

# Drought Monitoring Activities in Minnesota & Minnesota State Drought Plan Update

Luigi Romolo PhD

Minnesota State Climatologist

### **Presentation Overview**

- Background on MN SCO
- Drought Monitoring
- Current Drought Plan
- Proposed Plan Update



### Minnesota State Climatology Office

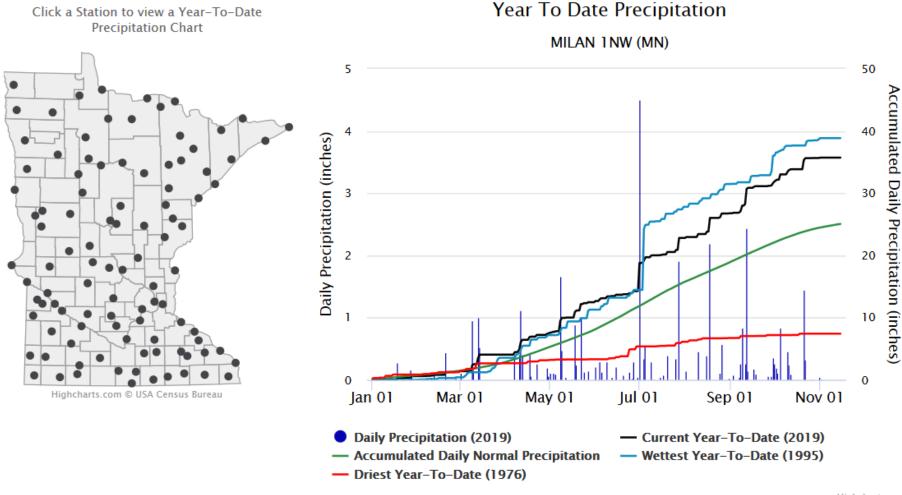
- We are a program within the Minnesota Department of Natural Resources in the Division of Ecological and Water Resources
- Our Office is located at the University of Minnesota, St. Paul Campus
- Including myself we have three full time climatologists
  - Mr. Pete Boulay: Assistant State Climatologist
  - Dr. Kenny Blumenfeld : Senior Climatologist
  - Greg Spoden: Part-Time (former State Climatologist)
  - DNR Volunteers

### Service:

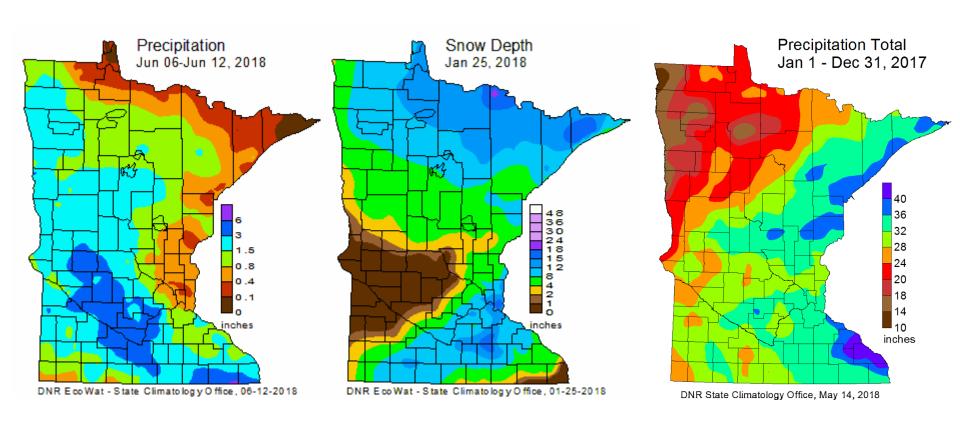
- Many Requests are served through the use of SC-ACIS and/or Cli-MATE.
- We have many web-based climate products that utilize ACIS web services.
- Approximately 50 presentations to various agencies and organizations.
- Roughly 150-200 Media Contacts per year.
- Monitor drought weekly, providing advice to the NDMC/USDM

### Service: ACIS Web Services

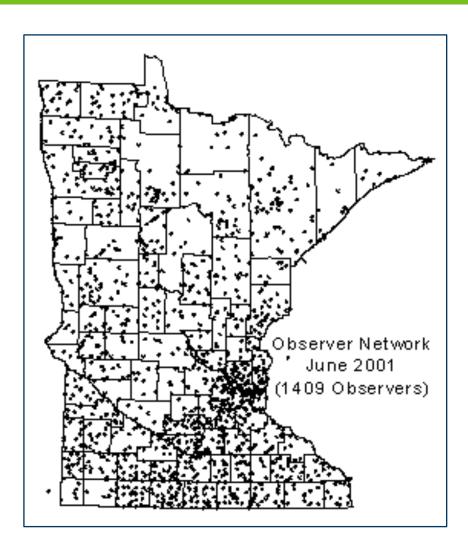
### **Year to Date Precipitation Chart**



### Monitoring: Maps



### Data: MN Gage



# "We were CoCoRaHS before CoCoRaHS was cool!"

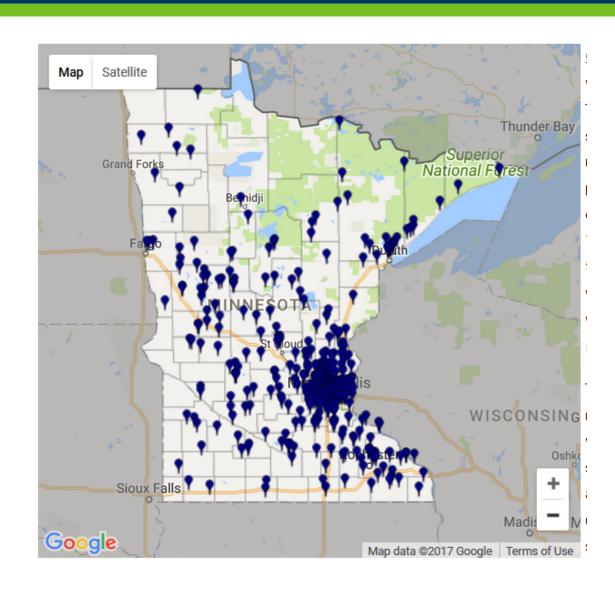
– Greg Spoden (Former MN State Climatologist)

### Data: We're also Cuckoo for CoCoRaHS

Just over 400 observers

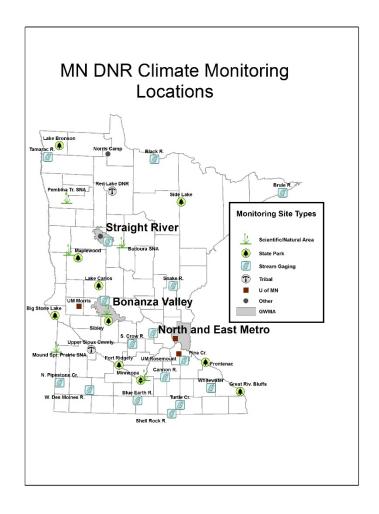
Approx. 190 report consistently

 Uneven distribution of observers

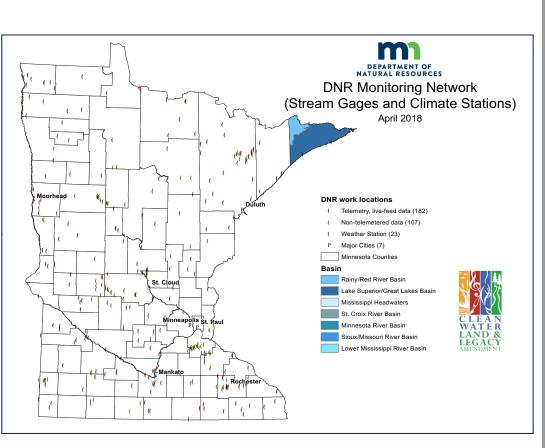


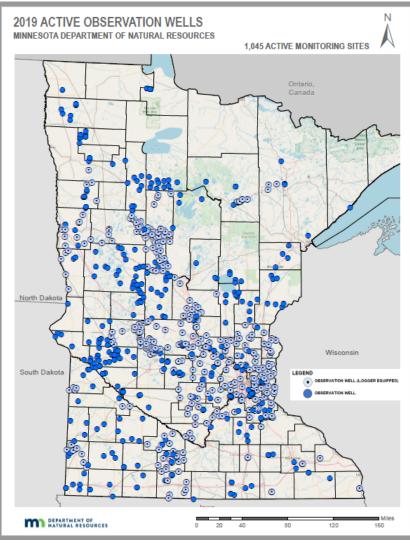
### Data: MN DNR Mesonet



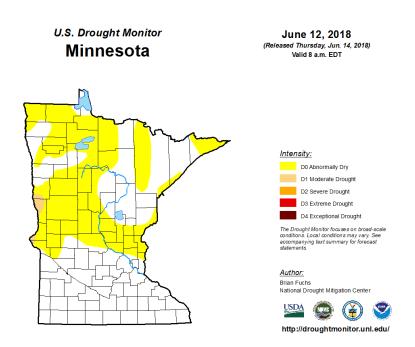


# Data: Cooperative Stream Gaging Sites & Observation Wells





### **Monitoring**



#### **Climate Journal**

This page offers a running account of significant Minnesota weather events or sustained weather features. See our *legacy climate journal* ☑ Older journal articles will appear as we continue to back-fill this page.

#### **June 2018**

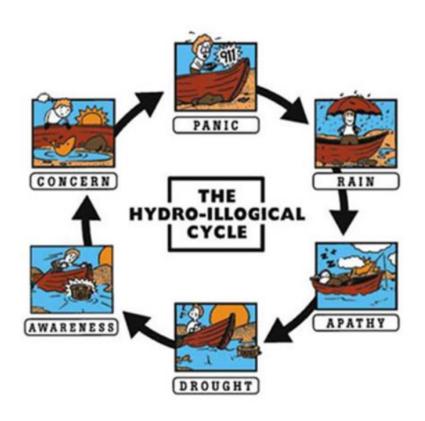
- June 11 Storms: Heavy Rain and Wind
- HydroClim Minnesota for Early June 2018 ☑

#### May 2018

- May 2018 St. Cloud Weather Summary from SCSU ☑
- Memorial Weekend Heat Wave: 2018
- Does 90 Degrees in May Equal a Hot Summer?
- May 29 Large Hail in Southeast Minnesota ☑
- May 25 Storms in Southeast Minnesota ☑
- 2018 Fishing Opener Weather
- Lake Ice Out Table For Selected Lakes
- Lake Ice Out: 2018
- HydroClim Minnesota for Early May 2018
- Participate in Regional and National Calls/Webinars
- Provide support to DNR Hydrology Staff
- HydroClim Newsletter

### **Current Drought Plan**

- Existing Drought Plan
  - Crisis Management
  - Lacks Hazard Analysis
  - Lacks Risk Analysis
  - Missing most critical components of a good drought plan
  - Promotes questions, not answers



### Why Do We Need a New Plan?

### If I can fit the entire drought plan on one slide......

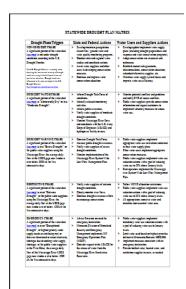
#### Minnesota Statewide Drought Plan

This plan provides a framework for proparing for and responding to droughts to minimize conflicts and negative impacts on Minnesota's natural resources and contomy.



#### Statewick Throught Plan watershed

- Red 0902 Ratey 0903
- Rainy 0900 Worten Lake Superior 0601 Mississippi Headwaters 0701
- St. Crotx 0703 Minnacota 0702
- Upper Ministrippi-Black-Root 0704
   Upper Ministrippi-Magaziant-Flora 0704
   Upper Ministrippi-Magaziant-Flora 0704
   Upper Ministrippi-Iona-Skunk-Wagazinison 0704
   Des Moines 0710
- Missouri-Little Sleen 1023



#### Responsibilities, Flans and Actions Related to Drought Plannin

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Legislation enoted in 1990 mandated the Department of Natural Resources (CNR) in proper a denight plan. Minescale Nature (NR) Testing 1990 983 dates

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- required by DYE. Waters and Not Council.

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#### (1000/291 3446.1)

Experience of Tubin Safety, Newsierd Security and Emergency Management (MSDA) - Tubin information and response securitarians

Tubing Control Access - Tubin information response presentation, exercise supplicition, data sufficiency.

Experiment of Agriculture - Assistance with one and other farming related drought instead

Experiment of Marith - Public Theire Engely

#### and of Water and Bell Economic (27/25) – Individual and Seasonal a

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- make convertible agreement during the flow periods and coordination among the hydrogener facility agreed
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#### STATE DROUGHT TASK FORCE

Furgrees and Role
The State Descript Pack State is convened, as defined in the Resentine Phase of the Descript Table, to provide a contact and communication between agencies and institutions affected by drought and to provide a contact for the cross media. The Table Person could also be called together as other times as needed to corre a source for the cross media. The Table Person could also be called together and other times as needed to corre as forwards media could be described by the contact of more forwards contact.

#### Members

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Last modified: April 29, 2009 - MNDNR Division of Waters

### Minnesota Statutes 103G.293

The commissioner shall establish a plan to respond to drought-related emergencies and to prepare a statewide framework for drought response. The plan must consider metropolitan water supply plans of the Metropolitan Council prepared under section 473.1565. The plan must provide a framework for implementing drought response actions in a staged approach related to decreasing levels of flows. Permits issued under section 103G.271 must provide conditions on water appropriation consistent with the drought response plan established by this section.

1?



**Figure 2** Ten-step planning process. (*Source*: National Drought Mitigation Center, University of Nebraska, Lincoln, Nebraska, USA.)

# Strategy: Component 1: Drought Hazard Profile

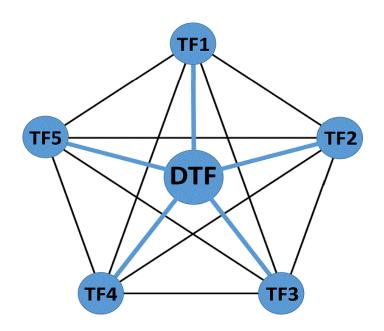
- Thorough and concise definition of drought and dialog of what drought means for Minnesota
- History of severe drought events in Minnesota
- Outline monitoring activities and monitoring networks
- Detail expansion of drought monitoring activities by utilizing existing resources and engaging citizen scientists
- Provide guidance on drought in the face of climate change
- Hazard Profile already started; aligned with State All Hazard Plan prepared by Dept. of Public Safety

# Strategy: Component 2: Drought Vulnerability & Risk Assessment

- Comprehensive research study that identifies exhaustive list of all drought vulnerabilities and impacts for the state
- Develop a geography of vulnerabilities and risks
- Organize all vulnerabilities by impact sector
- Develop broad domain of mitigation goals and strategies for all impacts and vulnerabilities
- Engage stakeholders and potentially affected interests

# Strategy: Component 3: Sector-Level Drought Task Forces

- Identify members on the Primary Drought Task Force that could lead Sectoral-Level Drought Task forces
- Establish a knowledge network to foster communication among all impact sectors



# Strategy: Component 4: Drought Response Plan

- Develop clear descriptions of how drought is assessed and declared for the state of Minnesota
- Create well-defined drought warning phases
- Provide thorough and well defined list of response actions for each phase
- Ensure actions are oriented around list of vulnerabilities and impacts
- Establish responsibility assignments for the DNR and a list of recommended assignments for other involved agencies

### Strategy: Component 5: Plan Maintenance

- Establish a plan maintenance committee
- Establish a schedule for evaluating the drought plan (i.e., after each event, annually, etc...)
- Assessments of the plan ought to address all achievements and all potential opportunities and challenges
- Conduct drought management exercises (Drought Tournaments, Workshops, Tabletop Exercises) to evaluate the state's coping capacity to drought events

### Strategy: Component 6: State Drought Portal

- Creates an online home for living documents, including the drought plan itself
- Provide comprehensive, easy to use value-added climate products for drought monitoring and assessment
- Model this after what is produced by NIDIS, while drilling down to more detail.
- Utilize the portal for drought education and outreach activities, including drought awareness brochures, training videos, podcasts and information on drought relief and recovery

### Summary

- Currently working to start the drought plan update
- Will be engaging other agencies once we finalize our strategy
- New plan should place
   Minnesota in a great position to deal with drought events and drought-related impacts



Photo Credit: Pete Boulay



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3500+ Followers and Growing Strong



## Thank You!