

# NCSA Tools for Vector Borne Disease Modelling

Marcus Slavenas

[slavenas@illinois.edu](mailto:slavenas@illinois.edu)

18 Sept 2017

# NCSA Tools Overview

- Geodashboard
  - Geospatial data storage, display, download
- Clowder
  - <https://clowder.ncsa.illinois.edu/>
  - Data Management System
- BrownDog
  - <http://browndog.ncsa.illinois.edu/>
  - Data Transformations
    - Conversions
    - Extractions

# Geodashboard Demo Sites

- Demo sites could be broken
  - Version 2 <http://gltg-demo.ncsa.illinois.edu/geodashboard/>
  - Version 3 <http://gltg-demo.ncsa.illinois.edu/>

# Point Data

- Select a Site
  - Popup = Overview
  - View Data => Details
- Standardized JSON

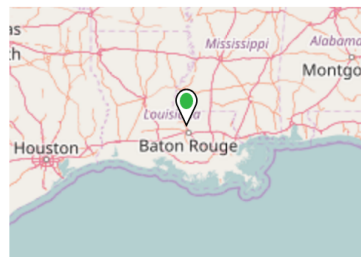
```
{  
  "id": 41968129,  
  "created": "2017-07-27T16:24:52Z",  
  "start_time": "1982-05-17T00:00:00Z",  
  "end_time": "1982-05-17T00:00:00Z",  
  "properties": {  
    "site": "foxriver98",  
    "owner": "sierra-club",  
    "ammonia-unionized-temp-ph-nh4-mgl": 0.00171  
  },  
  "type": "Feature",  
  "geometry": {  
    "type": "Point",  
    "coordinates": [  
      41.666389,  
      -88.523889,  
      0  
    ]  
  },  
  "stream_id": "1743",  
  "sensor_id": "1548",  
  "sensor_name": "foxriver98"  
}
```

# Details

Data  
Calculated Data

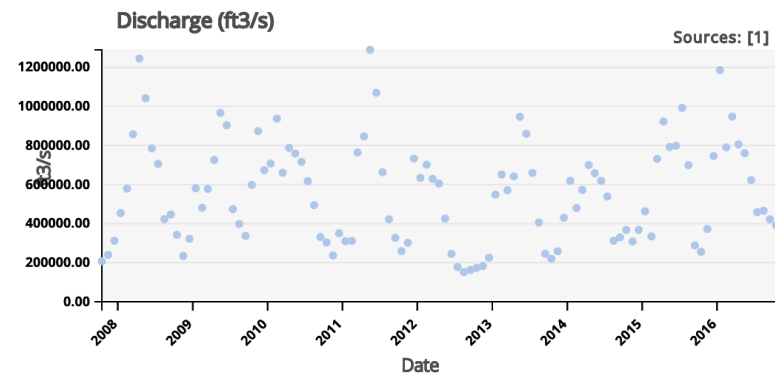
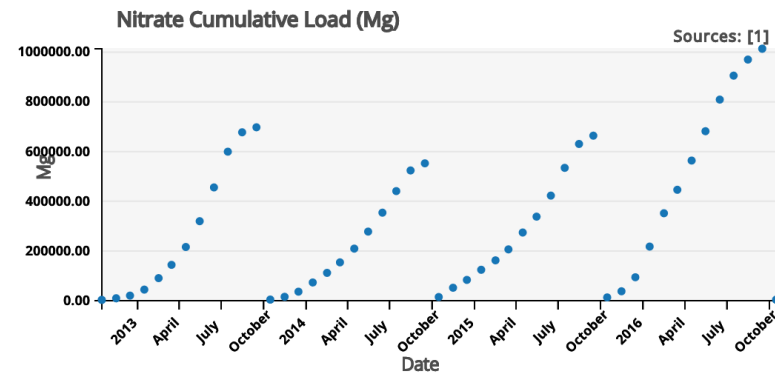
Selected Parameters i

- Nitrate Cumulative Load (Mg)
- Discharge (ft3/s)
- Dissolved Oxygen (mg/L)
- Nitrate Load (Mg)
- Nitrate as N (mg/L)
- Specific Conductance (uS/cm)
- Turbidity (FNU)
- Water Temperature (C)

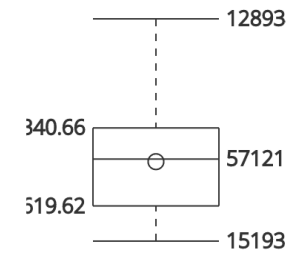
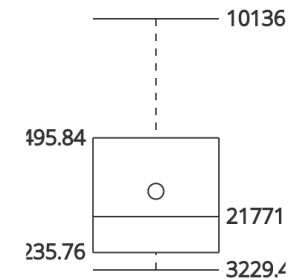


Date Range  Averaged by month

Time Series



Box and Whisker i

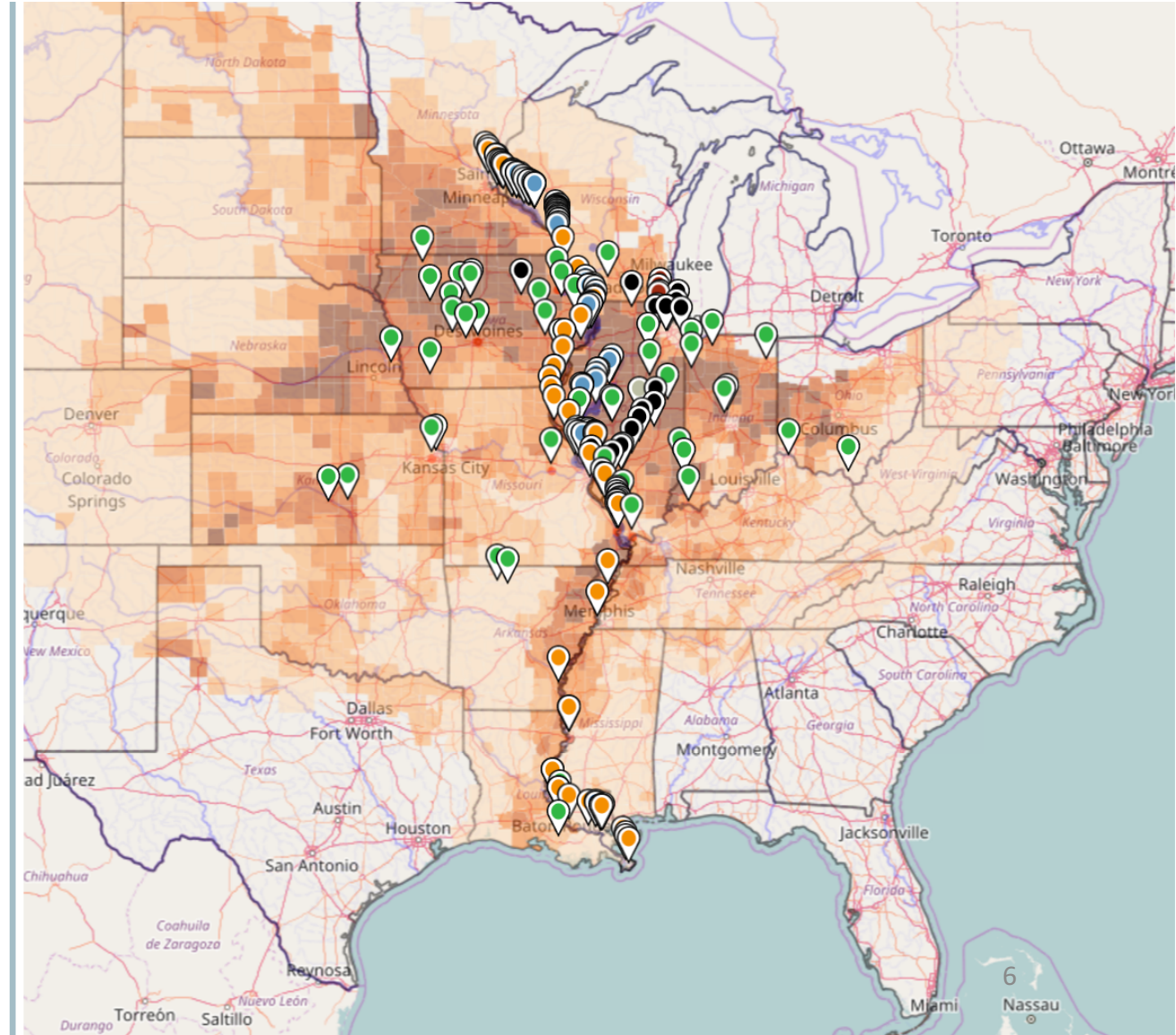


# Shape Files

## Spatial Data

- Fertilizer levels shown in brown heat map

- Sites
- Large Rivers
- HUC 8
- HUC 4
- HUC 2
- US States
- Total annual nitrogen from point sources by HUC8 watershed (avg. 2007-2014)
- Stream segments impaired for Nitrogen
- Stream segments impaired for Phosphorus
- Stream segments impaired for Nutrients



# Select by Shape

**Areas**

River Reaches

Watersheds

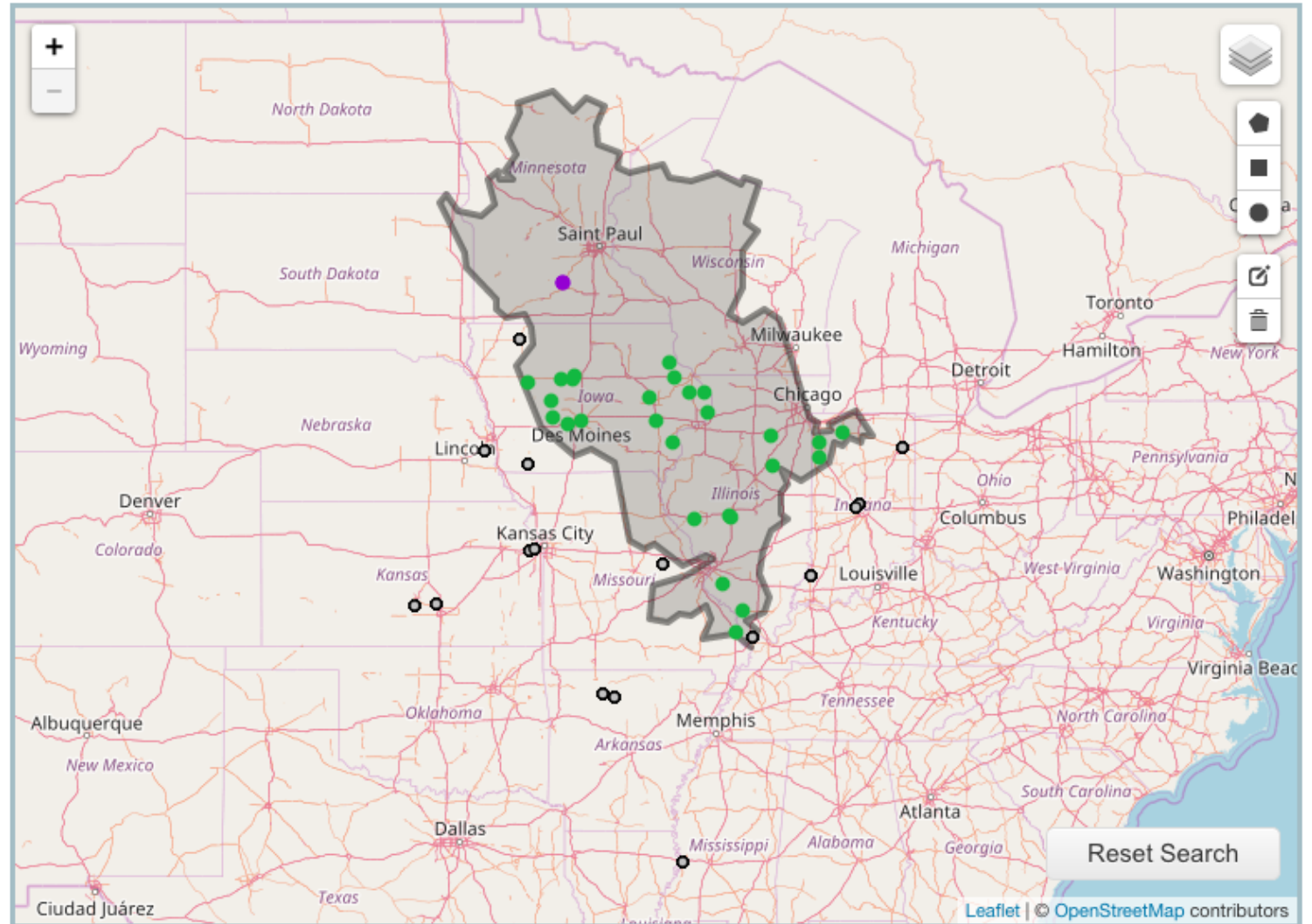
- Ohio
- Tennessee
- Upper Mississippi
- Lower Mississippi
- Missouri

**Data Sources**

- Gustavus Adolphus College (GAC)
- United States Geological Survey (USGS)

**Parameters**

- Air Temperature 24hr Avg (F)
- Alkalinity Total (mg/L)
- Ammonia Unionized Temp pH NH4 (mg/L)



## Search Results

Download as CSV

Download as JSON

Permalink

Visualize

# Download Mixed Data Sources

The image shows an Excel spreadsheet with a data table. The table has the following columns: id, created, start\_time, end\_time, owner, source, unit\_code, nitrate-nitrite, nitrate-as-n, procedures, total-nitrogen, and longitude. Two red callouts are present: one pointing to the 'nitrate-nitrite' column with the text 'Nitrate + Nitrite as N', and another pointing to the 'source' column with the text 'Mixed Sources'.

id	created	start_time	end_time	owner	source	unit_code	nitrate-nitrite	nitrate-as-n	procedures	total-nitrogen	longitude
2241748	2015-10-21T	1988-07-06T	1988-07-06T	WIDNR_WQ	http://water	mg/l	0.11				
2239396	2015-10-21T	1988-07-26T	1988-07-26T	MNPCA	http://waterqualitydata.us/						
2240307	2015-10-21T	1988-07-26T	1988-07-26T	MNPCA	http://water	mg/l	0.08				
2240642	2015-10-21T	1988-07-26T	1988-07-26T	MNPCA	http://water	mg/l	1.5				
2239950	2015-10-21T	1988-07-26T	1988-07-26T	MNPCA	http://water	mg/l	1.6				
2241066	2015-10-21T	1988-08-03T	1988-08-03T	USGS-MN	http://water	mg/l as N	1.4				
2241749	2015-10-21T	1988-08-03T	1988-08-03T	WIDNR_WQ	http://water	mg/l	0.47				
2239397	2015-10-21T	1988-08-24T	1988-08-24T	MNPCA	http://water	mg/l	0.04				
2239951	2015-10-21T	1988-08-31T	1988-08-31T	MNPCA	http://water	mg/l	0.92				
2240643	2015-10-21T	1988-08-31T	1988-08-31T	MNPCA	http://water	mg/l	1.2				
2240308	2015-10-21T	1988-08-31T	1988-08-31T	MNPCA	http://water	mg/l	0.02				
2241750	2015-10-21T	1988-09-07T	1988-09-07T	WIDNR_WQ	http://water	mg/l	0.04				
2239952	2015-10-21T	1988-09-28T	1988-09-28T	MNPCA	http://water	mg/l	0.92				
2240644	2015-10-21T	1988-09-28T	1988-09-28T	MNPCA	http://water	mg/l	1.2				
2240309	2015-10-21T	1988-09-28T	1988-09-28T	MNPCA	http://water	mg/l	0.02				
2239398	2015-10-21T	1988-09-28T	1988-09-28T	MNPCA	http://water	mg/l	0.04				
2241751	2015-10-21T	1988-10-05T	1988-10-05T	WIDNR_WQ	http://water	mg/l	0.04				
2240310	2015-10-21T	1988-10-25T	1988-10-25T	MNPCA	http://water	mg/l	0.02				
2239953	2015-10-21T	1988-10-25T	1988-10-25T	MNPCA	http://water	mg/l	0.04				
2240645	2015-10-21T	1988-10-25T	1988-10-25T	MNPCA	http://water	mg/l	1.2				
2239399	2015-10-21T	1988-10-25T	1988-10-25T	MNPCA	http://water	mg/l	0.02				
2239400	2015-10-21T	1988-10-27T	1988-10-27T	MNPCA	http://water	mg/l	0.18				
2241752	2015-10-21T	1988-11-01T	1988-11-01T	WIDNR_WQ	http://water	mg/l	1.1				
2241067	2015-10-21T	1988-11-22T	1988-11-22T	USGS-MN	http://water	mg/l as N	1.3				
2241753	2015-10-21T	1988-12-06T	1988-12-06T	WIDNR_WQ	http://water	mg/l	1.12				
2241754	2015-10-21T	1989-02-08T	1989-02-08T	WIDNR_WQ	http://water	mg/l	1.41				
2241068	2015-10-21T	1989-02-22T	1989-02-22T	USGS-MN	http://water	mg/l as N	1.53				
2241755	2015-10-21T	1989-03-07T	1989-03-07T	WIDNR_WQ	http://water	mg/l	1.34				
2239954	2015-10-21T	1989-03-28T	1989-03-28T	MNPCA	http://water	mg/l	1.7				
2240646	2015-10-21T	1989-03-28T	1989-03-28T	MNPCA	http://water	mg/l	2.1				
2240311	2015-10-21T	1989-03-28T	1989-03-28T	MNPCA	http://water	mg/l	2.5				
2241756	2015-10-21T	1989-04-05T	1989-04-05T	WIDNR_WQ	http://water	mg/l	1.89				
2241069	2015-10-21T	1989-04-13T	1989-04-13T	USGS-MN	http://water	mg/l as N	1.4				
2239955	2015-10-21T	1989-04-26T	1989-04-26T	MNPCA	http://water	mg/l	0.34				
2240647	2015-10-21T	1989-04-26T	1989-04-26T	MNPCA	http://water	mg/l	0.31				
2240312	2015-10-21T	1989-04-27T	1989-04-27T	MNPCA	http://water	mg/l	0.12				
2239401	2015-10-21T	1989-04-27T	1989-04-27T	MNPCA	http://water	mg/l	0.09				
2241757	2015-10-21T	1989-05-02T	1989-05-02T	WIDNR_WQ	http://water	mg/l	0.38				
2240313	2015-10-21T	1989-05-23T	1989-05-23T	MNPCA	http://water	mg/l	0.14				



# Trends

## Select

- Parameter
- Baseline Average
- Rolling Average
- Threshold
- Region

### Select Parameter

Parameter to Explore

- Nitrate and Nitrite as N (mg/L)
- Discharge (ft<sup>3</sup>/s)
- Turbidity (FNU)

### Change Calculation Setting

Setting how to calculate change

Baseline Avg Period (yr)

5

Rolling Avg Period (yr)

1

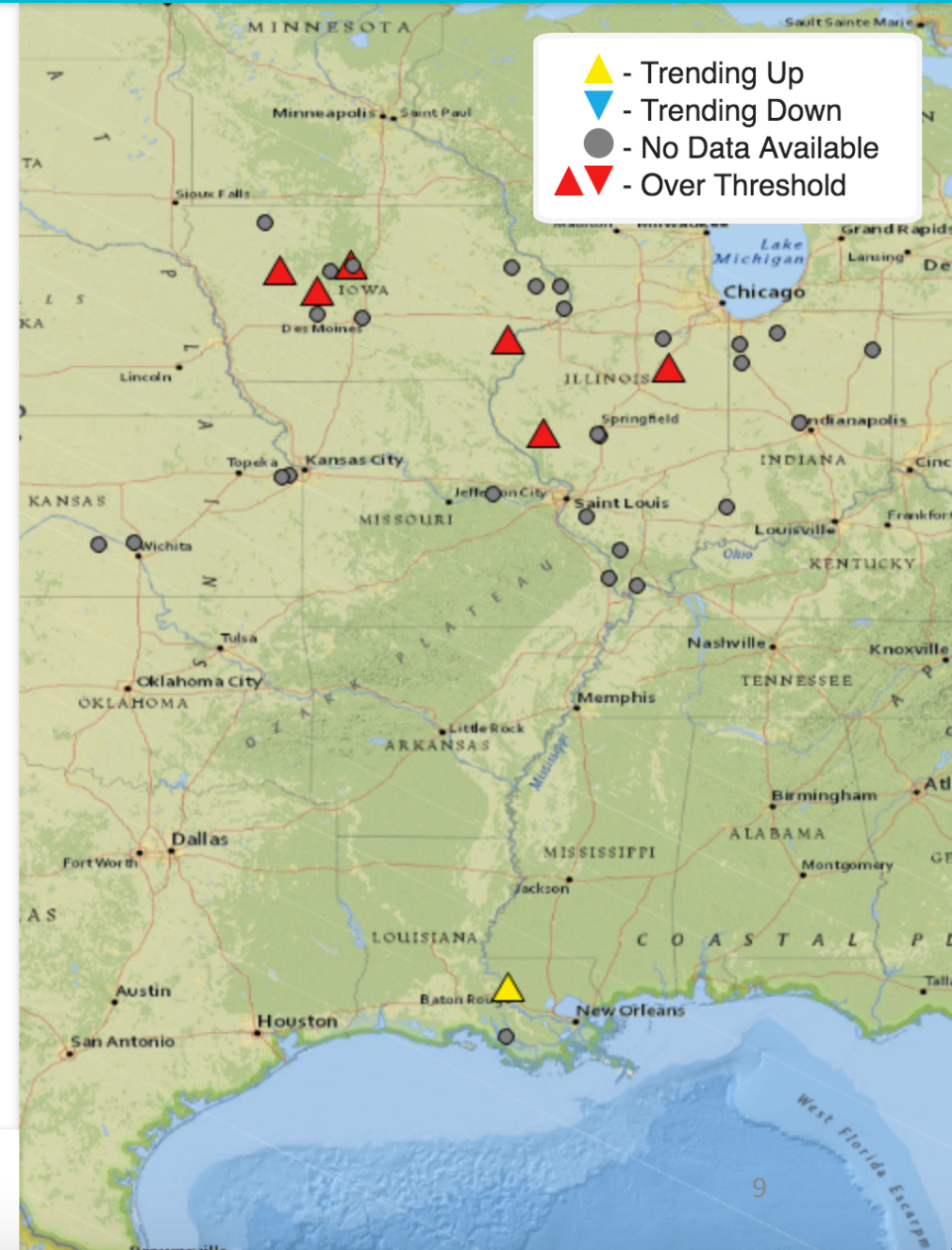
### Select Threshold Value

Change the threshold value for analysis

Standard01

APPLY SETTING

Results: 35 / 40




# Clowder and BrownDog

## Clowder

- Content Repository

## BrownDog

- Data Transformations
- Can be run automatically through Clowder



Filename: 8a17160r.jpg  
Type: image/jpeg  
Uploaded on: Dec 21, 2015 13:52:34  
Uploaded by: Marcus Slavenas

License  
Type: All Rights Reserved  
Holder: Marcus Slavenas  
[Edit](#)


Tags

- Human Profile Automatically Detected [File]
- Human Face Automatically Detected [File]
- Person Automatically Detected [File]

- Human Face Automatically Detected [Section]
- Person Automatically Detected [Section]
- Human Profile Automatically Detected [Section]


[Download](#) [Follow](#) [Delete](#)

Sections  
Click on icon at bottom-right of gallery to toggle sections gallery fullscreen view



Datasets containing the file

- GI Upload [Remove](#)

#	Thumbnail	Position	Description	Find
		x: 282.00, y: 43.00, width: 110.00, height: 110.00	<a href="#">Edit</a>	<a href="#">Similar</a>

Upload to Clowder -> BrownDog runs Extractor on .xlsx file -> posts data to Geodashboard

GLM Explore Help

Indira Gutierrez / GLFMSP

# GLFMSP


Owner: Indira Gutierrez  
Created on Jun 13, 2017

All Rights Reserved Indira Gutierrez

Description: Great Lakes Fish Monitoring and Surveillance Program - ingested data

[Download All Files](#)

Files Metadata Visualizations Comments (0)

**Fish\_Program\_2017.xlsx**  
application/vnd.openxmlformats-officedocument.spreadsheetml.sheet  
Jun 13, 2017  
1.8 MB  
0 0 0

[Download](#)

## Keweenaw Point

Contaminants

Date Range: 8/15/1978 - 8/15/2013  
Averaged by year

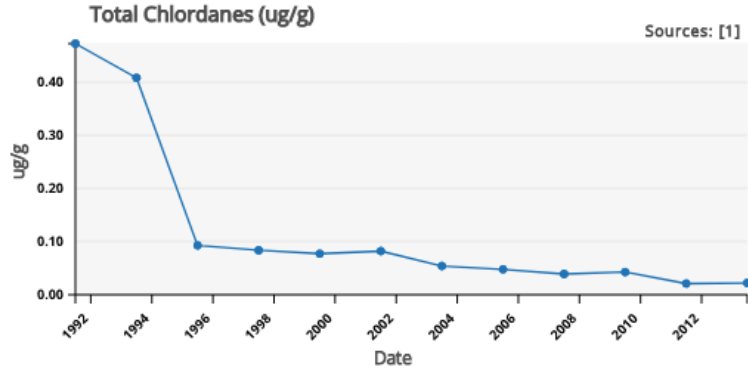
[Download Data](#)

Selected Parameters

- Total Chlordanes (ug/g)
- Mercury (ug/g)
- Total PBDEs (ug/g)
- PCB Fish Tissue (ug/g)
- Toxaphene (ug/l)

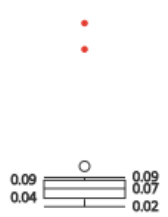
### Time Series

#### Total Chlordanes (ug/g)

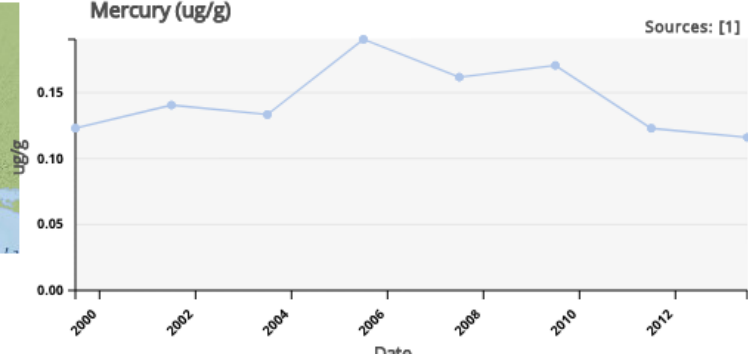


Date	Total Chlordanes (ug/g)
1992	0.45
1994	0.40
1996	0.10
1998	0.09
2000	0.08
2002	0.09
2004	0.06
2006	0.05
2008	0.04
2010	0.04
2012	0.02

Sources: [1]

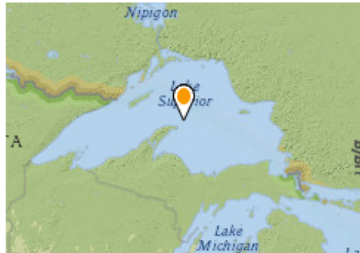
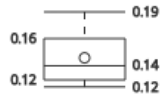


#### Mercury (ug/g)



Date	Mercury (ug/g)
2000	0.12
2002	0.14
2004	0.13
2006	0.19
2008	0.16
2010	0.17
2012	0.12

Sources: [1]



Thanks  
Marcus Slavenas  
slavenas@illinois.edu