Some Thoughts on Drought Decision Support and Early Warning

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NIDIS Midwest Climate Outlook and DEWS Kick-off Meeting

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What is Drought?

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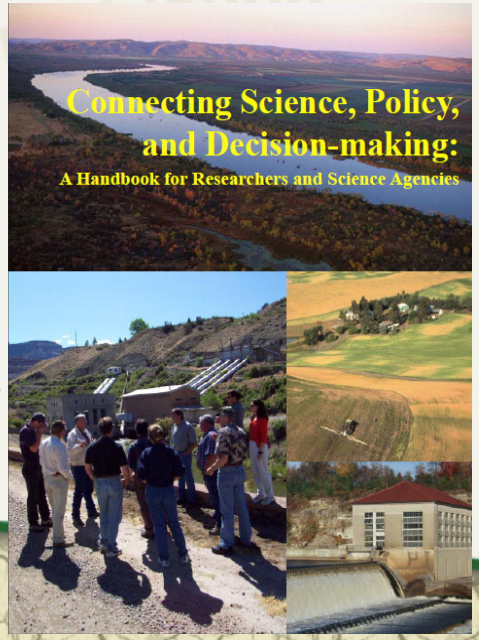
Providing Useful Services and Products: Information Delivery

- *"To increase the impact of scientific information, there should be a focus on **usability**, not just **availability** of information. This means moving to **"value added"** products, where findings are provided in a format that allows for policy applications"*



–Taken from: *(Jacobs/NOAA OGP) Connecting Science, Policy and Decision Making: A Handbook for Researchers and Science Agencies*

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Considerations for Choosing Indicators / Triggers

- Proper and Timely Detection of Drought
- Spatial and Temporal Sensitivity
- Supplies and Demands
- ***Drought In / Drought Out***
- Composite and/or Multiple Indicators
- Data availability/stability, period of record, and validity
- Ease of Implementation
- ***Validation….do they match the impacts/reality of the situation on the ground?***

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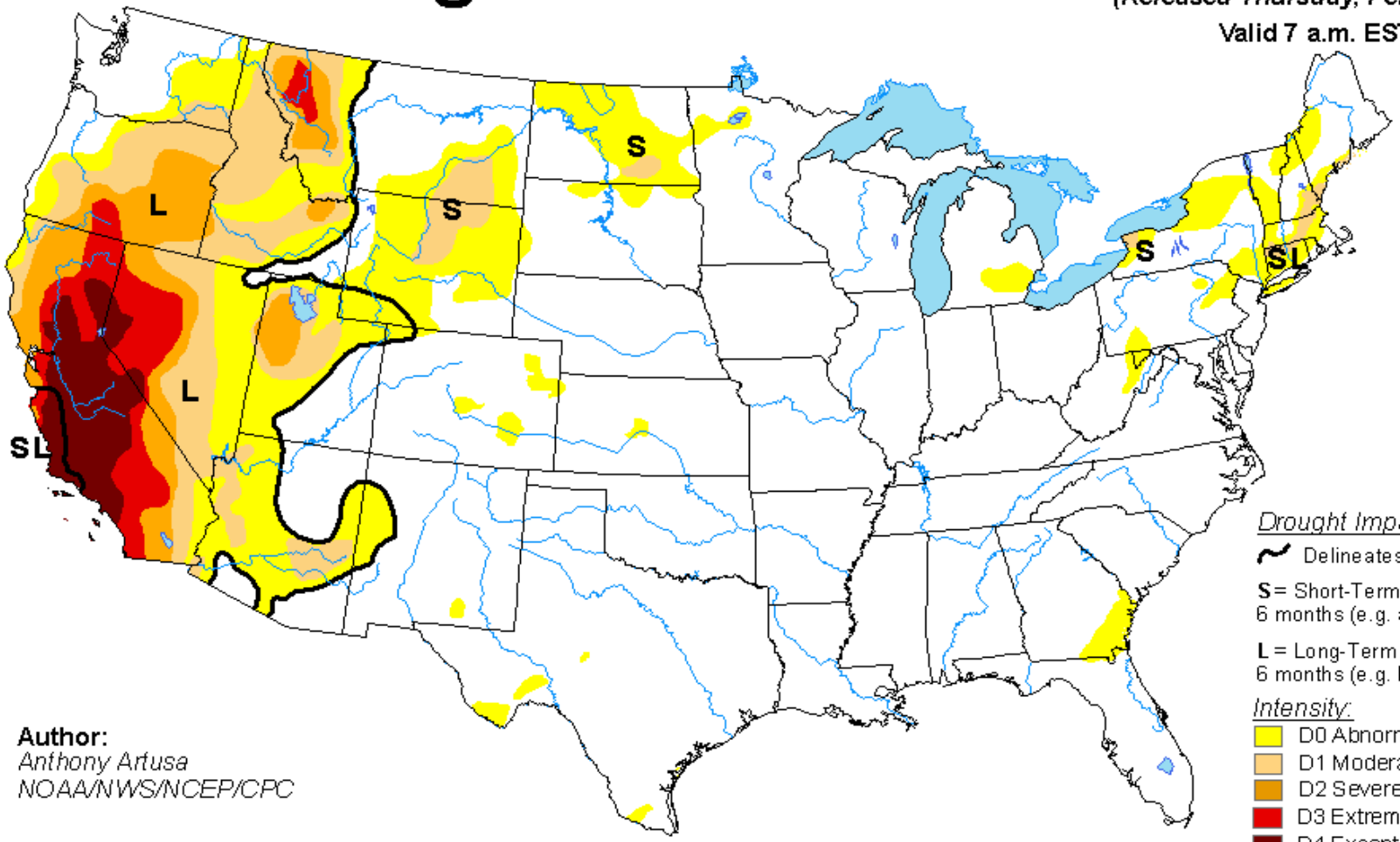
U.S. Drought Monitor

February 2, 2016

(Released Thursday, Feb. 4, 2016)

Valid 7 a.m. EST



Author:
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Drought Impact Types:

Delineates dominant impacts

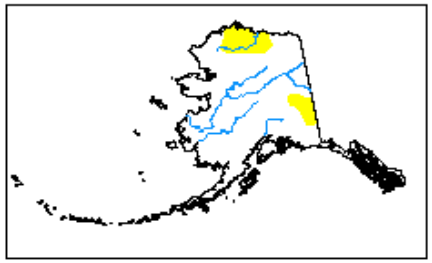
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)

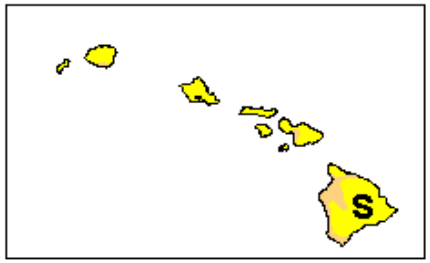
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

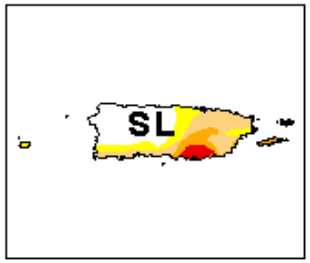
Intensity:

- 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 forecast statements.





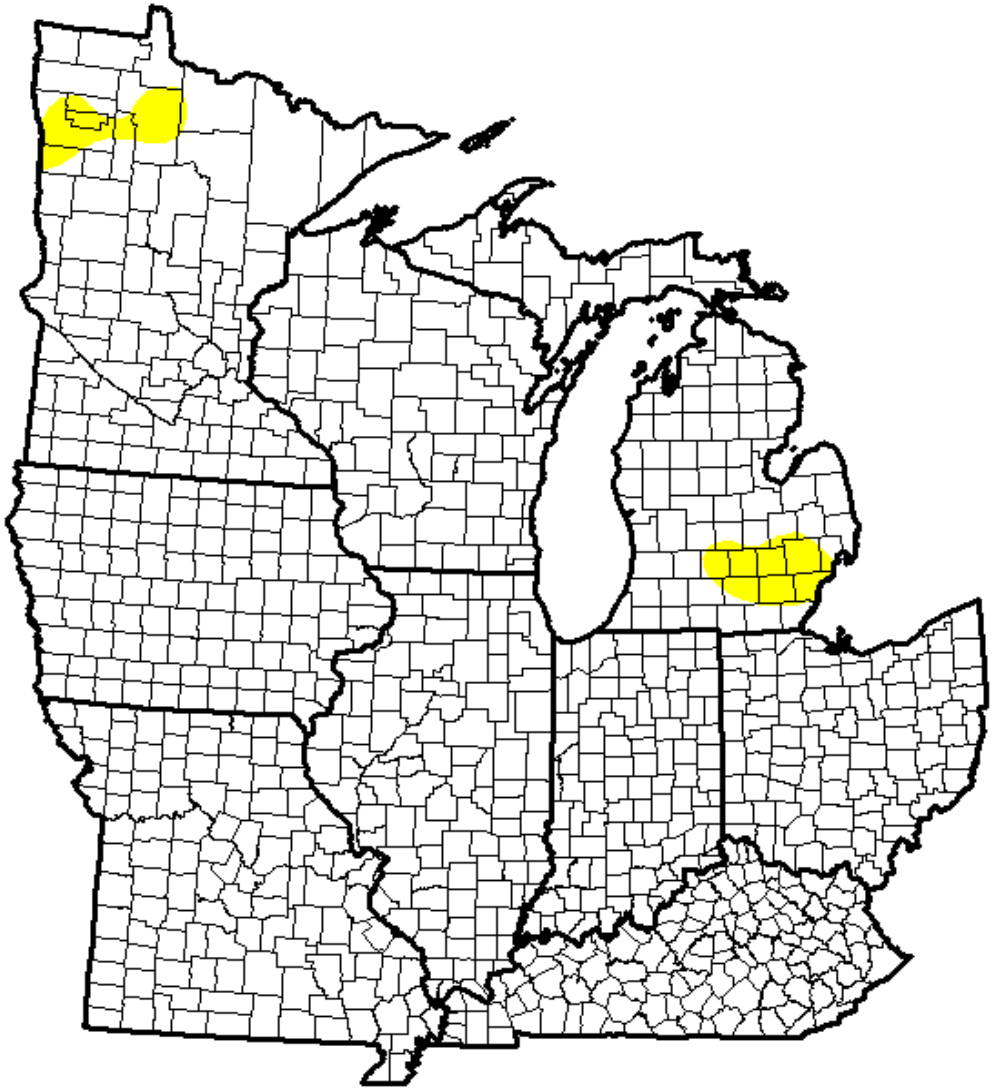


USDA

National Drought Mitigation Center

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Midwest



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Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	97.98	2.02	0.00	0.00	0.00	0.00
Last Week *1/26/2016*	98.00	2.00	0.00	0.00	0.00	0.00
3 Months Ago *11/3/2015*	61.24	38.76	12.93	0.00	0.00	0.00
Start of Calendar Year *12/29/2015*	88.07	11.93	2.35	0.00	0.00	0.00
Start of Water Year *9/29/2015*	79.46	20.54	1.04	0.00	0.00	0.00
One Year Ago *2/3/2015*	72.43	27.57	3.16	0.00	0.00	0.00

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Percentiles and the U.S. Drought Monitor

Advantages of percentiles:

- Can be applied to any parameter
- Can be used for any length of data record
- Puts drought in historical perspective

USDM Drought Intensity Categroies:

- D4, Exceptional Drought: (2)  once per 50+ years
- D3, Extreme Drought: (5)  once per 20 to 50 years
- D2, Severe Drought: (10)  once per 10 to 20 years
- D1, Moderate Drought: (20)  once per 5 to 10 years
- D0, Abnormally Dry: (30)  once per 3 to 5 years

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U.S. Drought Monitor Approach

- **"Convergence of Evidence"**
  - Many types of drought "information" can be collectively analyzed to ***determine if the majority of information is 'converging' (telling the same story)*** about the accuracy, or inaccuracy, of the drought as depicted by the USDM
  - Need to ***look at 100% of the data, BUT don't believe in any one piece of data input 100%*** in making a decision…
  - ***Multiple indicators and types of information*** that describe different environmental parameters are needed to get a complete picture of a drought indicators performance
  - ***Impacts are the "ground truth"***, yet aren't monitored….you can't measure what you don't monitor!

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The Importance of Drought Early Warning and Information Systems (DEWIS)

- Allows for ***early*** drought detection
- Improves response (***proactive***)
- Data and tools for ***decision support***
- ***"Triggers"*** actions within a drought plan
- A critical ***mitigation*** action
- ***Foundation*** of a drought plan

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Components of a Drought Early Warning and Information System (DEWIS)

- Monitoring **AND** Forecasting
- Access to **timely** data (including ***impacts***)and "value added" ***information***
- **Synthesis/analysis** of data used to "trigger" set actions within a drought plan
- **Tools** for decision makers
- Efficient **dissemination/communication** (WWW, media, extension, etc.)
- Drought risk assessment and **planning**
- **Education** and Awareness

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Lessons Learned

- Monitoring is the ***foundation*** of risk management planning: ***NOW WHAT?!?!***
  - ***Trigger to who does what and when!***
  - ***One can not manage what is not monitored!***
- ***Impact collection must be an integral part*** of any drought early warning information system
- Tool development should be an ***iterative process*** in partnership with the users
- ***Dissemination*** is needed through a variety of media and educational materials in order to reach a variety of audiences

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Final Thought

- ***Decision Support*** **Tools/ Applications/Services help make data usable and bridge the gap between monitoring/early warning, prediction and preparedness (*"triggers"* for decision support)**

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