The Future of (the) Drought

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Texas A&M University
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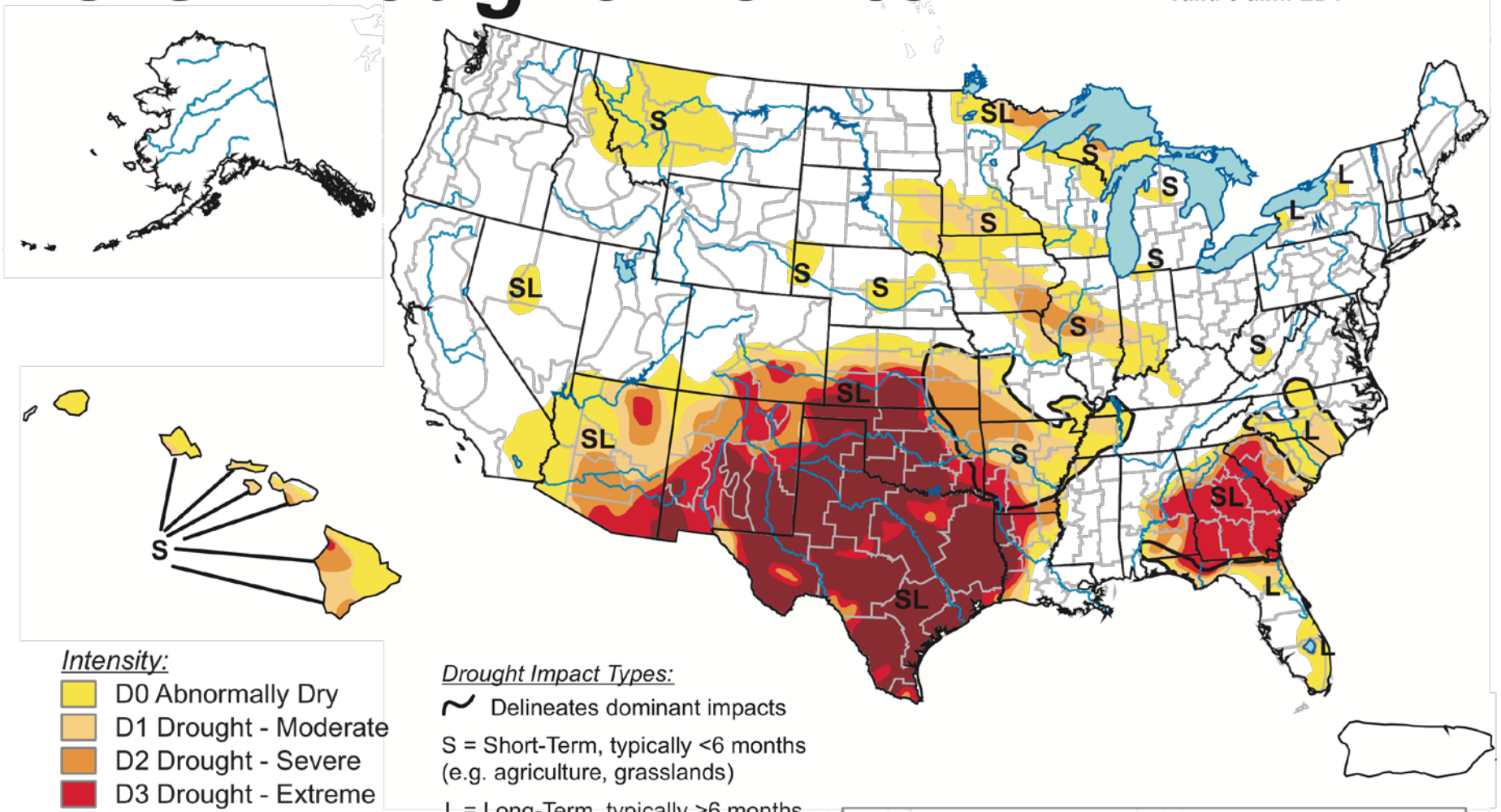
U.S. Drought Monitor

September 27, 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

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

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

http://droughtmonitor.unl.edu/

Released Thursday, September 29, 2011

Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC

October-September Precipitation

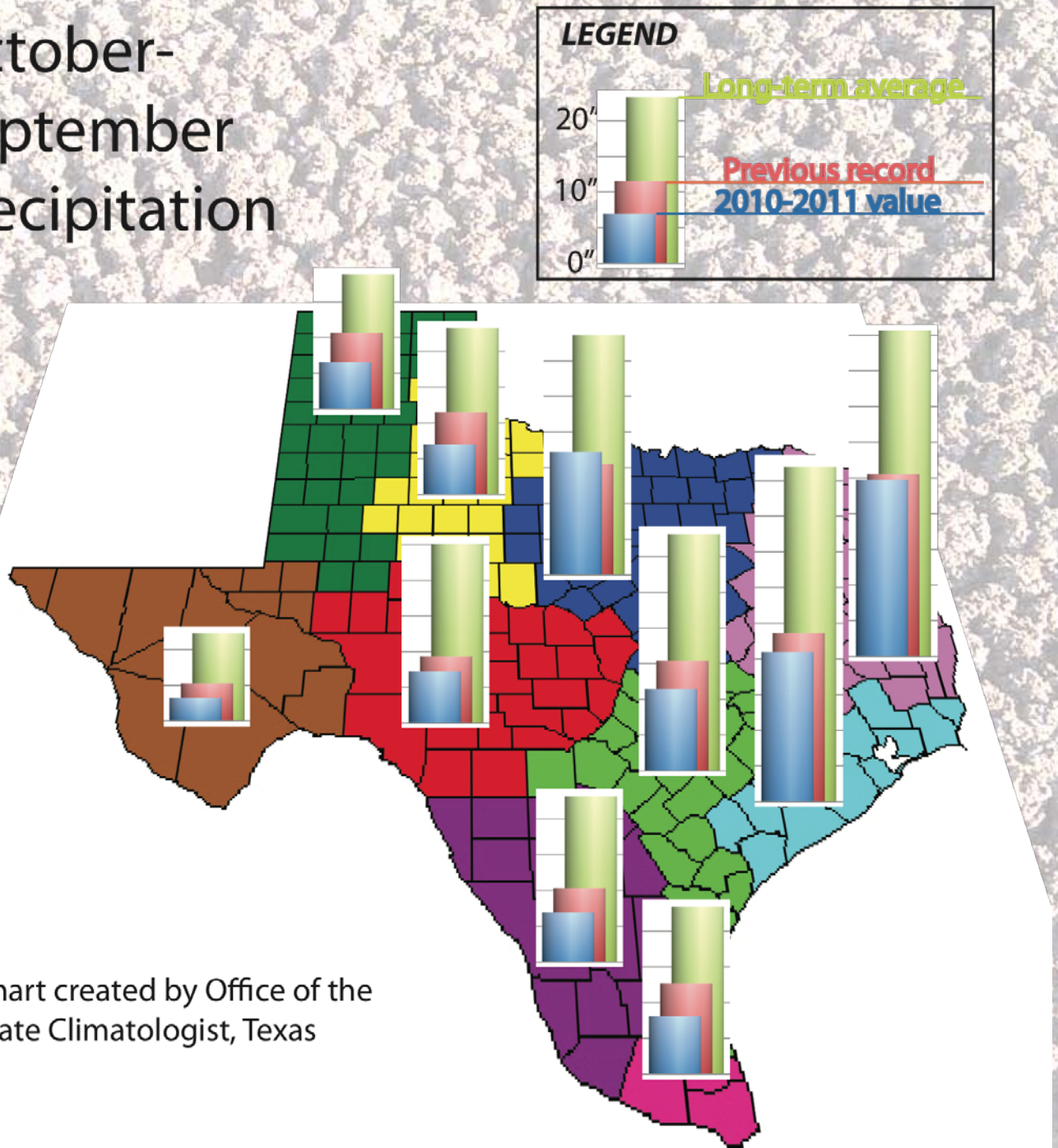
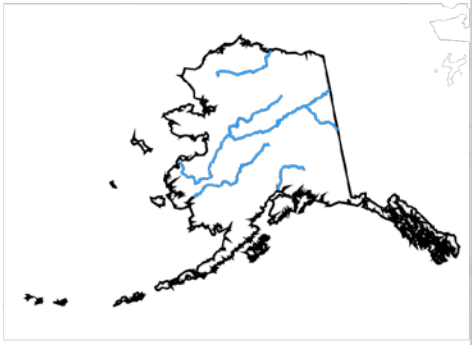
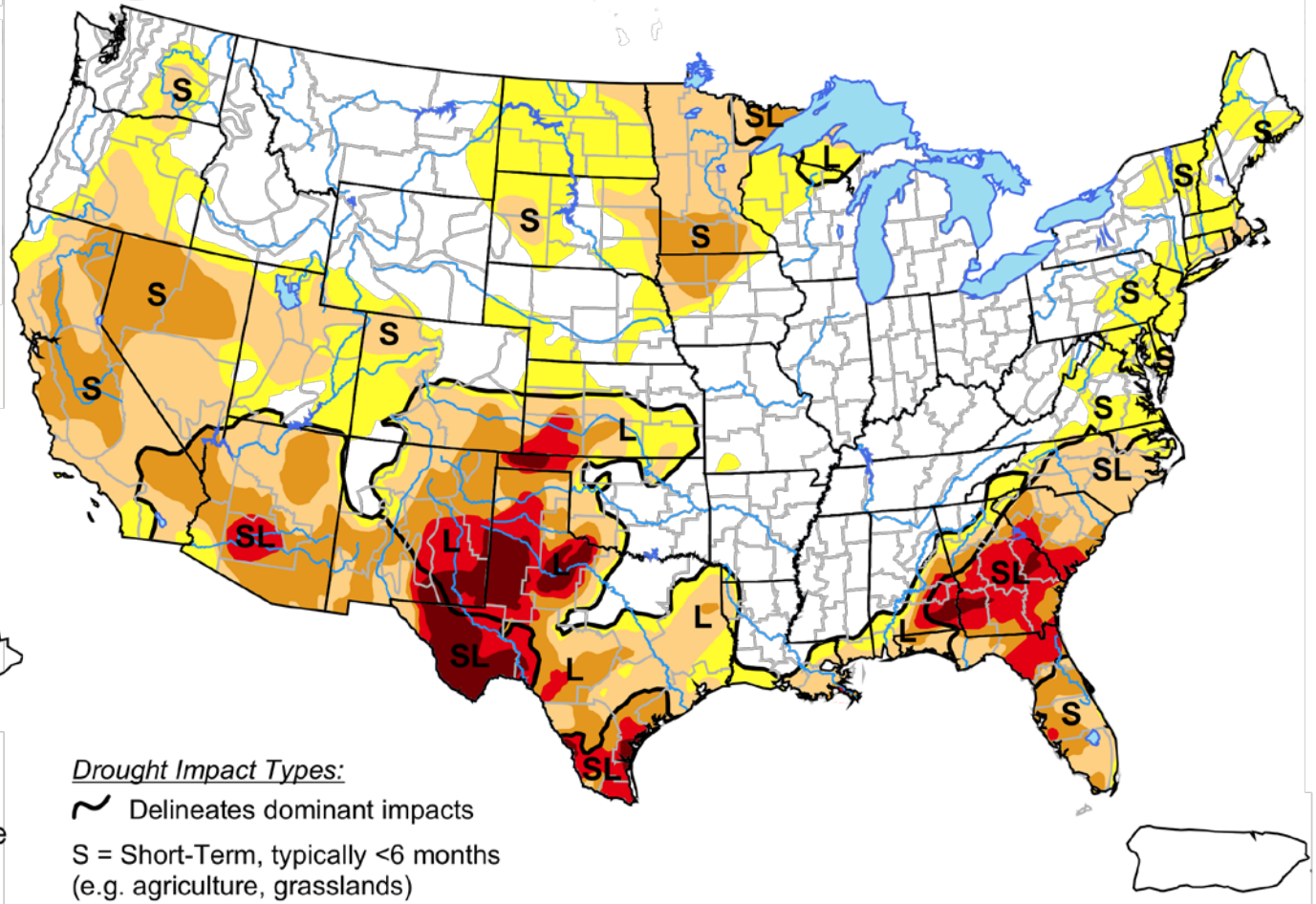


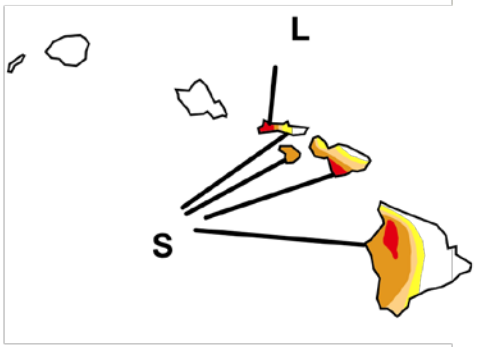
Chart created by Office of the State Climatologist, Texas

U.S. Drought Monitor

March 20, 2012
Valid 7 a.m. EDT







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http://droughtmonitor.unl.edu/

Released Thursday, March 22, 2012

Author: Eric Luebehusen, U.S. Department of Agriculture

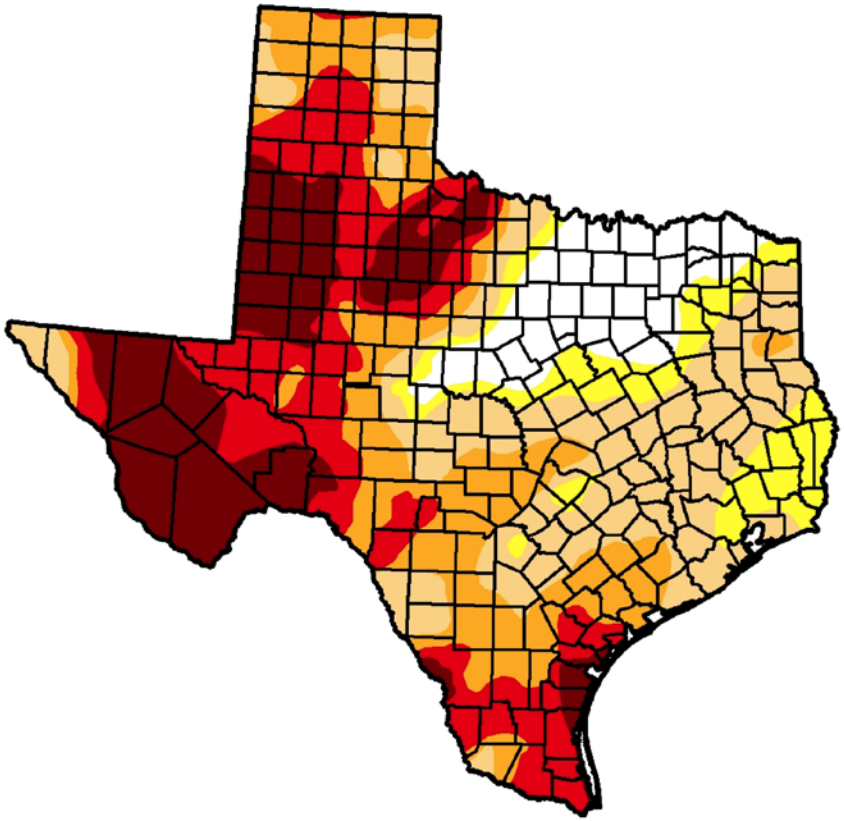
U.S. Drought Monitor

March 20, 2012
Valid 7 a.m. EST

Texas

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	10.11	89.89	81.28	56.09	36.50	17.92
Last Week (03/13/2012 map)	6.98	93.02	84.50	67.10	41.62	20.54
3 Months Ago (12/20/2011 map)	0.01	99.99	97.85	84.81	69.35	38.84
Start of Calendar Year (12/27/2011 map)	0.01	99.99	97.83	84.81	67.32	32.36
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
One Year Ago (03/15/2011 map)	3.23	96.77	83.75	56.98	17.13	0.00



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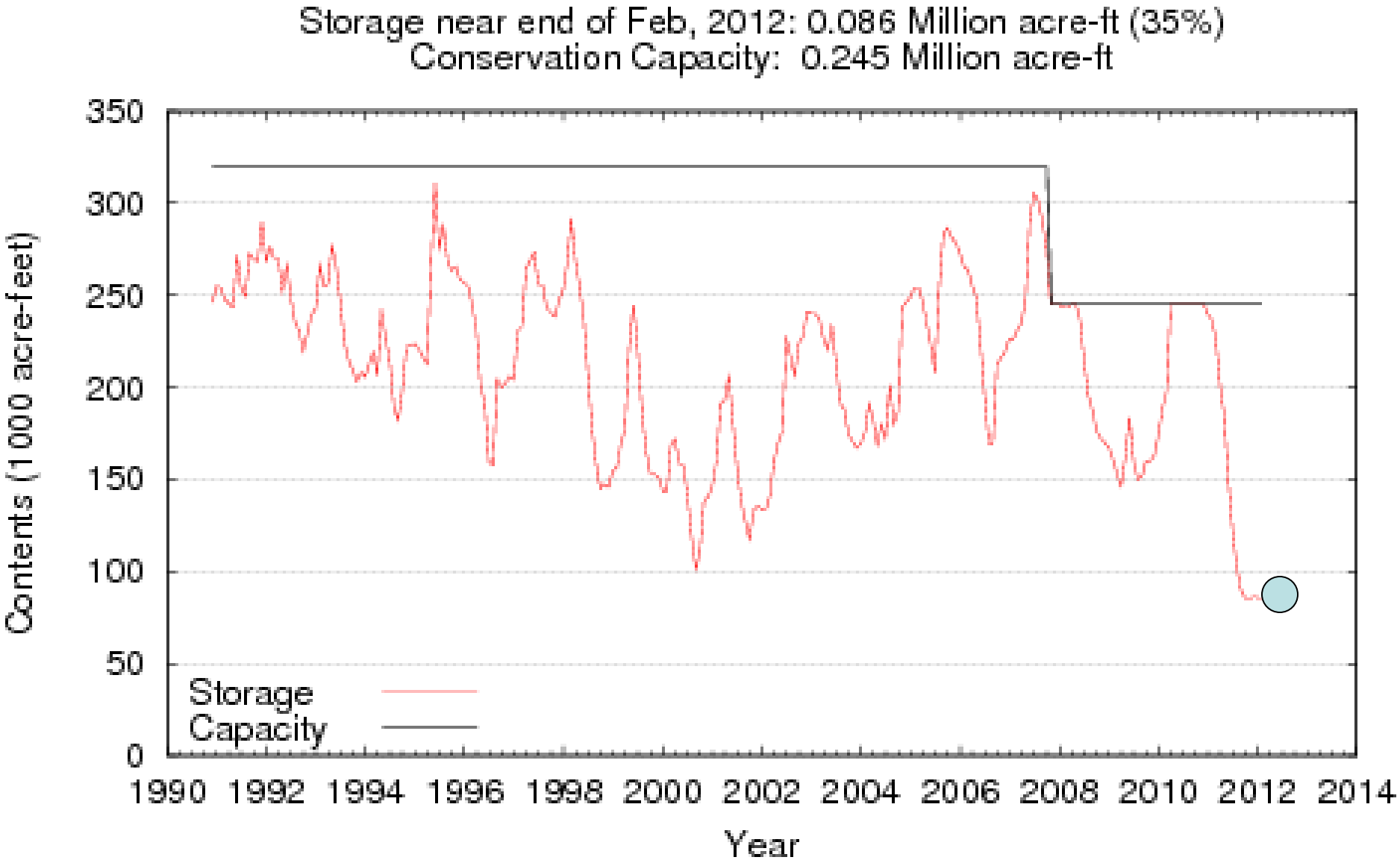
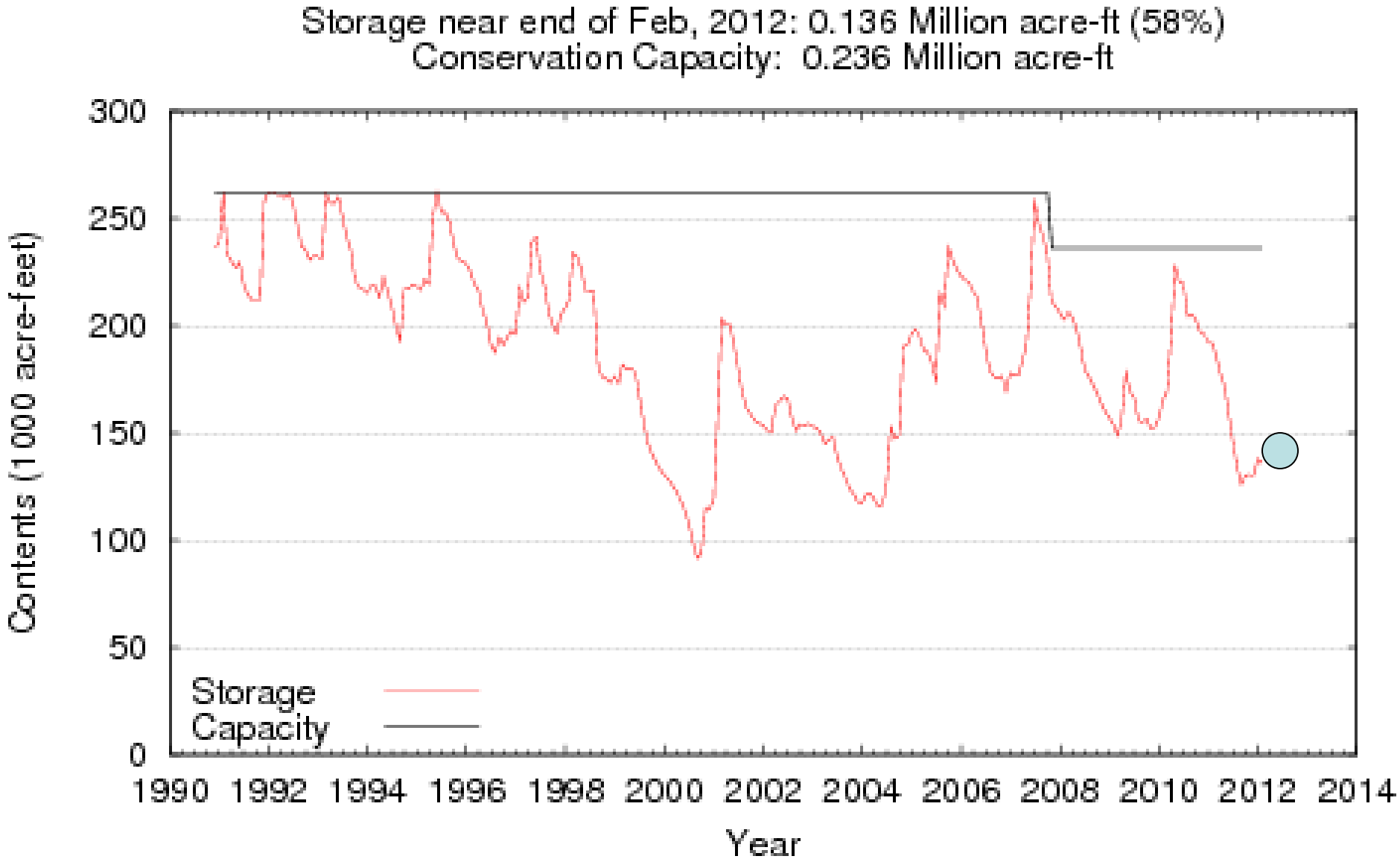
Released Thursday, March 22, 2012

Eric Luebehusen, USDA

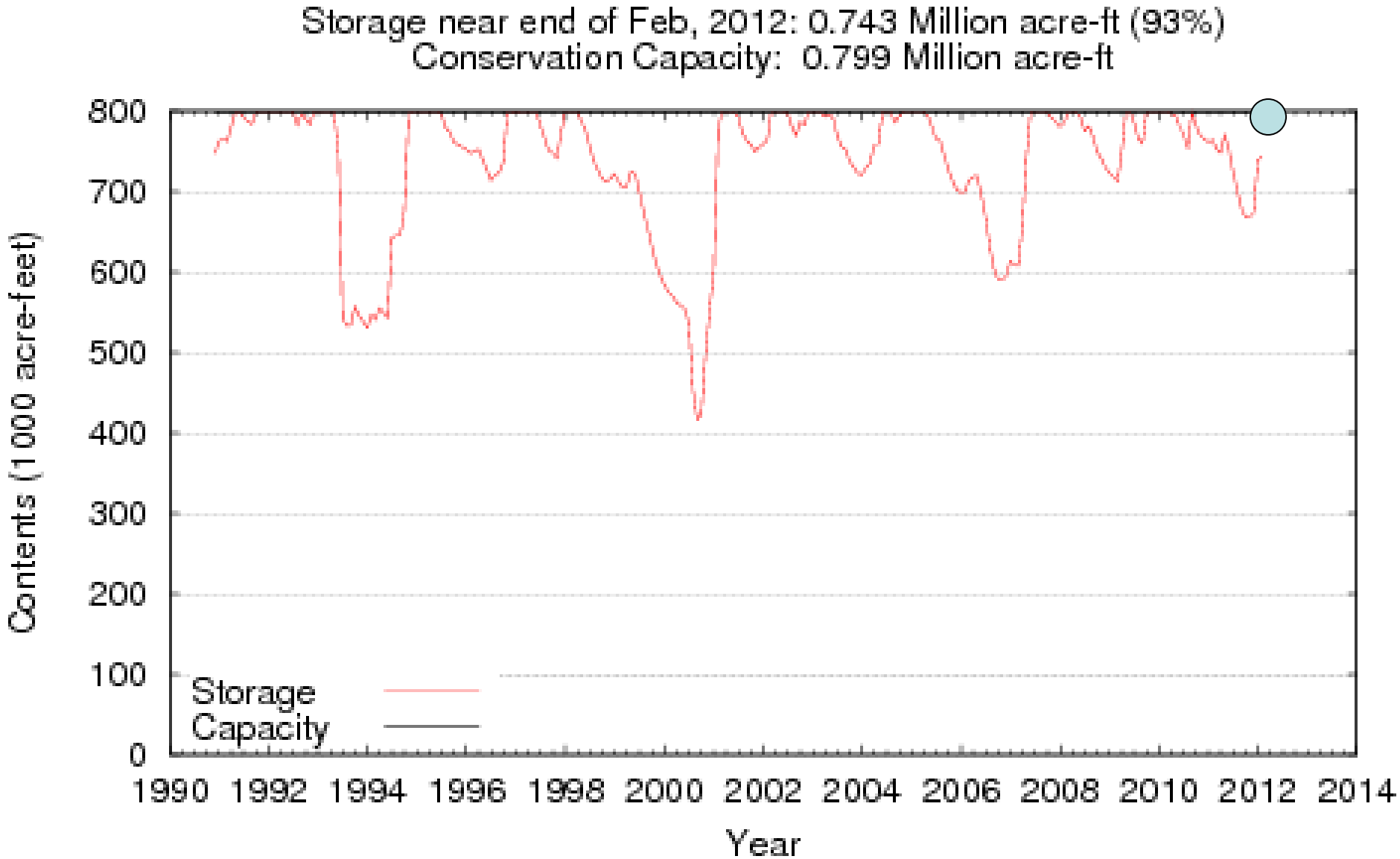
Lake Kemp


Storage near end of Feb, 2012: 0.086 Million acre-ft (35%)
Conservation Capacity: 0.245 Million acre-ft
Contents (1000 acre-feet)
350
300
250
200
150
100
50
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Year
Storage
Capacity

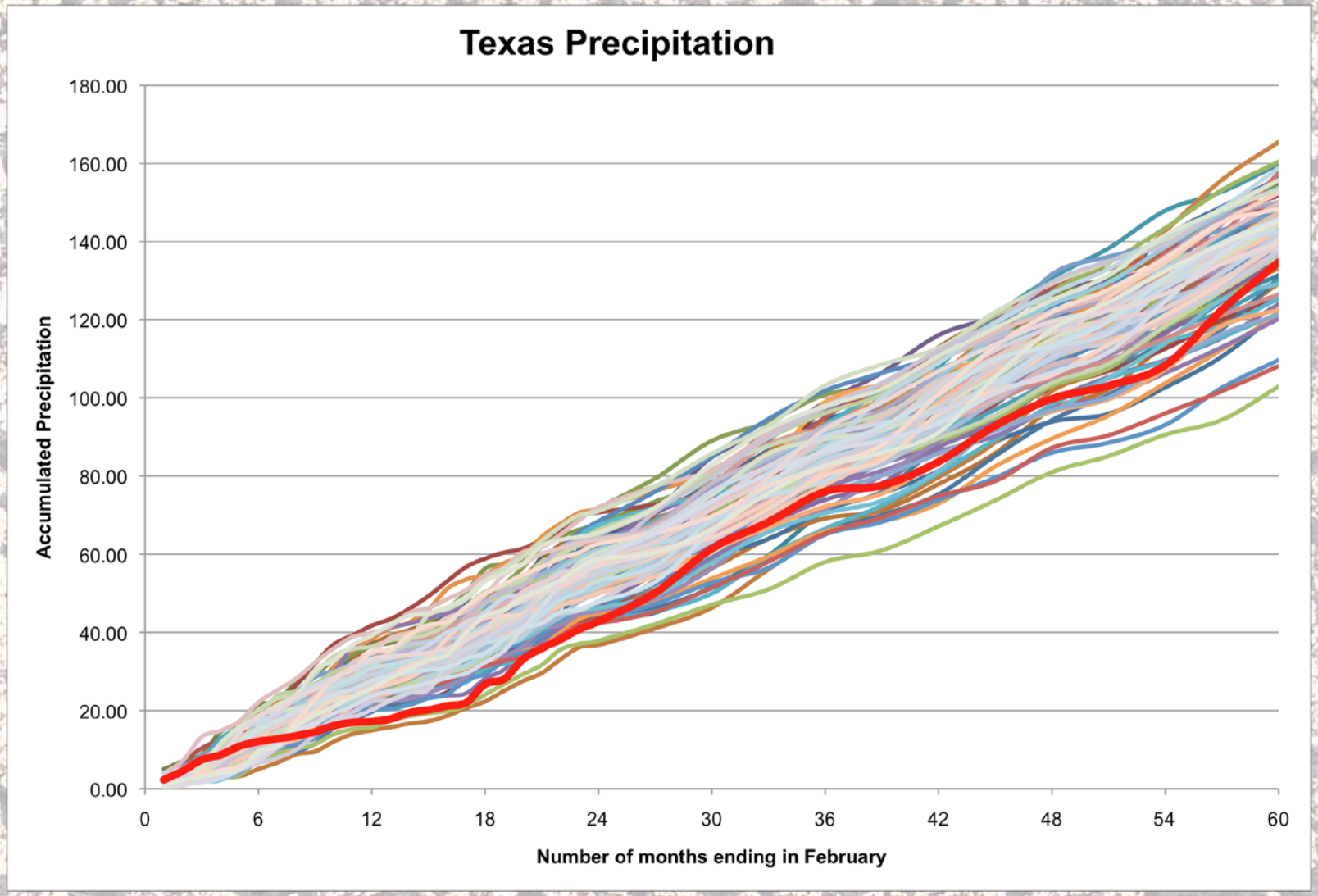
Lake Arrowhead



Lake Ray Roberts

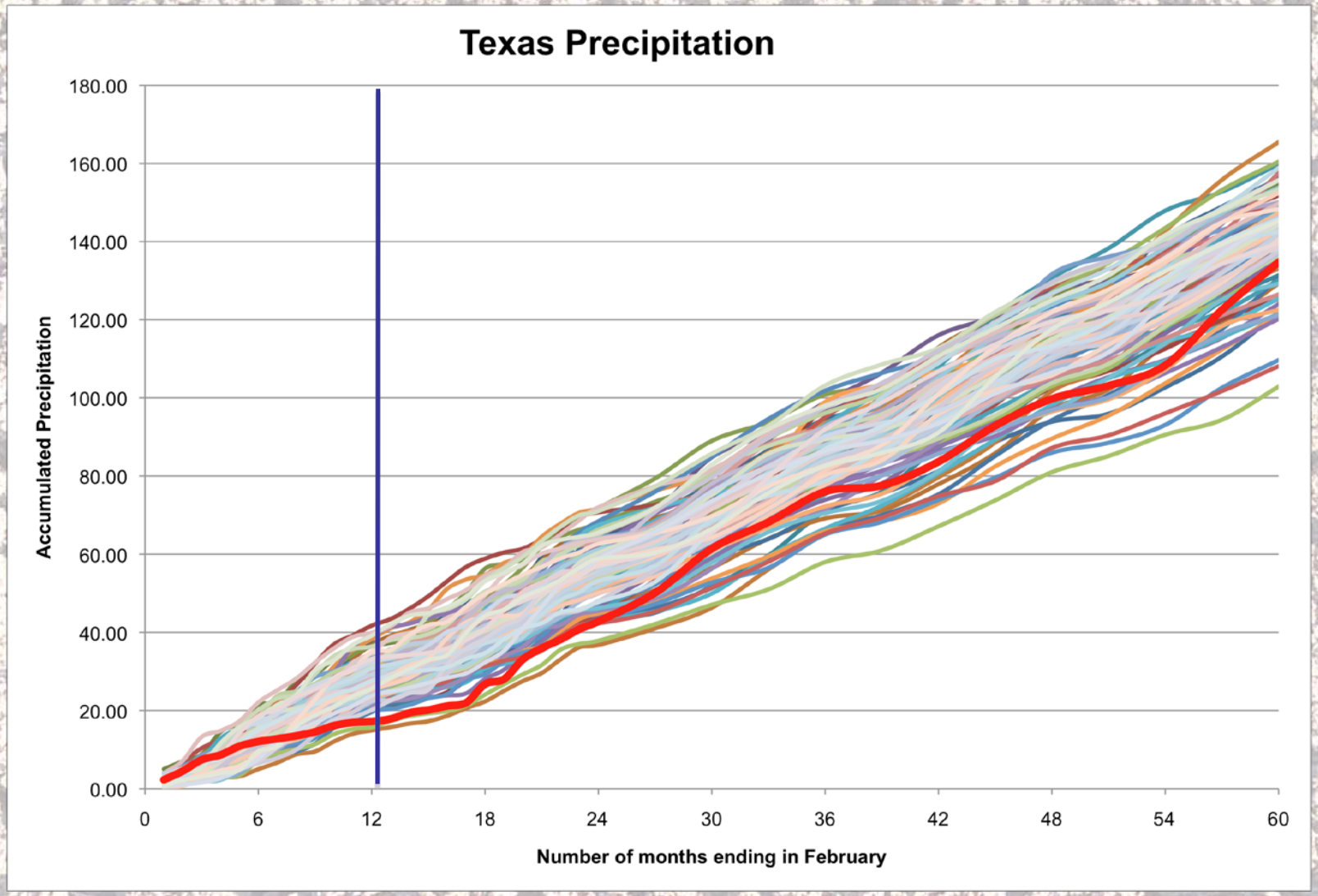


Rainfall Amount →

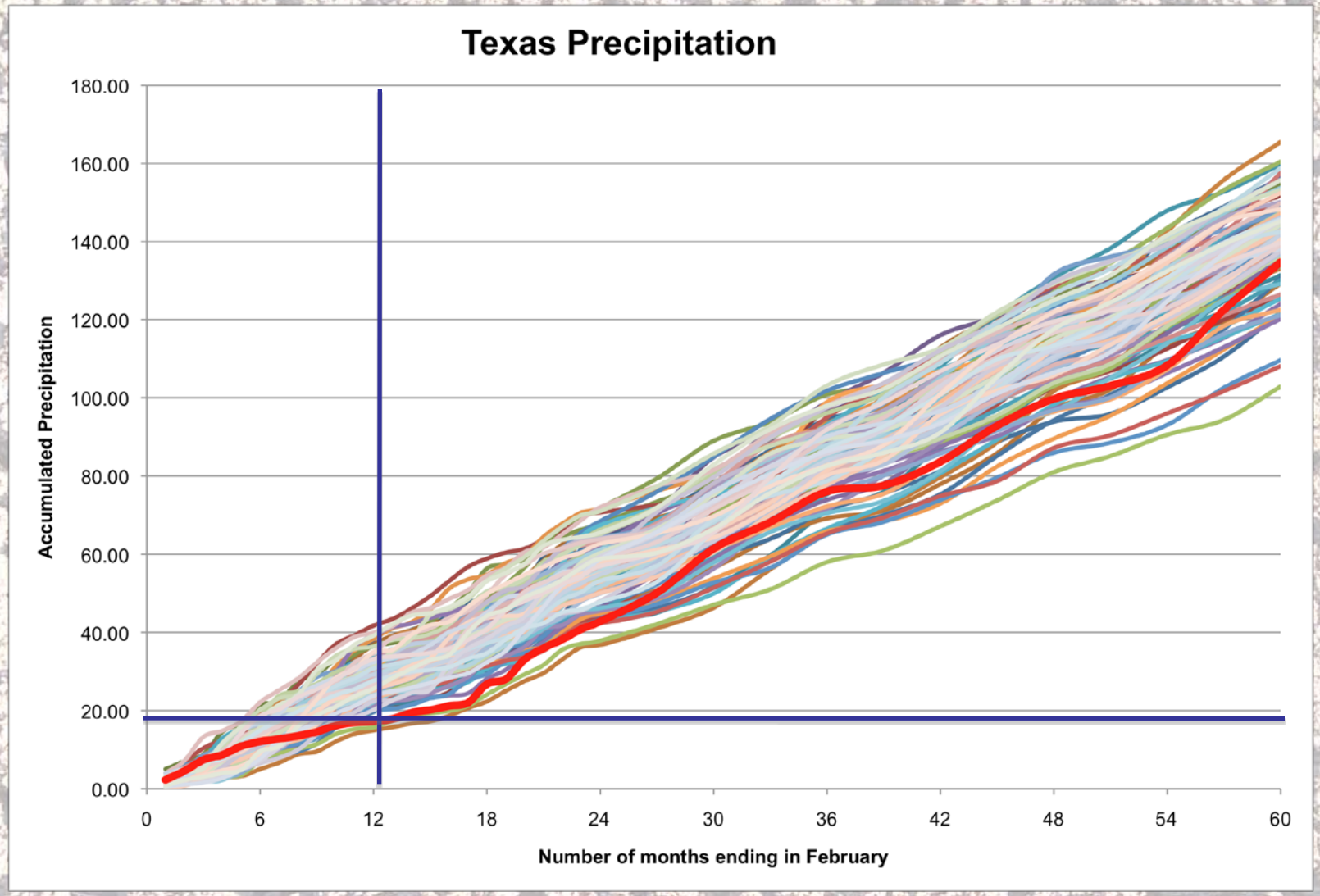


Rainfall Duration →

Rainfall Amount →



Rainfall Duration →



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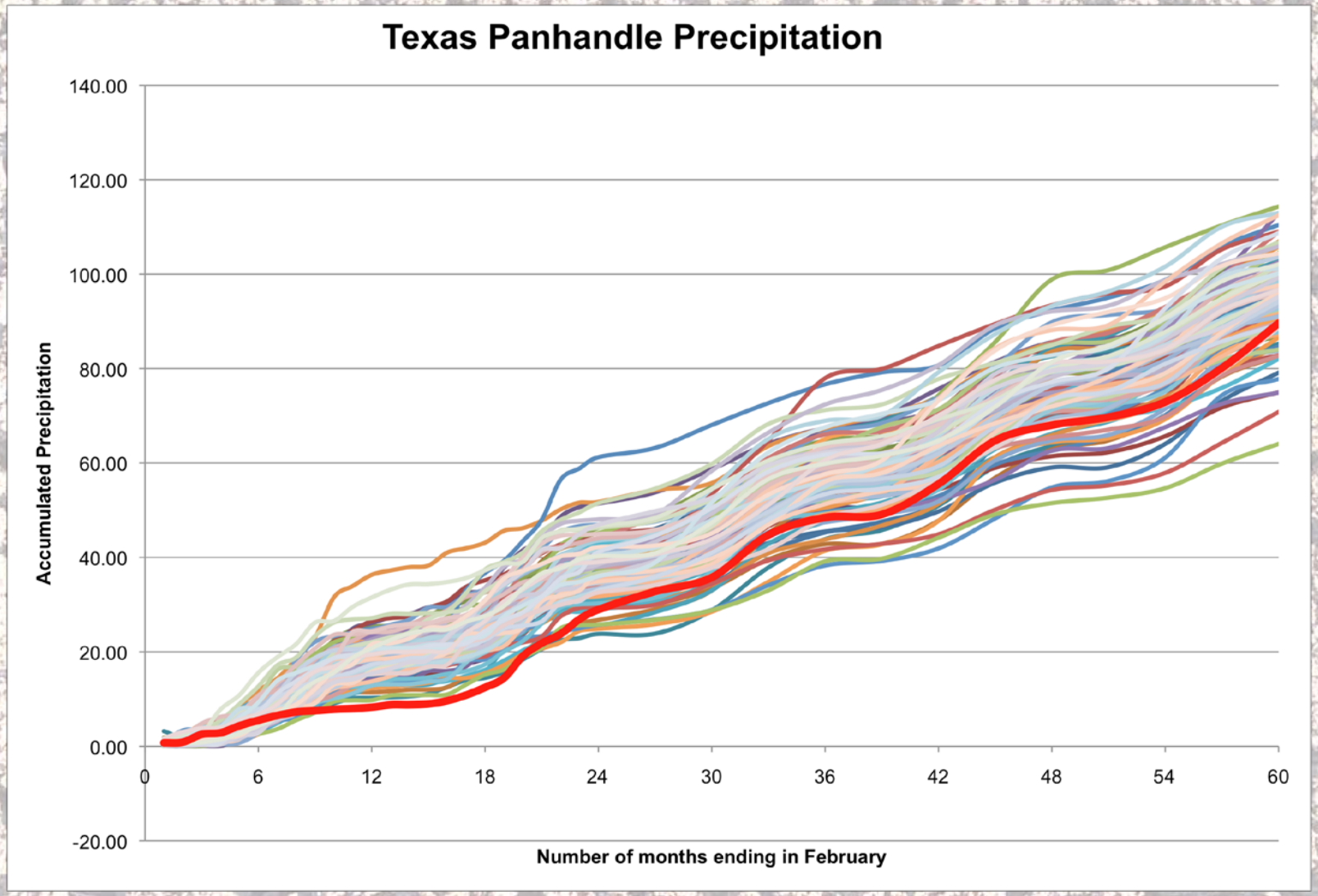
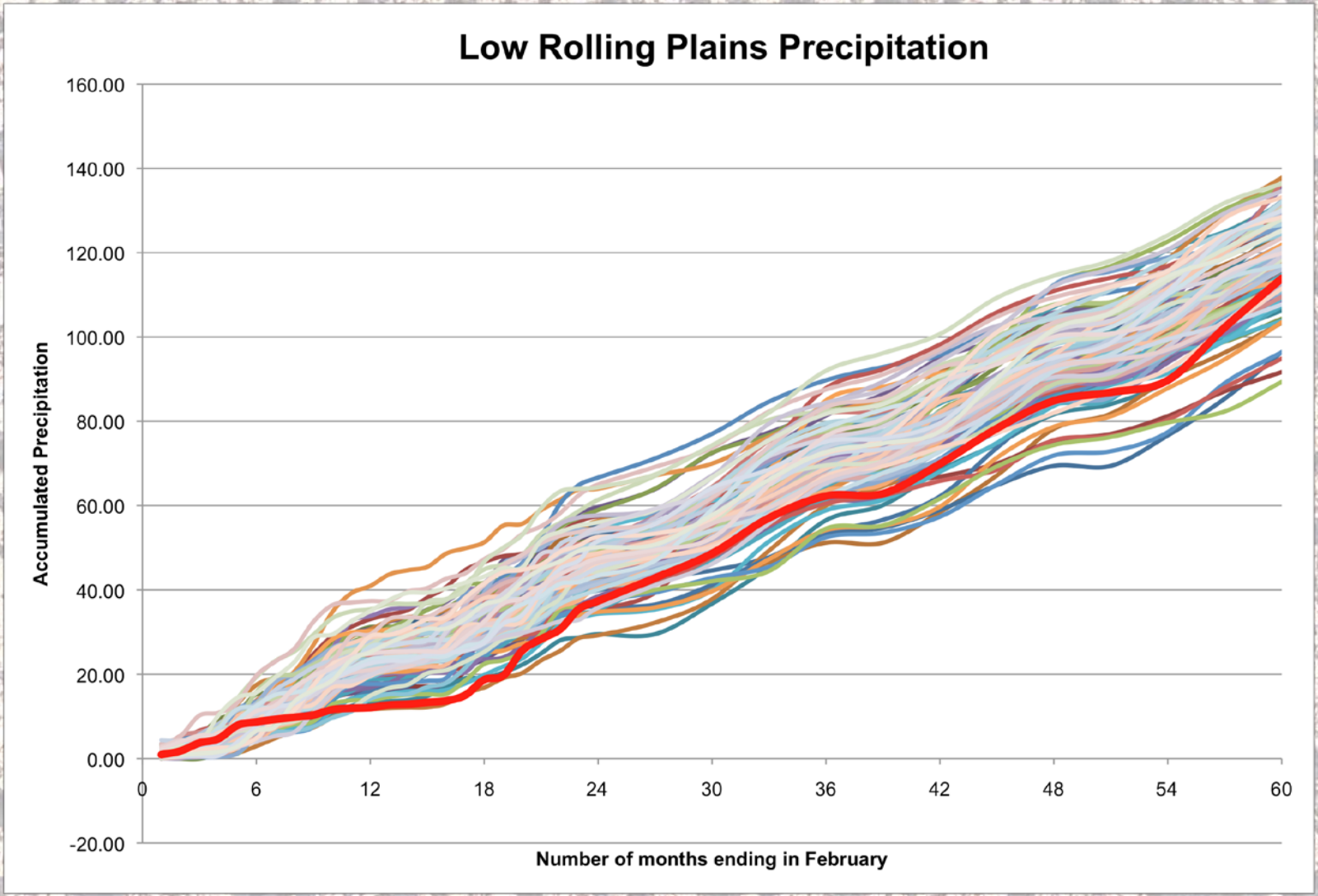
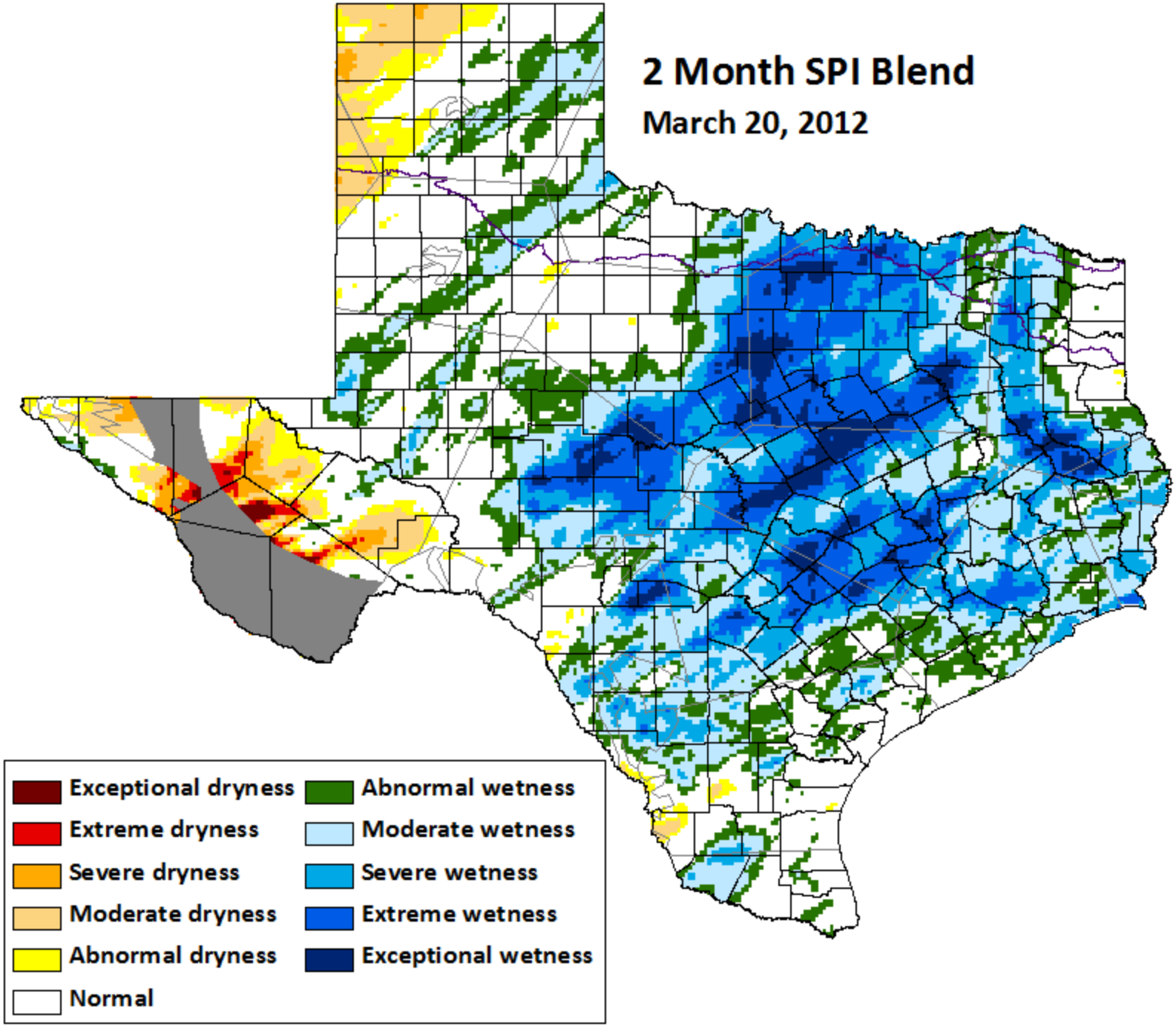


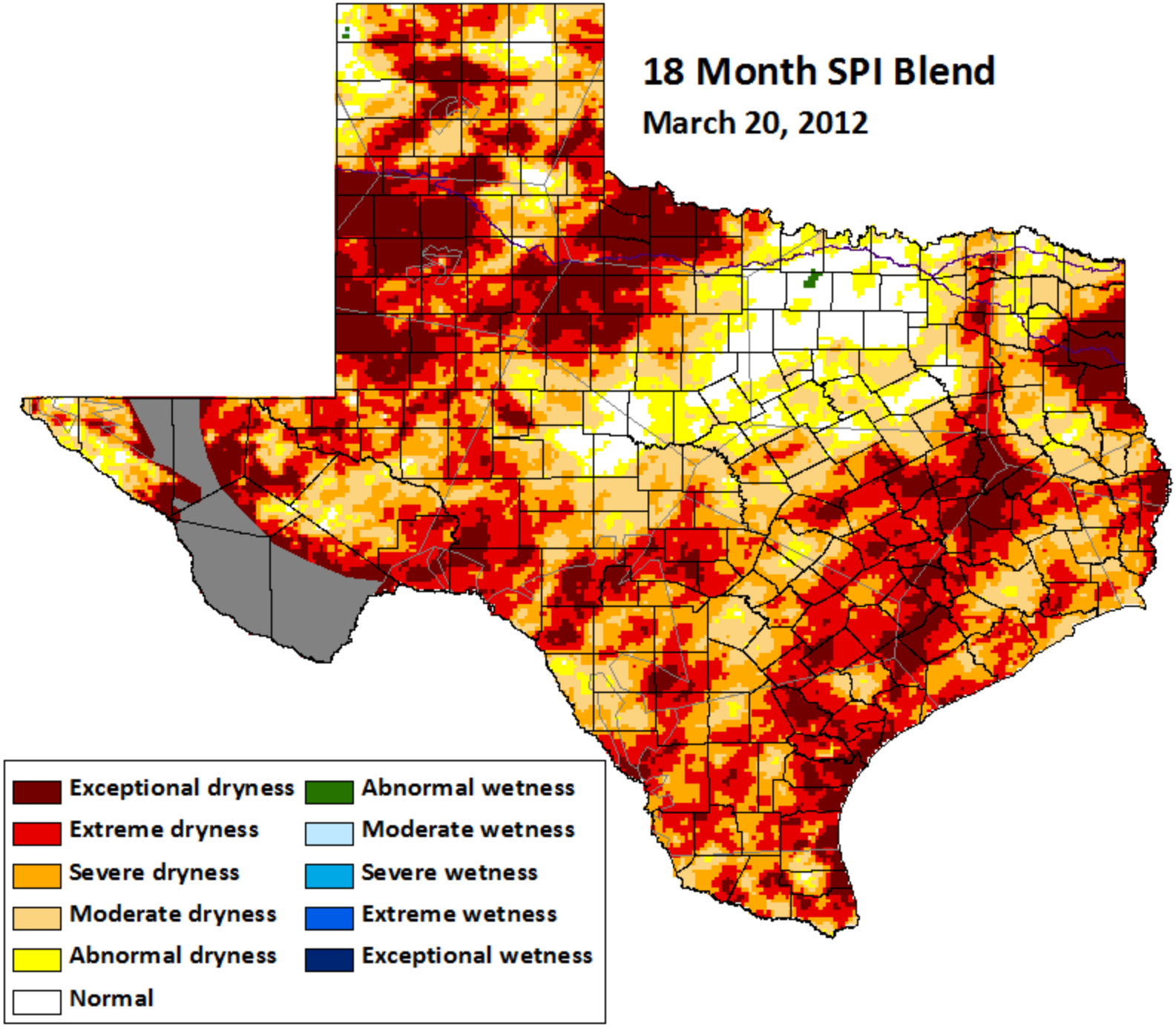
Rainfall Duration →

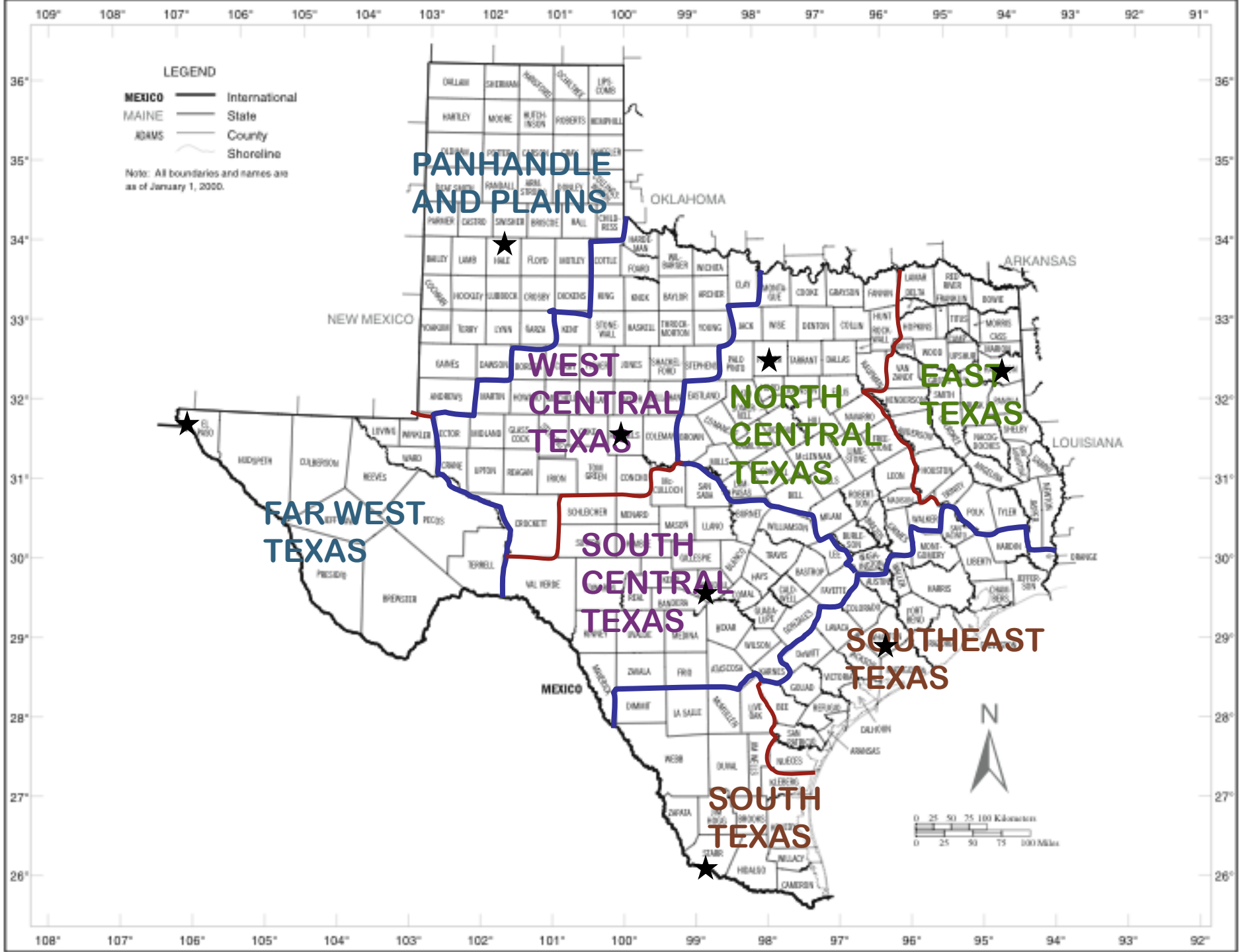
Rainfall Amount →

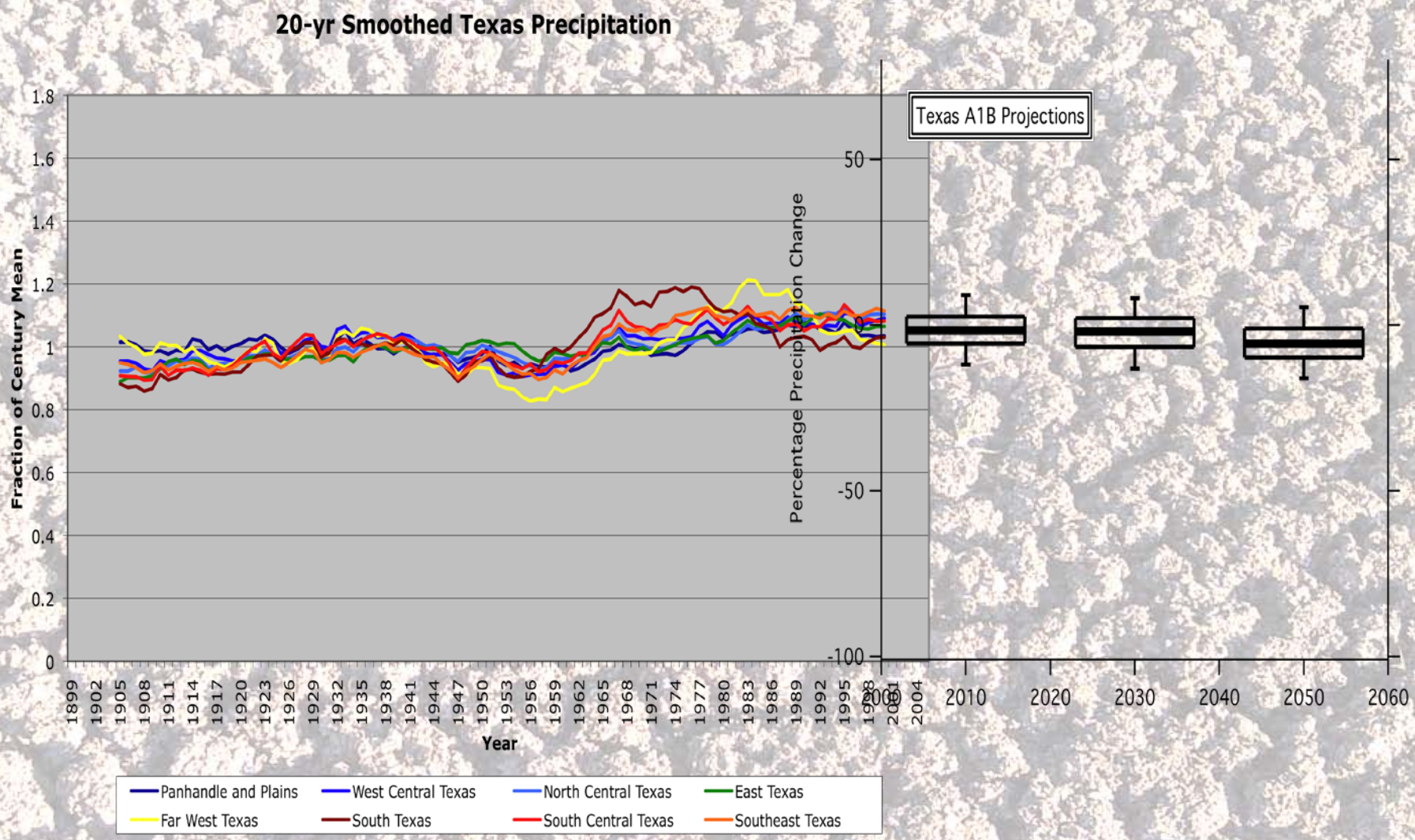


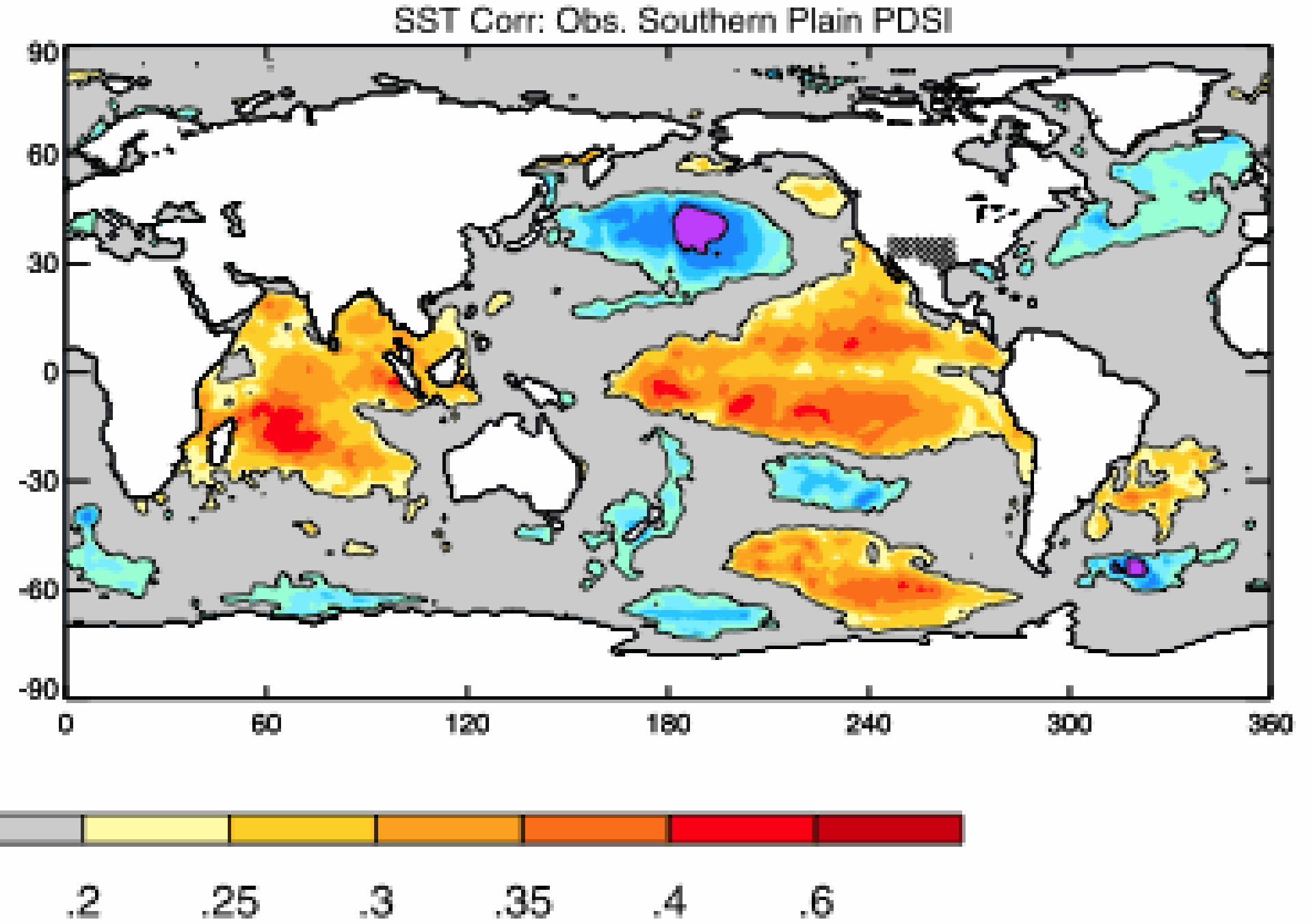
Rainfall Duration →


2 Month SPI Blend
March 20, 2012
Exceptional dryness
Extreme dryness
Severe dryness
Moderate dryness
Abnormal dryness
Normal
Abnormal wetness
Moderate wetness
Severe wetness
Extreme wetness
Exceptional wetness


18 Month SPI Blend
March 20, 2012
Exceptional dryness
Extreme dryness
Severe dryness
Moderate dryness
Abnormal dryness
Normal
Abnormal wetness
Moderate wetness
Severe wetness
Extreme wetness
Exceptional wetness


TEXAS - Counties
U.S. Census Bureau, Census 2000
LEGEND
MEXICO International
MAINE State
ADAMS County
Shoreline
Note: All boundaries and names are as of January 1, 2000.
PANHANDLE AND PLAINS
WEST CENTRAL TEXAS
NORTH CENTRAL TEXAS
EAST TEXAS
FAR WEST TEXAS
SOUTH CENTRAL TEXAS
SOUTHEAST TEXAS
SOUTH TEXAS
OKLAHOMA
ARKANSAS
NEW MEXICO
LOUISIANA
MEXICO
N

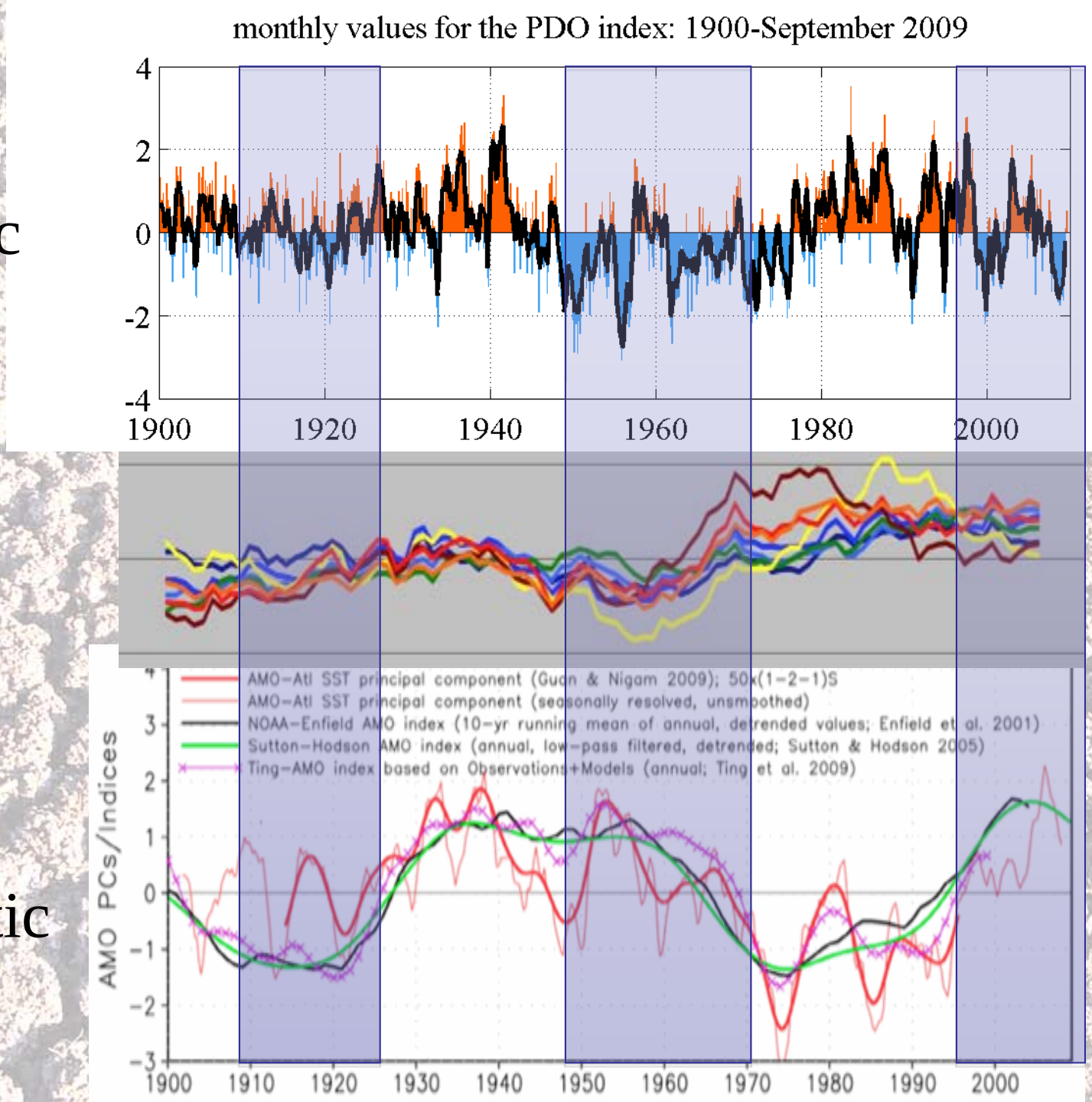

20-yr Smoothed Texas Precipitation
Texas A1B Projections
Fraction of Century Mean
Percentage Precipitation Change
Year
Panhandle and Plains
West Central Texas
North Central Texas
East Texas
Far West Texas
South Texas
South Central Texas
Southeast Texas

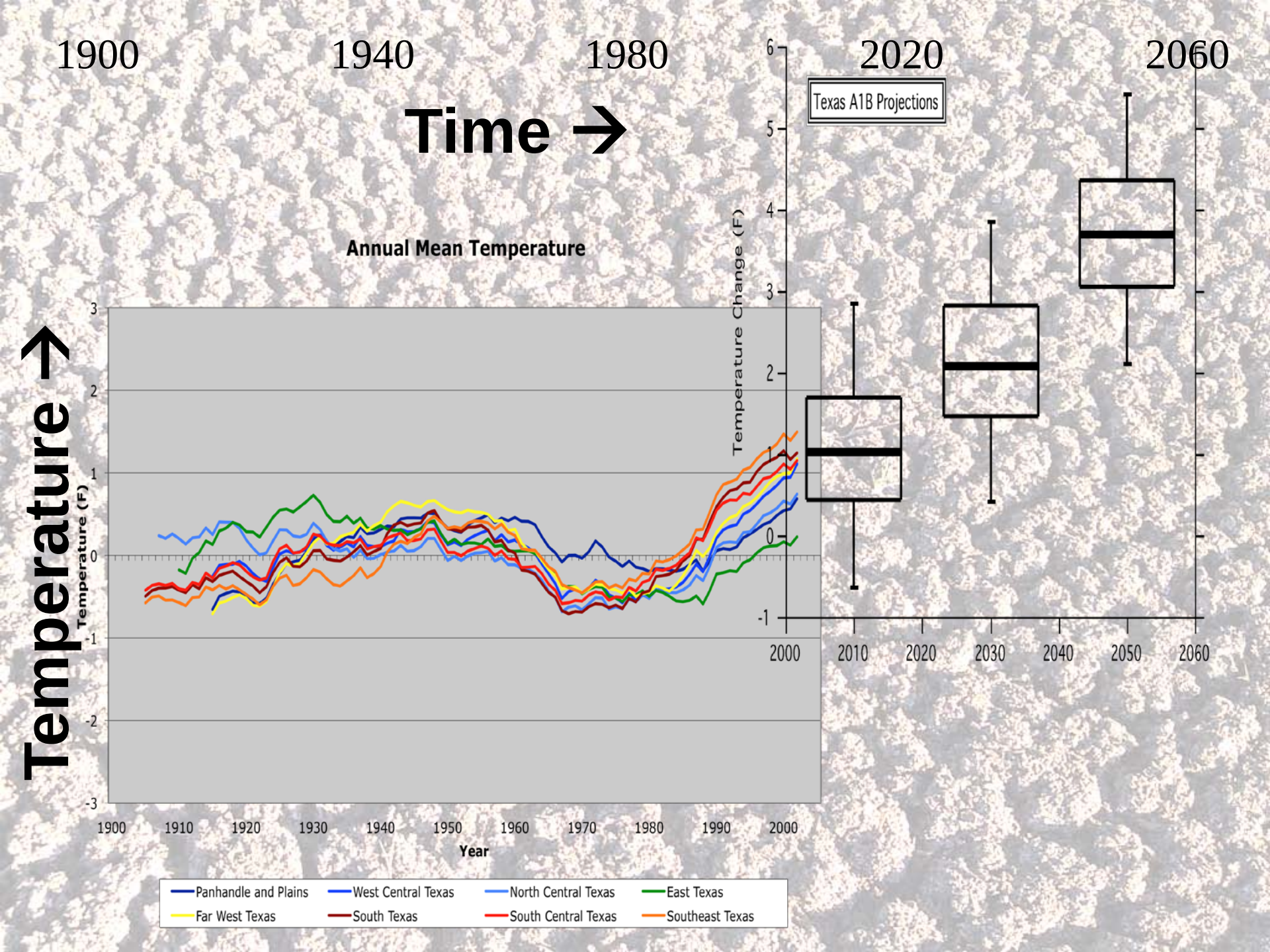

SST Corr: Obs. Southern Plain PDSI
90
60
30
0
-30
-60
-90
0
60
120
180
240
300
360
.2
.25
.3
.35
.4
.6

Pacific

Texas

Atlantic




1900
1940
1980
2020
2060
Time →
Temperature →
Annual Mean Temperature
Temperature (F)
Year
Panhandle and Plains
West Central Texas
North Central Texas
East Texas
Far West Texas
South Texas
South Central Texas
Southeast Texas
Texas A1B Projections
Temperature Change (F)

Drought and La Niña

- Dissipating La Niña
  - All bets are off for spring and summer
  - 5 out of 11 2-year La Niñas get a third year

Drought and Natural Variability

- Cold tropical Pacific (PDO) +
- Warm north Atlantic (AMO) =
- Period of drought susceptibility for Texas (ONO)
  - A few more years, or a decade or more?
  - 1950s-type drought still possible
  - It WILL get wet again

Drought and Climate Change

- Temperatures becoming warmer
- More evaporation, more water demand, less streamflow
- Future droughts will be hotter

Contact Information

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- http://atmo.tamu.edu/osc
- http://blog.chron.com/climateabyss