Water are you talking about? Mapping Oklahoma Libraries for Drought Monitoring Programs

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Spotty Rain Campaign

OCLWA 28th Annual Conference. Stillwater, OK. April 3-4, 2019

Goals for the Session

To introduce the Spotty Rain Campaign

To highlight our citizen science partners and the importance of volunteer drought monitoring

To share exploratory research about rural/small libraries in Oklahoma, their attributes, and interactions with drought

Our Research Project

Title: Enhancing the Capacity for Rural Libraries to Engage the Public in Drought Science, Monitoring, and Adaptation

Where: 90 Rural libraries in Oklahoma, Colorado, Nebraska/Iowa

What: Professional development webinar, Materials (poster, drought infographic booklet), and Library programs

Objectives:

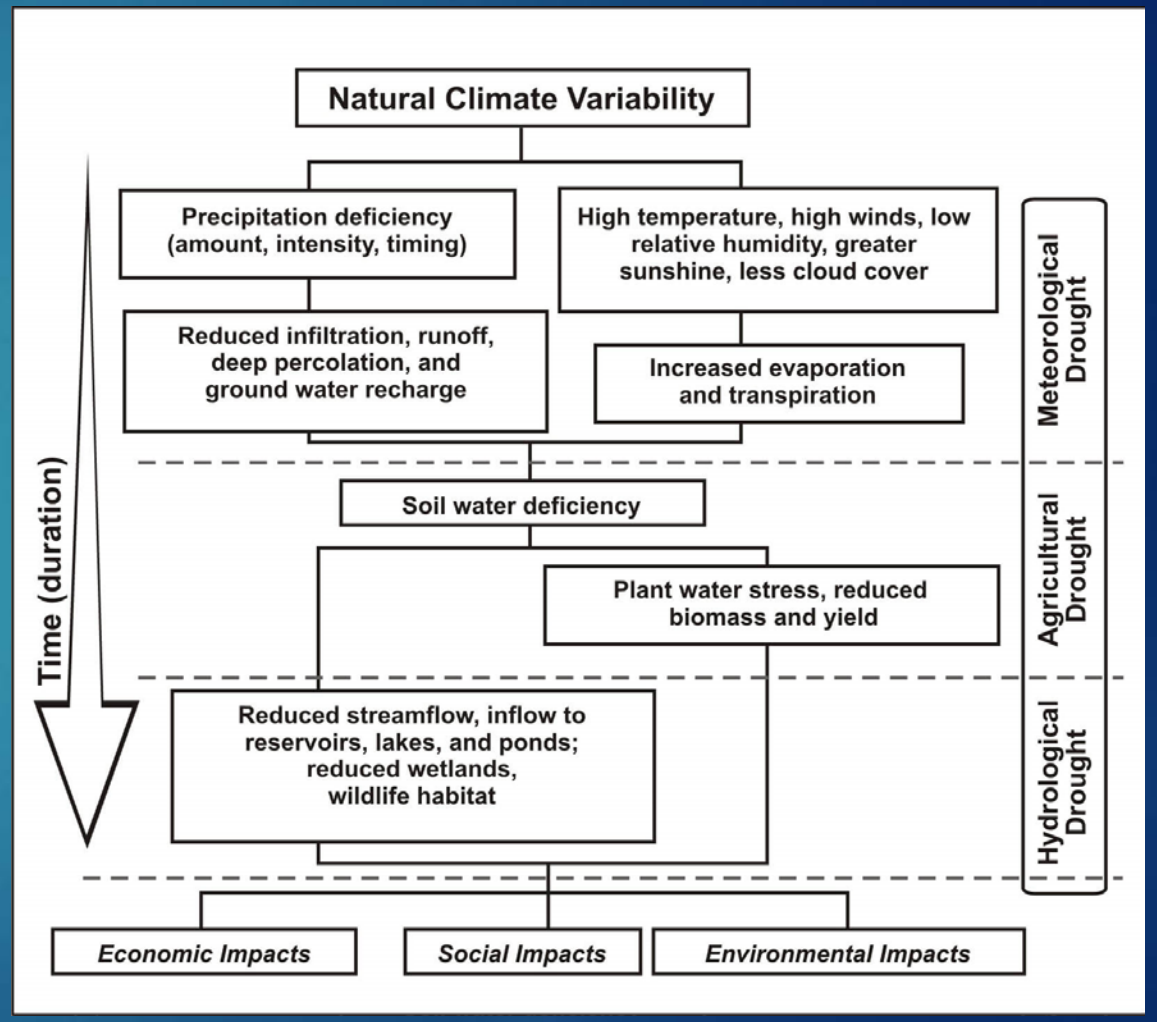
- Engagement
- Explore social contexts through voluntary participation
- Design and pilot educational materials

Drought Impacts

- Agriculture
- Wildfire
- Recreation
- Lakes & Streams
- Plant & Wildlife
- Water Supply

- Six major drought periods:
  - 1890's, 1909-1918, 1930-1940, 1952-1958, 1962-1972, and 2000-2015

- Megadroughts are projected to increase in the Southwest and Central Plains of North



What is CoCoRaHS?

Community Collaborative for Rain, Hail and Snow

- The organization
  - Nation wide, grass-roots organization
  - Provide Training to become volunteers
- Our volunteers
  - Collect data using low-cost measuring tools
  - Report daily observation data at **www.cocorahs.org**
    - Daily data is immediately available as a map and table

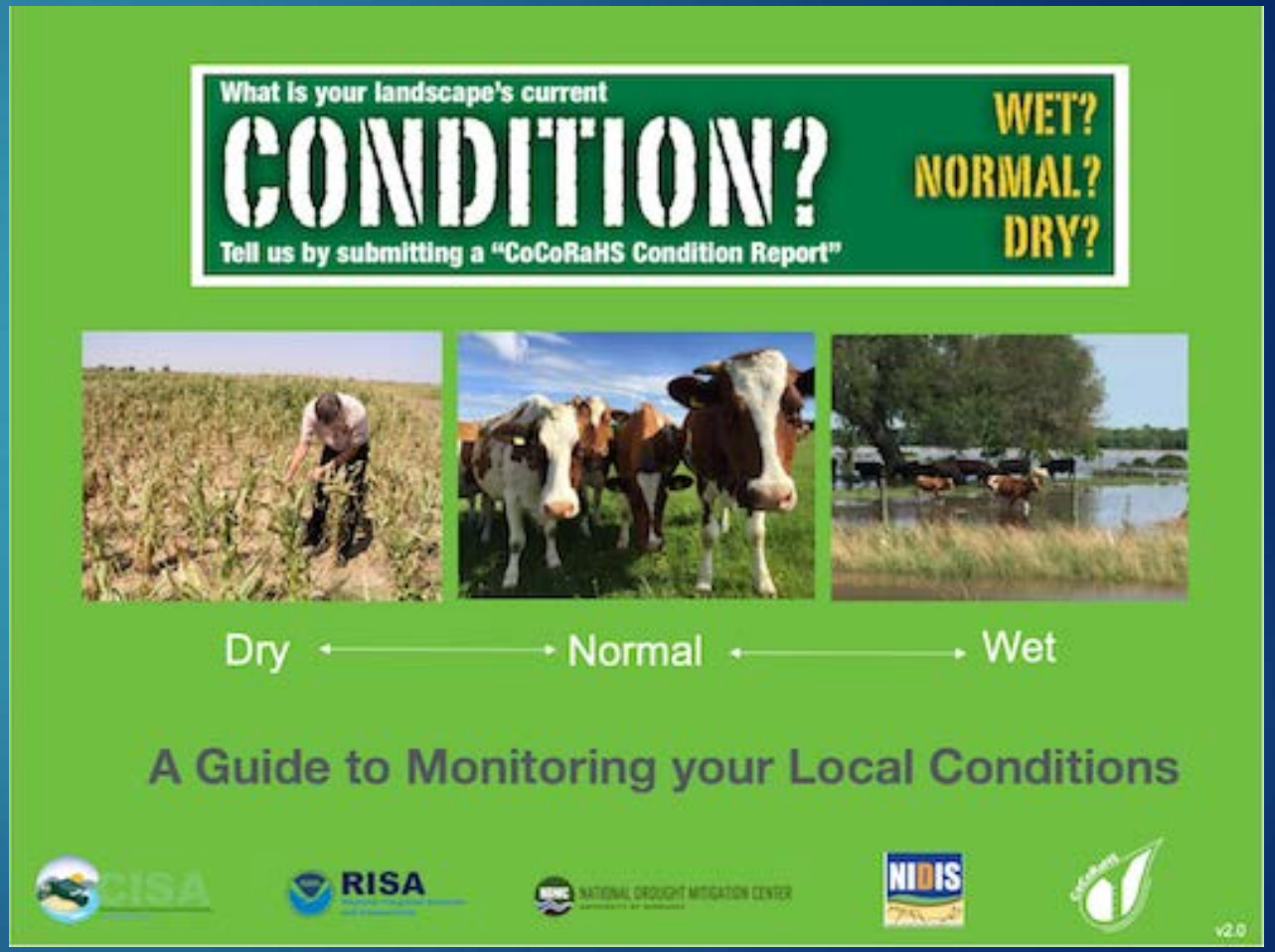
CoCoRaHS

Community Collaborative Rain, Hail & Snow Network

Condition Monitoring

- Support the National Drought Mitigation Center (NDMC) Drought Impact Reporter
- Create “story maps” that provide context and detail

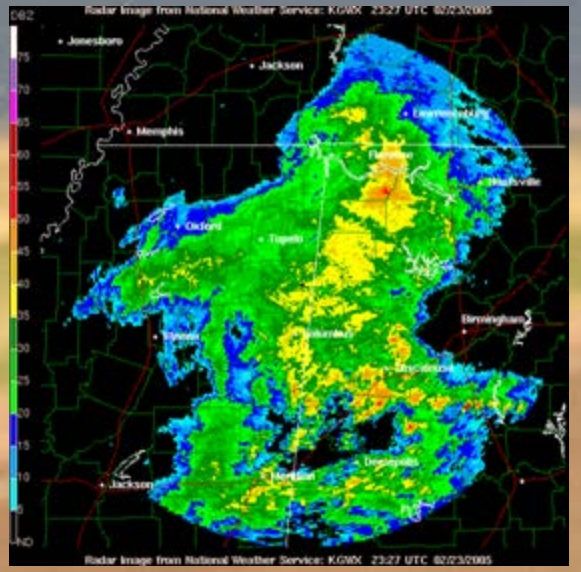
- https://survey123.arcgis.com/share/2a2a183c3ff04c2686d8018f93848183



CoCoRaHS data is used by many

- National Weather Service
- NASA
- Hydrologists
- Emergency Managers
- City Utilities
  - -Water supply
  - -Water conservation
  - -Storm water
- Insurance adjusters
- USDA—Crop production
- Engineers
- Scientists studying storms
- Mosquito control
- Farm Service Agency
- Ranchers and Farmers
- Outdoor & Recreation

- Teachers and Students
  - Geoscience education tool
  - Taking measurements
  - Analyzing data
  - Organizing results
  - Conducting research
  - Helping the community



Research Questions

In order to target appropriate libraries for engagement in drought monitoring programs, we completed an exploratory study:

- Where are the rural/small libraries in Oklahoma, and what are their attributes?
- How do these libraries interact with other geographic entities related to drought management and planning?

Methods

Maps

- American Library Association locale codes – library designations
- US Drought Monitors
  - Current data is from March 5th, 2019
  - Past data is from February 19th, 2013
- CoCoRaHS

Archival Research

- Library databases, conference agendas, policy statements

Methods

- According to the 2015 NCES, the locales are defined as:
  - City (large, midsized, small)
    - Territory within an urbanized area, inside a principal city
    - Population ≥ 250,000 ; ≤ 250,000 but ≥ 100,000; ≤ 100,000
  - Suburban (large, midsized, small)
    - Territory outside the principal city, but within the urbanized area
    - Population ≥ 250,000 ; ≤ 250,000 but ≥ 100,000; ≤ 100,000
  - Town (fringe, distant, remote)
    - Territory within urbanized cluster
    - Distance ≤ 10 miles; ≥ 10 miles but ≤ 35 miles; ≥ 35 miles
  - Rural (fringe, distant remote)
    - Census-defined rural territory
    - Distinct distances from urbanized area (greater distance) and urbanized cluster

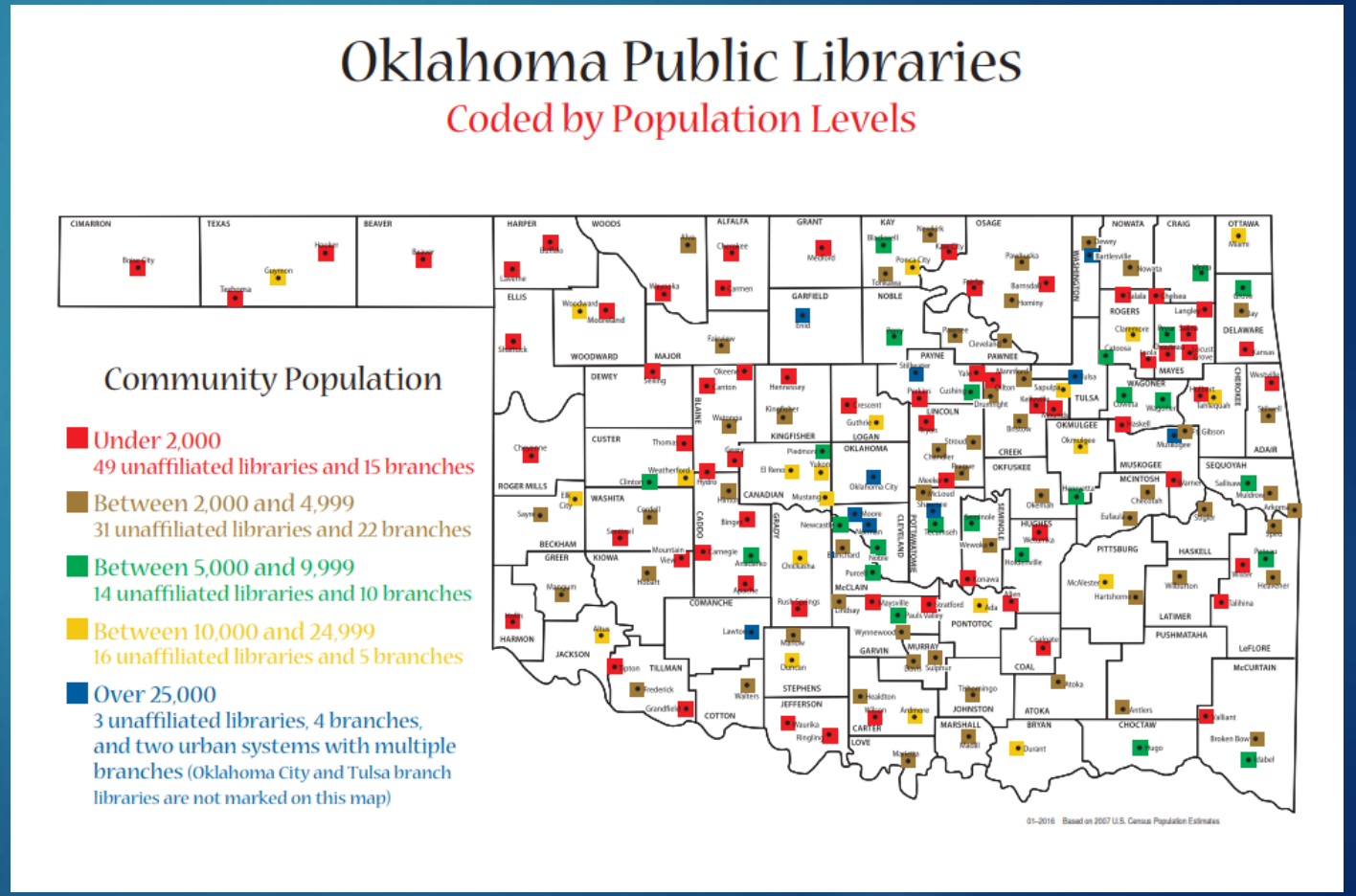
Oklahoma Library System

By Locale

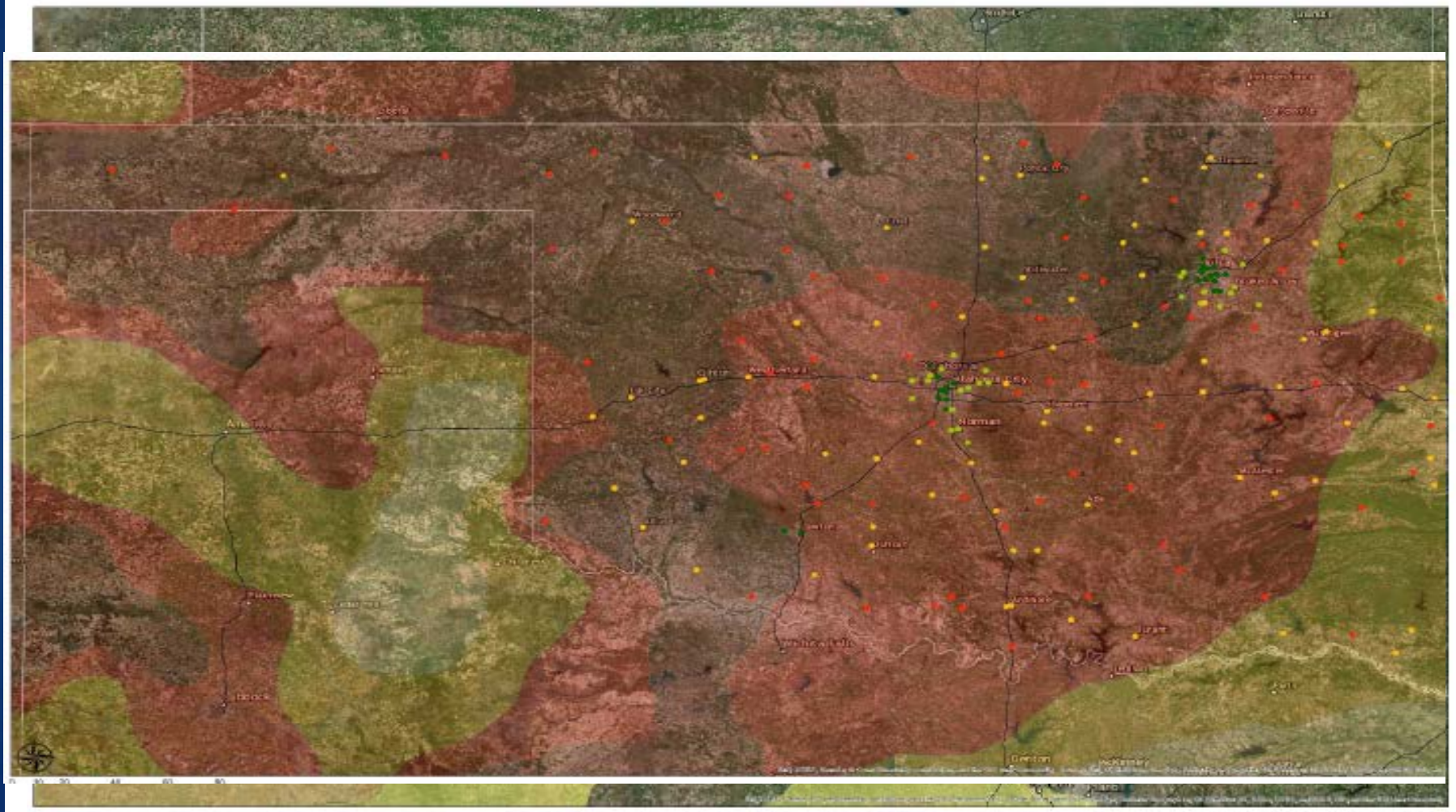
- 38% Rural
- 37% Town
- 12% Suburb
- 12% City

By population:

80 libraries and 37 branches serving communities with less than 5,000 people



Libraries by Locale



Height of Drought - 19-02-2013

LOCALE

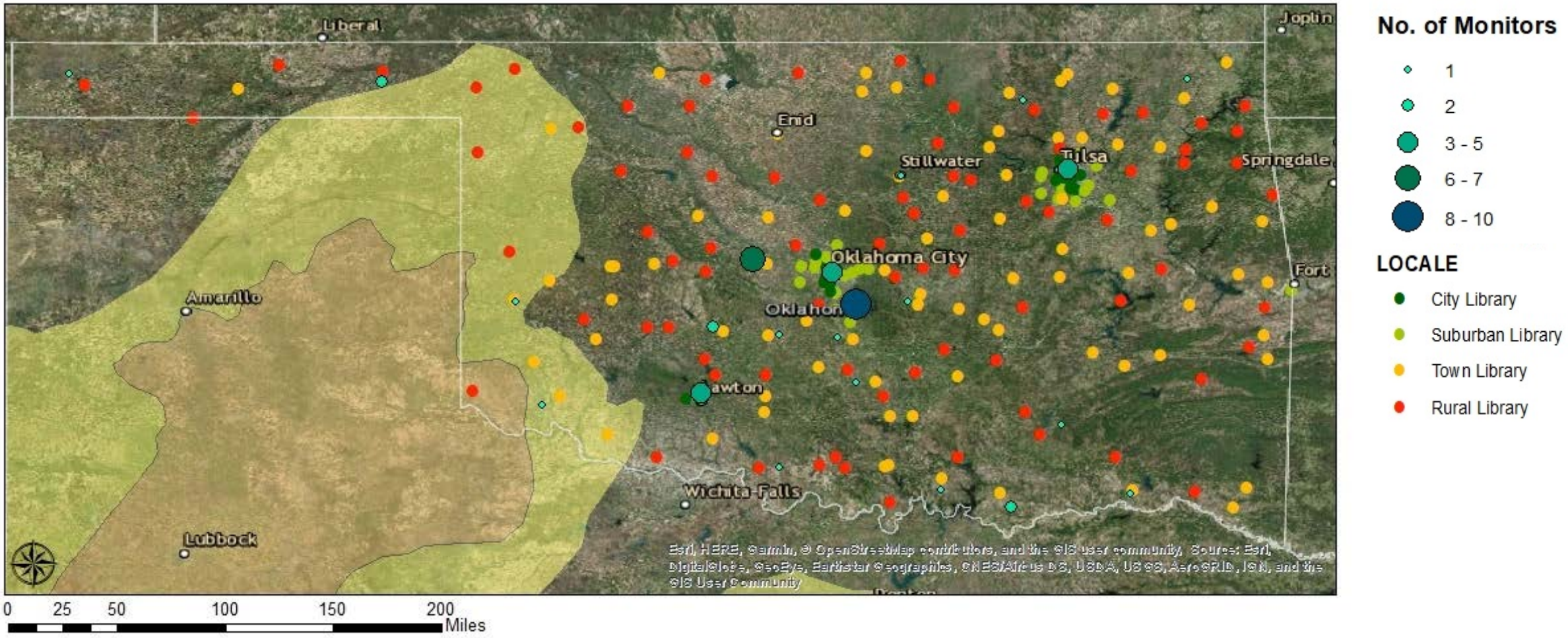
- City Library
- Suburban Library
- Town Library
- Rural Library

United States Drought Monitor Data

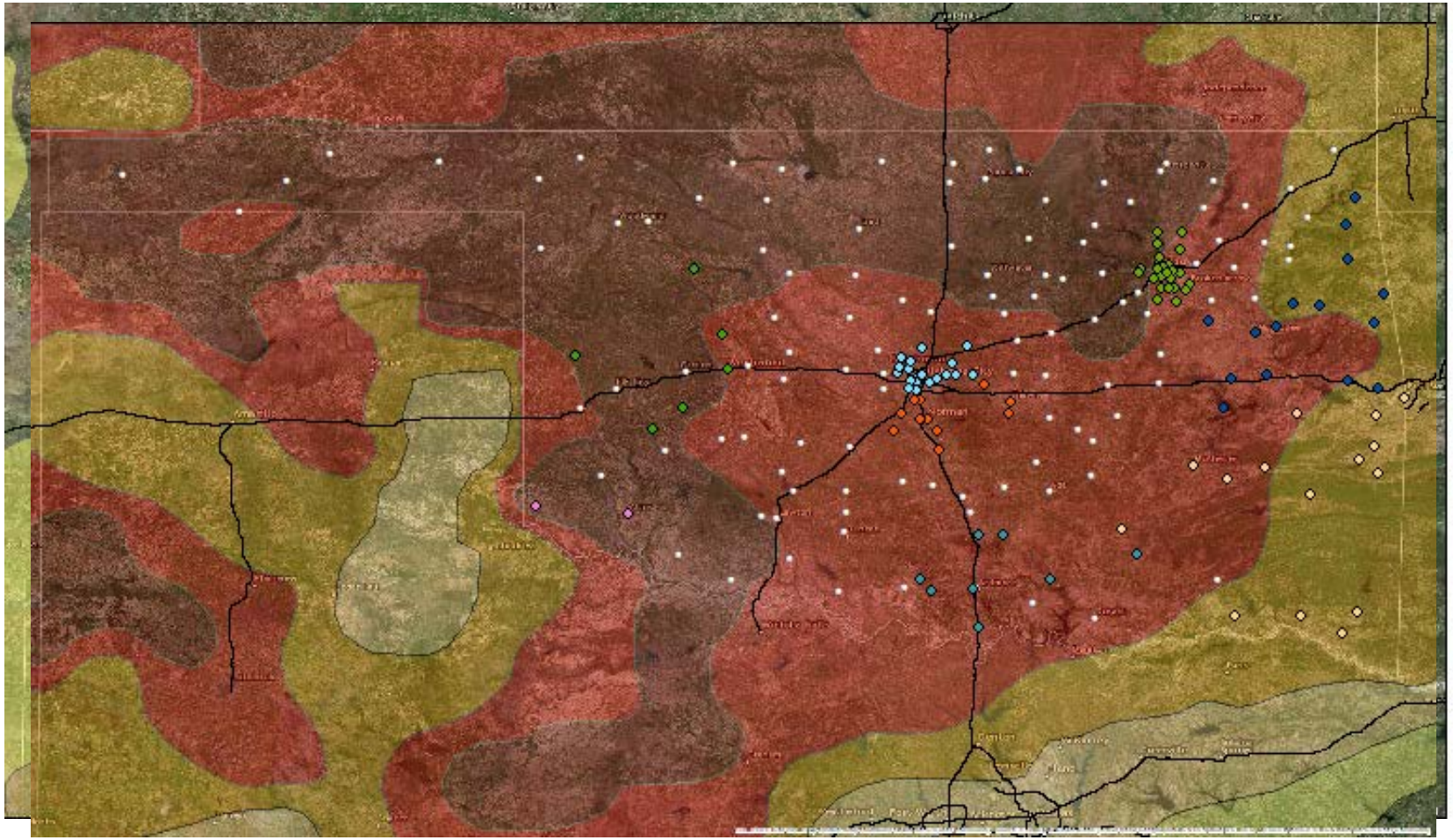
Intensity and Impacts

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

CoCoRaHS Volunteers



Independent vs. Systems Map



Height of Drought - 19-02-2013

Legend

Library System

- Independent
- Western Plains System
- Southern Prarie System
- Metropolitan System
- Pioneer System
- Southern Oklahoma System
- Tulsa City-County System
- Eastern Oklahoma District System
- Southeastern Public System of Ok

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Discussion

- These maps are useful for identifying communities where drought is relevant and resources are needed and to recruit volunteers.

- Areas of sparse volunteer participation may need more awareness and training, while areas of dense volunteer participation may benefit from network and skills building.

Future Research

- Expanding to other states in study area
  - Nebraska/Iowa
  - Colorado
- Adding more layers for drought management and planning
  - Watersheds
  - Climate information
  - Forecast offices

Visit our resource pages

- Spotty Rain Website & Facebook
  http://www.spottyrain.com/classroom.html

- It is OK! Blog & Facebook
  https://www.ee-ok.com/reading.html

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