

# Mesonets and Drought Early Warning

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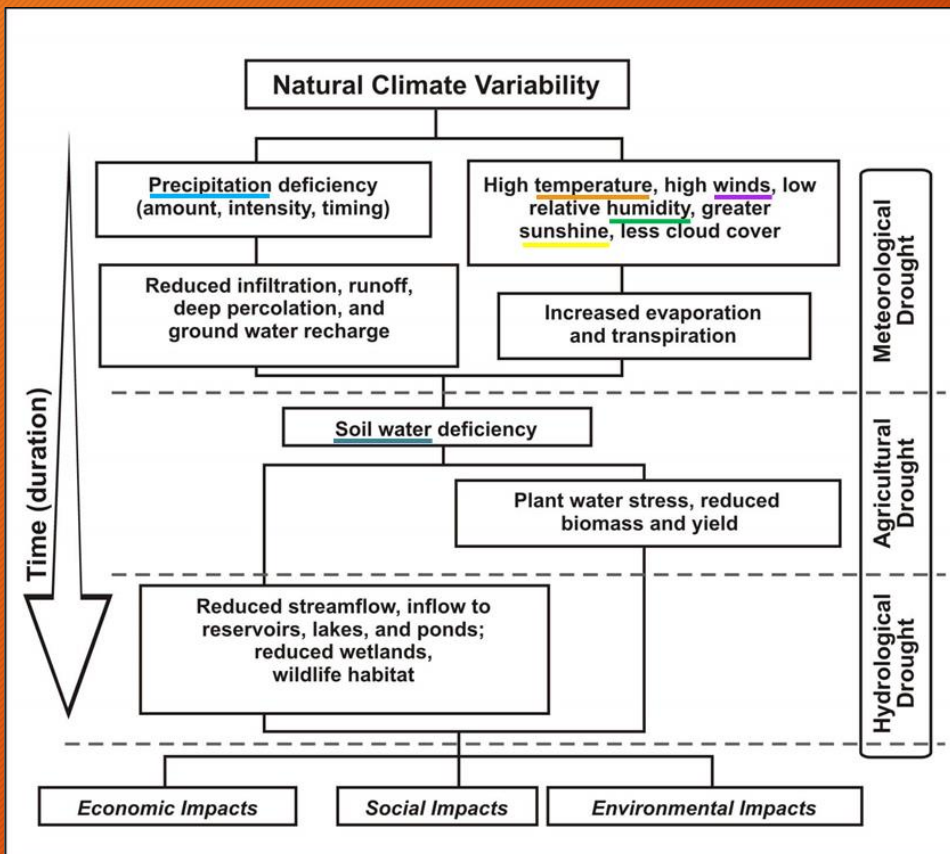
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# Maximizing the Value of Mesonets for Drought Early Warning

1. Converting mesonet data into drought indicators
2. Linking mesonet-based indicators with indicators from hydrologic monitoring platforms
3. Linking indicators with impacts
4. Communicating effectively with target audiences

# Direct and Derived Indicators



- Aggregate data to relevant temporal units (e.g., days, months, etc.)
- Calculate descriptive summaries (e.g., mean, percent of normal, etc.)
- Derive multivariate indicators (e.g., potential ET, heat index, etc.)

# Complimentary Hydrologic Indicators

2  
Hydrologic  
Network  
Indicators



# Landscape Images from the 2012 Drought

3  
Linking  
Indicators and  
Impacts

Pasture

Soybeans

Corn

May 24<sup>th</sup>



June 25<sup>th</sup>



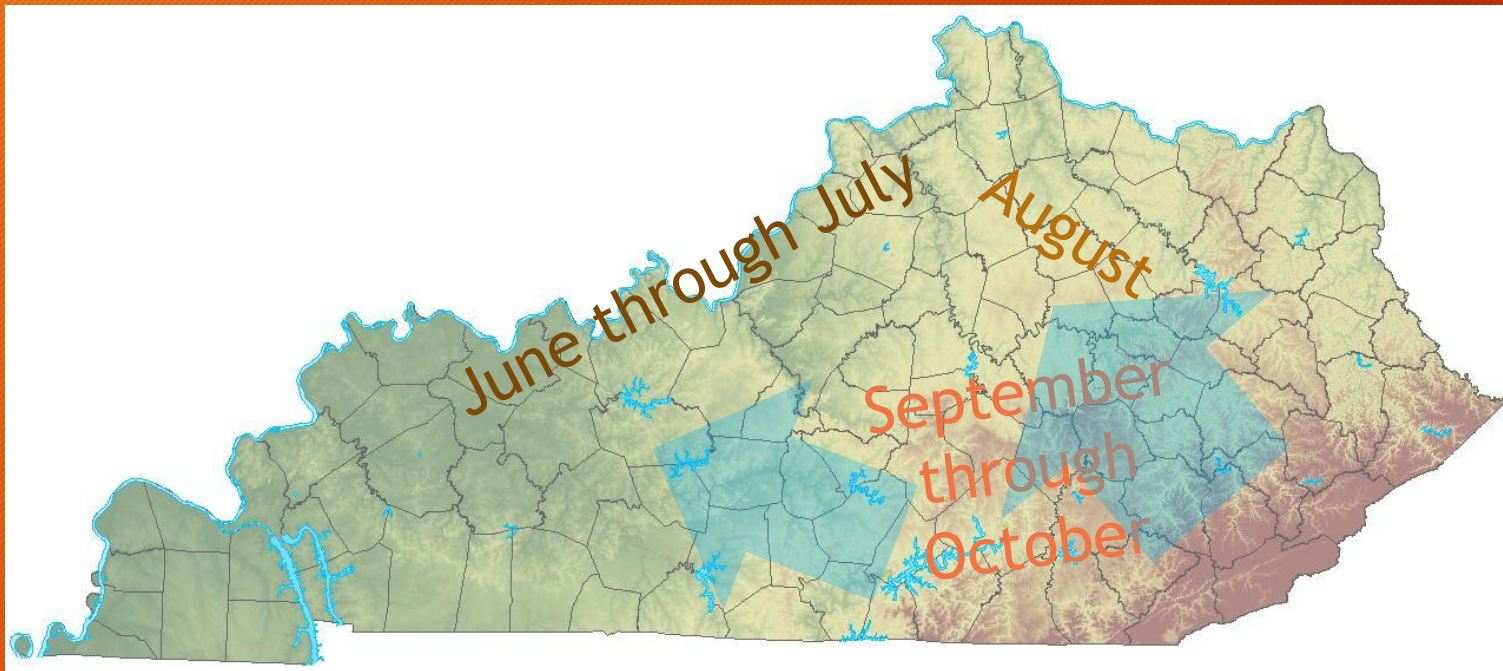
# Drought Impact Conditioning

3  
Linking  
Indicators and  
Impacts



# Approximate Timing for Onset of Dryness during the 2010 Drought

3  
Linking  
Indicators and  
Impacts

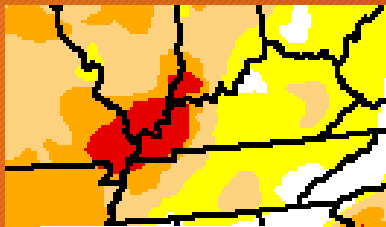


*Generalization based on data from a sample of Kentucky Mesonet stations*

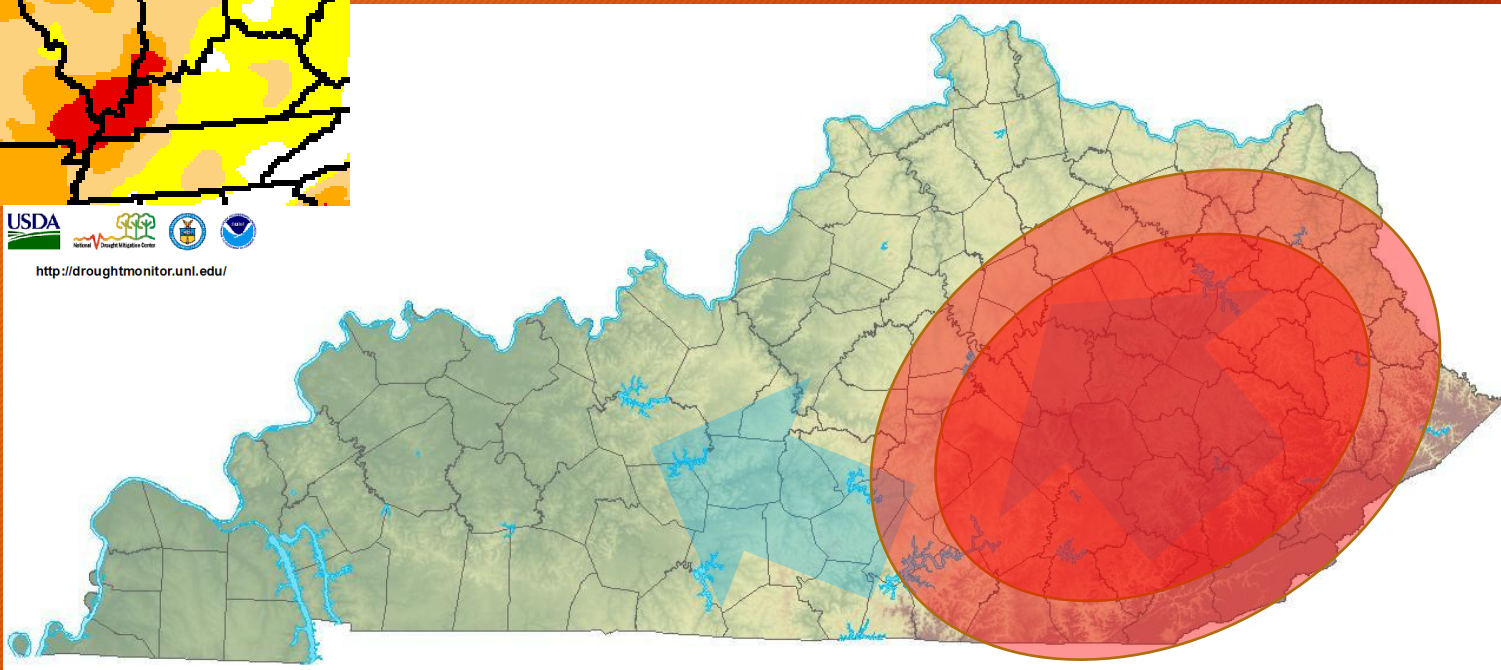
# Regional Context Matters

What if the 2012 Drought was centered on eastern Kentucky?

3  
Linking  
Indicators and  
Impacts



USDA  
National Drought Mitigation Center  
<http://droughtmonitor.unl.edu/>



Agriculture • Wildfires • Municipal Water Supplies



# The ABCs of Drought Early Warning

- A. A warning is an intentional message triggered from a drought indicator to a targeted audience
- B. Effective communication occurs when an intended message has been received by a targeted audience
- C. Early implies that the receiver has sufficient advance notice to enable a meaningful response

# Communicating Information Derived from Data

4  
Communicating  
with Target  
Audiences



Regional  
Mesonet  
Perspective



Local  
Mesonet  
Perspective



Integrating  
Hydrologic  
Indicators



Linking to  
Impacts

# Discussion

- What drought indicators are commonly used as triggers in states across the Midwest? Can these be implemented using mesonet data?

# Discussion

- Are meteorological and hydrological indicators integrated into a centralized decision support system? If not, what are the challenges in doing so?

# Discussion

- How does the sequential pattern of sector vulnerability vary by season and region across the Midwest?
- Are impact data collected in a systematic manner to facilitate integration with indicators? If not, what is necessary to accomplish this?

# Discussion

- How is the status of drought indicators communicated to target audiences? What opportunities exist for improvements?
- How are the relationships between indicators and impacts evaluated and communicated. How do these relationships vary by season and state across the Midwest? What opportunities exist for improvements?