-03 06 UTC



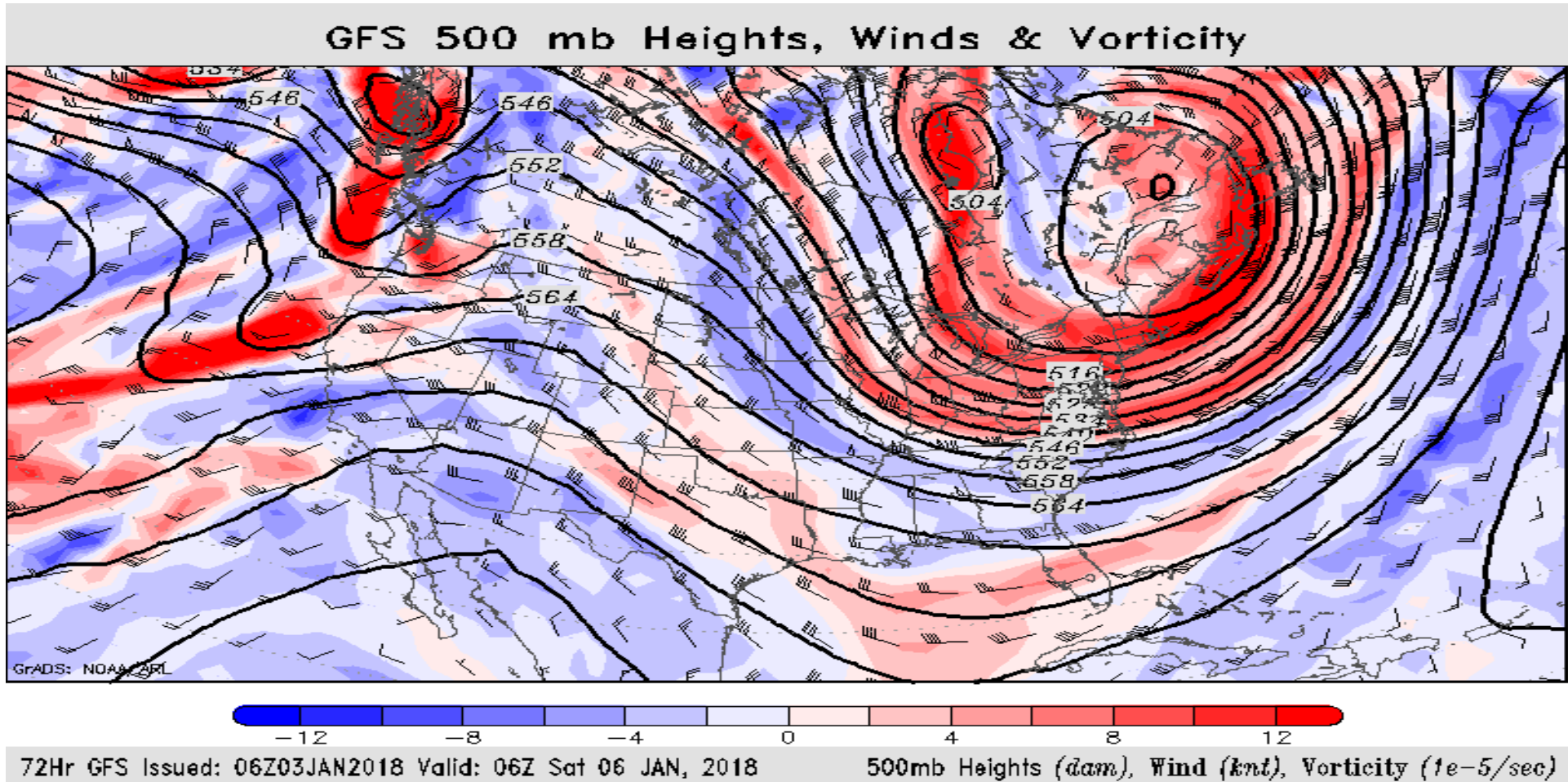
Current Great Lakes Ice Cover



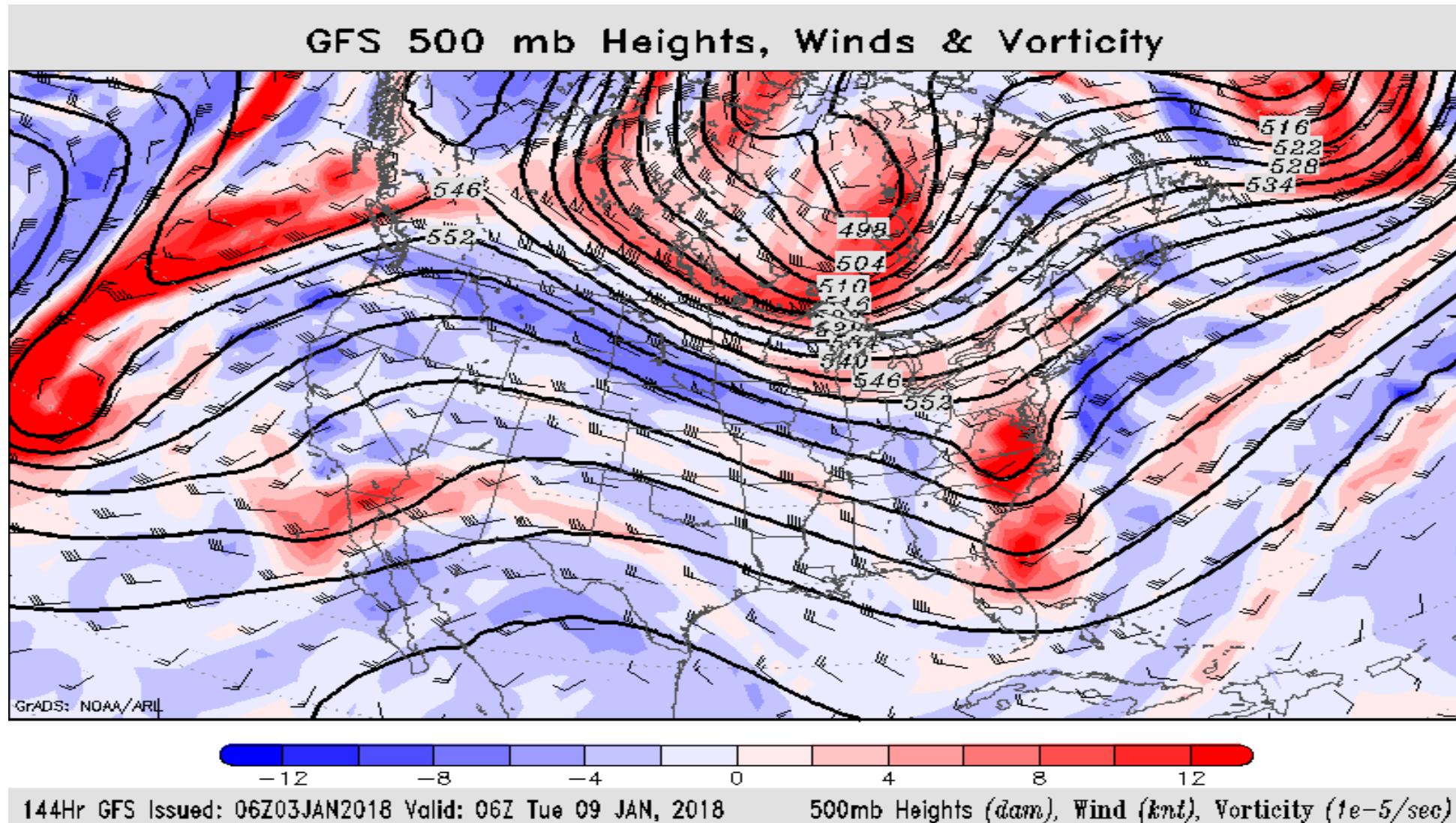
GFS 500 mb Initialization Day 1



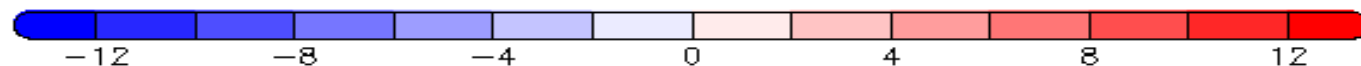
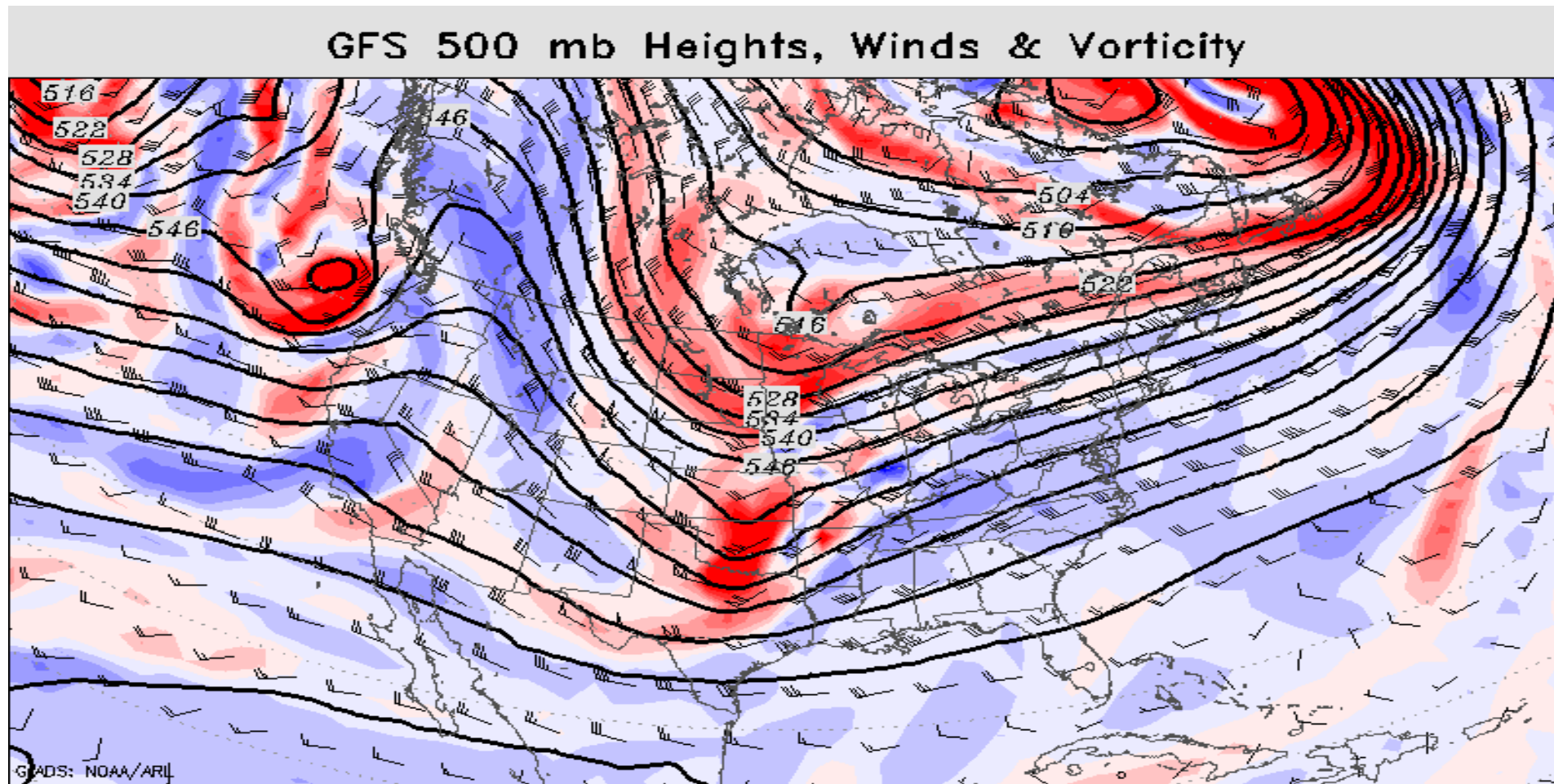
GFS 500 mb Day 3 Forecast



GFS 500 mb Day 6 Forecast



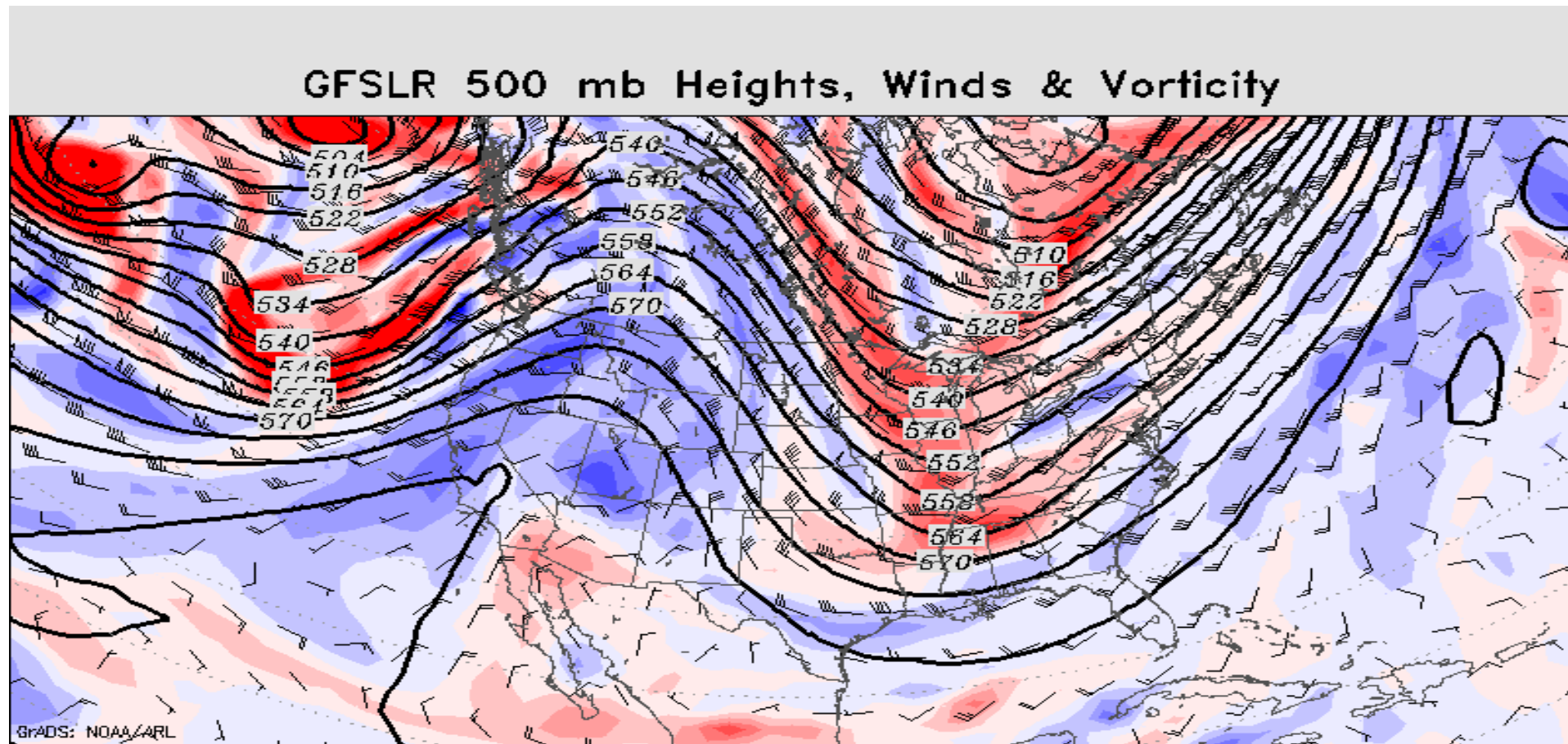
GFS 500 mb Day 9 Forecast



216Hr GFS Issued: 06Z03JAN2018 Valid: 06Z Fri 12 JAN, 2018

500mb Heights (dam), Wind (knt), Vorticity ($1e-5/sec$)

GFS 500 mb Day 12 Forecast

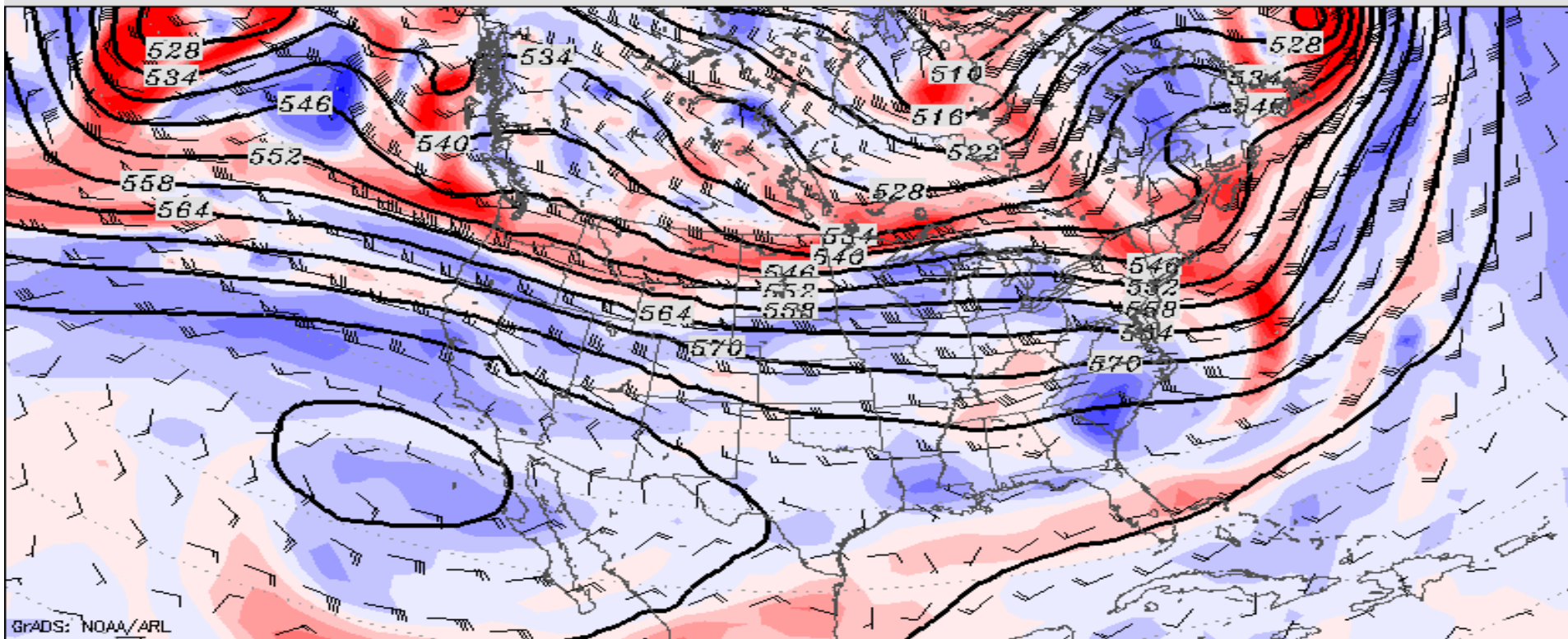


288Hr GFSLR Valid: 06Z Mon 15 JAN, 2018

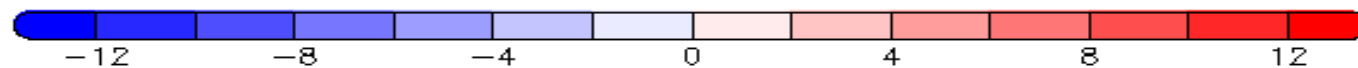
500mb Heights (dam), Wind (knt), Vorticity ($10^{-5}/\text{sec}$)

GFS 500 mb Day 15 Forecast

GFSLR 500 mb Heights, Winds & Vorticity



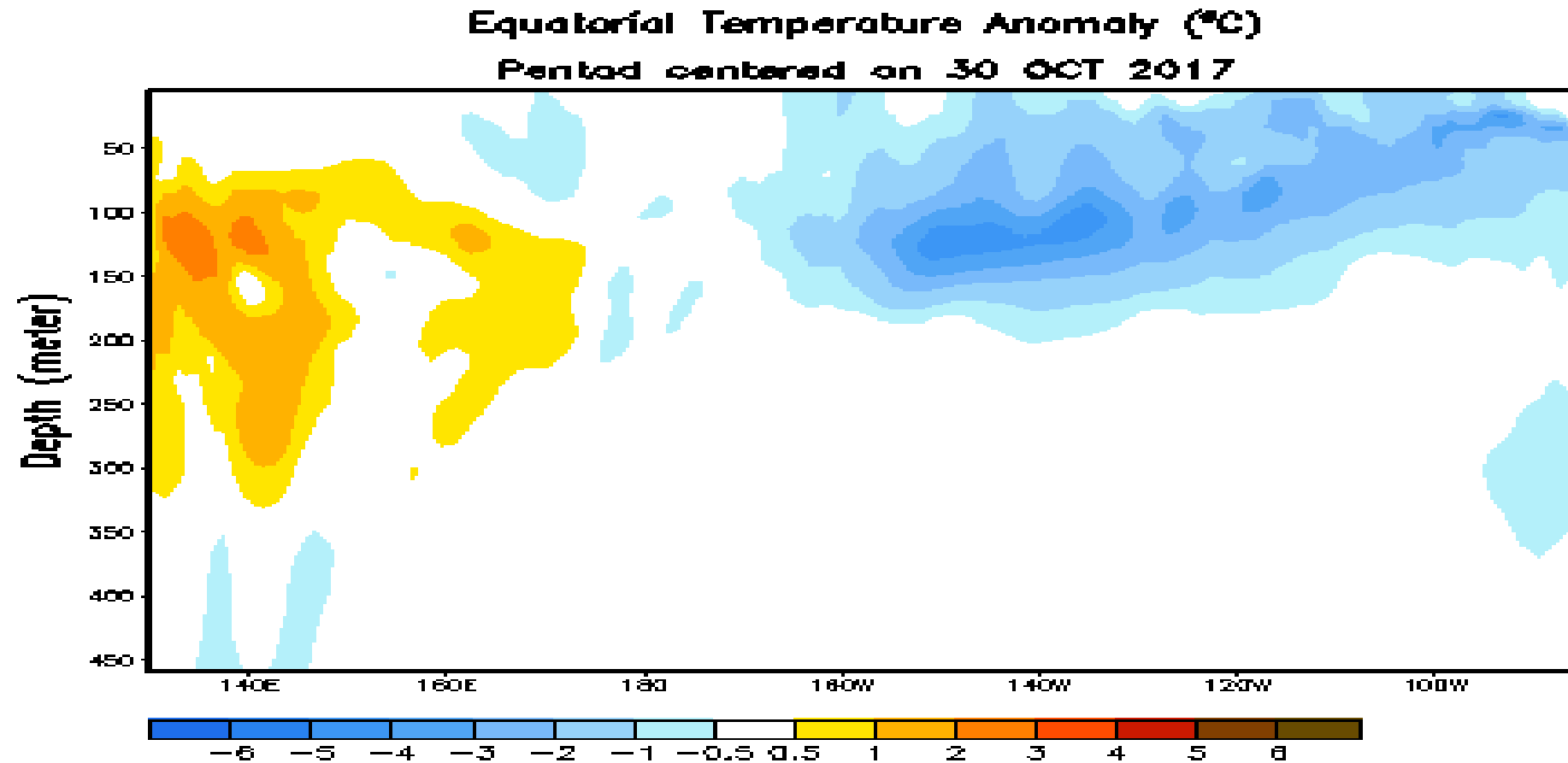
GrADS: NOAA/ARL



360Hr GFSLR Valid: 06Z Thu 18 JAN, 2018

500mb Heights (dam), Wind (knt), Vorticity ($1e-5/sec$)

Sub-Surface Equatorial SST Trend



ENSO Forecast: Consensus of Global Models

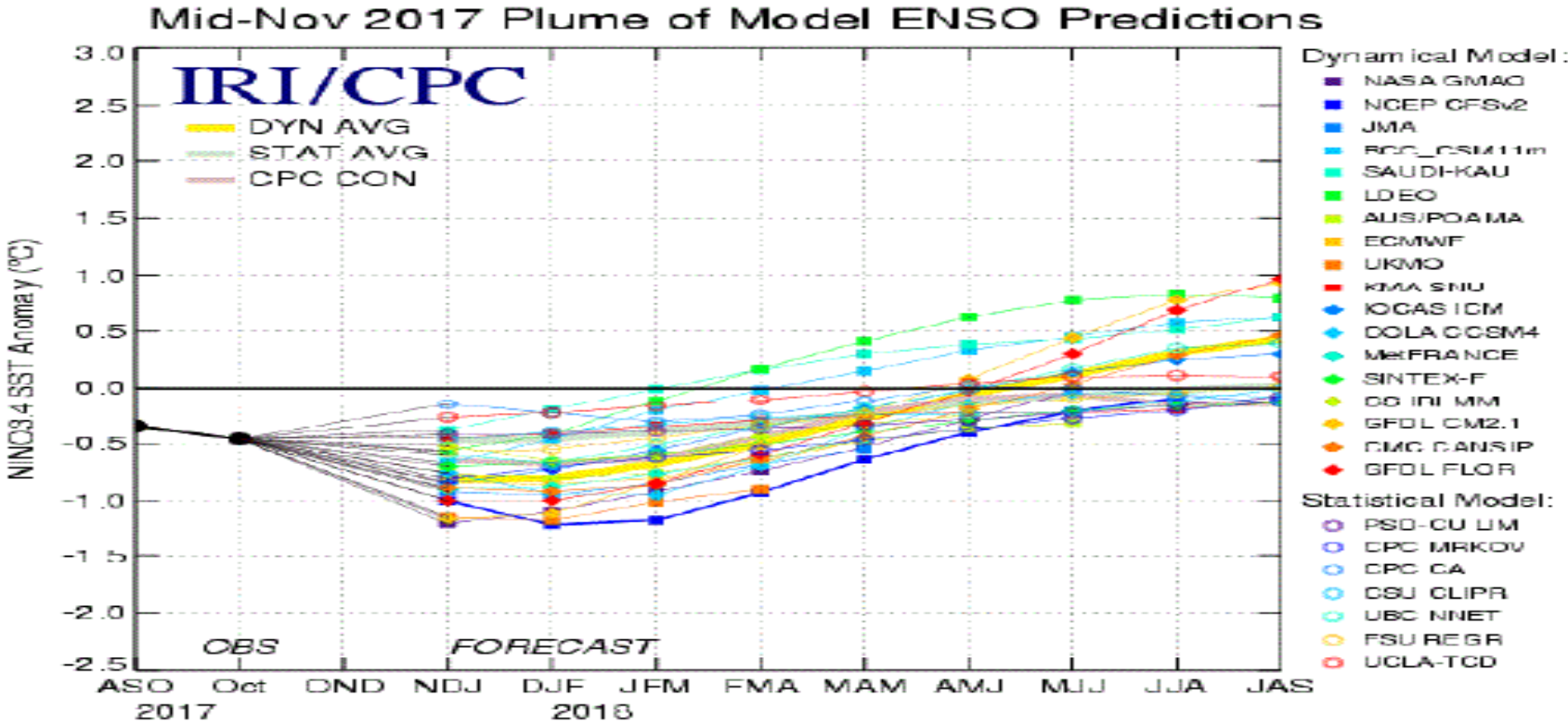
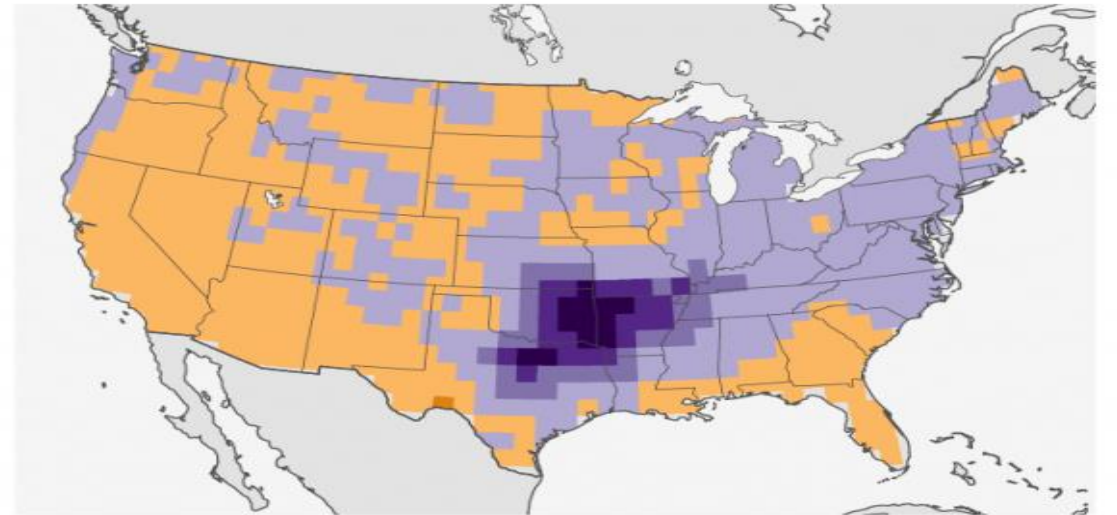
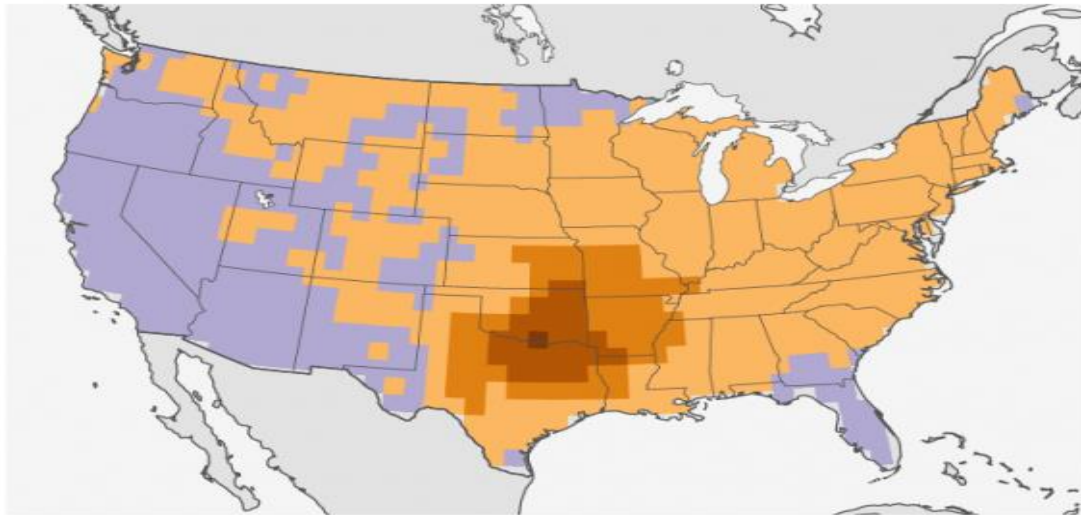
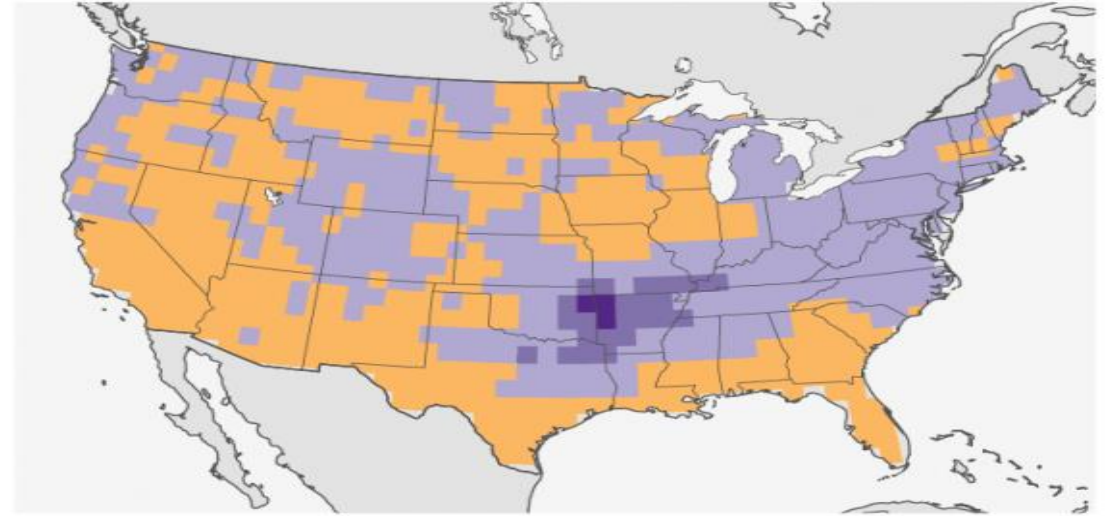
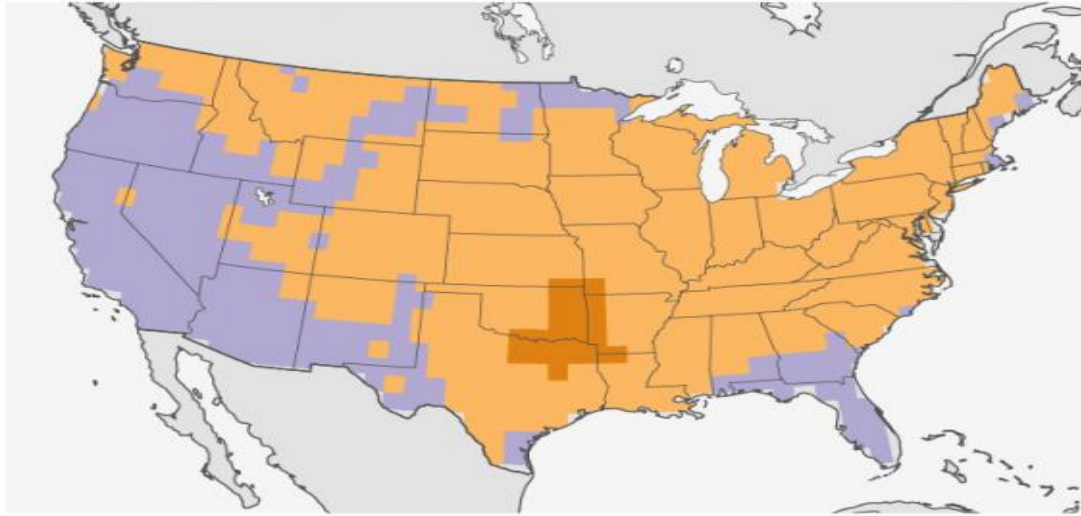
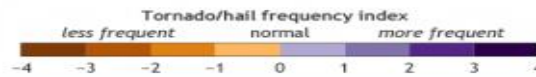


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 17 November 2017.

Hail/Tornado Frequency During ENSO Events



Influence of El Niño (left) and La Niña(right) on the frequency of tornadoes (top) and hailstorms (bottom)



Key Climate Driver Points

- Soil moisture values within normal range for most of Nebraska
- Weak and Moderate La Nina's show an enhance tendency for below normal winter temperatures across upper Midwest and Great Lakes
- Extreme temperature oscillations likely to continue for remainder of this winter
- La Nina patterns lead to an increase in tornado/hail events in the central Plains
- Snowpack doesn't paint a rosy picture for drought elimination/expansion across the southern and central Plains
- Drought continues for the Dakota's and spring weather will determine the extent of recovery or where intensification will likely occur
- Watch for El Nino development during the second half of 2018



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