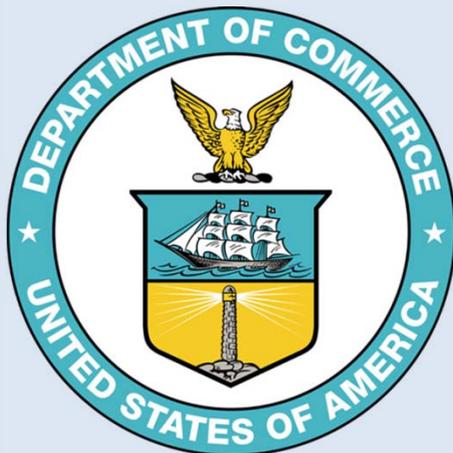


NOAA Climate Science & Services Monthly Climate Update

A look back at 2011 and a preview for the next 3 months



Dr. Kathryn Sullivan

Assistant Secretary of Commerce for Environmental Prediction

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3-Month Forecaster, Operations Branch
Chief, Operations Branch, NOAA's Climate Prediction Center

January 19, 2012

2011 Major Weather and Climate Events in the United States

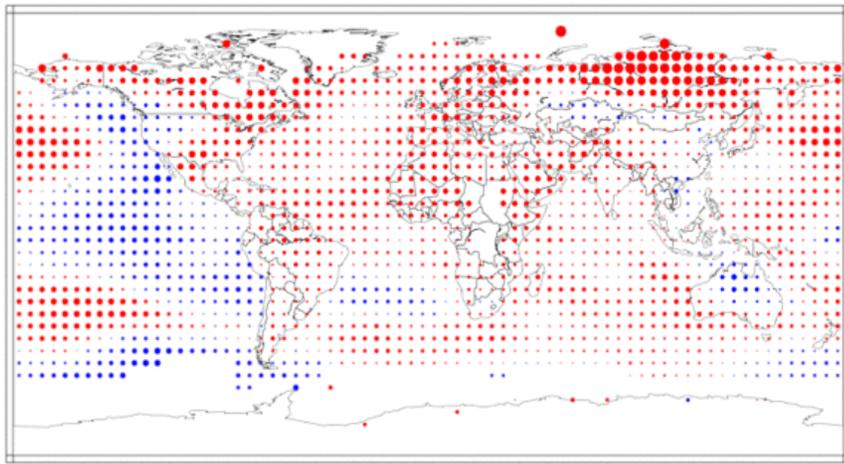


Global Climate Highlights

Temperature Anomalies Jan-Dec 2011

(with respect to a 1971-2000 base period)

National Climatic Data Center/NESDIS/NOAA



-5C -4C -3C -2C -1C 0C 1C 2C 3C 4C 5C
Degrees Celsius



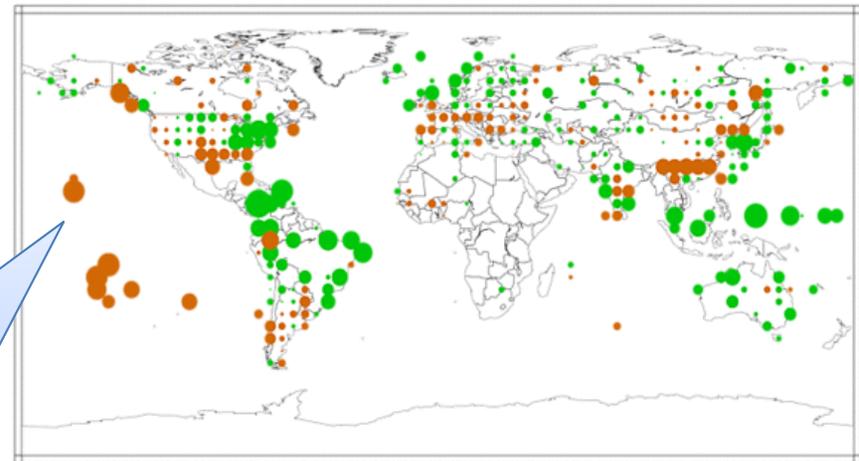
Temperature (GHCN-Monthly)

- La Niña pattern shows up well in Pacific
– ***La Niña was a major factor in annual outcomes in many regions***
- Warmest year for Spain, Norway (tied). 2nd warmest for UK
- Near-polar land areas continue very warm

Precipitation Anomalies Jan-Dec 2011

(with respect to a 1961-1990 base period)

National Climatic Data Center/NESDIS/NOAA



-250mm -200mm -150mm -100mm -50mm 0mm 50mm 100mm 150mm 200mm 250mm
Millimeters



Precipitation (GHCN-Monthly)

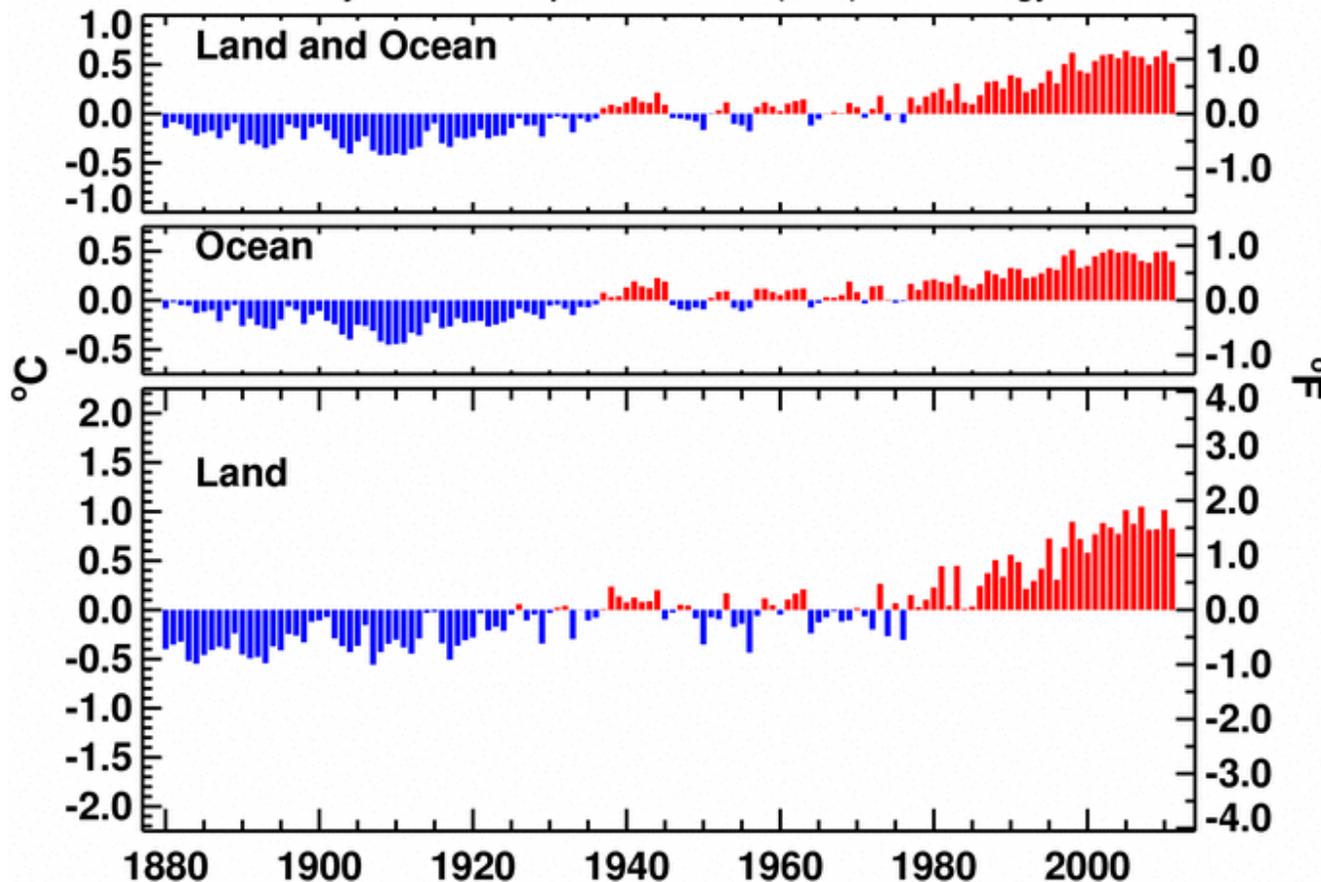
- Globally: 2011 2nd wettest year over land (2010), with regional extremes
- Major Droughts: East Africa, Mexico/USA border, Central to Southeast Europe
- Extreme wet in Central & adjacent South America
- Wettest year for Norway, 3rd wettest for Australia



Global Temperatures During 2011

Jan-Dec Global Surface Mean Temp Anomalies NCDC/NESDIS/NOAA

Analysis is based upon Smith et al. (2008) methodology.



Period of record: 133 years (1880-2011)

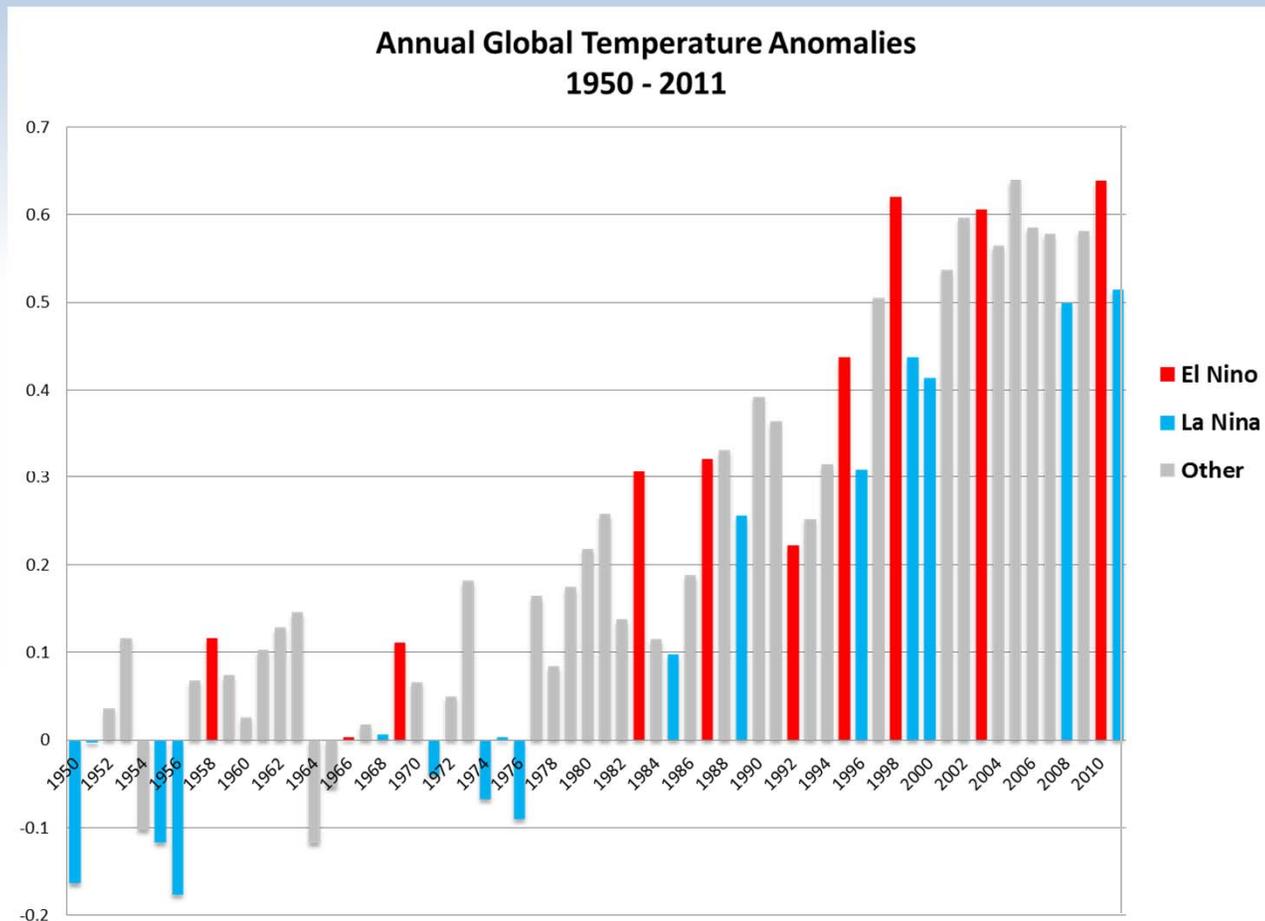
Surface Temperature Anomalies and Ranks

- **Land & ocean:**
 - +0.51 C / 0.92 F
 - 11th warmest on record (tied)
 - 2nd coolest year of 21st C. (2008)
 - Equal to 2nd warmest of 20th C.
- **Land:**
 - +0.83 C / 1.49 F
 - 8th warmest
- **Ocean:**
 - +0.40 C / 0.72 F
 - 11th warmest (tied)



La Niña & Global Temps

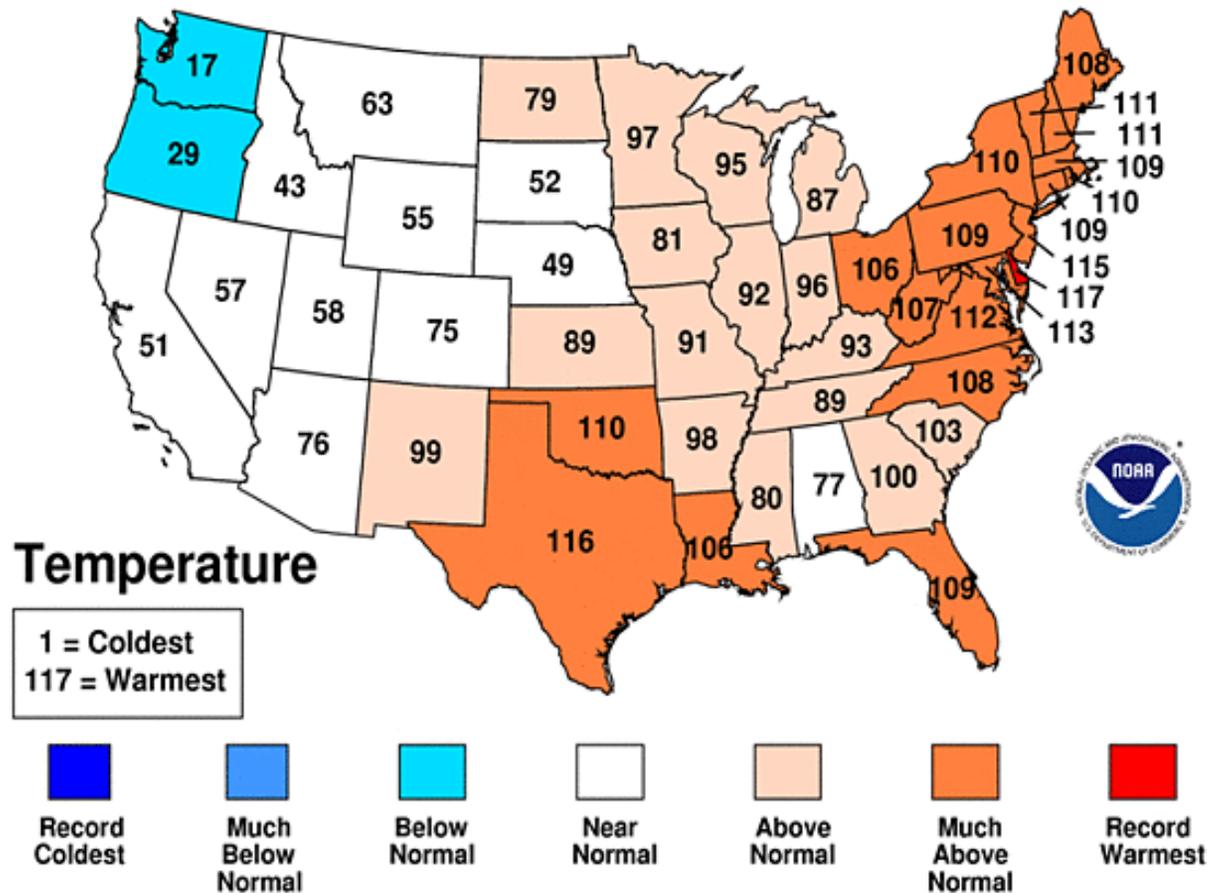
This year was the warmest “La Niña year” on record for the land, the ocean and the combined temperatures. La Niña years are defined as having the first three months of the year in La Niña, as determined by NOAA’s Climate Prediction Center



U.S. Annual Temperature Ranks

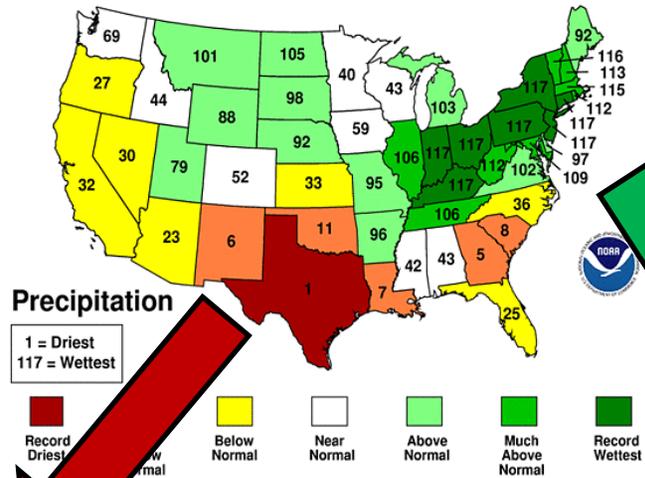
January-December 2011 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA

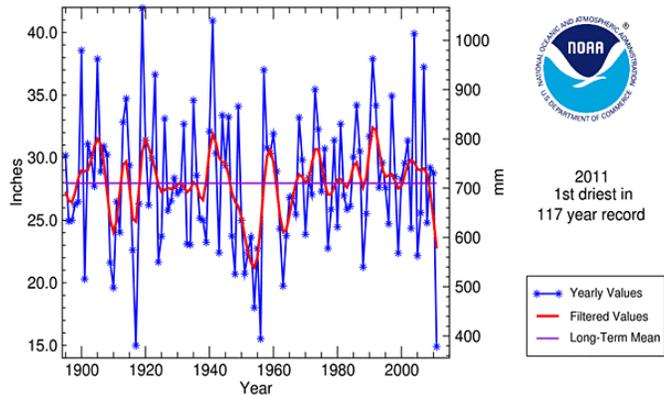


U.S. Annual Precipitation Ranks

January-December 2011 Statewide Ranks National Climatic Data Center/NESDIS/NOAA

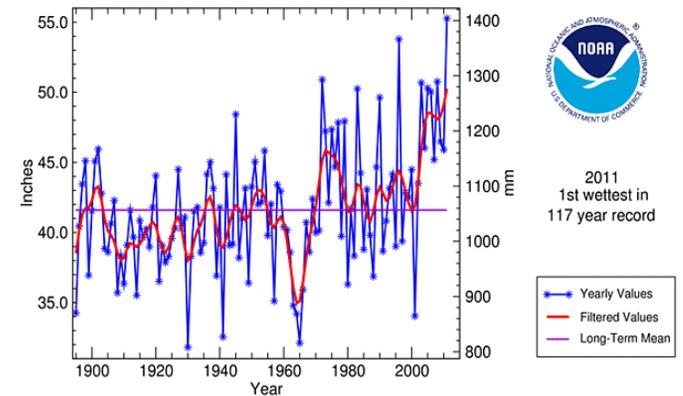


Texas Statewide Precipitation
1895 - 2011



National Climatic Data Center / NESDIS / NOAA

Northeast Region Precipitation
1895 - 2011

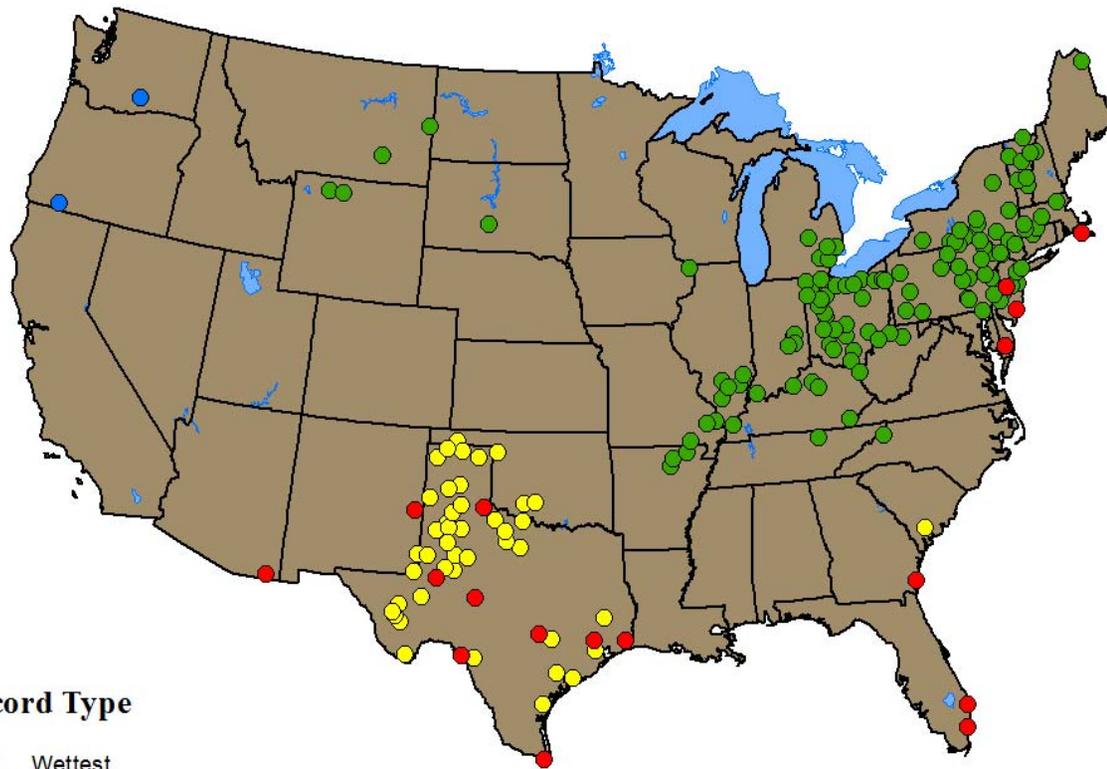


National Climatic Data Center / NESDIS / NOAA



Climate of 2011 in the U.S. – A year of Extremes

Selected Annual Climate Records for 2011



Record Type

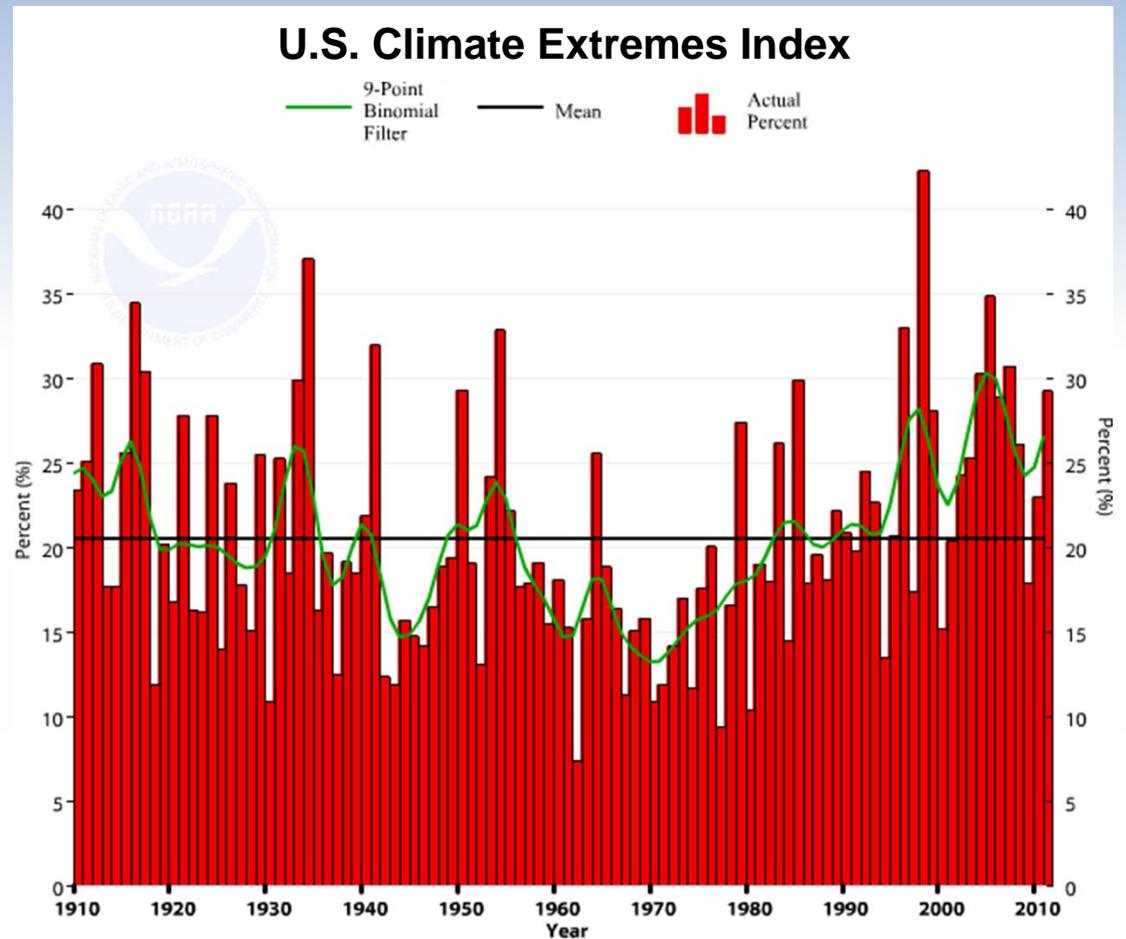
- Wettest
- Driest
- Warmest
- Coolest

These data are preliminary. A more complete list and map will follow once full quality assurance is complete.
Record Stations: Wettest 121, Driest 45, Warmest 17, Coolest 2
Source: GHCN-D
Last updated: January 18, 2012

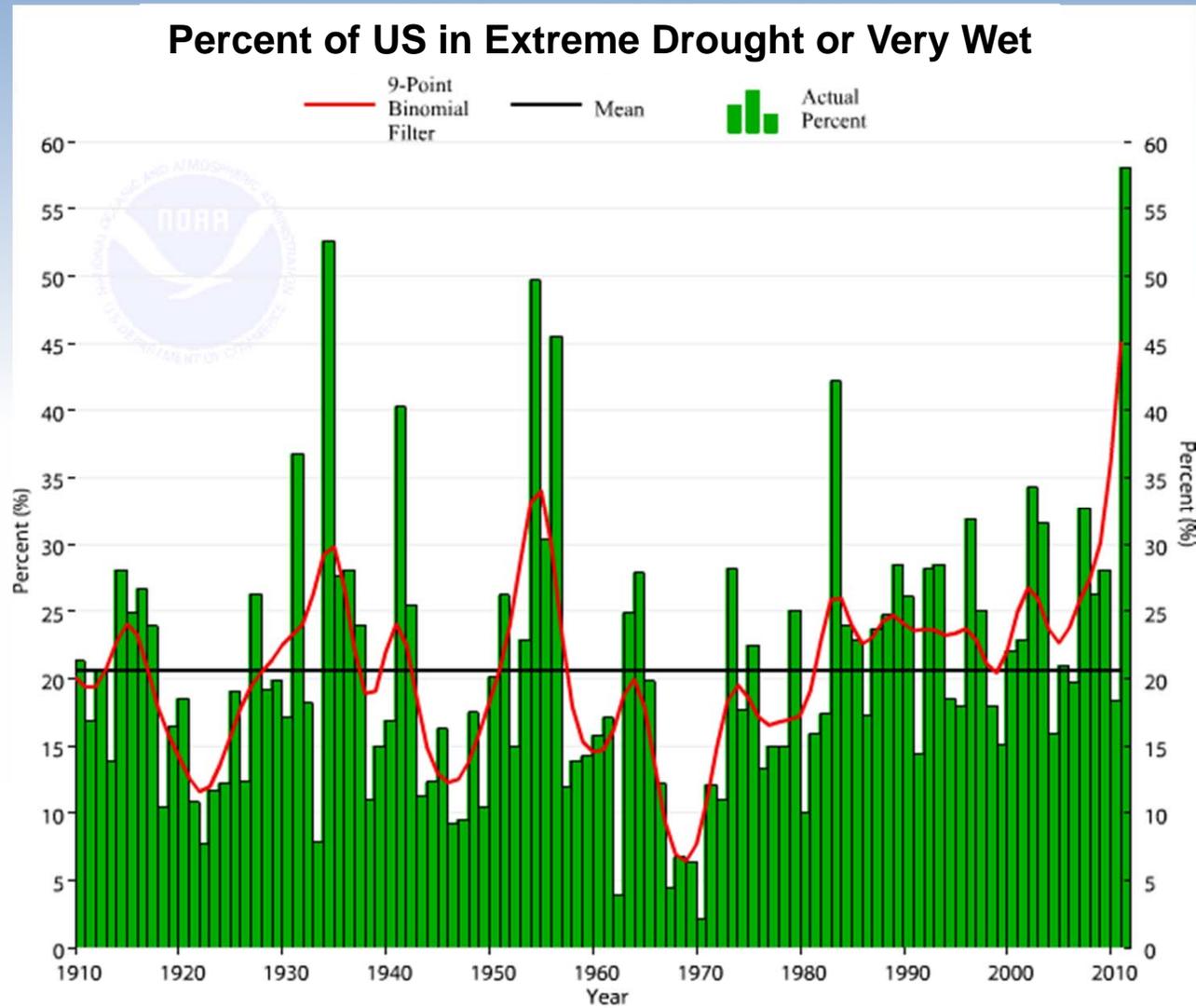


Climate of 2011 in the U.S. – A year of Extremes

CEI Component (type of extreme)	2011's Historical Fit
Max. Temperature ("afternoon highs")	Above Normal
Min. Temperature ("overnight lows")	Above Normal
Palmer Drought Severity Index	Record High
1-Day Precipitation	Above Normal
Days with/without Precipitation	Above Normal
Landfalling Tropical Cyclones	Near Normal
Total	29.3 Above Normal



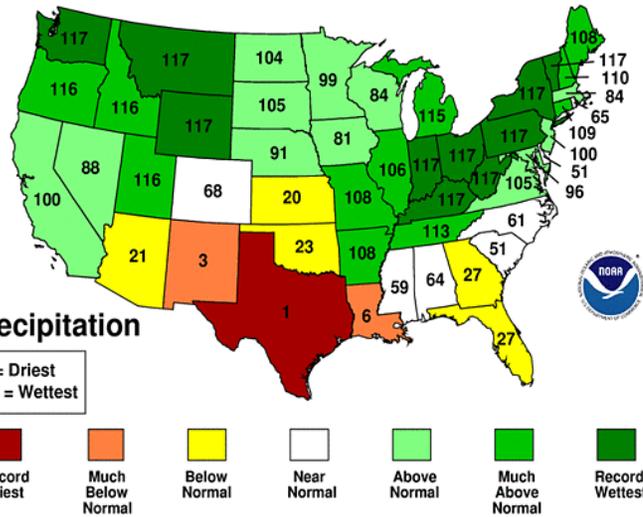
Precipitation Extremes



Spring Precipitation Extremes

Spring 2011

National Climatic Data Center/NESDIS/NOAA



Spring (March-May) Precipitation

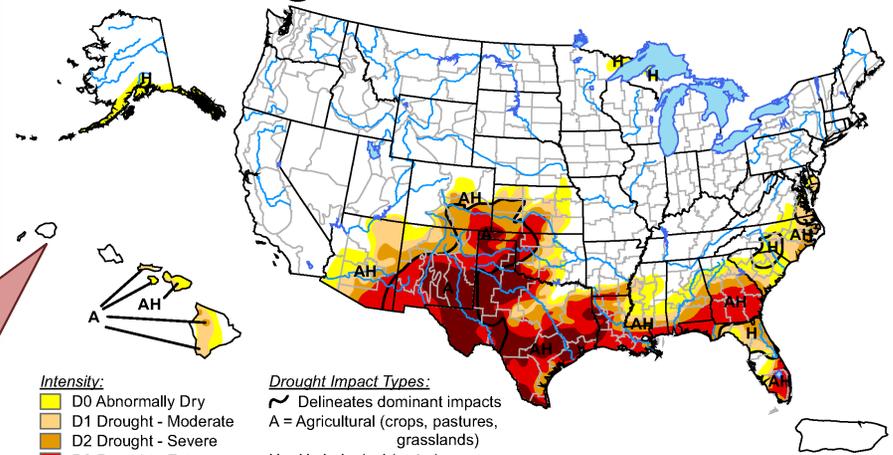
- 10 states record wet across the northern U.S.
- 11 additional states top ten wet.
- Spring precipitation, combined with snow melt, contributed to historic flooding.
- Texas was record dry – precipitation more than 5 inches below average.

Drought and Wildfires

- Exceptional Drought developed across the Southern Plains, Gulf Coast, and Southeast.
- Very dry conditions contributed to a record wildfire season – 3.2 million acres burned nationwide.
- Lack of spring rains was a precursor to the summer drought.

U.S. Drought Monitor

May 31, 2011
Valid 8 a.m. EDT



Intensity:

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

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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

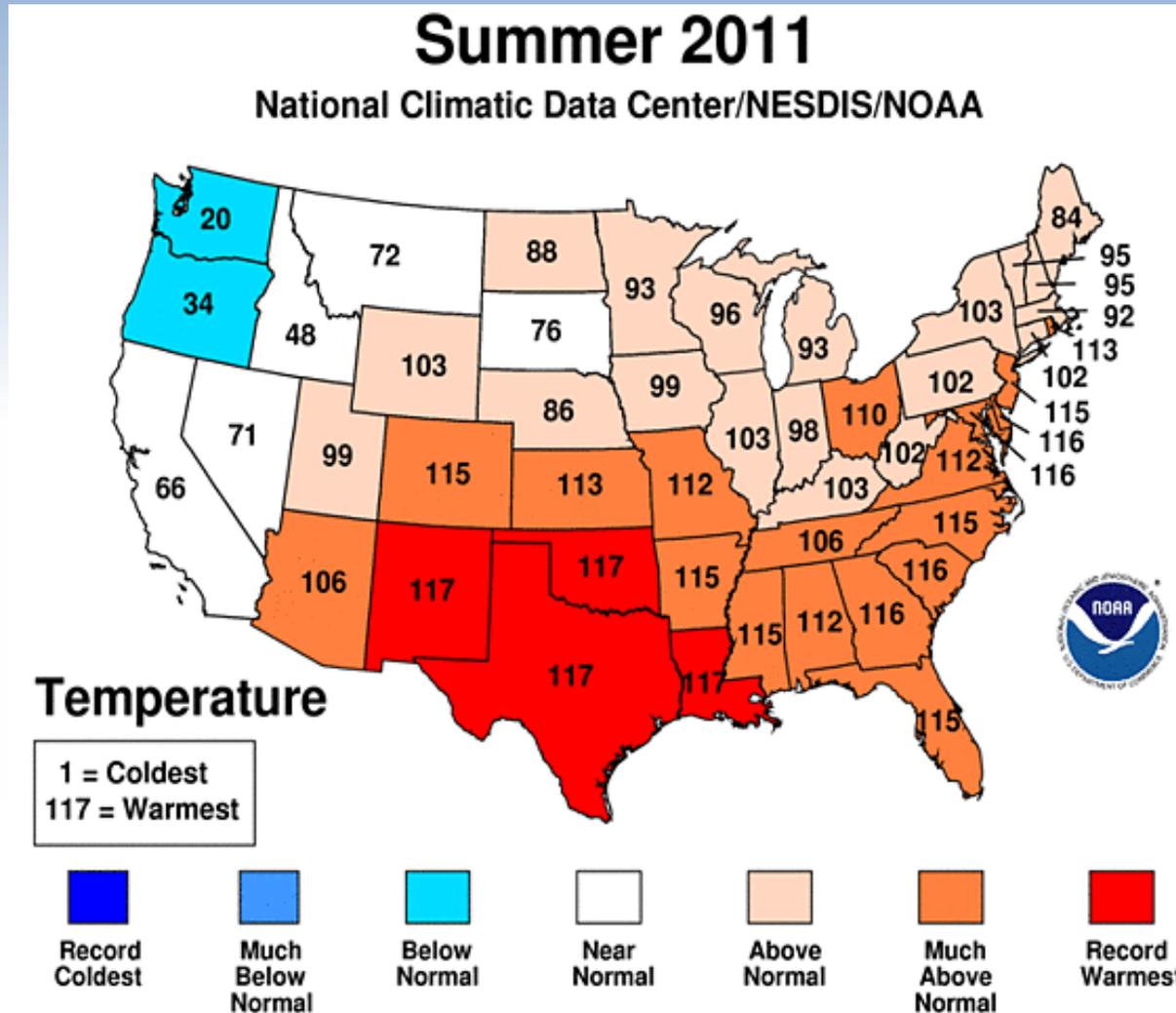
<http://drought.unl.edu/dm>



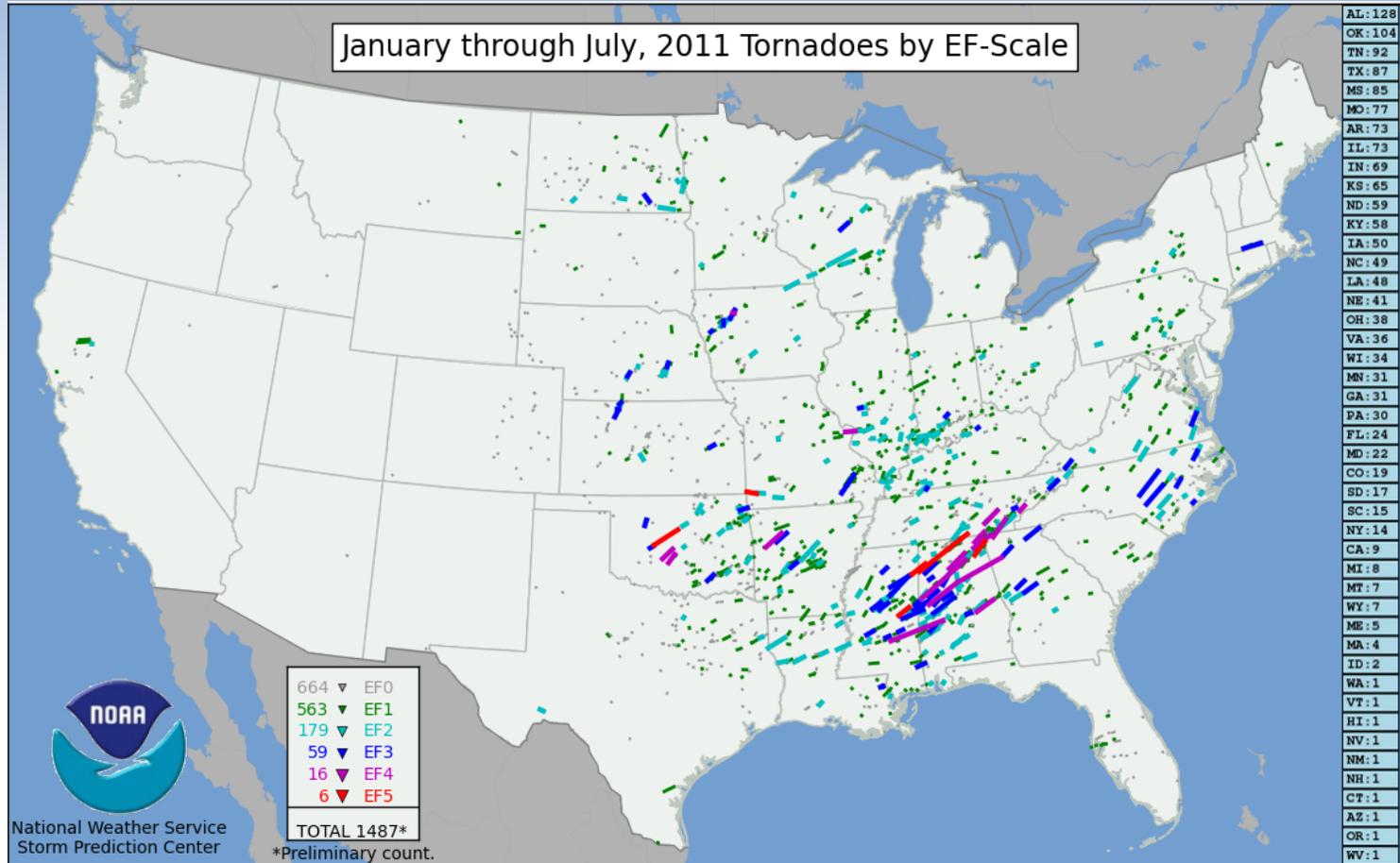
Released Thursday, June 2, 2011
Author: Anthony Artusa, NOAA/NWS/NCEP/CPD



U.S. Summer Temperatures



U.S. Tornadoes



Top Ten Weather / Climate Events of 2011

- Climate scientists within NCDC and in partner/peer institutions in the U.S. and around the world voted on the top ten events of 2011.
- The criteria were significance in:
 - Physical science: Unusual / Rare / Extreme
 - Impacts: on people, property and governance
 - Emblematic / Indicative of major trends in variability or change

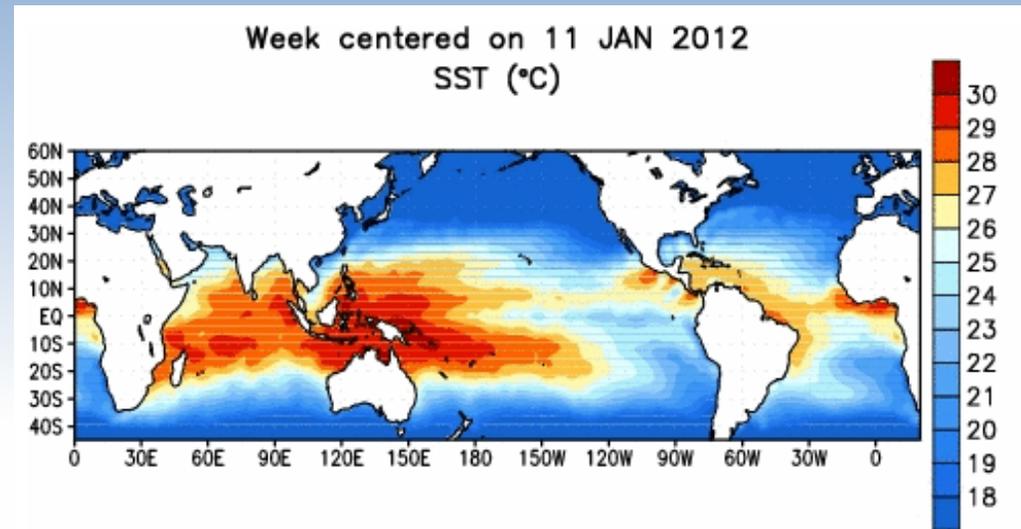
Rank	United States Event
1	April 25-28 Tornado Super Outbreak
2	Southern Drought
3	Joplin Tornado
4	River Flooding on the Mississippi and Ohio
5	Hottest Statewide Summers on Record for OK, TX
6	Hurricane Irene
7	Flooding on the Missouri and Environs
8	U.S. Wildfire Season
9-tie	April 14-16 Tornado Outbreak
9-tie	Tropical Storm Lee

Rank	Global (non-US) Event
1	Drought in eastern Africa
2	Thailand Flooding
3	Flooding across eastern Australia
4	Double-Dip La Niña
5	Flash Floods in Brazil
6	Tropical Storm Washi (Sendong)
7	Arctic Sea Ice Extent
8	Heavy Rain and Flooding in Colombia
9	Drought in Mexico
10	Drought across Europe



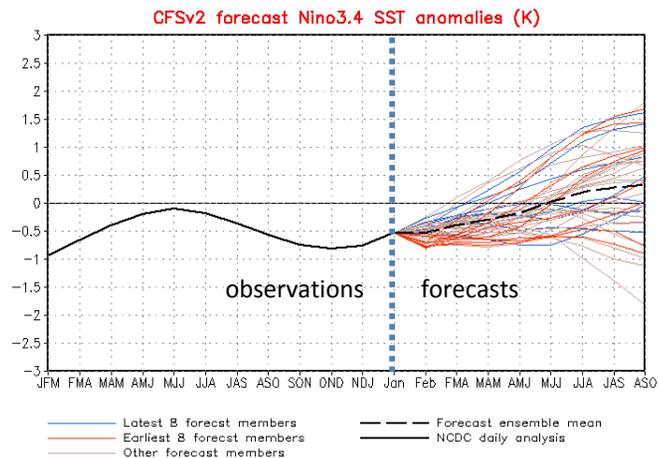
Current El Niño/Southern Oscillation (ENSO) Status

La Niña continues, likely, through early spring

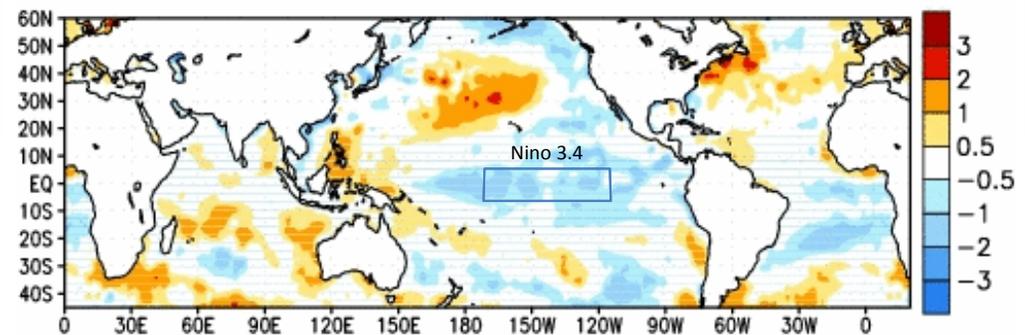


NWS/NCEP/CPC

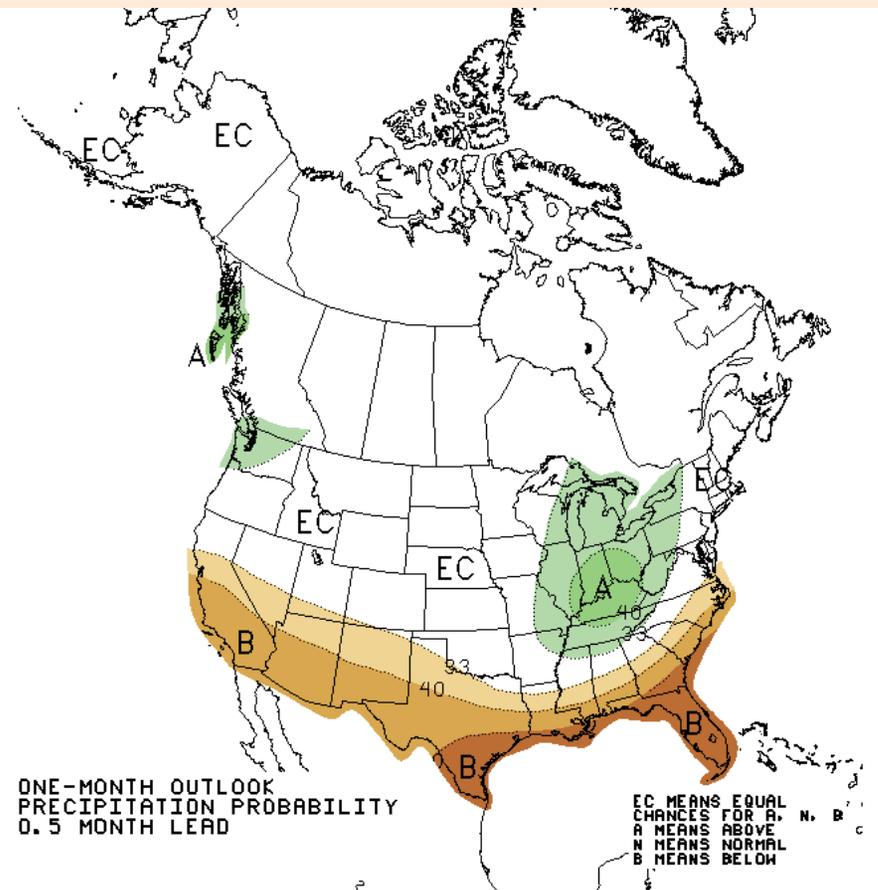
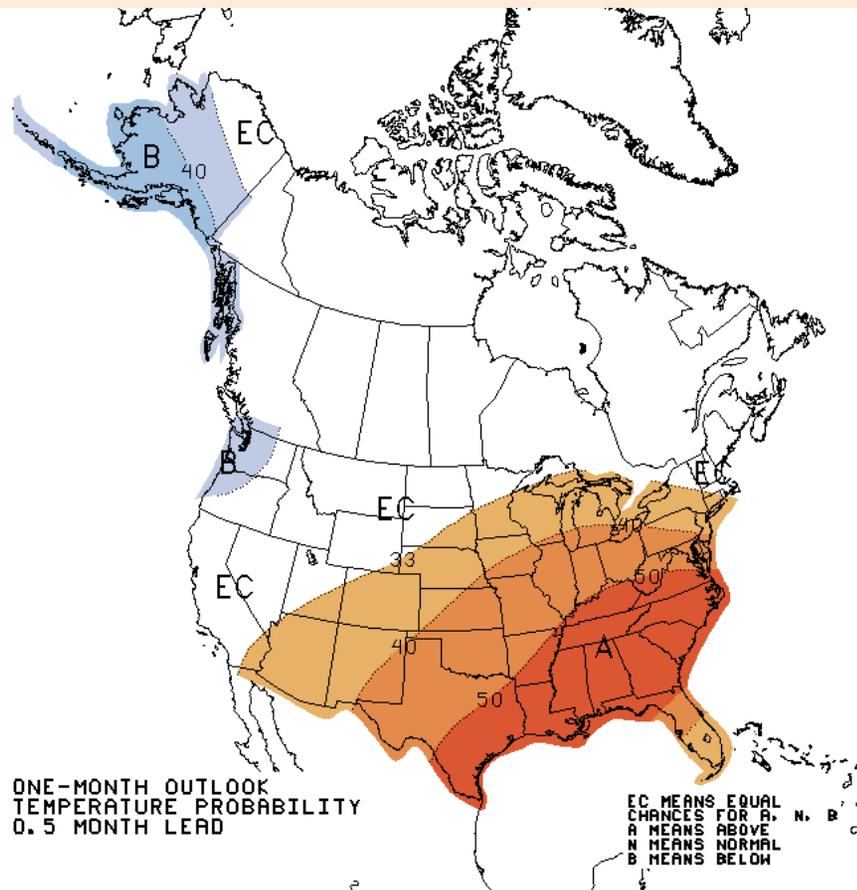
Last update: Wed Jan 18 2012
Initial conditions: 7Jan2012-16Jan2012



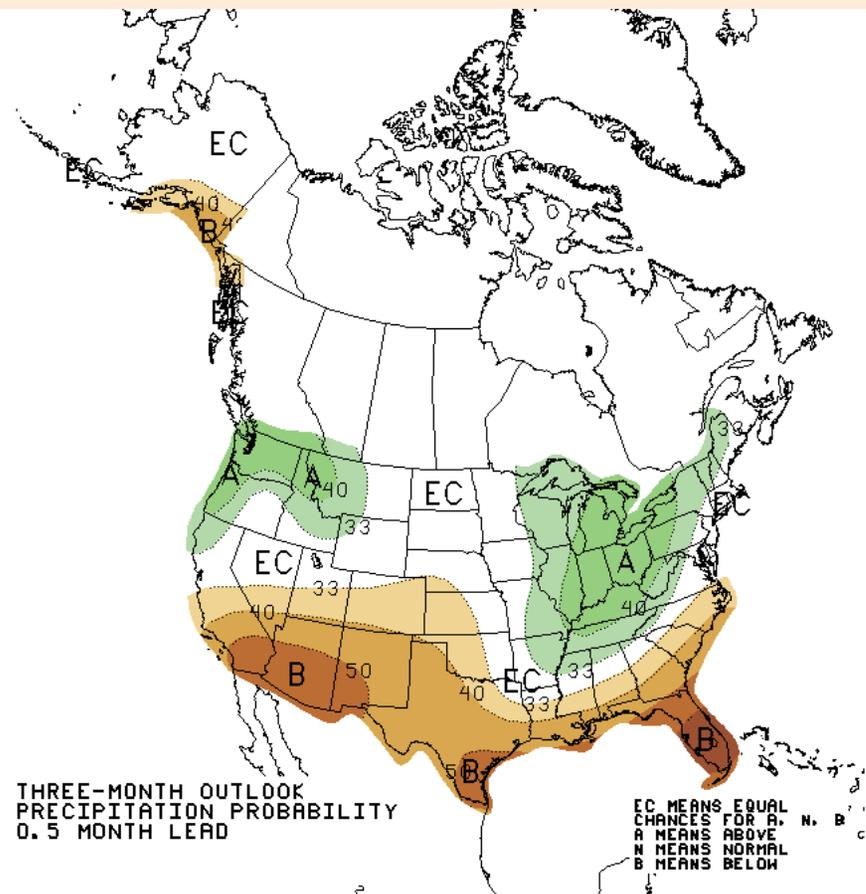
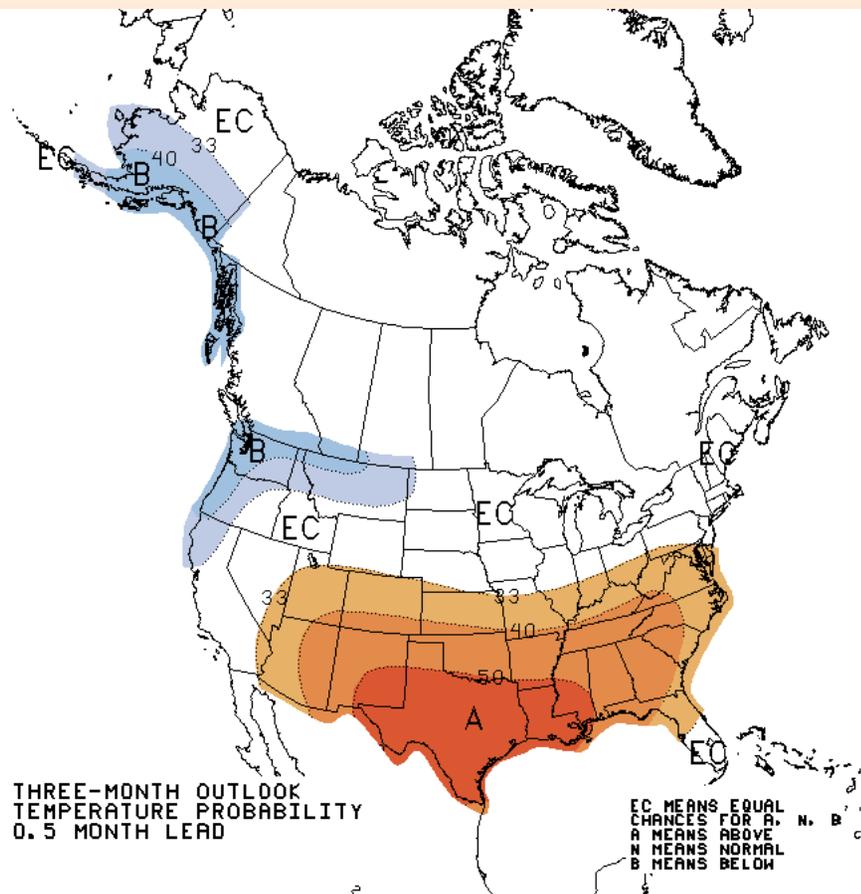
Anomalies (°C)



1-Month Temperature and Precipitation Outlooks

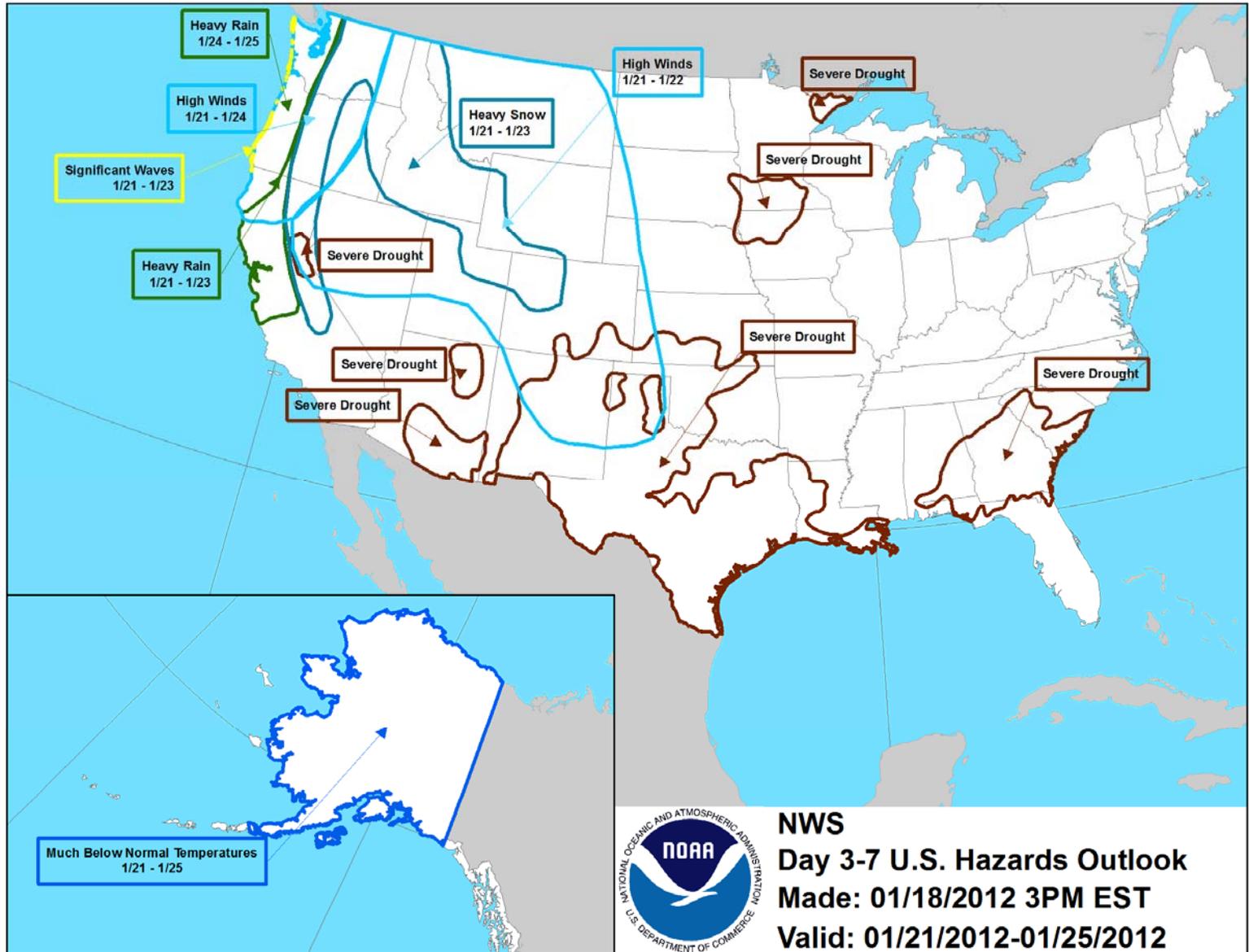


3-Month Temperature and Precipitation Outlooks



U.S. Hazards Outlook for Days 3-14

(produced 01/18/12)



For More Information



- Today's Presentation:
<http://www.ncdc.noaa.gov/sotc/briefings>
- NOAA's National Climatic Data Center: www.ncdc.noaa.gov
 - Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Monitor: www.drought.gov