

# CitSci.org:

~ a comprehensive citizen science support platform ~

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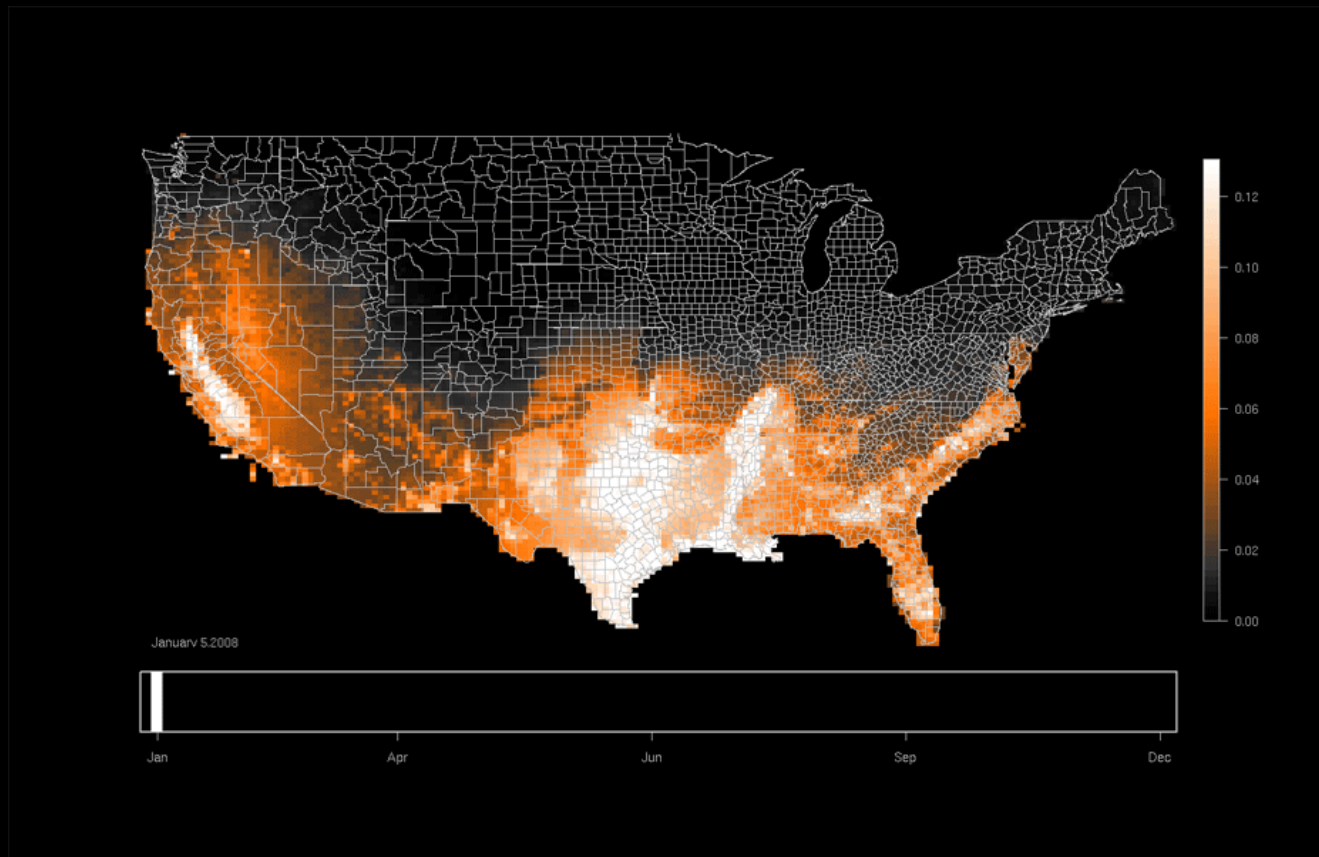
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Colorado State University

**2015 National Data Integrity Conference**  
*Enabling research: New challenges & opportunities*  
Fort Collins, Colorado  
May 5-8, 2015





# the power of citizen science...





# citizen science

“participation by the general public in scientific research”

(Couvett et al. 2008)



from water quality...







to forest health...





from pika populations...







to invasive species...





# citizen science generates data...

“large volume of high quality data”

“covering large spatial and temporal scales”

“often in complex heterogeneous formats”

“that are of varying degrees of rigor”

“and that contain privacy issues”





# citizen science generates data...

“large volume of high quality data”

“covering large spatial and temporal scales”

“often in complex heterogeneous formats”

“that are of varying degrees of rigor”

“and that contain privacy issues”

many projects struggle to deal with such data



we built [citsci.org](https://citsci.org) to help...





what is citsci.org?

“free, open, online support platform”





# mission

“provide **comprehensive support** for citizen science programs globally”





# goals



“support the **full spectrum** of citizen science needs”



“elevate the **rigor** of citizen science data”



“improve data **standardization**, interoperability, integration, accessibility, and dissemination”



# goals



“support the **full spectrum** of citizen science needs”



“elevate the **rigor** of citizen science data”



“improve data **standardization**, interoperability, integration, accessibility, and dissemination”





# goals



“support the **full spectrum** of citizen science needs”



“elevate the **rigor** of citizen science data”



“improve data **standardization, documentation, integration, accessibility, and sharing**”



# basically...



“provide a comprehensive platform where **anyone, anywhere** can enact projects themselves”

...**and**...have the confidence that their projects will be rigorous, advance scientific understanding, and yield positive actions and outcomes...



# how?

provide an open transparent, scalable platform

- co-design and co-create the platform with participants
- create flexible, customizable database architectures
- provide easy-to-use metadata documentation tools
- automate data sharing in standard open formats
- share well-documented data with domain repositories




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## Create your own projects!

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### Species

#### Pronghorn



### Featured Projects

#### Trout Unlimited WV-VA Water ...



 65 Participants  
 499 Observations  
 60 Photos

### Discoveries

#### Sighting in ECWEFO001

reported by

**Chris Byrd**

on

**December 1st, 2014**

### Let Us Help

We support **your** citizen science. At CitSci.org, you create your own projects where trained volunteers and scientists together answer local, regional, and global questions, inform natural resource decisions, advance scientific understanding, and improve environmental education. We provide tools to empower you and your participants to ask questions, select methods, submit data, analyze data, and share results. Our tools support the full spectrum of citizen science program needs - from creating projects to getting feedback from volunteers for program evaluation. Join us today!

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	<p><b><u>Trout Unlimited WV-VA Water Quality Monitoring Project</u></b></p>		<p>September 1, 2013</p>	<p>8,633</p>	<p> Member</p>
	<p><b><u>Tamarisk Coalition</u></b></p>	<p>Tamarisk Mapping on Arkansas and Colorado Rivers</p>	<p>November 16, 2005</p>	<p>7,450</p>	<p> Member</p>
	<p><b><u>Mequon Nature Preserve</u></b></p>	<p>Mequon Nature Preserve citizen science monitoring projects</p>	<p>January 14, 2014</p>	<p>4,710</p>	<p> Member</p>
	<p><b><u>Front Range Pika Project</u></b></p>	<p>A citizen science effort to gather baseline data on the current distribution of pikas and ...</p>	<p>July 26, 2011</p>	<p>4,141</p>	<p> Member</p>
	<p><b><u>Vernal Pool Cooperative of Virginia 2013-2014</u></b></p>	<p>Locate and characterize vernal pools on public lands in Virginia.</p>	<p>November 30, 2013</p>	<p>3,343</p>	<p> Member</p>
	<p><b><u>Vernal Pool Cooperative of Virginia</u></b></p>	<p>Locate and characterize vernal</p>		<p>,052</p>	<p> Member</p>

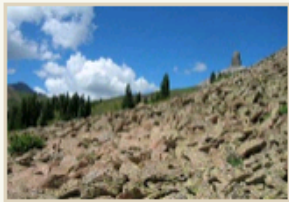
create projects

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**Photos**




[Upload a photo](#)
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**Manage Tabs**

Position	Tabs	Visibility	Active	Positions
1	Submit Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<a href="#">Move Down</a>
2	View Data	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">Move Up</a> <a href="#">Move Down</a>
3	Feedback	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">Move Up</a> <a href="#">Move Down</a>
4	Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">Move Up</a> <a href="#">Move Down</a>
5	Media	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<a href="#">Move Up</a> <a href="#">Move Down</a>

make it your own



 [Manage Members](#)

## Project Members [help](#)

[To Project Profile](#)

### Users Requesting To Join PN

User	Email	Requested Role	Options
Paul Boyette	pablcb@yahoo.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
John Jarvis	jarvisjw@comcast.net	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Anne Reis	areis@urbanecologycenter.org	Reviewer	<a href="#">Approve</a> <a href="#">Deny</a>
Michelle Anthony	carwoman@aol.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Rick Hooley	chooley@sprynet.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Mary Jo Lakhal	Dano_ver@comcast.net	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Nikki Yancey	nikkiyanc@gmail.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Ulanda Baker	ulanda703@msn.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
marc harvey	bmharvey@embarqmail.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
George Shay	Gshay60@q.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
marc harvey	bmharvey@embarqmail.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>
Jennifer Gilden	gildenjen@gmail.com	Contributor	<a href="#">Approve</a> <a href="#">Deny</a>

### PN Members

Member	Email	Role(s)	Options
Alice Henderson	gis_wildlife@yahoo.com	Contributor	<a href="#">Edit Roles</a> <a href="#">Remove</a>

manage members

## CitSci.org Shared Measurements

### What We Measure

The projects created on CitSci.org measure many things about organisms and the environment. Below is a growing and changing list of things currently being measured by the many diverse projects being implemented using CitSci.org. Project managers can continually add to this growing list of measurements as needed! The measurements made by projects may be about organisms (species attributes) or any aspect of the environment broadly (site characteristics). Each measurement can be made using units of choice.

[Organism Attributes](#)
[Site Characteristics](#)
[Units](#)

Don't see what you would like to measure?

[Add new measurement](#)

Search:



Show

10



entries

Measurement	Type	# of Projects Using Measurement	Options*
Presence	Categorical	43	<a href="#">Details</a>
Height	Decimal	14	<a href="#">Details</a>
Percent Cover	Decimal	9	<a href="#">Details</a>
DBH	Decimal	9	<a href="#">Details</a>
Count of individuals	Decimal	8	<a href="#">Details</a>

create measurements

# Datasheet Creator

[To Project Profile](#)

[Preview](#) [Save](#)

## Datasheet Information

Datasheet name:  \*

Instructions:   
(Limit to 4000 characters)

Locations:  Entered By User  Predefined *(not yet supported by mobile apps)*

Projection:  Latitude / Longitude  UTM

Observation Type:

[Add Organism](#)
[Add Predefined Organism Picklist](#)
[Add Any Organism Picklist](#)
[Add Site Characteristic](#)

## Pre-Defined Locations

Plot 1	Latitude: 41, Longitude: -105.4	<a href="#">Remove</a>
Plot 2	Latitude: 42.2, Longitude: -102.2	<a href="#">Remove</a>

[Add Location](#)

create datasheets



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# Stream Monitoring Field Data Sheet

## To Project Profile

### Date of Observation

Date of observation:

Recorder:

Authority:

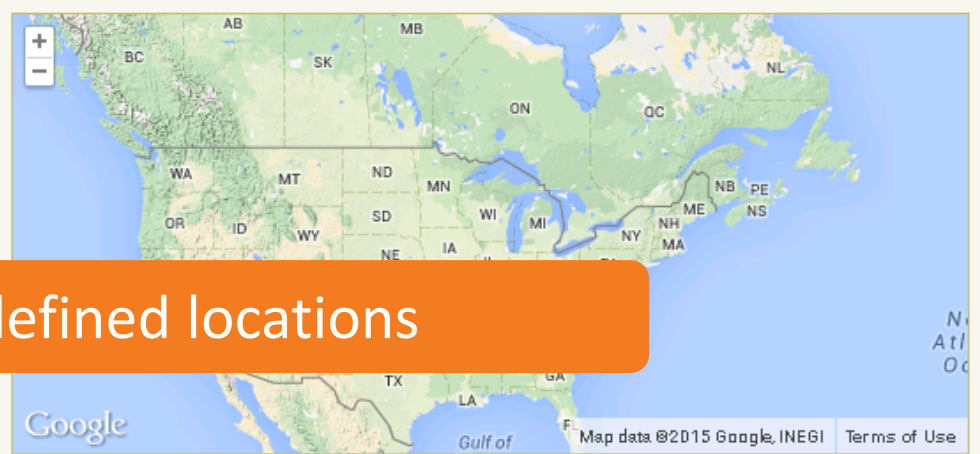
Search Time (minutes):  Minutes

Comments:

### Location Information

Please select a location from the list below (a marker will appear on the map to the right once selected)

Location:



pre-defined locations



### Location Information

Please either (a) enter latitude longitude coordinates below **from your GPS unit** you used, or (b) click on the map to the right and/or enter an address in the search box to determine and provide an approximate location for your observation.

Search:

Name:

Datum:

Latitude<sup>1</sup>:

Longitude<sup>2</sup>:

Accuracy<sup>3</sup> (meters):



<sup>1</sup> Latitude; data must be in decimal degrees and should contain at least 5 decimal places. (Example: 41.99999)

<sup>2</sup> Longitude; data must be in decimal degrees and should contain at least 5 decimal places. (Example: -72.99999)

<sup>3</sup> Approximate uncertainty of your GPS unit in meters. Please enter accuracy information from your GPS unit or use the pre-populated value if using the map to obtain an approximate location. This value should contain between 1 and 6 decimal places for us to show a marker on the map at your manually entered latitude/longitude coordinates. When entering coordinates and accuracy from your GPS, include as many decimals as your GPS displayed in the field including at least 1 and up to 6 decimal places.

### Organisms

Eurasian Watermilfoil (*Myriophyllum spicatum*)

Presence:

opportunistic locations

ft

Depth:  ft



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# Berry Lake Weed Monitoring: Eurasian Water Milfoil

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members

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observations

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locations

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measurements

Project Manager: Brian Ewart [Email Brian](#)

Description: We  
milfr  
loca  
Wis  
incit  
Zer

EWM Monitoring



boats provide ideal platforms for  
itoring.

### Add File

**Browse to a file and then click 'Upload'**




Tab-delimited text file (\*.txt):  No file selected.

upload legacy data

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[Observations](#) [Map](#) [Locations](#)

 Search:  [?](#)

 Show  entries

Date	Location Name	Latitude	Longitude	Photo	Options
October 19, 2014	Ouzel Lake-RMNP	40.19341	-105.63192		<a href="#">Delete</a> <a href="#">View</a>
October 8, 2014	Duck Lake-CPW	39.56649	-105.72291		<a href="#">Delete</a> <a href="#">View</a>
October 6, 2014	Glen Cove-Erb	38.875802	-105.072601		<a href="#">Delete</a> <a href="#">View</a>

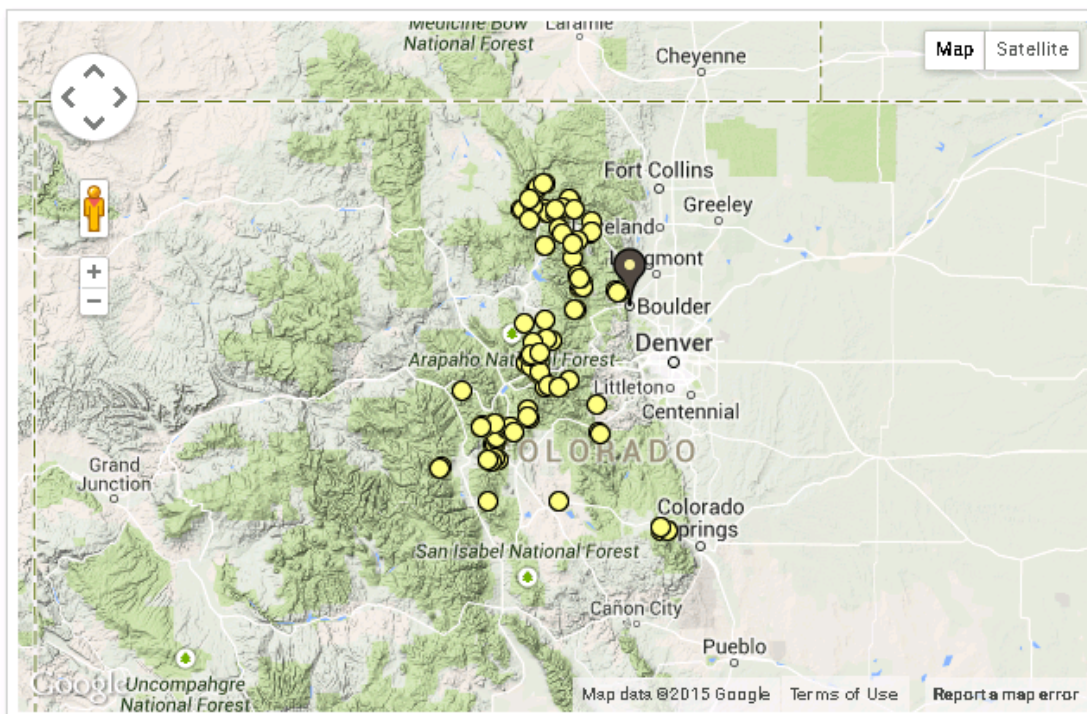
view observations

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**Legend**

-  Project Headquarters
-  Single Observation
-  Many Observations

Search by Observation Name:

[Search](#)

[Reset Map](#)

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Search:  [?](#)
 Show  entries

Location Name	Latitude	Longitude	# Observations	Options
Additional Cave Basin #1	37.53985	-107.47996	1	<a href="#">View</a>
Additional Dead Horse Creek #1	37.55021	-107.46702	1	<a href="#">View</a>
Additional Dead Horse Creek #2	37.55056	-107.47883	1	<a href="#">View</a>
Additional Hermosa Peak	37.71322	-107.92133	1	<a href="#">View</a>
Additional Highland Mary Lakes Pika 01	37.76732	-107.58252	1	<a href="#">View</a>
Additional Kennebec Pika 01	37.44794	-107.9924	1	<a href="#">View</a>
Additional Navajo Lake	37.847383	-108.026698	1	<a href="#">View</a>
Additional Red Mountain 2010 Training Site	37.89416	-107.71243	1	<a href="#">View</a>

view locations



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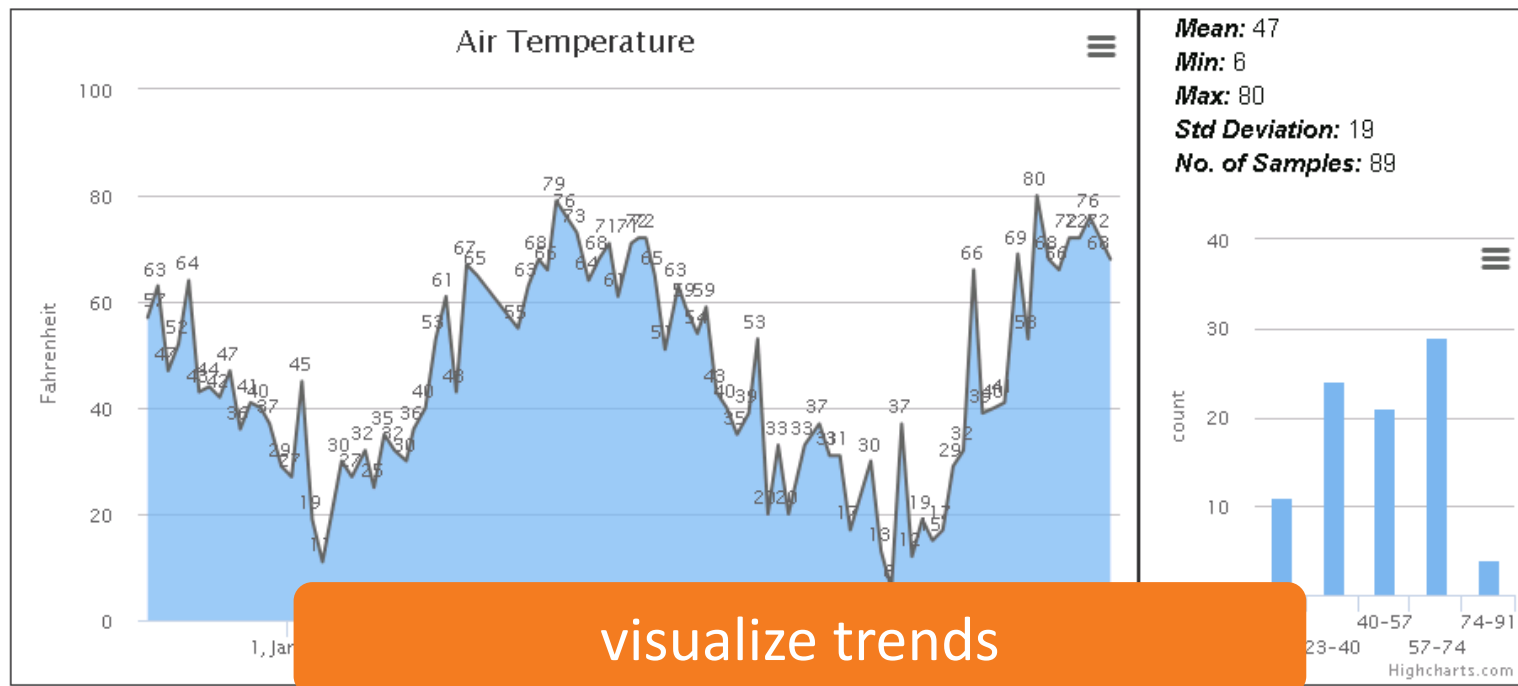
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[Relationships](#)
[Comparisons](#)

Location:

Measurement:



visualize trends

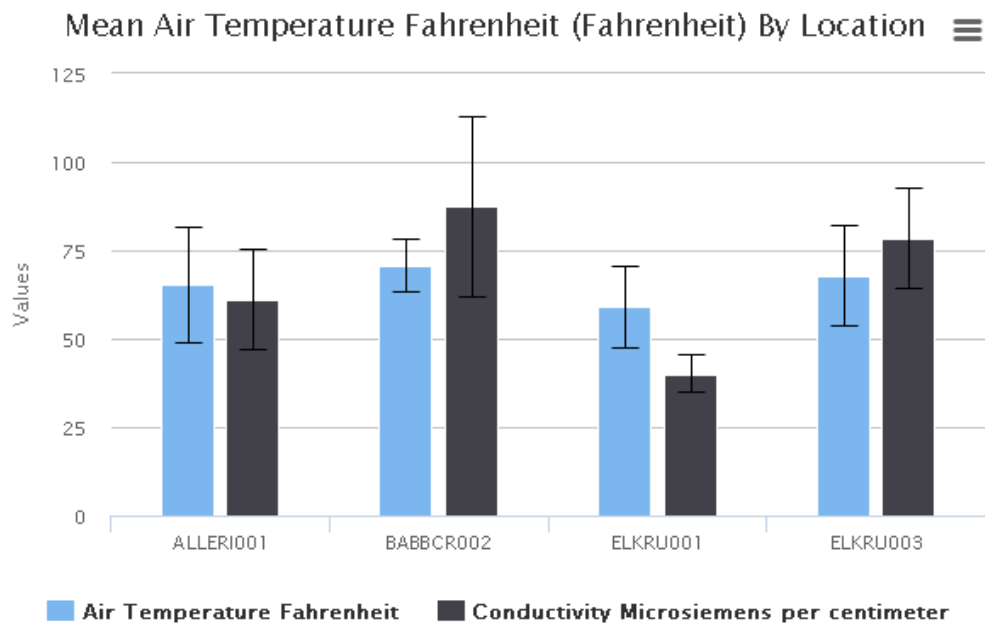
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Measurement   
 Locations



make comparisons

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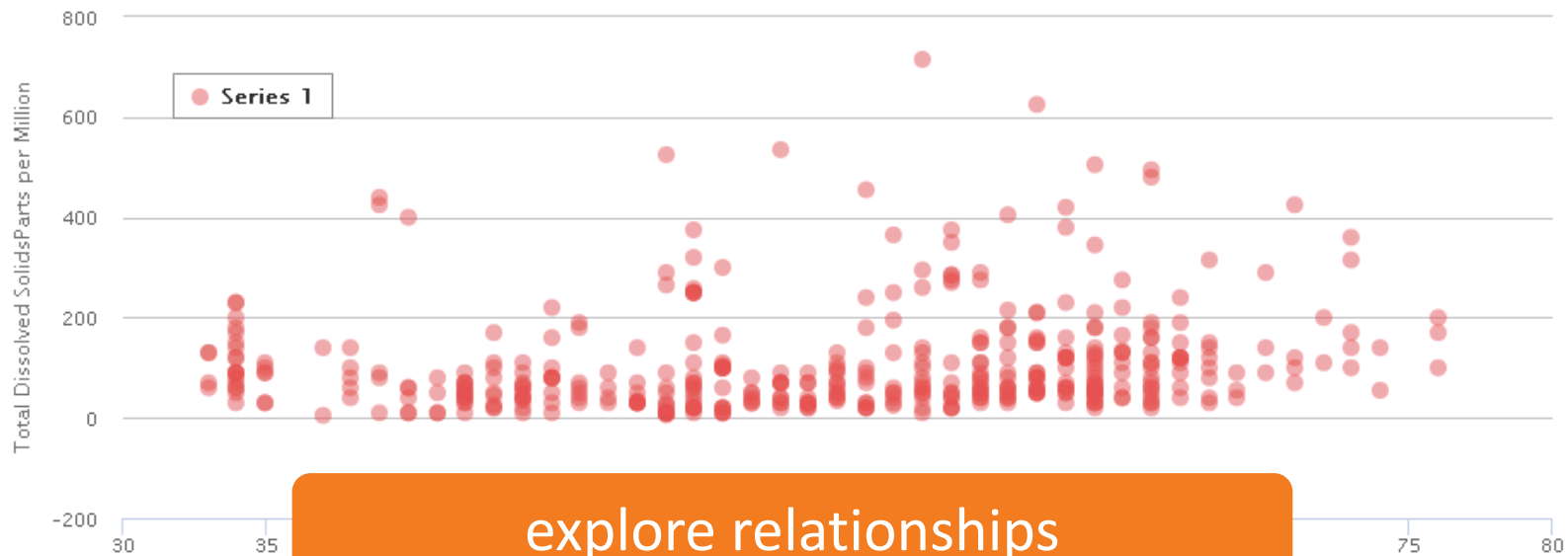
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Y Axis: 
  
 X Axis:

Water Temperature Fahrenheit Versus Total Dissolved Solids Parts per Million by location and date



explore relationships

Highcharts.com



# get feedback

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## Surveys (Questionnaires/Program Evaluations/Feedback Forms)

**Exam/Survey 1:** Summer 2010 Feedback Questionnaire   [Take Survey](#)   [View Results](#)

[Manage Surveys](#)

[Manage Tabs](#)

evaluate success/progress



# make mobile observations

A large, solid orange rounded rectangular button with the word "beta" centered in white lowercase letters.

beta



# what's trending

- ✓ 150+ projects and counting
- ✓ 160+ datasheets built
- ✓ 25% of datasheets use pre-defined locations
- ✓ Presence/absence; temp; % cover; DBH; etc.
- ✓ 102,000+ measurements reported by all projects
- ✓ 364 things being measured / measurements created...

41% Categorical

32% Decimal

25% Integer





# challenges

“data volume”  
“data complexity”  
“data privacy & sensitivity”  
“data provenance”  
“data rigor”



# challenges

- "data aggregation"
- "useful report generation"
- "metadata documentation"
- "support for nested plot designs"



# co-designed solutions

- “Feature Friday’s”
- “monthly co-design sessions”
- “project coordinators”
- “data management experts”

# www.citsci.org

Thanks!

Alycia Crall, Russell Scarpino, Brian Fauver, Melinda Laituri, Nicole Kaplan,  
Tom Stohlgren, Jim Graham, Lee Casuto, Pramod Shashidhara  
Sara Simonson, Ashish Kattamuri, and... many more!

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Natural Resource Ecology Laboratory  
The Center for Collaborative Conservation  
Colorado State University  
DataONE

