



SCIPP-CoCoRaHS Field Photos

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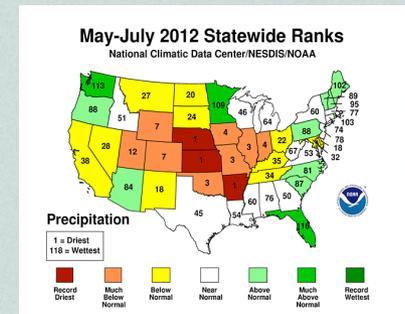
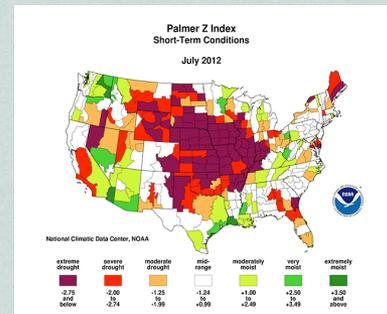
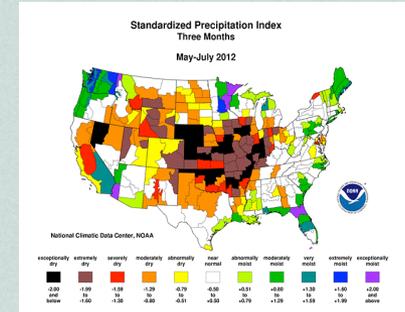
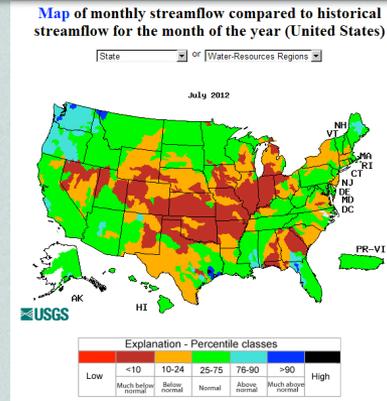
Visual Impacts May Not Match Indicators



Lawrence County, Illinois
Labor Day Weekend 2012

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Drought Impacts Vary

- Few dry weeks – lawns start turning brown, crops show some stress
 - Agriculture, lawns affected
- Few dry months – crops begin to fail, pastures go dormant, trees drop leaves
 - Water restrictions, animal behavior
- Dry years – water supplies diminish, springs stop flowing
 - Water systems, erosion, economic systems
- Dry decade – land abandonment, social and economic failure



Field Photos Weekends

- Conducted 3x annually since Labor Day 2012
 - Presidents Day (February)
 - Memorial Day (March)
 - Labor Day (September)
- Goal: to collect nearly simultaneous observations across the whole country
 - Both drought and non-drought areas
- Longitudinal analysis if repeat observers
- 3,681 photos collected to-date

Objectives

1. Establish a consistent, standard protocol for taking landscape photos to broaden participation in the Field Photos Library;
2. Improve the interface for uploading photos into the archives and make it easier for citizen scientists to extract information without advanced technical knowledge;
3. Develop a visual drought scale based upon the collected landscape photos; and
4. Calibrate the visual drought scale to established indices.

Lot of Variation in Photo Quality & Content



Improve the Interface

- Created by scientists, for scientists
- Make it simpler to upload and tag photos

PHOTOS ACTIONS
 Overview
 Browse
 Map
 Log in
 Register

Global Geo-Referenced Field Photo Library

Total photos: 146839 Photos per page: 24

Search

Longitude
 Min Max

Latitude
 Min Max

Date from

Date to

Categories
 All

Username

Countries
 All

Geographical
 All

None
 Category not set
 MODIS

July 16, 2015
 97.4402 °W, 35.1836 °N
 Unclassified
 MODIS

July 15, 2015
 122.8837 °W, 42.4681 °N
 Category not set
 MODIS

July 15, 2015
 122.8834 °W, 42.4668 °N
 Category not set
 MODIS

July 15, 2015
 122.8836 °W, 42.4669 °N
 Category not set
 MODIS

July 15, 2015
 122.8837 °W, 42.4681 °N
 Category not set
 MODIS

July 15, 2015
 122.8834 °W, 42.4668 °N
 Category not set
 MODIS

July 15, 2015
 122.8886 °W, 42.434 °N
 Category not set
 MODIS

July 15, 2015
 122.8832 °W, 42.4667 °N
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 MODIS

July 15, 2015
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 MODIS

July 15, 2015
 122.883 °W, 42.4666 °N
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 MODIS

July 15, 2015
 122.884 °W, 42.4673 °N
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 MODIS

July 15, 2015
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 Category not set
 MODIS

July 15, 2015
 122.8839 °W, 42.4678 °N
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 MODIS

July 15, 2015
 122.8839 °W, 42.4678 °N
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 MODIS

July 15, 2015
 122.8917 °W, 42.4564 °N
 Category not set
 MODIS

July 15, 2015
 122.8855 °W, 42.4261 °N
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July 15, 2015
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 MODIS

July 15, 2015
 122.8839 °W, 42.4678 °N
 Category not set
 MODIS

Earth Observation and Modeling
 University of Oklahoma

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Global Geo-Referenced Field Photo Library

Welcome, you are xiao2007
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Search by coordinates: Search by date: Search by metadata: Search by region:

Longitude min: Longitude max: From: Categories: Countries:

Latitude min: Latitude max: To: Users: Geographical:

Search by keywords:

Submit

10830 photos

Imagery ©2012, Map data ©2012 - Terms of Use

Date: 2012-09-02
 101.2696 °W, 39.005 °N
 Aspect S
 Category: Grasslands
 Field notes: KS-LG-2, SW of Winona, KS
[View MODIS time series data](#)

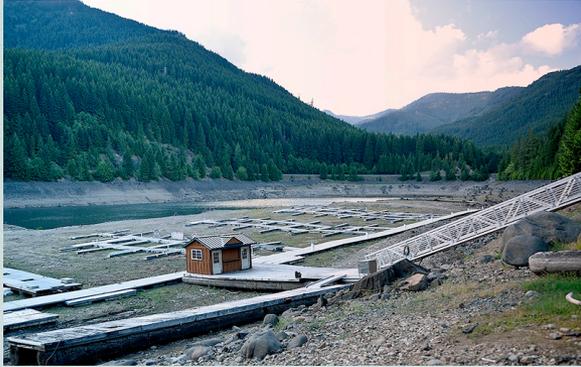
Date: 2012-09-02
 101.2696 °W, 39.0048 °N
 Aspect N
 Category: Grasslands

Date: 2012-10-05
 102.2243 °W, 39.0018 °N
 Aspect W
 Category: Cropland/Natural Vegetation Mosaic
 Field notes: "Attached are photos taken at County Road DD and Road 51 in Kit Carson County, Colorado in eastern Colorado. We are in D3, and close to D4 drought. Even corn under irrigation is looking burned up. We had two

Date: 2012-10-05
 102.2243 °W, 39.0018 °N
 Aspect N
 Category: Grasslands
 Field notes: "Attached are photos taken at County Road DD and Road 51 in Kit Carson County, Colorado in eastern Colorado. We are in D3, and close to D4 drought. Even corn under irrigation is looking burned up. We had two

Match Photos to Drought Monitor

All of these photos were from areas in D1 on the USDM (May 26, 2015)



Creating a Visual Drought Impact Guide

Similar to the EF-scale used for tornadoes

Group photos by categories (crop types, trees, water bodies, pastures, etc.)

Peer review process from U.S. Drought Monitor discussion list

Tested on an independent sample from subsequent collection periods



Comparing to Indices

- Use the Visual Drought Impact Guide to categorize all photos
- Compare the photos to commonly-used measures
- Seeks to address:
 - Do precipitation departures of similar magnitudes over similar time scales resemble similar impacts in different regions of the country?
 - How does the photographic evidence compare to indicators over time at a given location?
 - Can visual imagery be used to predict the severity of the indicators?

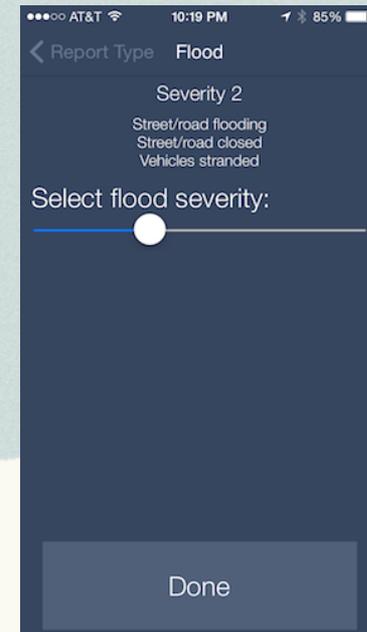
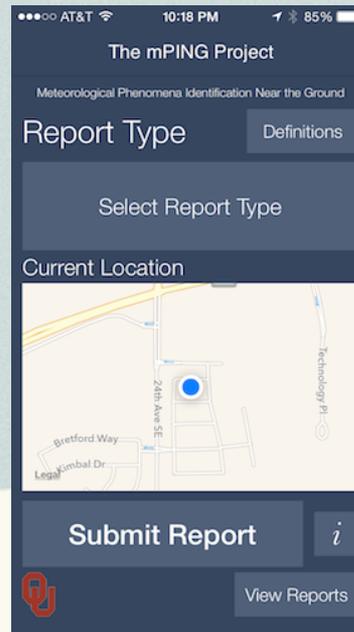
Crowdsourcing via a mobile app

App Features

- Basic Features:
 - current status of drought
 - commonly-used drought indicators
 - forecasts and outlooks
 - interface for reporting drought impacts
 - links to additional resources
- Survey on the DM Discussion List for required features
- As prototype is developed will convene focus groups:
 - providers – regular contributors to the DM process
 - consumers – end-users of drought information

“Condition Reporting”

- Open-ended perceptions of severity on a scale of 1 (few impacts) to 4 (extreme impacts)
 - Crop health, pasture health, lawn & garden, water resources, wildfires
- Patterned after 4-category scale used by mPING for severe weather reports



Impacts Reporting

Crop Health

Level	Example Impacts
Level 1	Slight wilting, stunted, stress showing
Level 2	Some crop loss, sparse coverage, wilting
Level 3	Significant loss, premature browning
Level 4	Total loss of crop, did not emerge

Pasture Health

Level	Example Impacts
Level 1	Delayed green-up, unseasonably slow growth
Level 2	Brown areas, weed growth common, stocking levels decreased
Level 3	Returning to dormancy, short, brown vegetation
Level 4	Barren fields, exposed soil

Impacts Reporting

Lawn & Garden

Level	Example Impacts
Level 1	Slight browning or wilting, more frequent watering
Level 2	Widespread browning, flowers dying
Level 3	Lawns dead or dormant, trees shedding leaves
Level 4	Exposed soil, shrubs and trees dying

Water Resources

Level	Example Impacts
Level 1	Reduced stream flow, ponds and lakes low
Level 2	Ponds and lakes well below normal, recreational impacts
Level 3	Ponds and lakes nearly empty, fish dying, wells going dry
Level 4	Lake beds exposed, dry streams, water emergencies

Impacts Reporting

Wildfires

Level	Example Impacts
Level 1	Fires common on warm, dry, windy days
Level 2	Large wildfires nearly daily occurrence, burn longer
Level 3	Frequent new starts, difficult to contain
Level 4	Records numbers and areas of fire, devastating wildfires

Thank You!

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