Drought Monitoring in the United States

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NASA IDS: Seasonal Prediction of Hydro-Climatic Extremes for the Greater Horn of Africa

NATIONAL DROUGHT MITIGATION CENTER
UNIVERSITY OF NEBRASKA

Drought monitoring is a partnership

NDMC

Department of Agriculture

National Atmospheric & Oceanic Administration

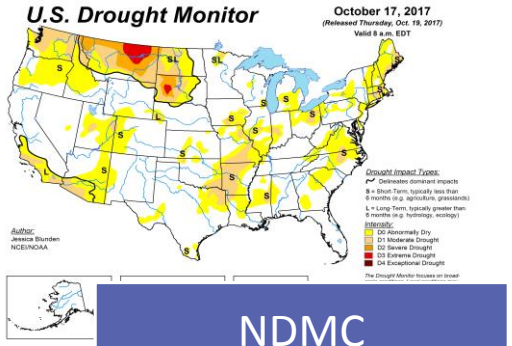
Geological Service

Forest Service

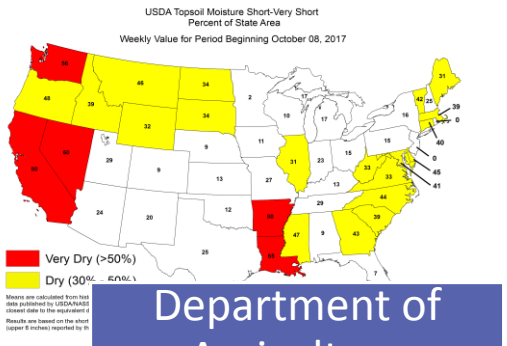
Natural Resource Conservation Service

Others at national, regional & state levels

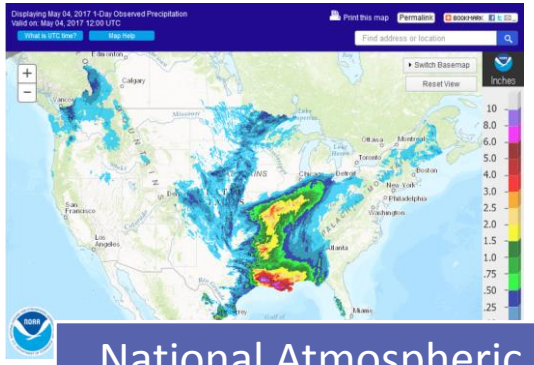
Agencies monitor for a variety of purposes



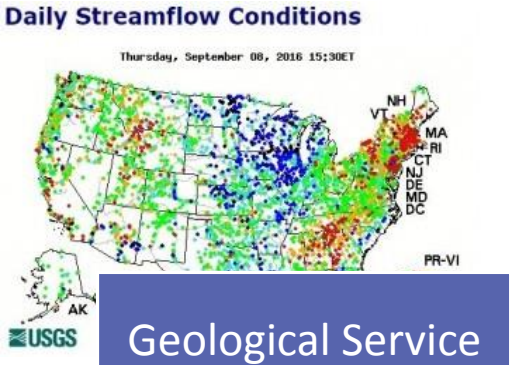
NDMC



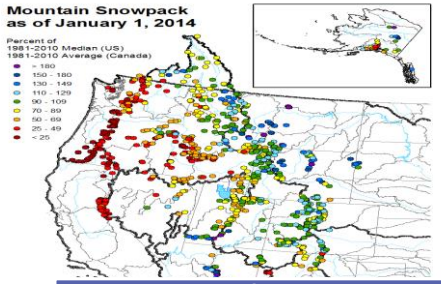
Department of Agriculture



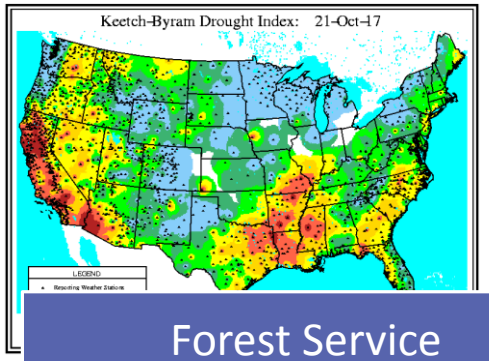
National Atmospheric & Oceanic Administration



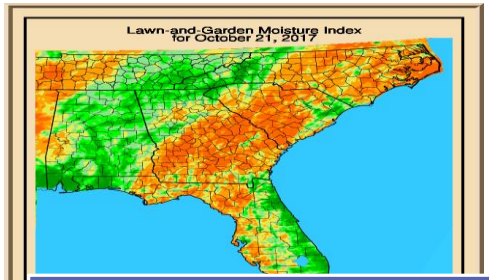
Geological Service



Natural Resource Conservation Service



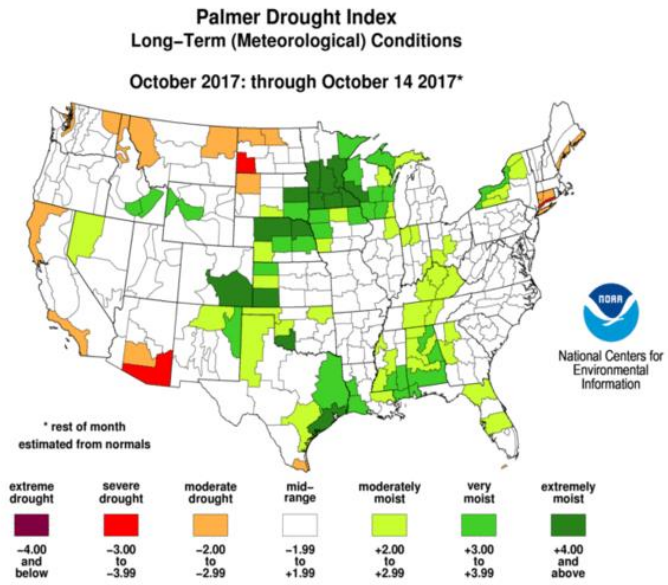
Forest Service



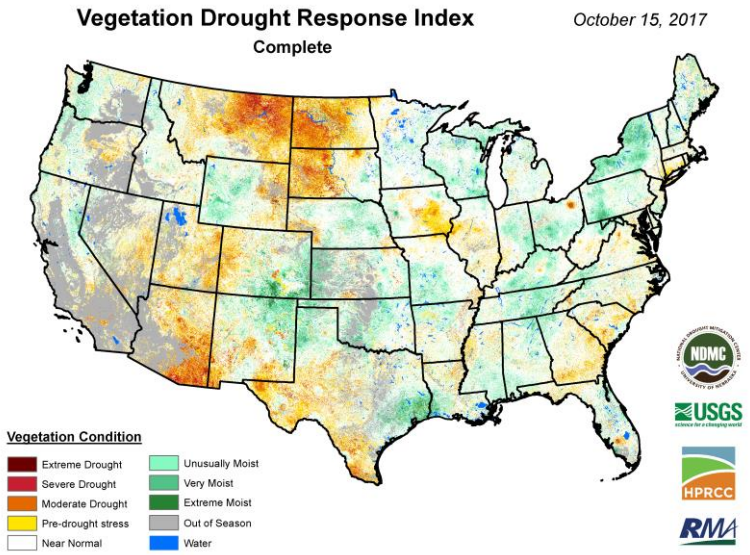
Others at national, regional & state levels

Drought monitoring uses different approaches

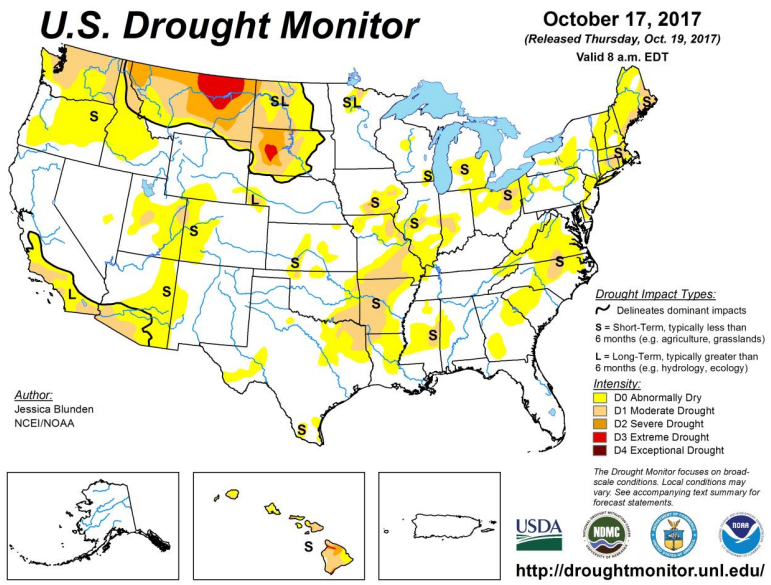
Single index or indicator



Multiple Indices or Indicators



Hybrid

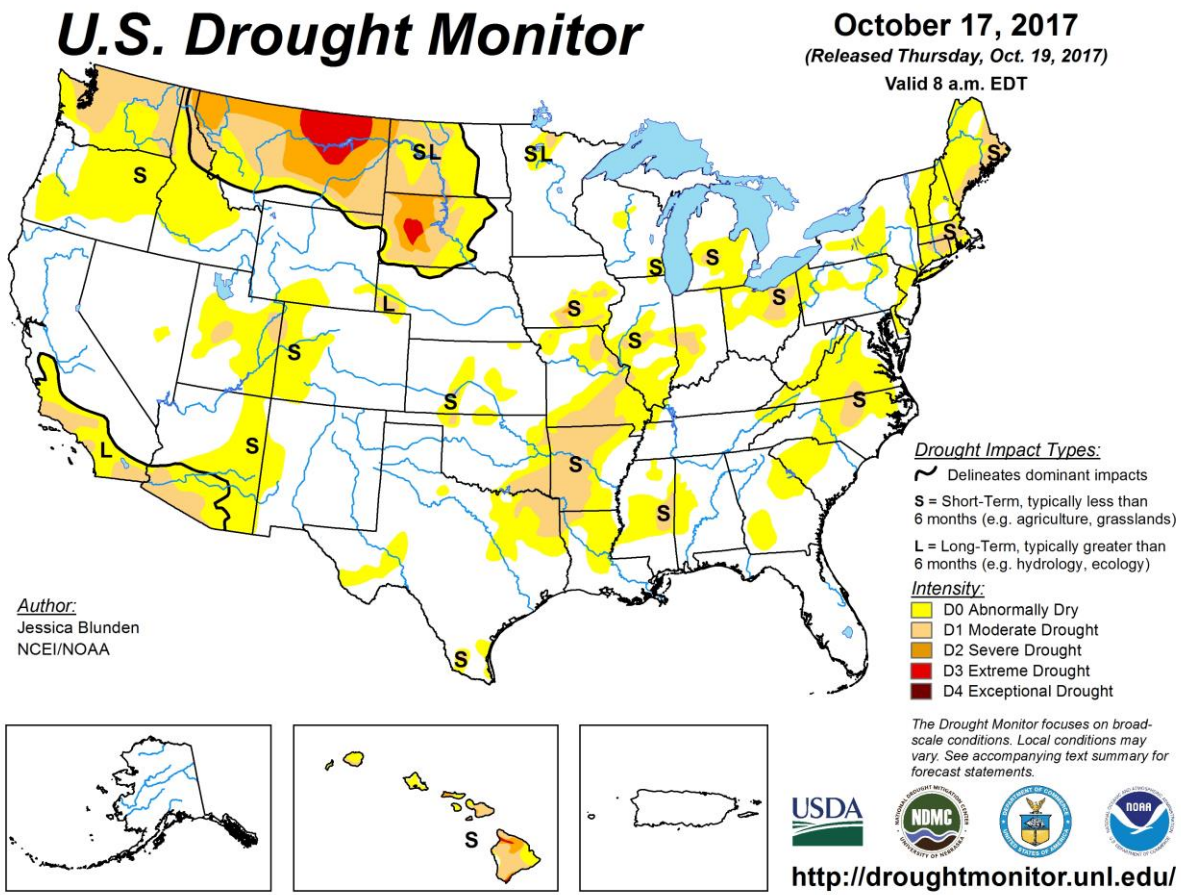


Hybrid Approach: U.S. Drought Monitor (USDM)

Objective
indicators & indices

+ =

Subjective
expertise



USDM depicts current drought conditions

Drought Impact Types:

Delineates dominant impacts

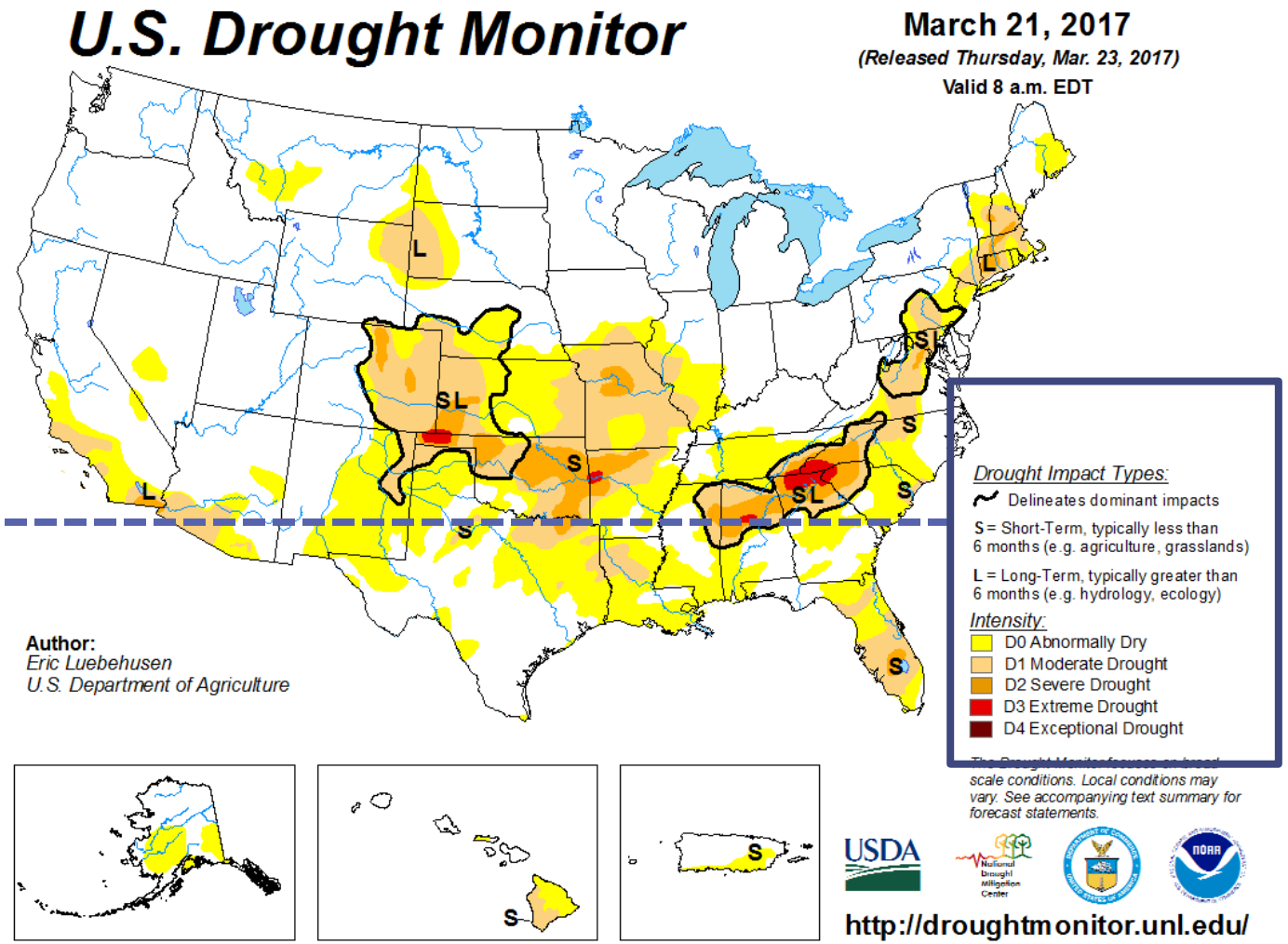
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

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

Intensity:

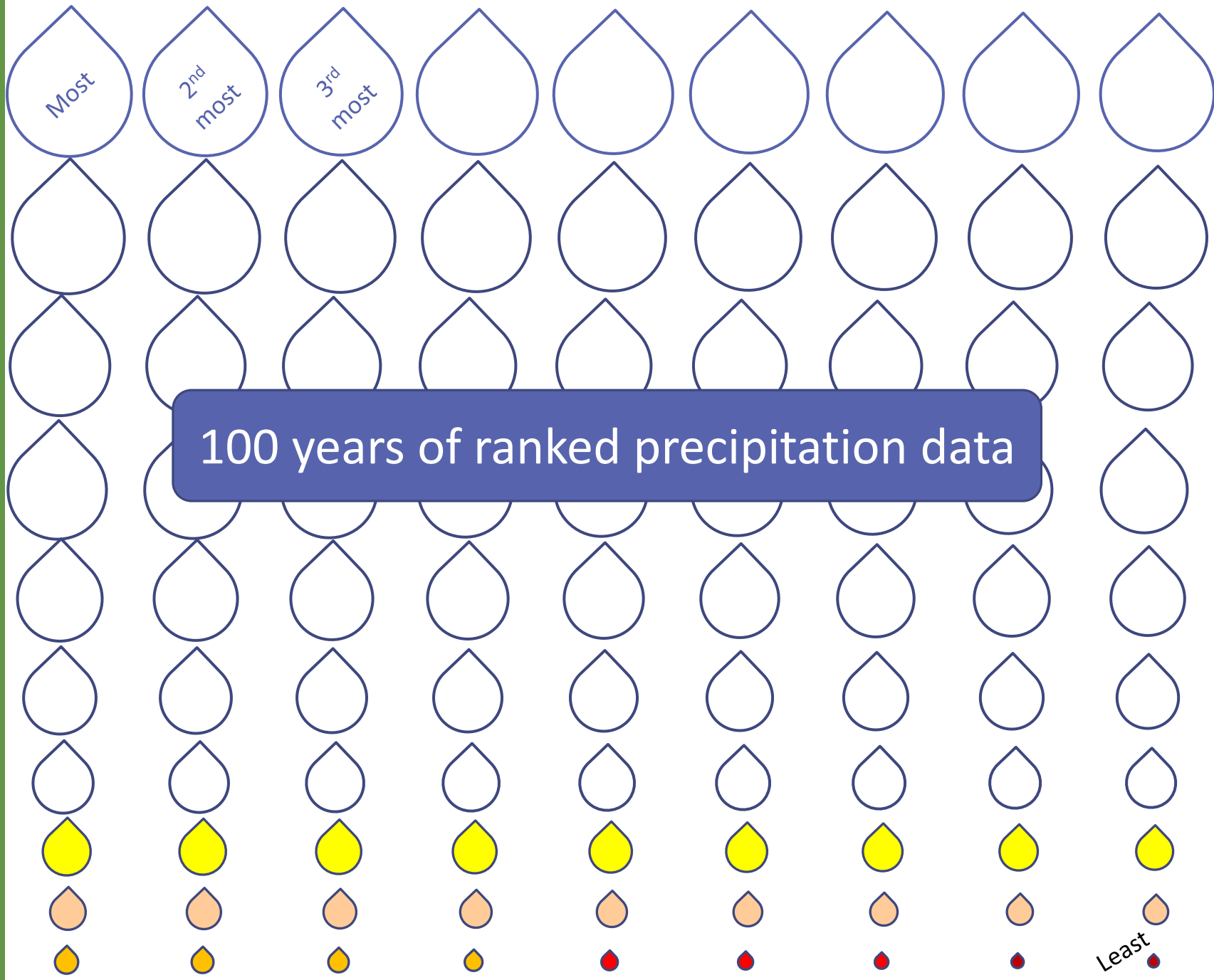
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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



USDM uses percentiles to determine severity

			Percentile
	D0	Abnormally Dry	21-30
	D1	Moderate Drought	11-20
	D2	Severe Drought	6-10
	D3	Extreme Drought	3 - 5
	D4	Exceptional Drought	1 - 2



USDM uses multiple indices & indicators to provide a complete picture of drought

Streamflow

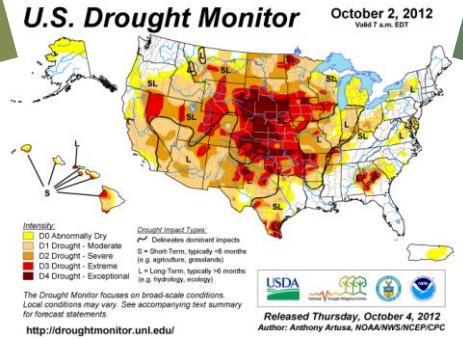
Vegetation Health

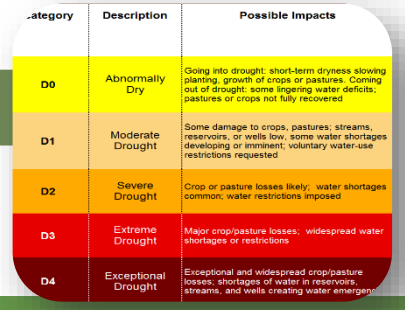
Wildfire Conditions

Soil Moisture

Reservoir Levels

Precipitation



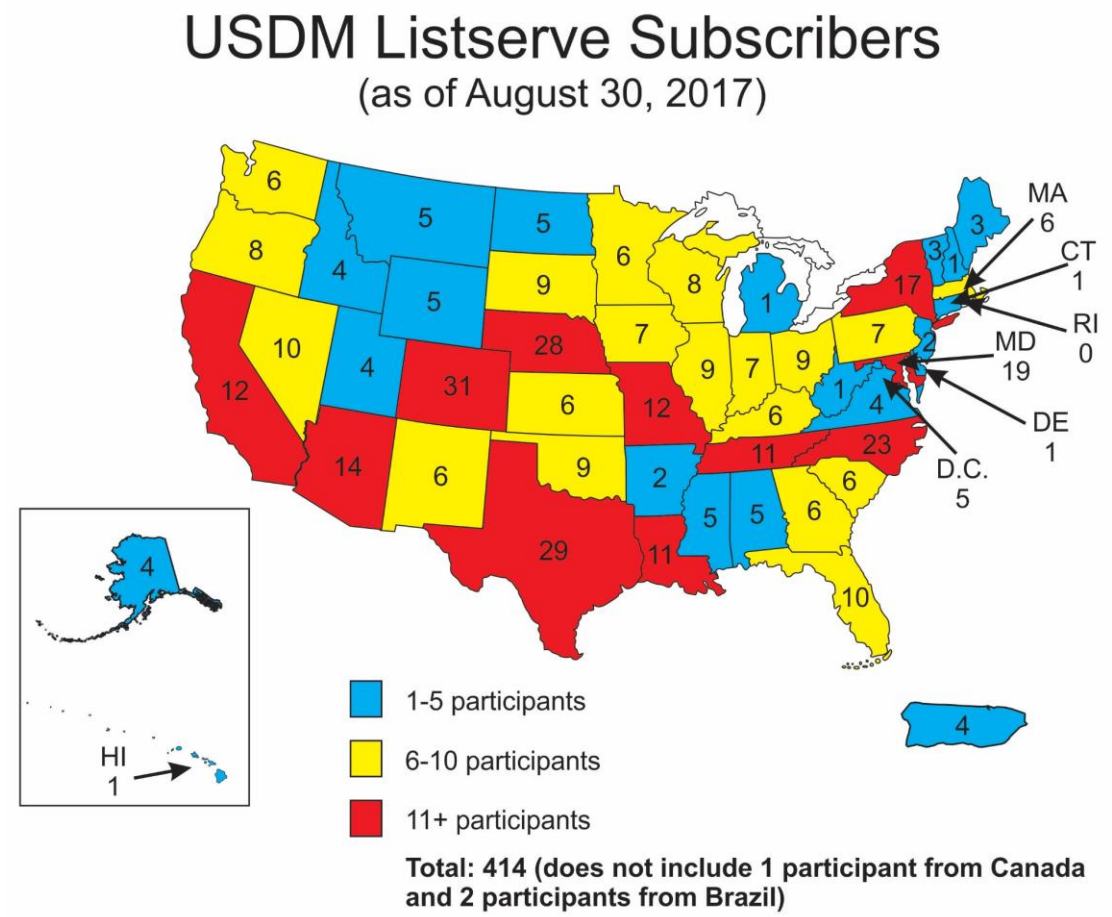


Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

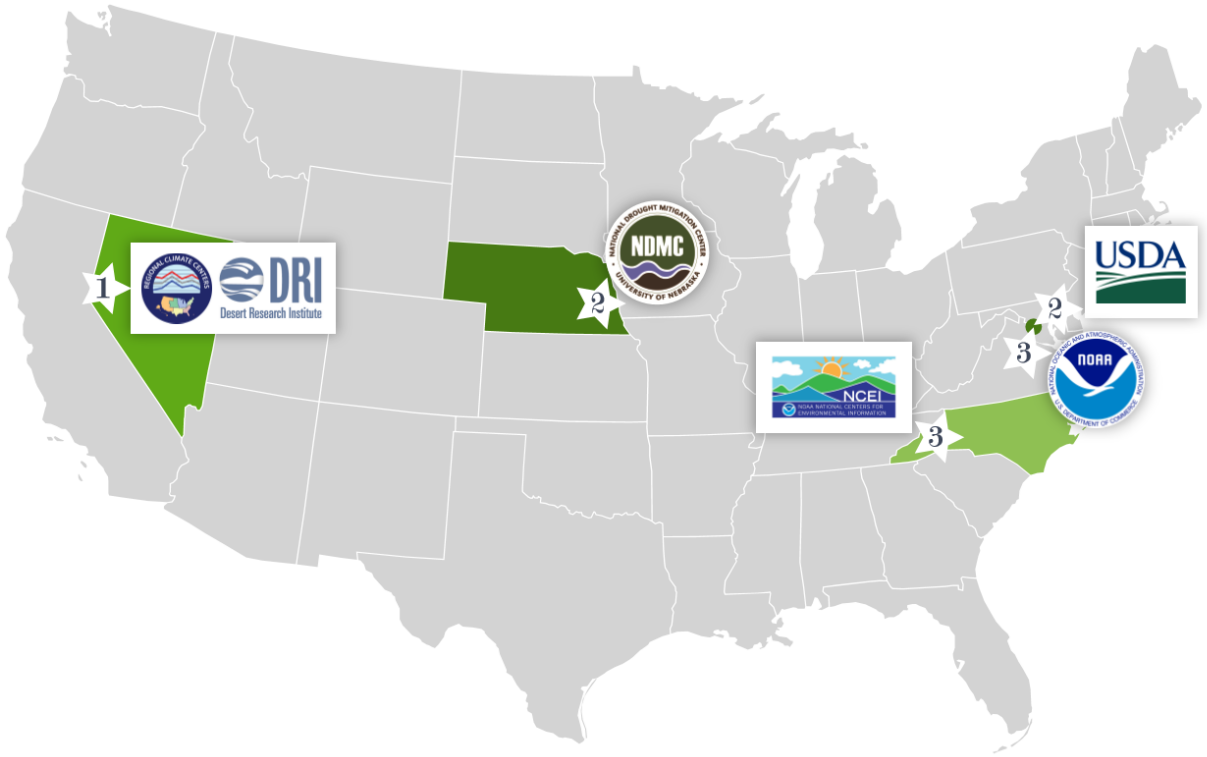
Impacts

USDM uses multiple time scales

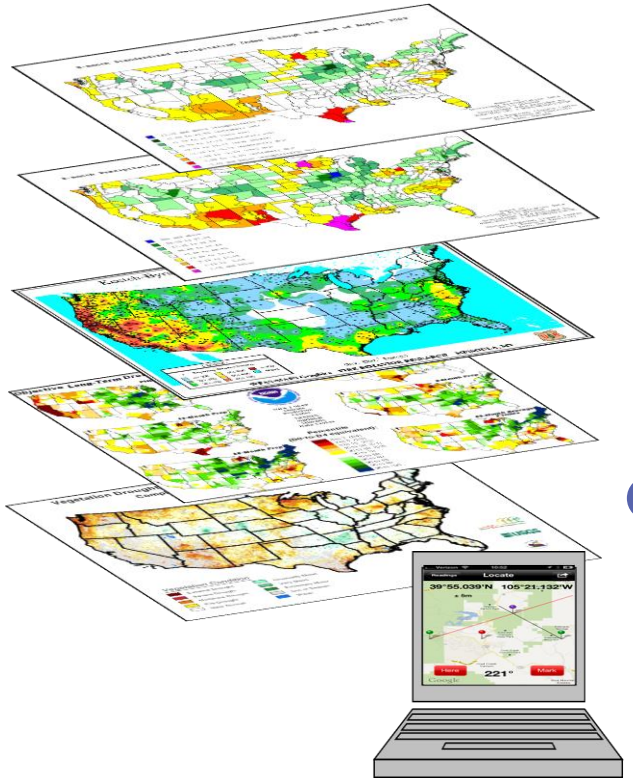
USDM uses subjective expertise for ground truth & interpretation of data

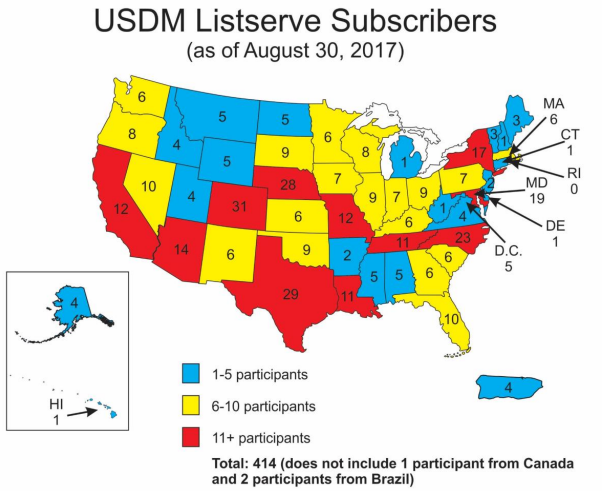


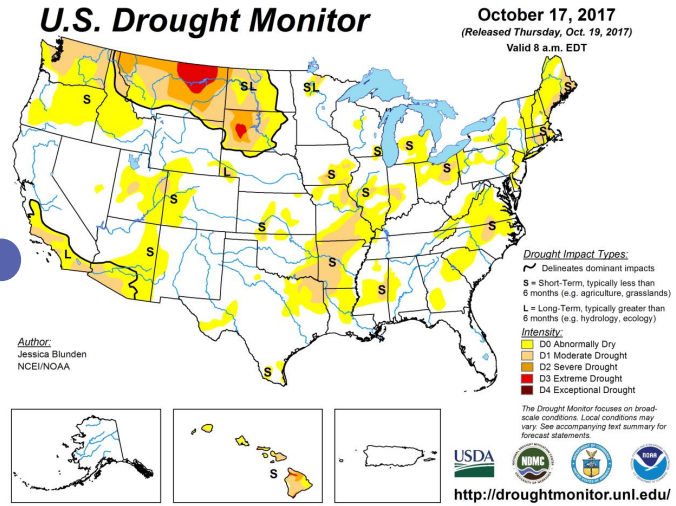
USDM Authors



USDM process uses convergence of evidence







USDM is communicated through many sources

Critical elements of a national drought monitoring network

#1
- Establish *partners*

#2
- Determine a realistic *process*

#3
- Be flexible & adaptable

#4
- Develop a communications network

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