

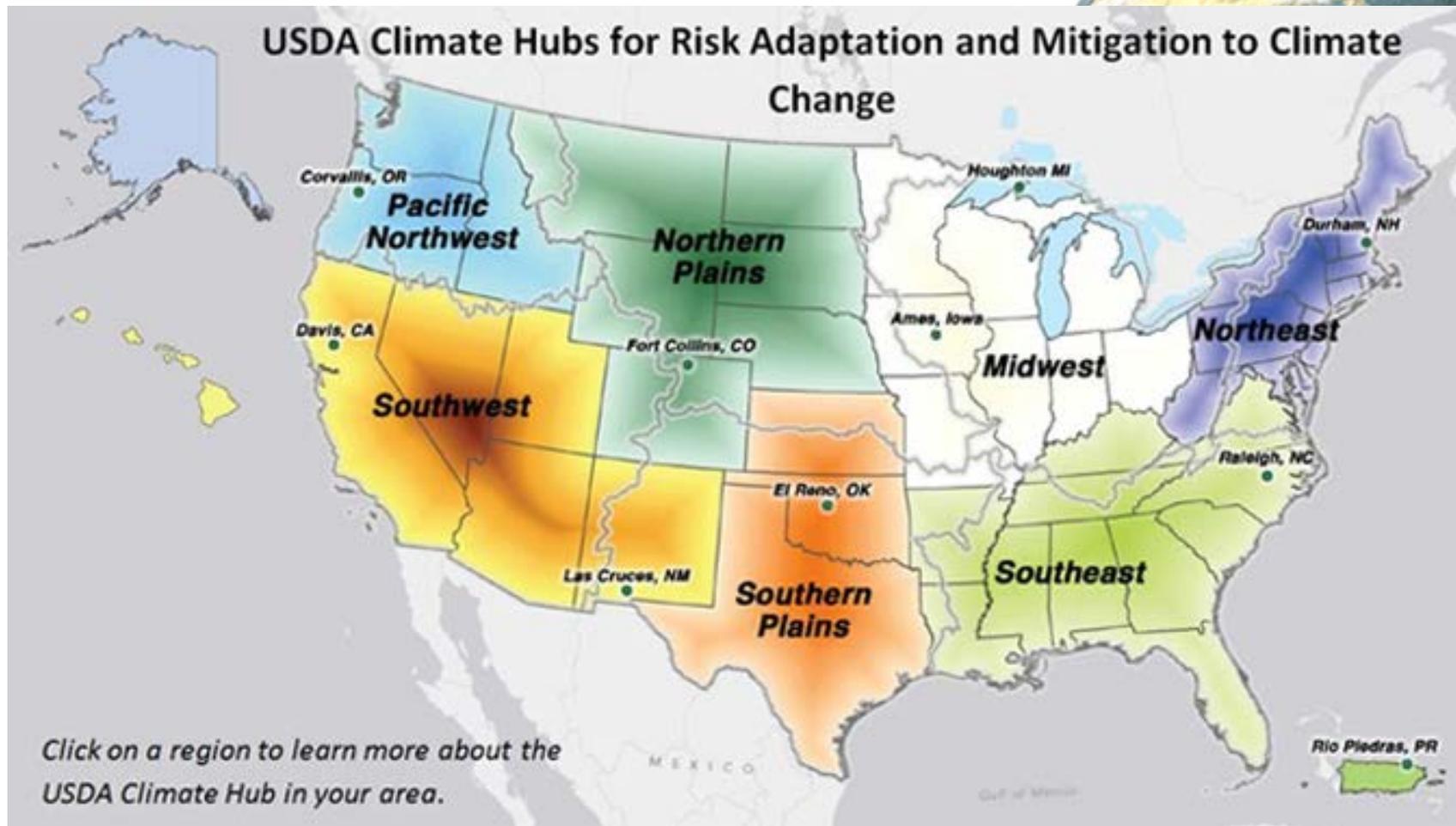
# Northern Plains Climate Hub and Drought

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United States Department of Agriculture



# Conceptual Framework for a USDA Regional Hub

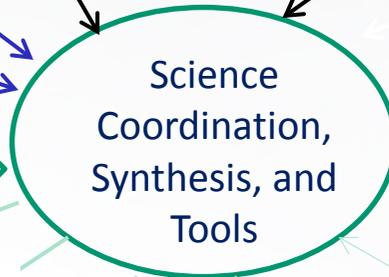
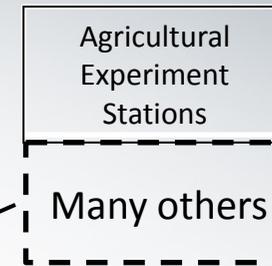


## Science and Technology providers:

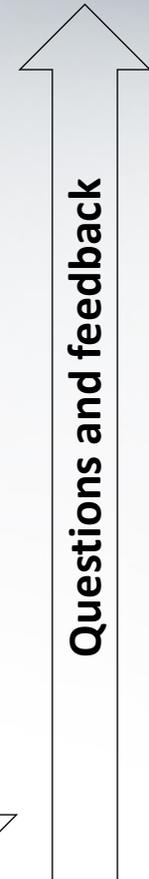
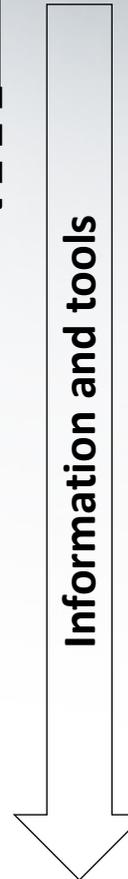
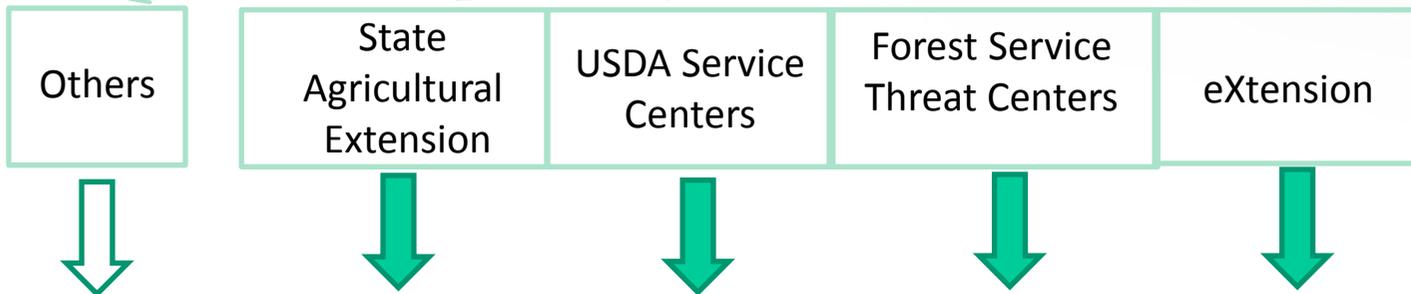
### Federal Partners



### Non-Federal Partners



## Technology Transfer providers:



Stakeholders and Stakeholder group: Farmers / Ranchers / Forest Managers / Tribes / States / Feds / LCCs / Others

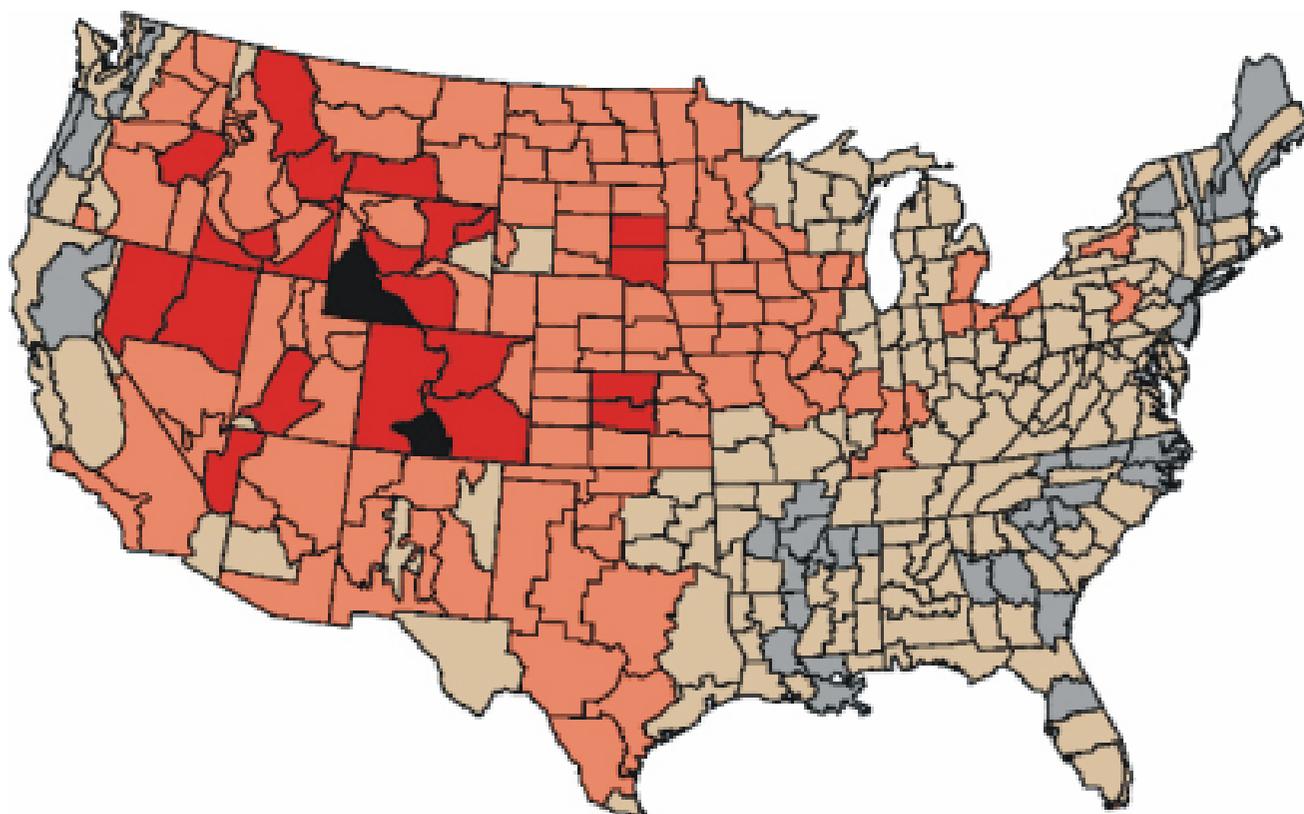
# Drought in Northern Plains



## Palmer Drought Severity Index

1895–1995

Percent of time in severe and extreme drought



% of time PDSI  $\leq$  -3

- Less than 5%
- 5% to 9.99%
- 10% to 14.9%
- 15% to 19.9%
- 20% or greater

SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)  
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center

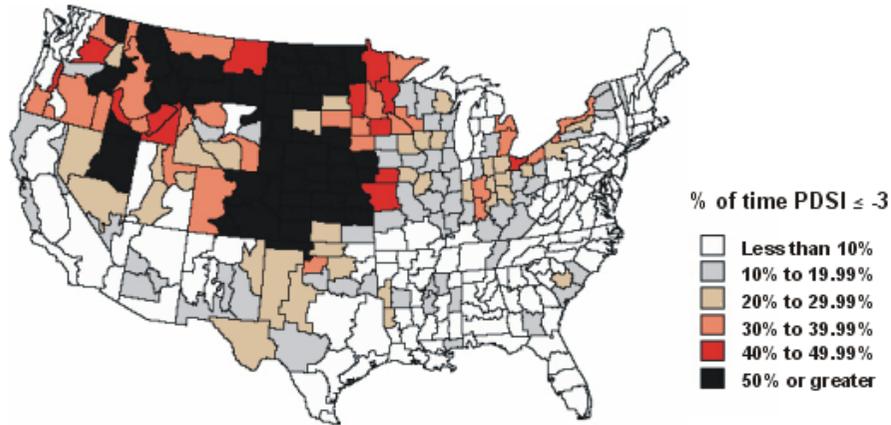
# Extent of Major 20<sup>th</sup> Century Droughts



## Palmer Drought Severity Index

1934–1939

Percent of time in severe and extreme drought

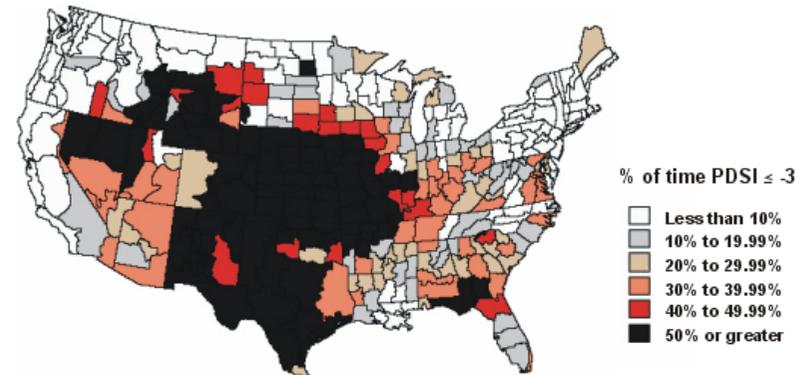


SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)  
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center

## Palmer Drought Severity Index

1954–1956

Percent of time in severe and extreme drought

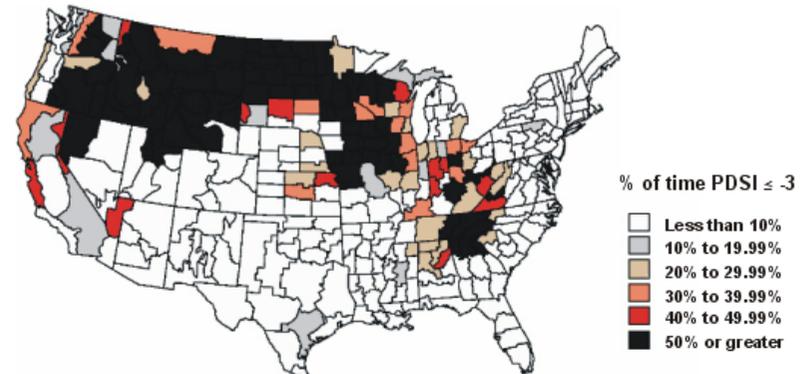


SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)  
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center

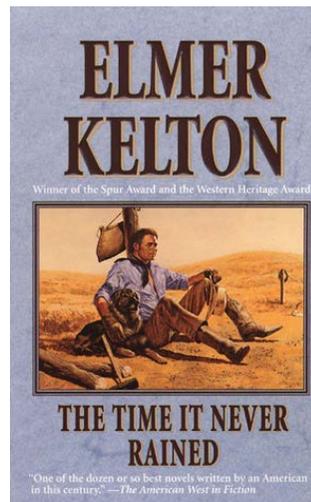
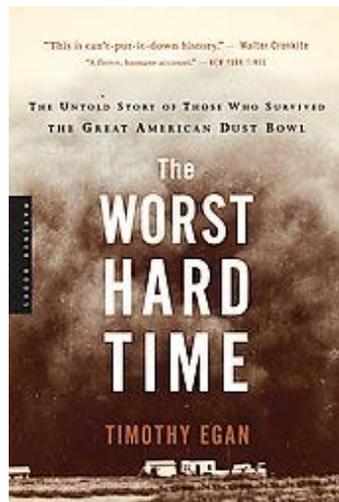
## Palmer Drought Severity Index

1988

Percent of time in severe and extreme drought

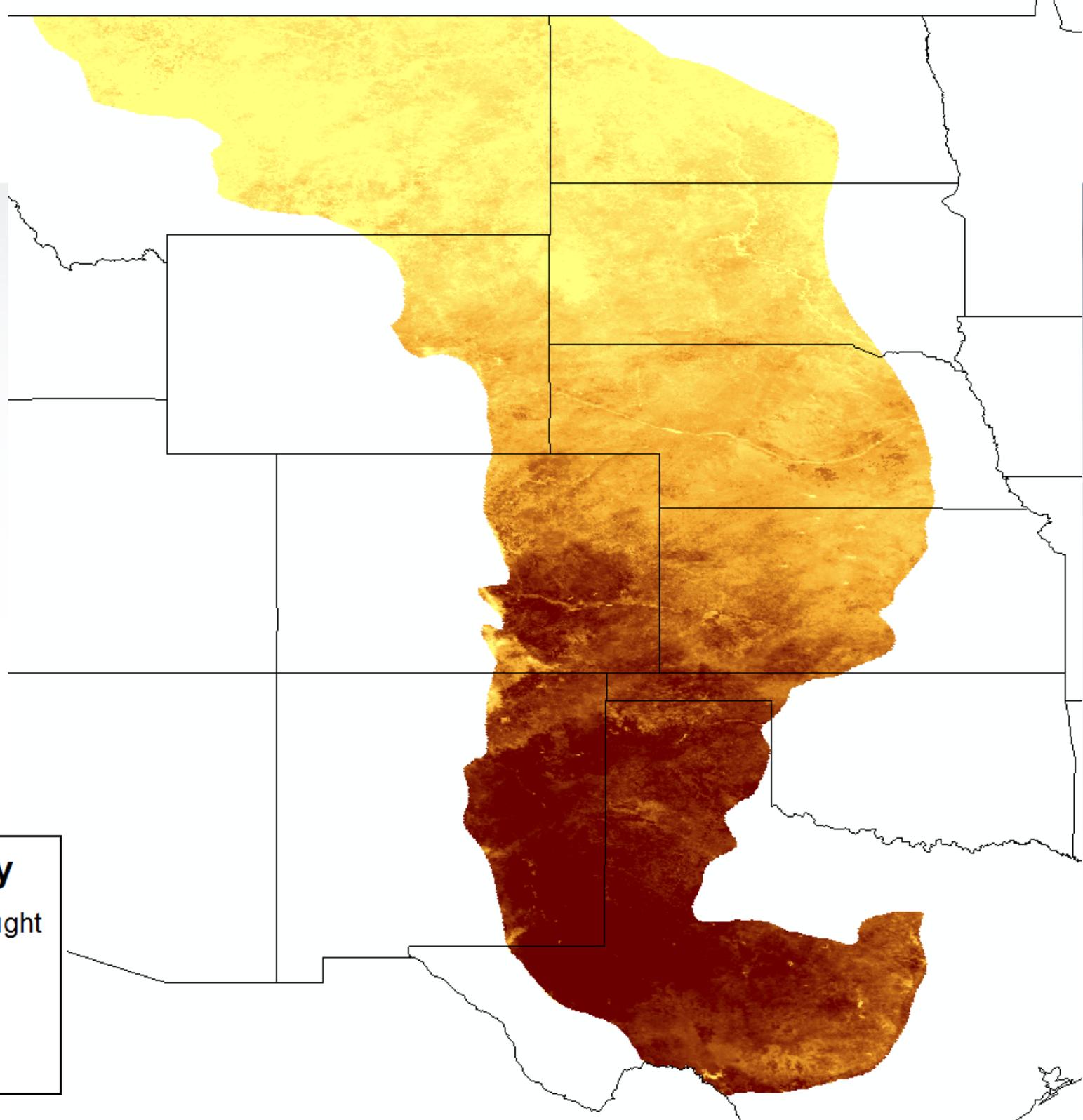
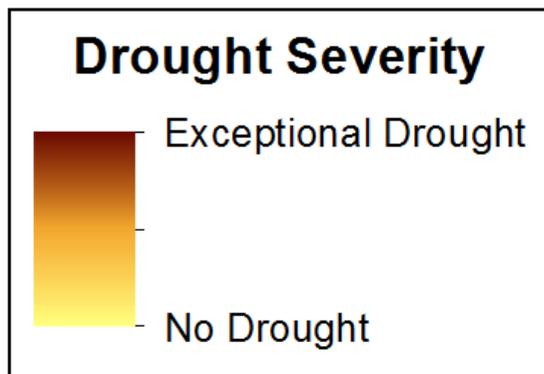


SOURCE: McKee et al. (1993); NOAA (1990); High Plains Regional Climate Center (1996)  
Albers Equal Area Projection; Map prepared at the National Drought Mitigation Center

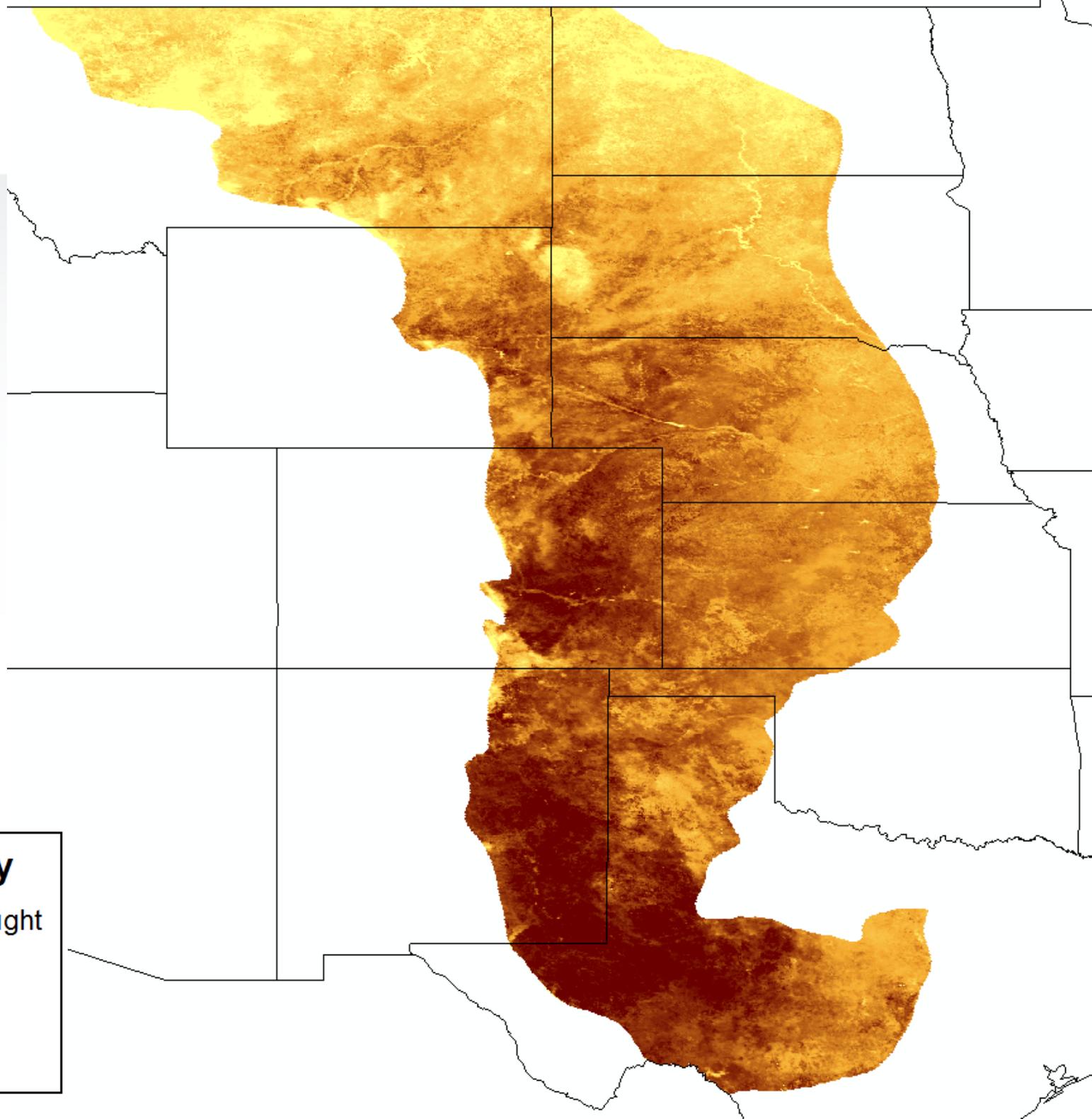


# July 12, 2011

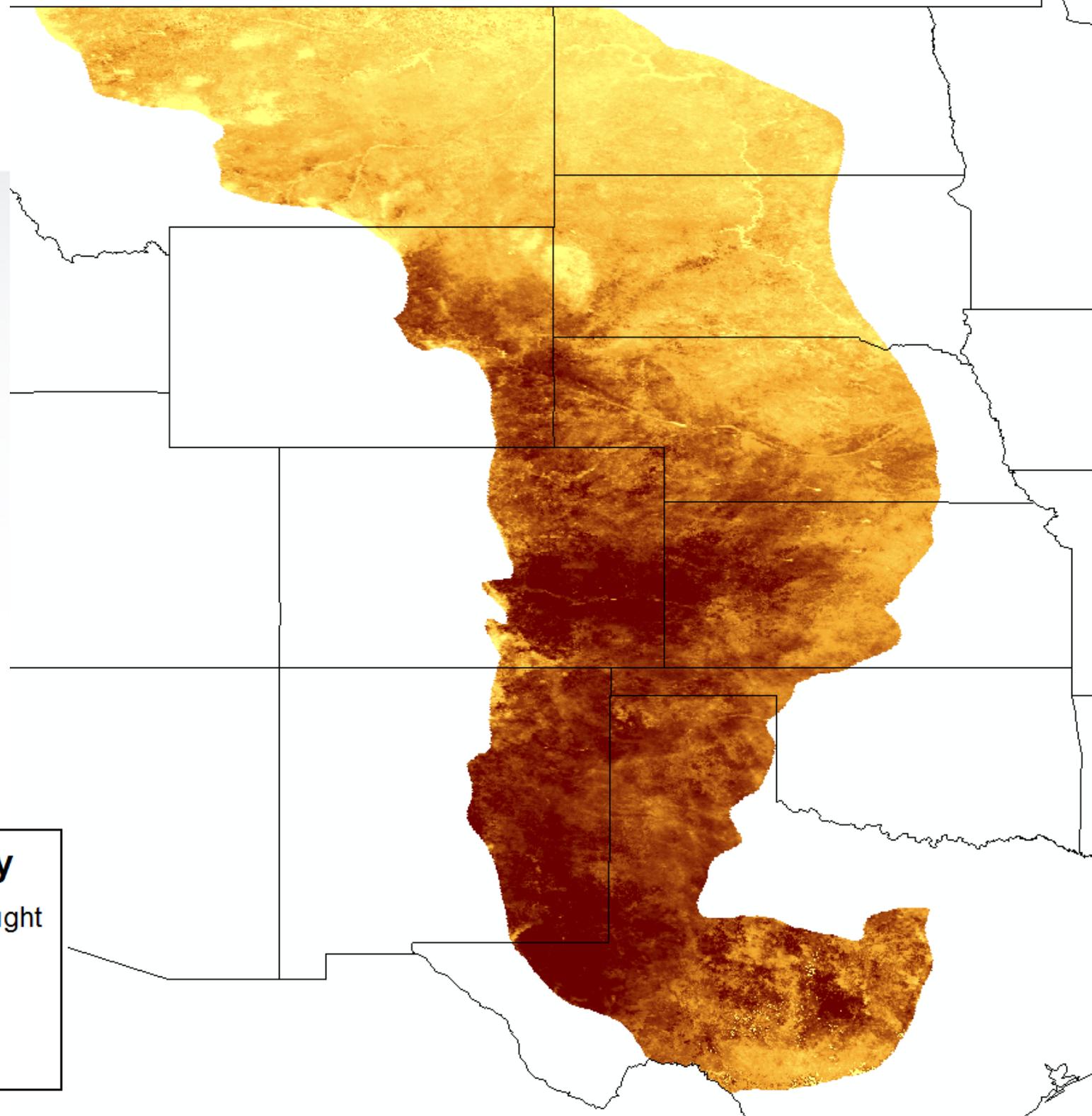
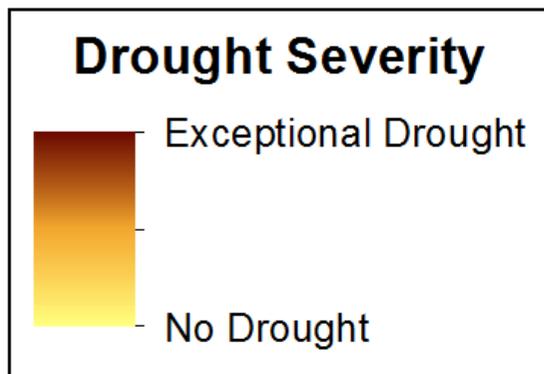
Created in ArcGIS using Land Surface Temperature, precipitation, and NDVI. LST data were acquired from Aqua MODIS and precipitation was collected from NOAA's Multisensor Precipitation Estimator. NDVI was calculated using Terra MODIS data.



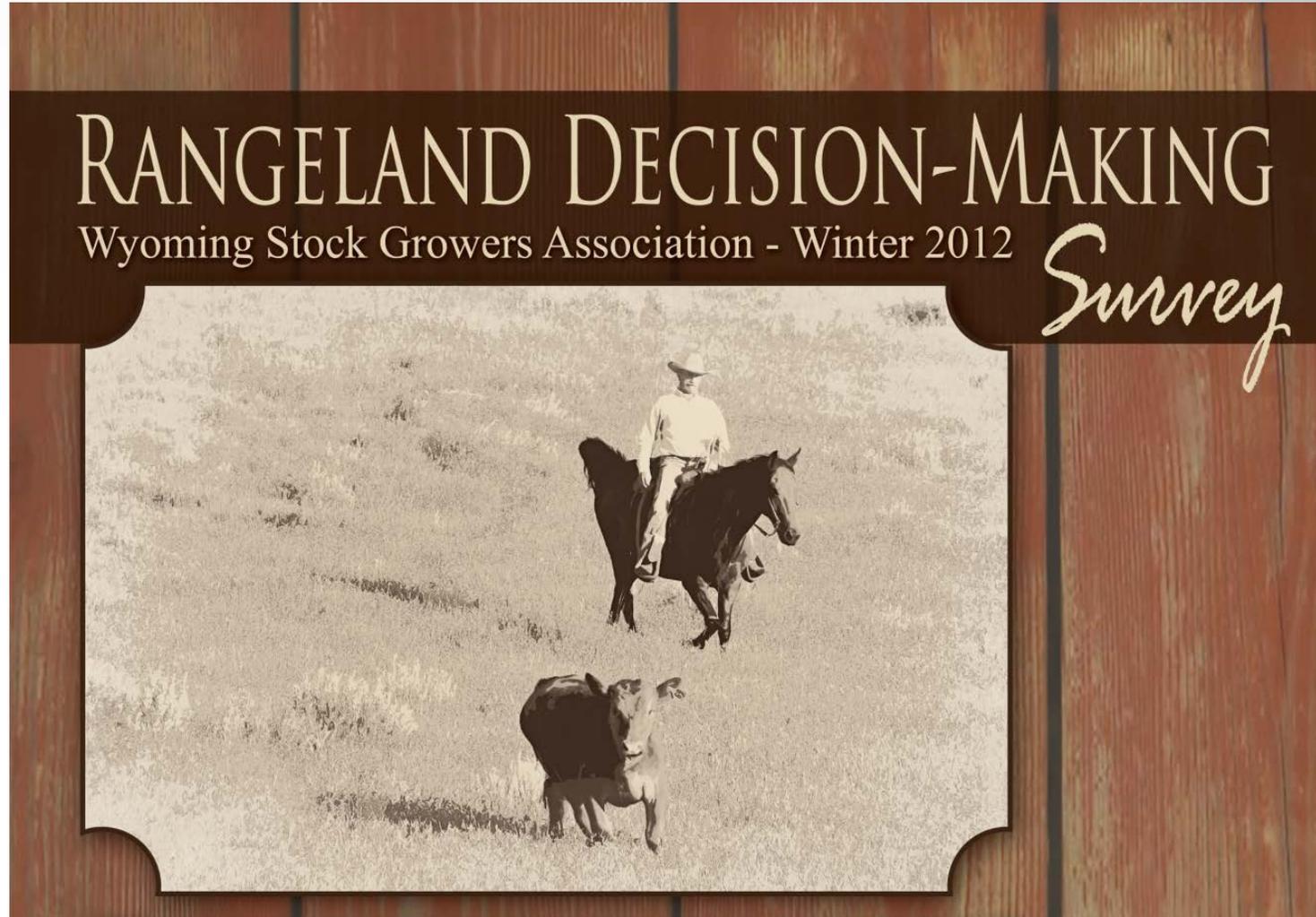
**July 12, 2012**



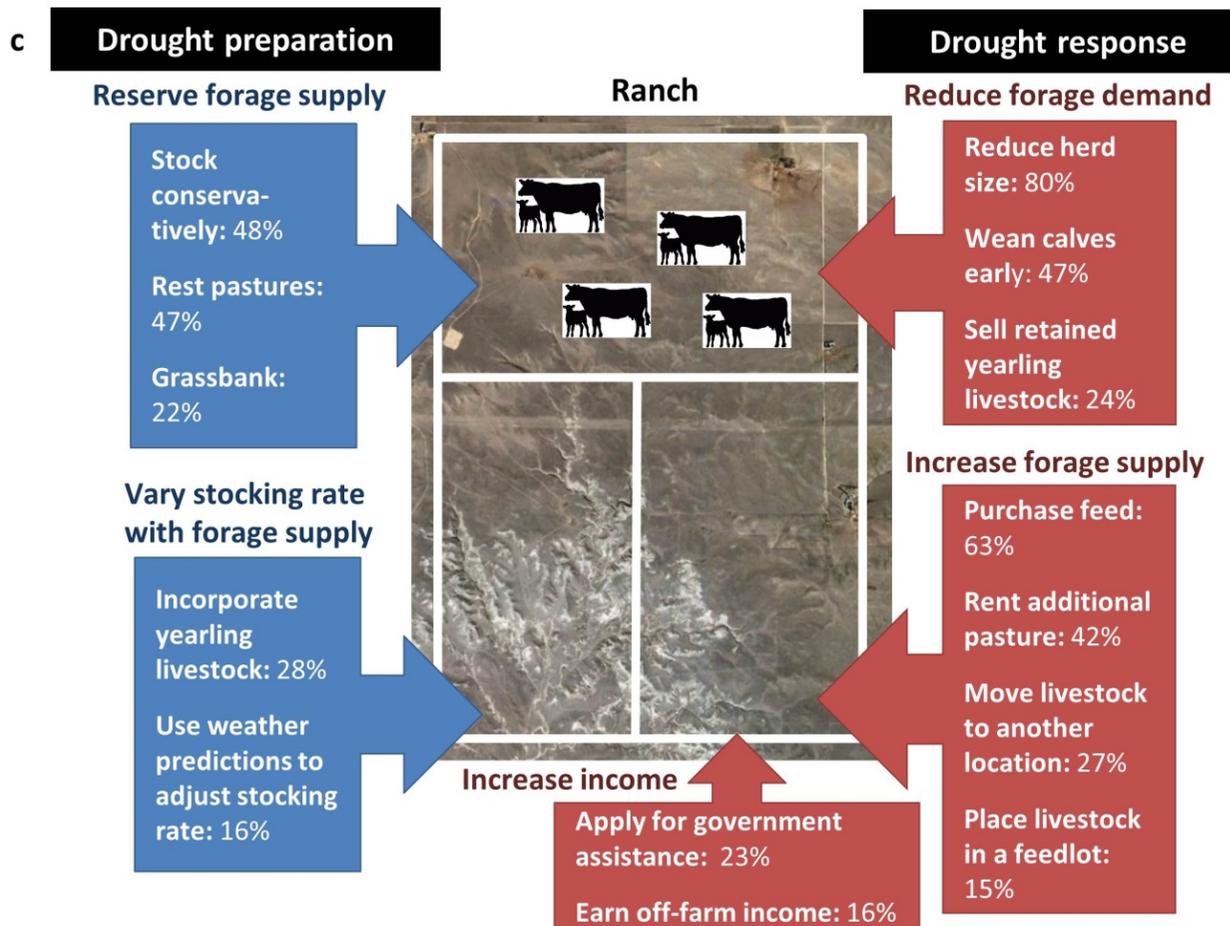
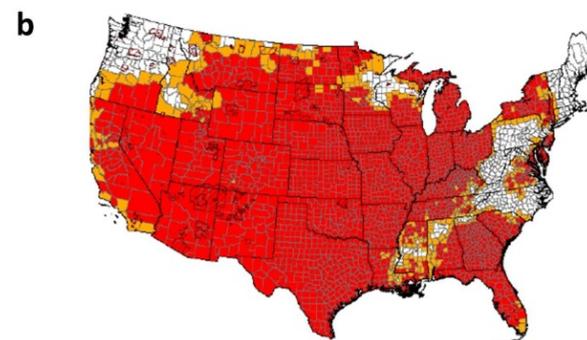
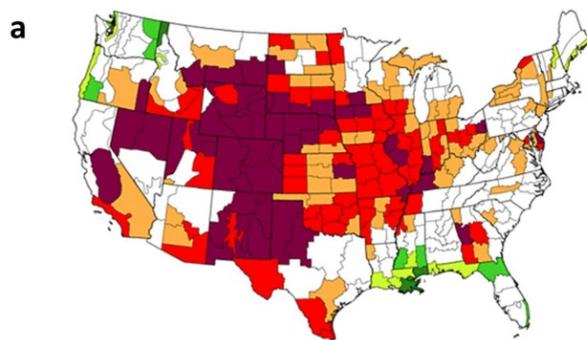
**July 12, 2013**



# What Drought Management Strategies do Wyoming Ranchers Use?



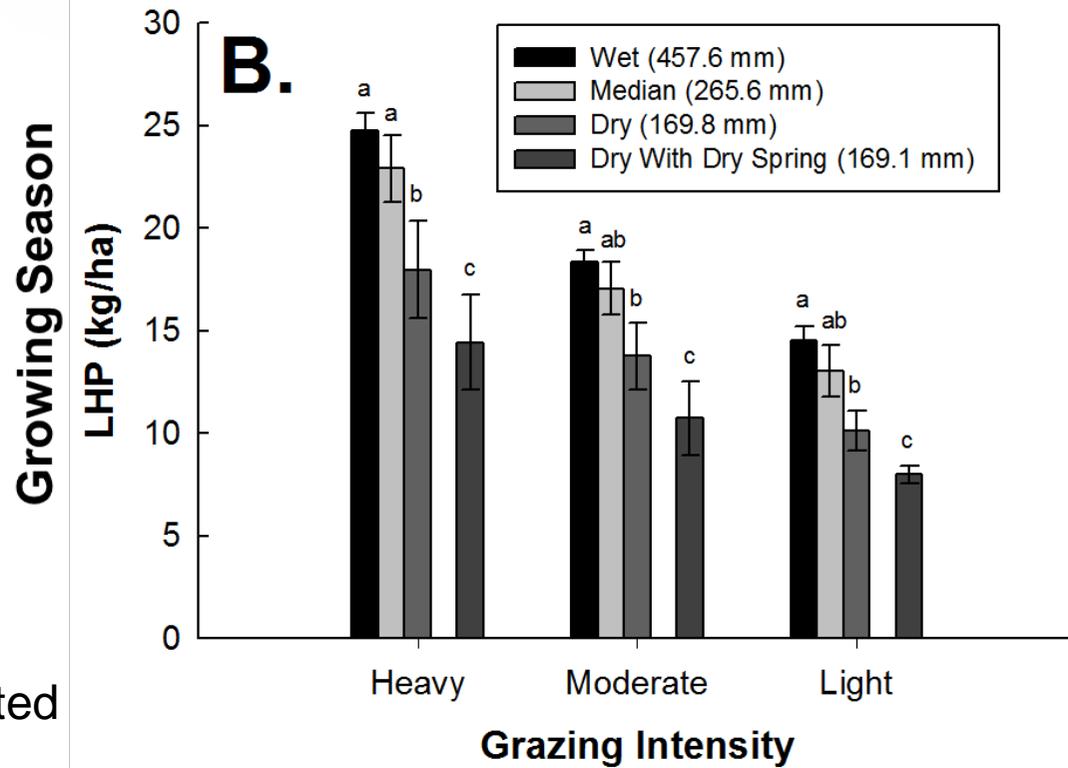
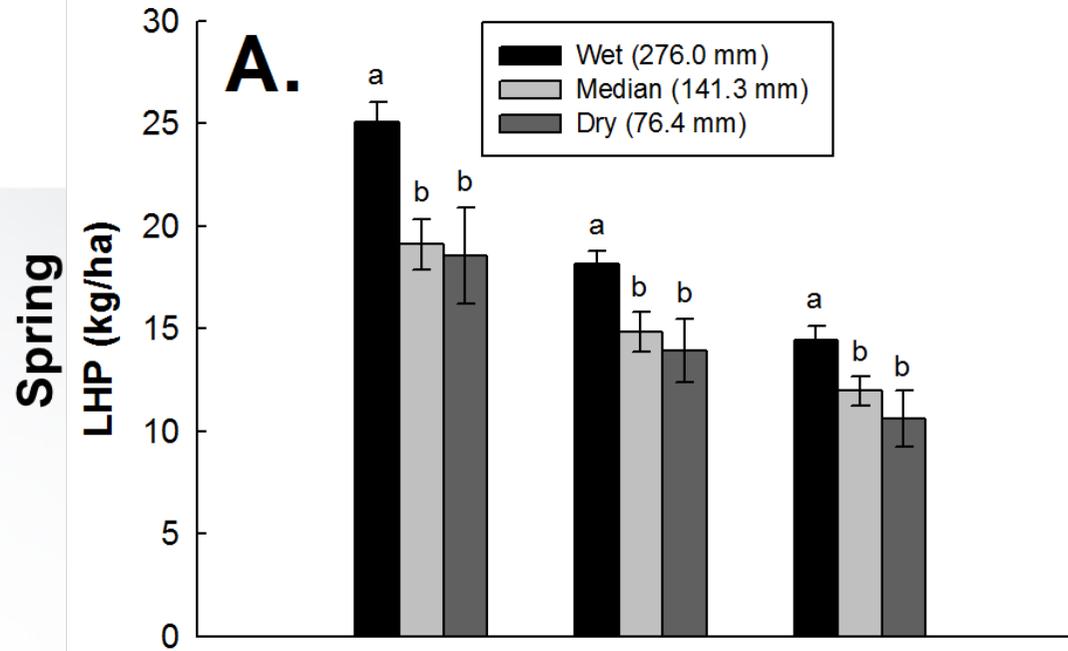
# Drought: Summary



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**Drought impacts**

Grazing capacity	75%	Irrigation water availability	47%
Profitability	54%	Calf weaning weights	36%
Winter feed availability	53%	Livestock reproductive rates	20%



# Irony?

