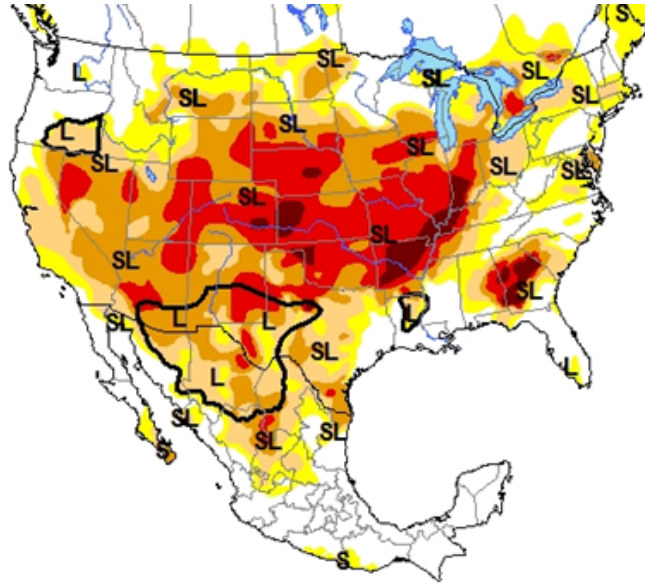


How Texas responds (and doesn't respond...) to **drought**



Robert E. Mace, Ph.D., P.G.

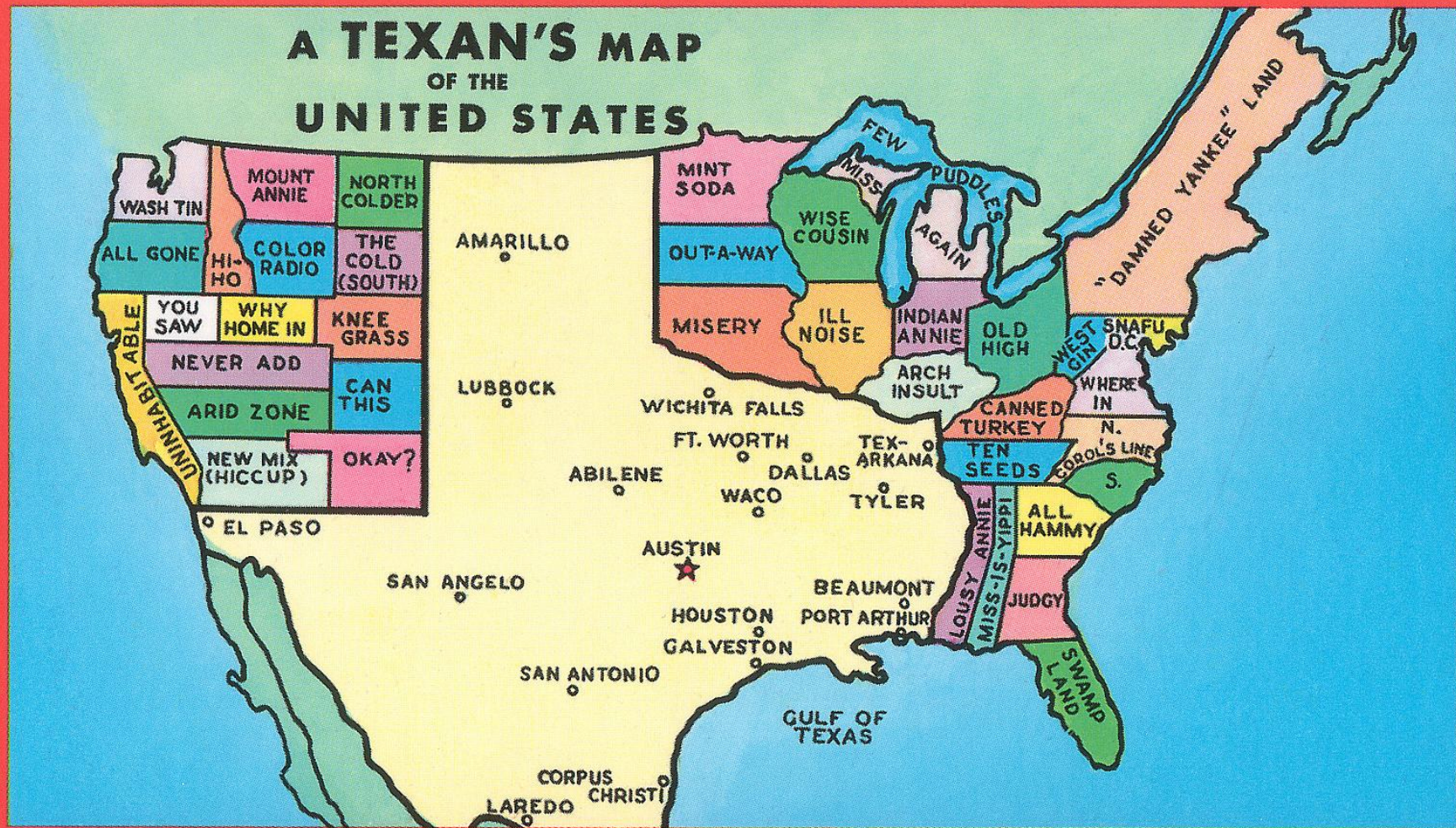
Texas Water Development Board

September 19, 2012

Colorado Water Conservation Board Statewide Drought Conference

Denver, Colorado

A TEXAN'S MAP OF THE UNITED STATES



Greetings from "The Lone Star State"

YAHOO! NEWS

End Times? Texas Lake Turns Blood-Red

CNN.com

PRINT THIS

Powered by Clickability

West Texas town faces looming prospect of dried-out reservoir

bu

(CNN) -- In normal times, Lake E.V. Spence is a teeming 14,600-acre reservoir with a maximum depth of 108 feet, just west of the town of Robert Lee, Texas.

Senate Natural Resources state is now facing extreme and 956 public water systems mandatory restrictions on 4,721 total community water systems across Texas.

Rubinstein said 55 of those have prohibited all outside watering and at least 23 are in such dire straits that officials

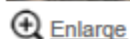
[Enlarge](#)

photo by: Earl Nottingham/Texas Parks & Wildlife

evaporates and little inflow replenishes the lakes, he said, "the salt content begins to concentrate a bit more."

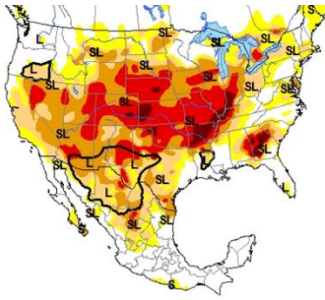
Lakes and reservoirs like E.V. Spence Reservoir near Robert Lee are quickly drying up. Residents are now running out of water to supply the town. The town is waiting on the approval of a \$1 million loan to build a pipeline to tap into Bronte's water supply 12 miles away.

sources, a leader with the rd said Tuesday.

puty executive

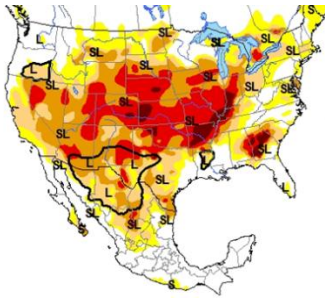
“Lake” O.C. Fisher





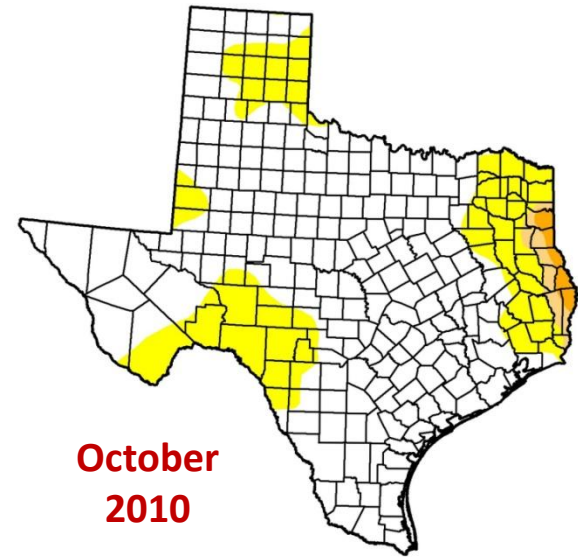
Outline

- Dang that drought last year was nasty!
- What do we do to prepare for drought?
- Is the crystal ball all wet?
- Conclusions

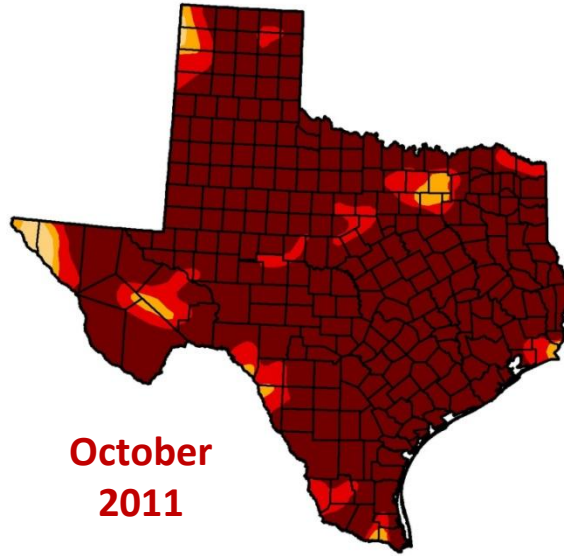


Outline

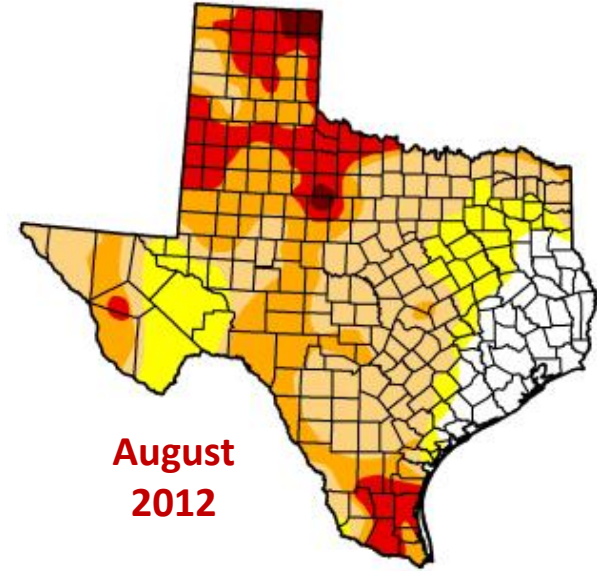
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**October
2010**

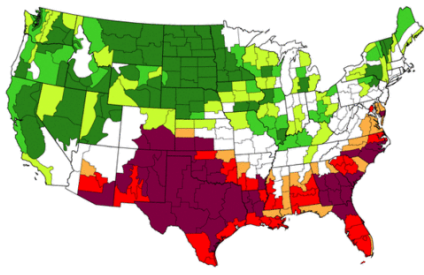


**October
2011**



**August
2012**





Records

- Worst one-year drought on record
- Driest period on record
- Hottest period on record
- Statewide reservoir storage lowest since 1978 at <60%
- Ag losses at \$7.62 billion
 - 50% cotton crop lost in West Texas
 - Ranchers selling herds
- ~ 4 million acres burned by wildfires
- Rivers with first-time calls on water rights

USHCN V2 Percentage of Normal Precipitation, Oct. 2010 through Sept. 2011

Driest consecutive twelve months on record
Driest Oct-Sept on record
Driest 1%-2%
Driest 3%-5%
Driest 6%-10%
Driest 11%-20%

Data: National Climatic Data Center
 Graphic: OSC

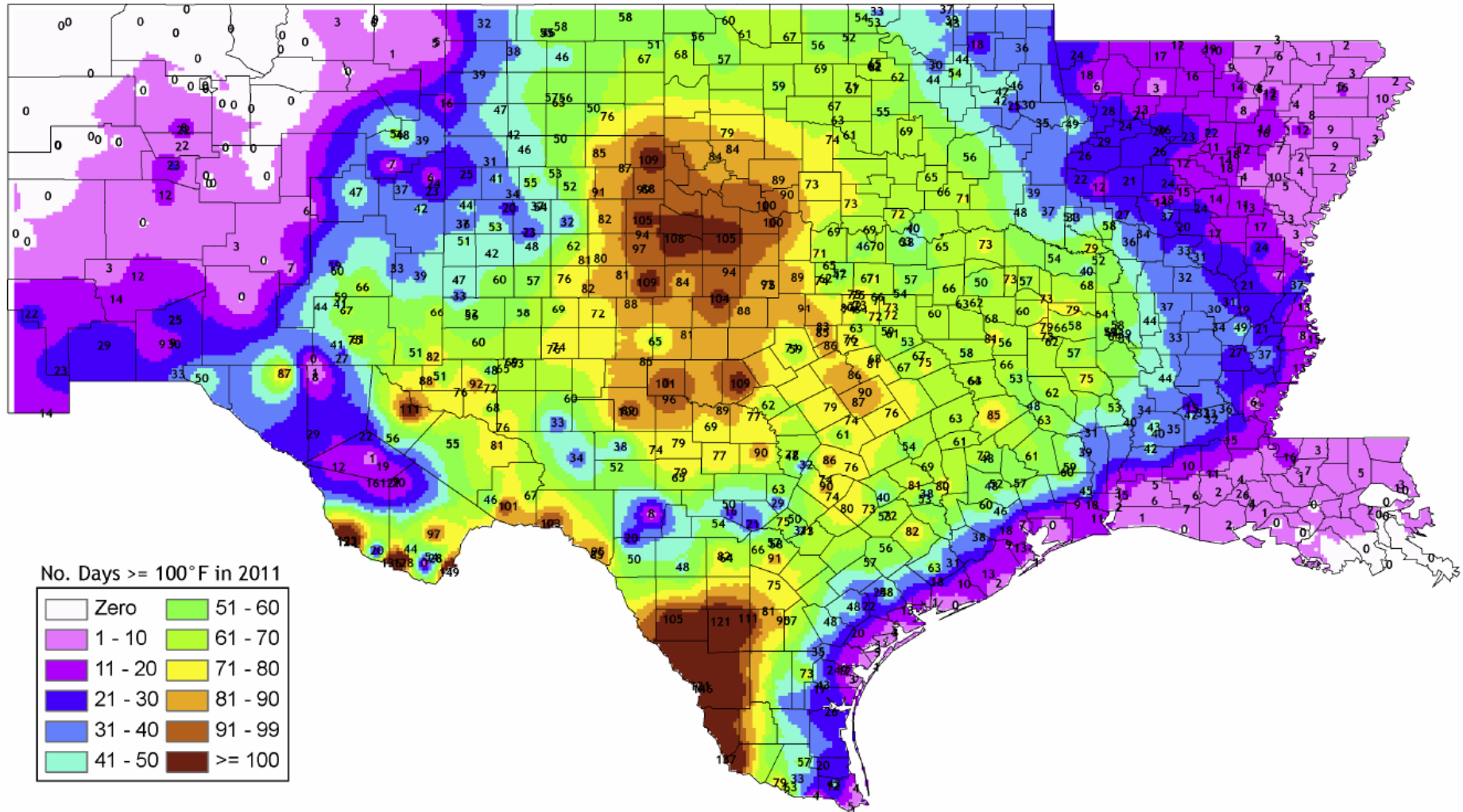
Driest Oct-Sept on record

Driest 3%–5%

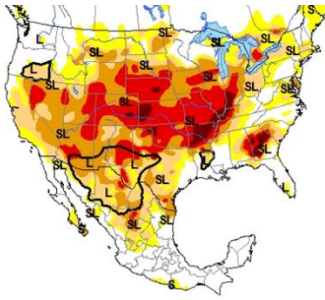
Driest 11%-20%

Graphic: OSC

“Heat Misery Index”

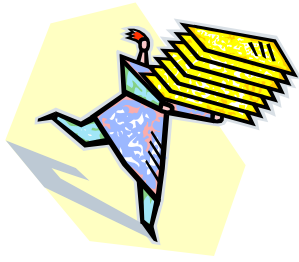


from the Office of the State Climatologist



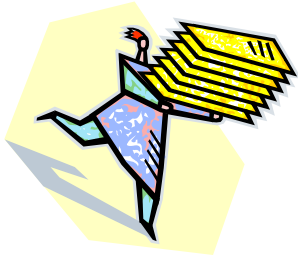
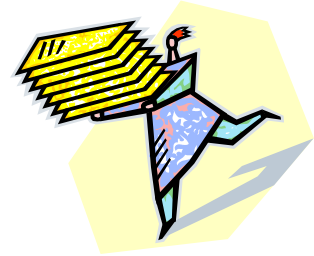
Outline

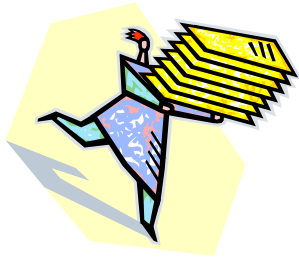
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Here a plan, there a plan, everywhere a plan plan!

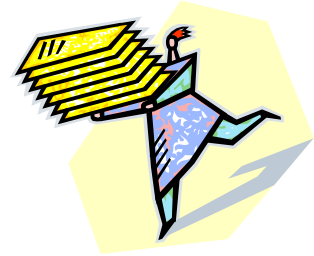
- Regional water plans
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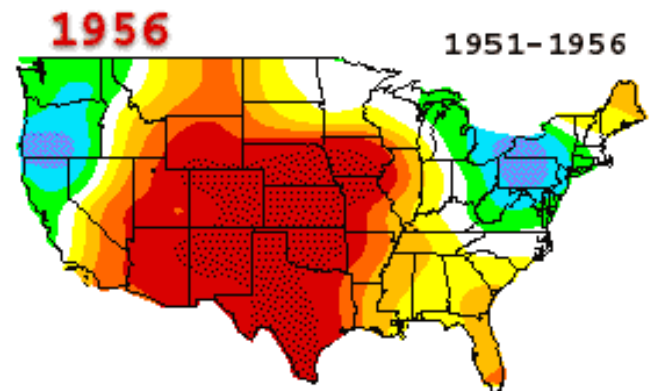
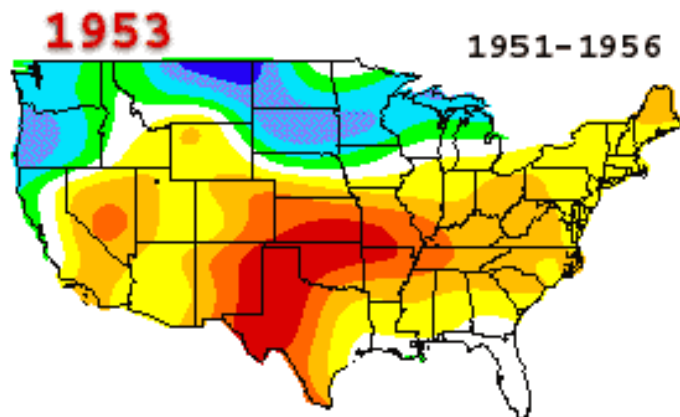
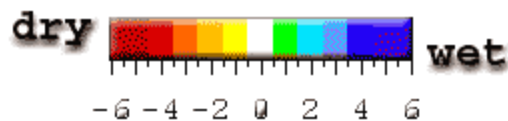
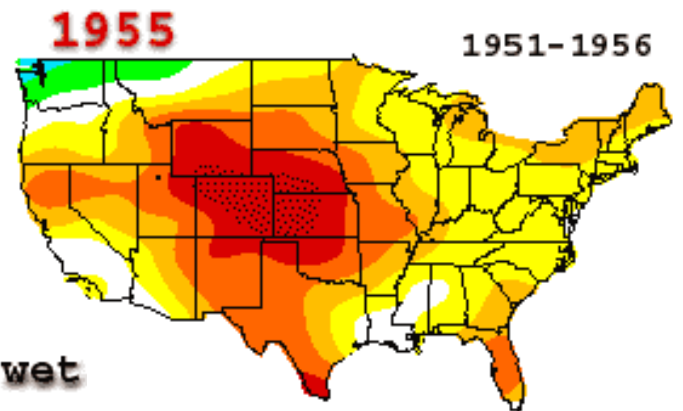
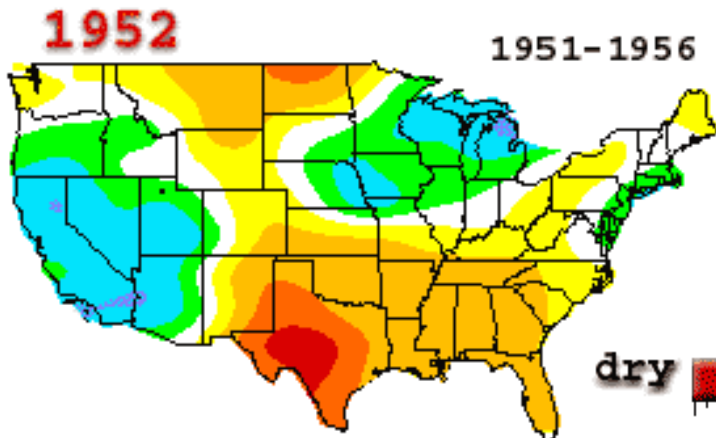
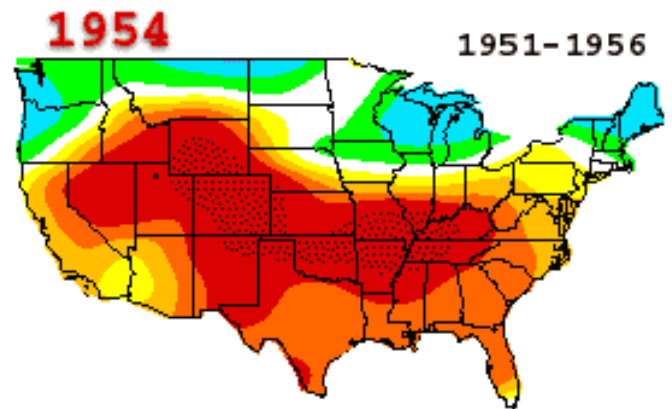
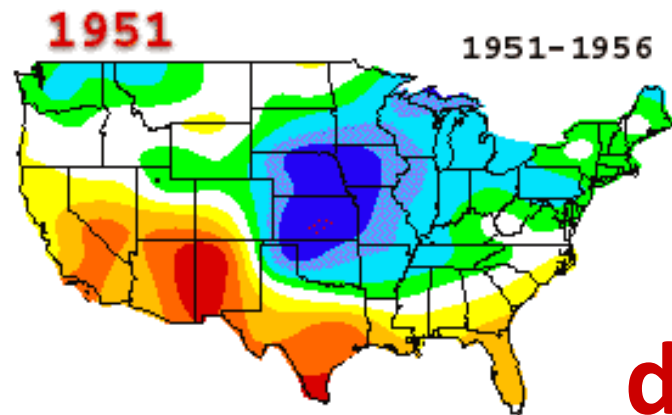


Here a plan, there a plan, everywhere a plan plan!

- **Regional water plans**
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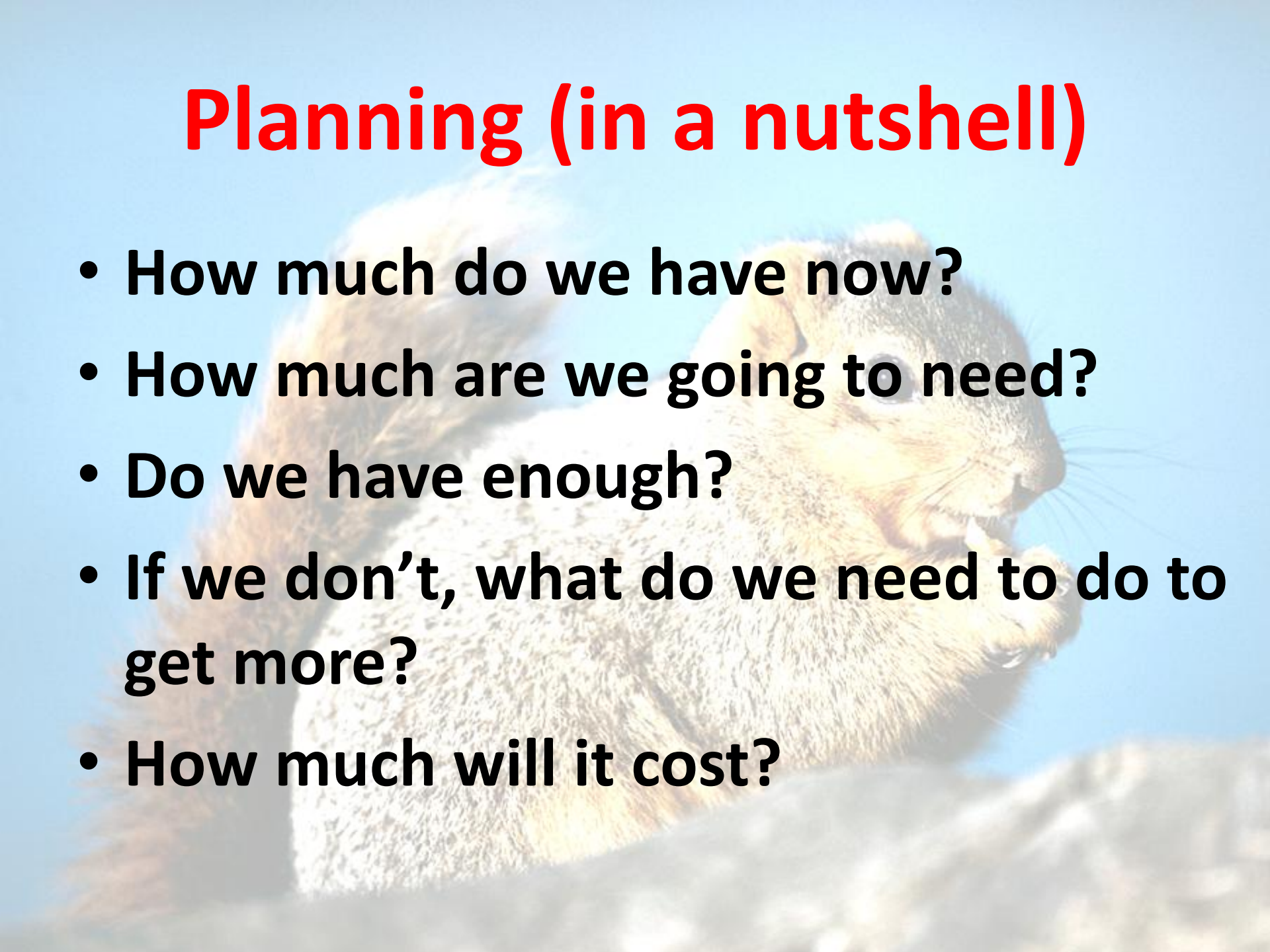


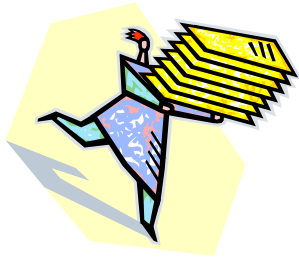
1950s drought



Planning (in a nutshell)

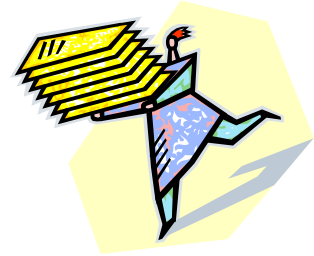
- How much do we have now?
- How much are we going to need?
- Do we have enough?
- If we don't, what do we need to do to get more?
- How much will it cost?



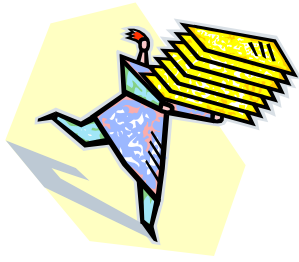


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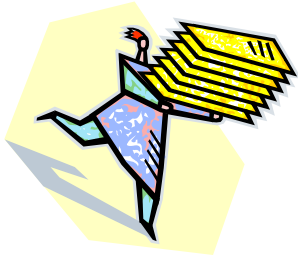
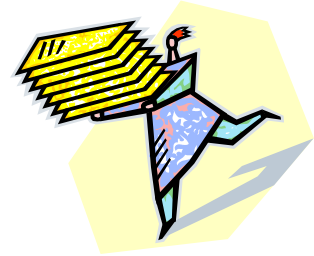






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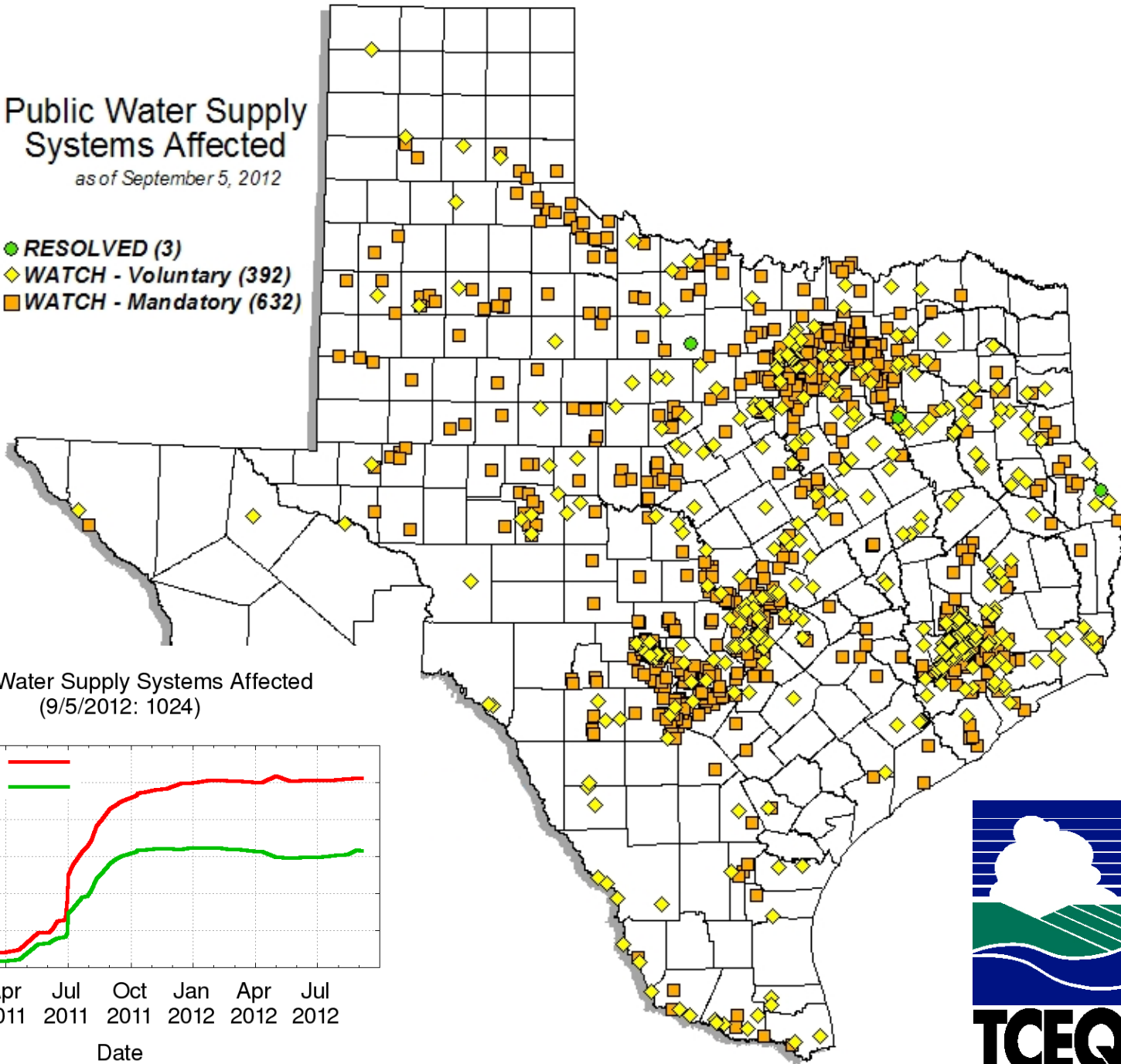
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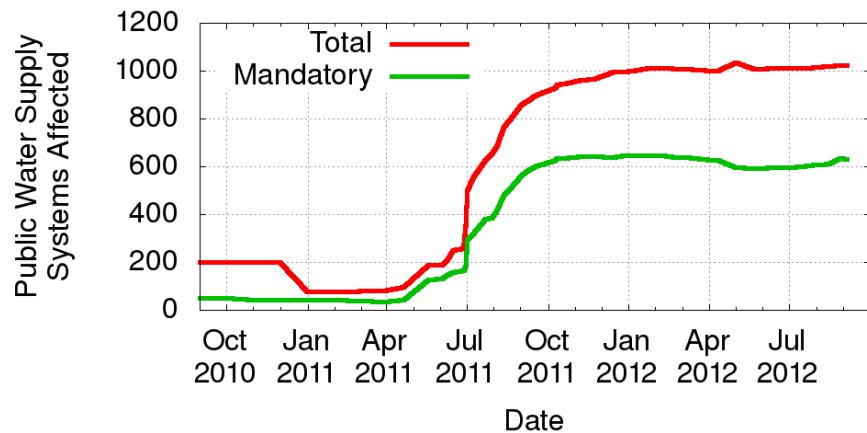
Public Water Supply Systems Affected

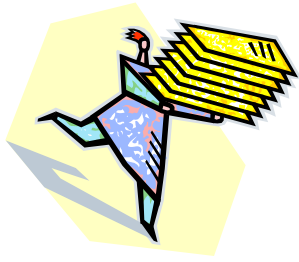
as of September 5, 2012

- **RESOLVED (3)**
- ◆ **WATCH - Voluntary (392)**
- **WATCH - Mandatory (632)**



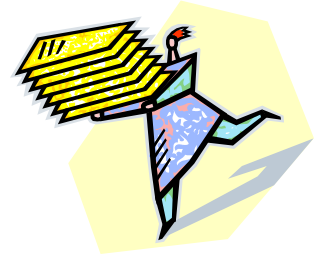
Public Water Supply Systems Affected
(9/5/2012: 1024)





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Emergency Management

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State Drought Preparedness Council

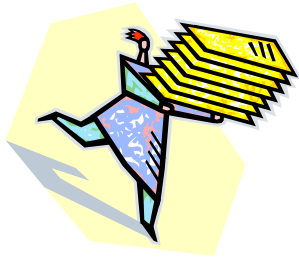
- ▶ [Drought Preparedness Council Overview \(PDF\)](#)
- ▶ [State Drought Preparedness Plan \(PDF\)](#)
 - ▶ [Annex A \(PDF\)](#)
- ▶ [Drought Preparedness Council 2009 Annual Report \(PDF\)](#)
- ▶ [Drought Assistance Directory \(PDF\)](#)
- ▶ [Council Members \(PDF\)](#)

Situation Reports and Supporting Documents

Month (2012)	Situation Report	Additional Documents
January		
February		
March		
April - May		
June		

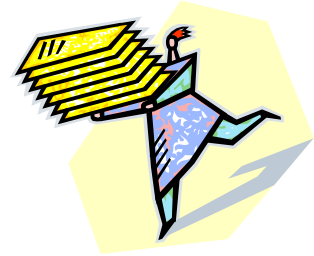
Situation Report Archive

News and Publications

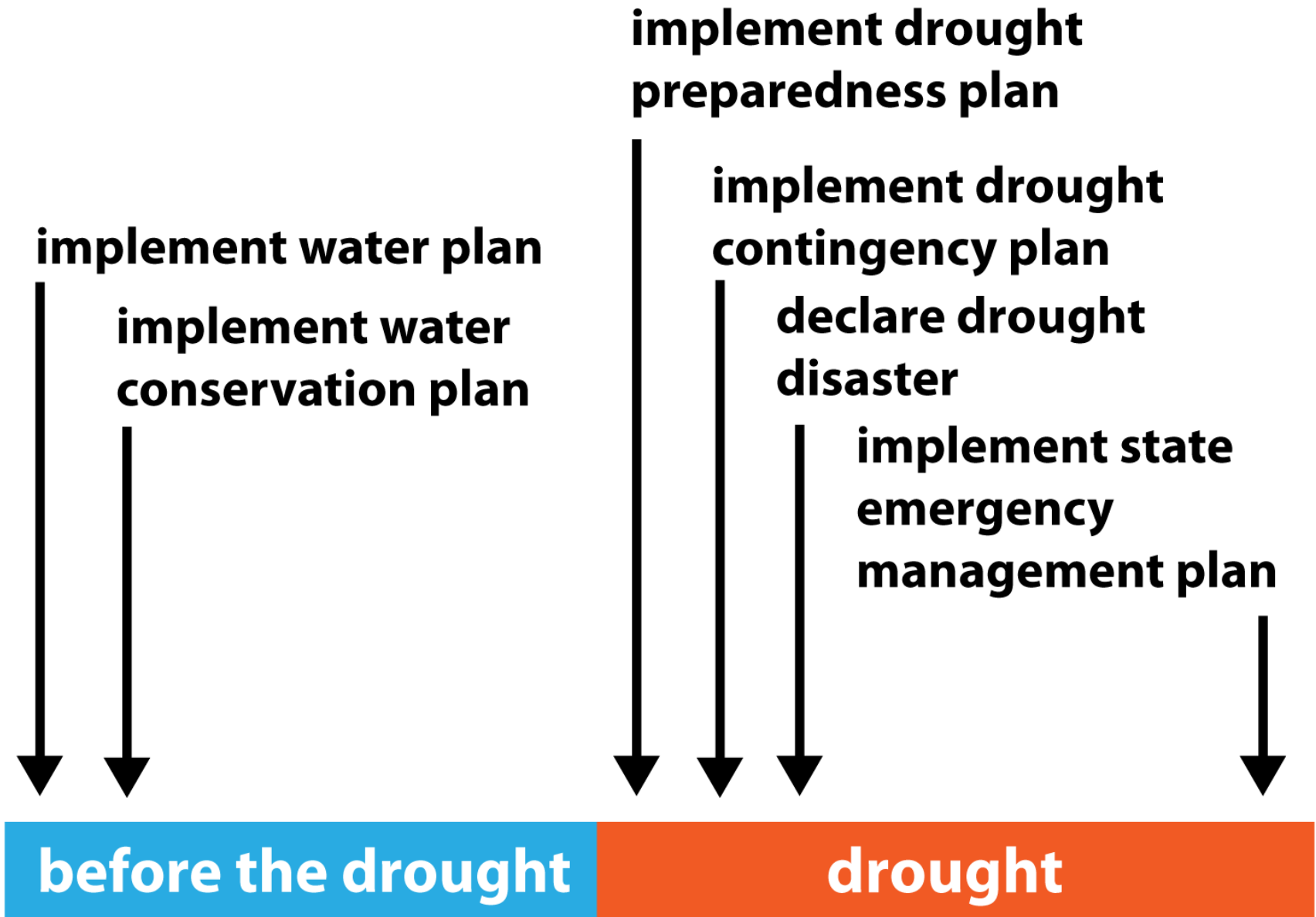


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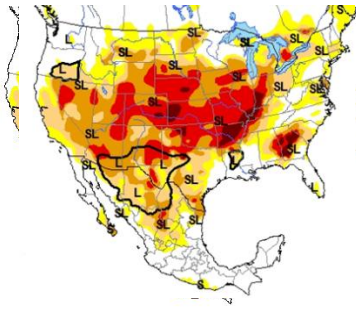




What we've learned

- Regional water plans
 - State water plan
 - Water conservation plans
 - Drought contingency plans
 - Drought preparedness plan
 - State emergency management plan
- need to implement!
- need to implement!
(demand hardening?)
- review & revise
- review & revise
- review & revise

“bridge” solutions for loss of water supply?



Outline

- Dang that drought last year was nasty!
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- Conclusions



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 6 - November 30, 2012

Released September 6, 2012







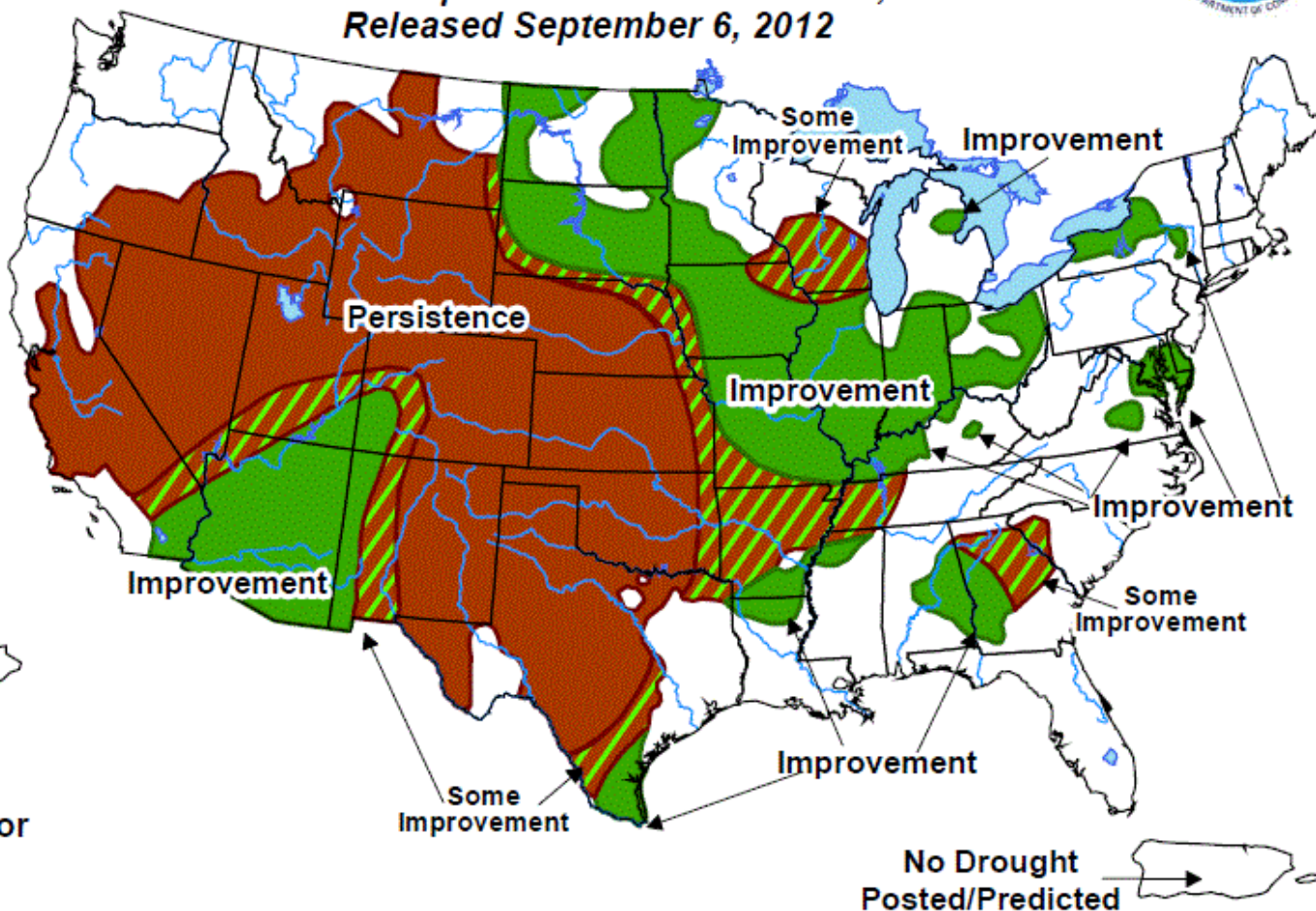
No Drought
Posted/Predicted

Development

Persistence

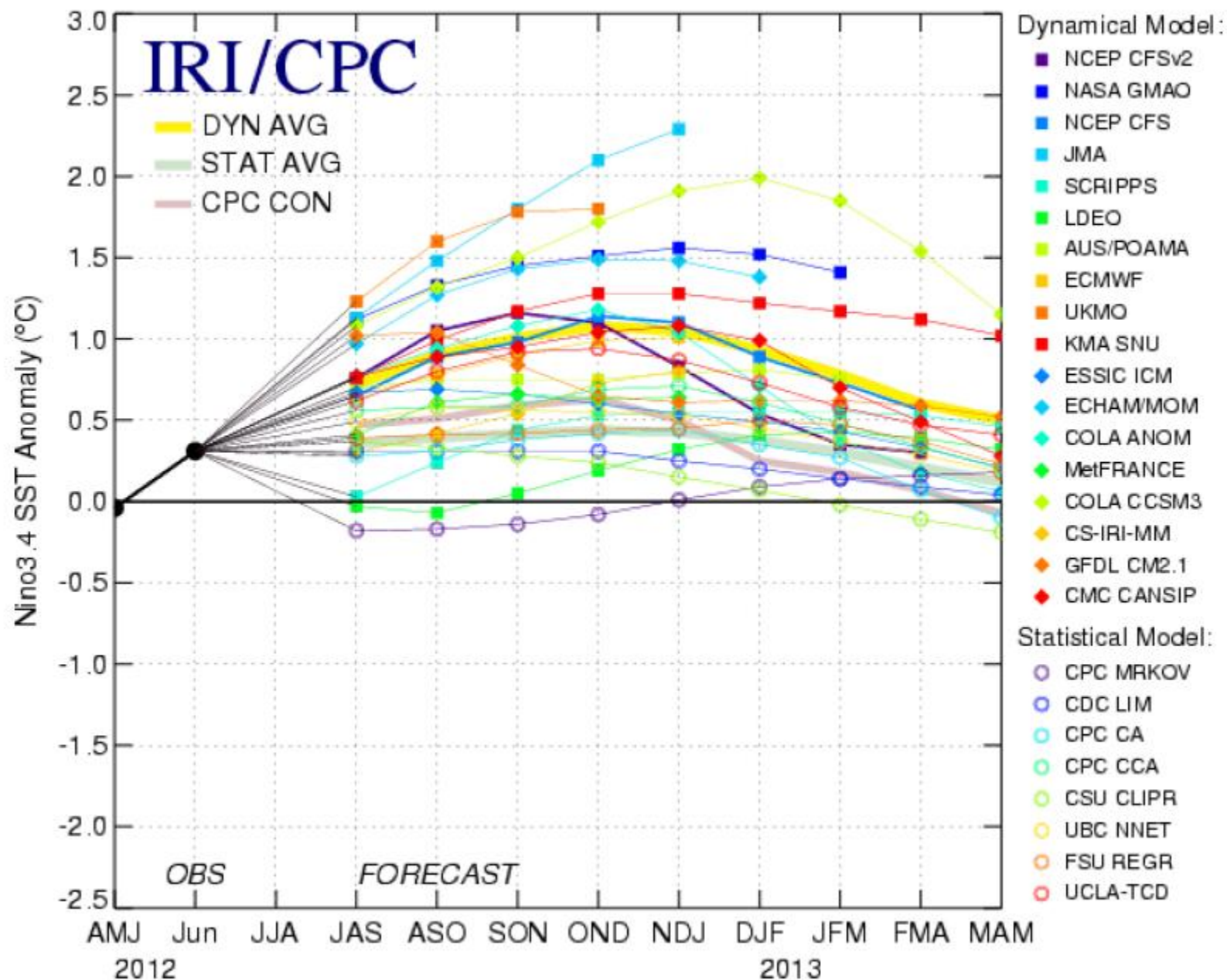
KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely



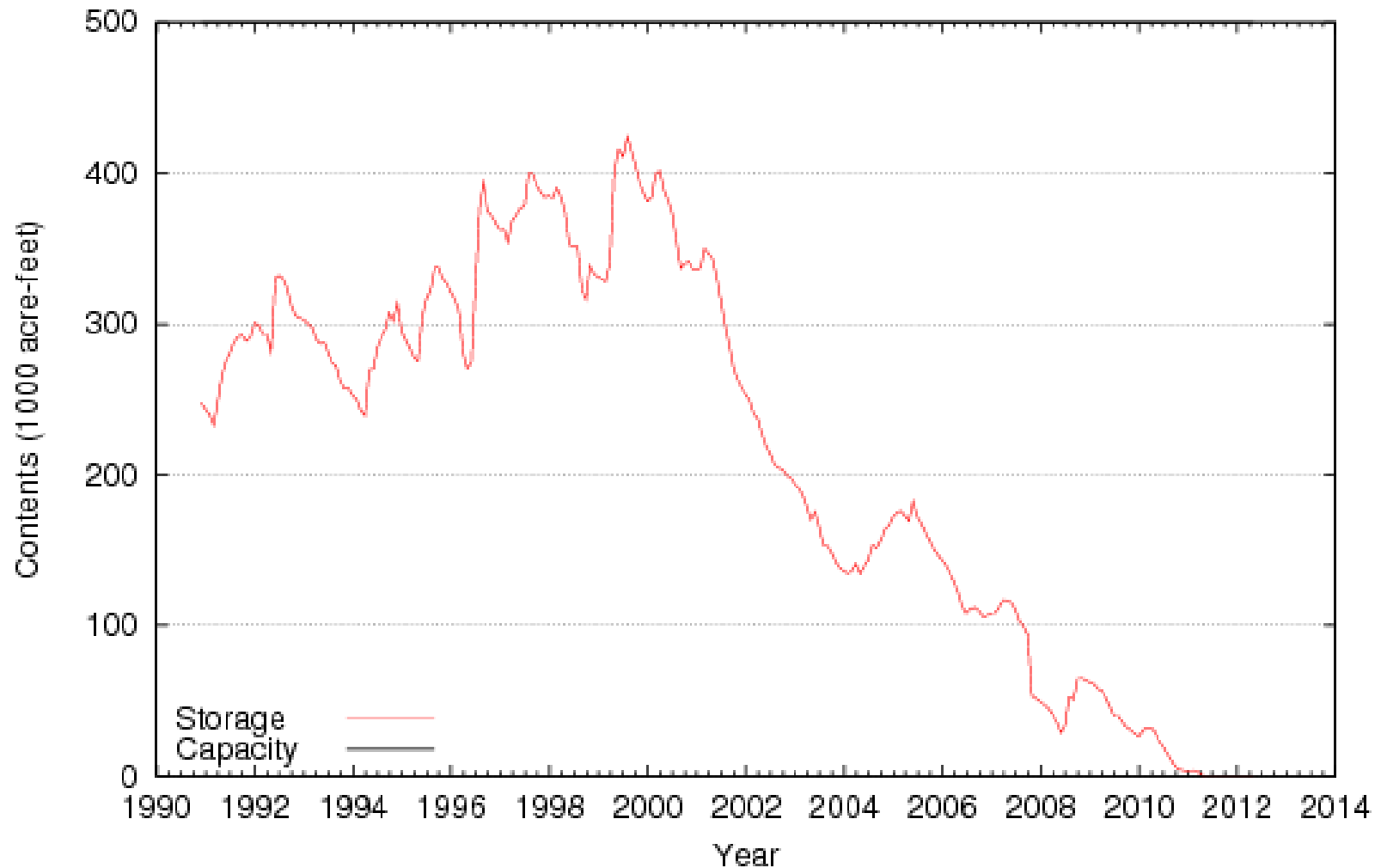
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

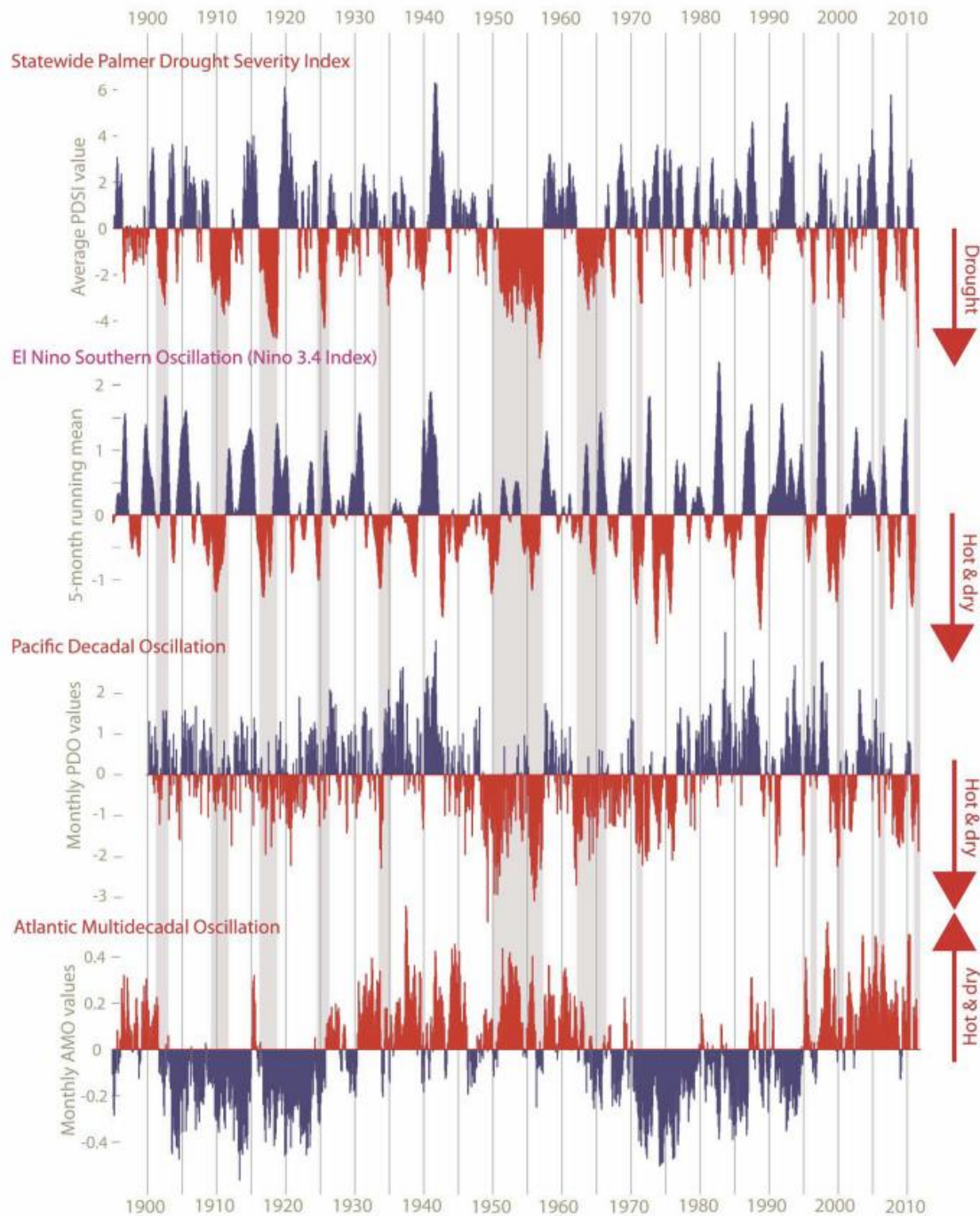
Mid-Jul 2012 Plume of Model ENSO Predictions



“Lake” Meredith (Texas share)

Storage near end of May, 2012: 0.000 Million acre-ft (0%)
Conservation Capacity: 0.500 Million acre-ft



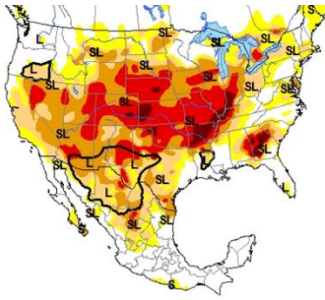


PDSI

ENSO

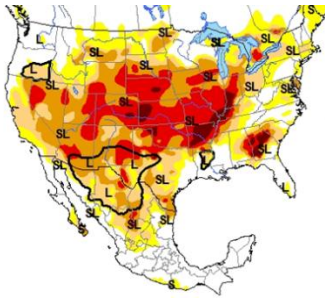
PDO

AMO



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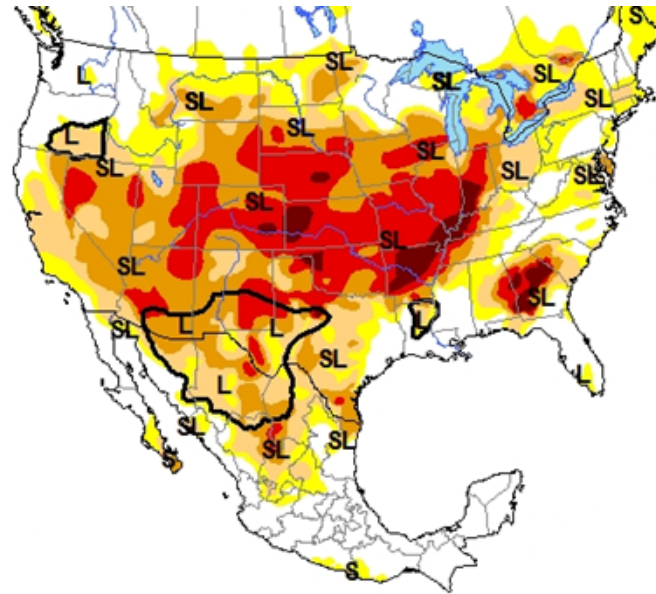
Conclusions

- **Dang that drought was nasty!**
 - Still going for much of the state...
- **We have a plan (several, in fact...)**
- **The crystal ball is...wet?**



Llano, Texas

photo by Erich Schlegel, New York Times



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Texas Water Development Board

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