IML-CZO
Data Management
Scalable Data Management

- Ability to grow in size and data types

Geodashboard
- Visualize
- Search
- Retrieve

Geospatial Cache
- Geospatial Database

Clowder
- User Uploads

Long Term Archive
- Raw Data
Data Counts

- 773 Files
- 145 Datasets
- 70 Collections
- 1,134,944 Datapoints
- 101 Streams
- 96 Sensor Locations
GIS Layers Control

Explore Layers
- USRB Flow Lines
- USRB Boundary
- USRB DEM
- IL Moraines
- IL County Boundaries
- USRB Terraces
- Clear Creek Streams
- Clear Creek Watershed
- Clear Creek Catchment

Explore by Categories
Sites

Explore Layers

Explore by Categories

Hydromet

Air Temperature

Monthly Precipitation

PS

Stream Water Quality

Stream Water Temperature

ISWS

Kjeldahl Nitrogen

ISWS

pH

ISWS 105

DATA SOURCE: ISWS Monitoring Site
TIME PERIOD: 04/19/1993 - 09/12/2015
LAT, LONG: 40.171° N, 88.445° W
PARAMETERS (7)
- Nitrate-N
- River Discharge
- River Stage
- Stream Water Temperature

View Data
Visualizations

ISWS105

Time Series

Parameters
- isco-sample
- Nitrate-N
- pH
- River Discharge
- River Stage
- source-line-number
- Stream Water Temperature

Date Range: 2/1/2015 - 9/12/2015

River Discharge (ft³/s)

Box and Whisker

River Stage
http://data.imlczo.org/clowder/

Welcome to IMLCZO
The Intensively Managed Landscapes-Critical Zone Observatory (IML-CZO) aims to understand the present-day dynamics of this change in the context of long-term natural coevolution of the landscape, soil, and biota.
Clowder Funding

- NARA/NSF OCI – Understanding Data Intensive and CPU Intensive Services to Support Preservation and Reconstruction of Electronic Records
- NSF CDI – Groupscope: Instrumenting Research on Interaction Networks in Complex Social Contexts
- NSF EAR – Critical Zone Observatory Network for Intensively Managed Landscapes (IML-CZO)
- NIH – Immunomodulatory and Regenerative Effects of Mesenchymal Stem Cells on Allografts
- Illinois-Indiana Sea Grant – Great Lakes Monitoring
- XSEDE – Large Scale Video Analytics
- NSF ACI – CIF21 DIBBs: Brown Dog
- NSF ACI - Sustainable Environment through Actionable Data (SEAD)
- NSF ICER EarthCube Building Blocks – A Geo-Semantic Framework for Integrating Long-Tail Data and Models
Raw Files
Any file type

Filename: 68.jpeg
Type: image/jpeg
Uploaded on: Aug 01, 2013 15:30:37
Uploaded by: Luigi Marini

License
Type: All Rights Reserved
Holder: Luigi Marini

Tags
- clear creek [File]

Datasets containing the file
Clear Creek Camp Cardinal Test

Sensors Associated with this file
Community to upload data

Name:
Wildcat-H2O

Description:

Show file previews:
- Everywhere
- On File Page
- Nowhere

New Files: [Add files] [Create Dataset] [Cancel upload]
Existing Files
- Wildcat_h2o_20150604.csv 189.85 KB [Start] [Cancel]
- Wildcat_h2o_20150521.csv 310.90 KB [Start] [Cancel]
Associating Datasets With Sensors
## Manage Sites

<table>
<thead>
<tr>
<th>ID</th>
<th>Sensor</th>
<th>Source</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Info</th>
<th>Edit</th>
<th>Delete</th>
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</thead>
<tbody>
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<td>IML-CZO</td>
<td>41.733333</td>
<td>-91.925</td>
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<td>-91.925</td>
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<td>94</td>
<td>CCW-Z1-S2-ExpPlot</td>
<td>IML-CZO</td>
<td>41.733333</td>
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<td>-91.925</td>
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<tr>
<td>82</td>
<td>CLRCRK01</td>
<td>IFIS</td>
<td>41.714222</td>
<td>-91.77911</td>
<td></td>
<td>Edit</td>
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</tr>
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</table>
## Define new Sites

### Site Information

#### Location Information

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive Name</td>
<td>White River Falls in Duvall County (required)</td>
</tr>
<tr>
<td>Location ID</td>
<td>DC105-WRF (required)</td>
</tr>
<tr>
<td>Region</td>
<td>Illinois (required)</td>
</tr>
<tr>
<td>Data Source</td>
<td>USGS (required)</td>
</tr>
</tbody>
</table>

**Location Type**

Location Type 1 can have 1 instrument.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lat / Long</td>
<td></td>
</tr>
</tbody>
</table>

Each location will contain at least one instrument, depending on its Location Type.

### Instrument #1 Information

**Instrument Device Info**

<table>
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<th>Field</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Instrument Name</td>
<td>Falls Creek Northeast Temperature Monitor</td>
</tr>
</tbody>
</table>

...
Datapoint

ISO 8601
With timezone

```json
{
  "id": 1464675,
  "created": "2015-09-01T22:15:19Z",
  "start_time": "2015-07-12T20:00:00Z",
  "end_time": "2015-07-12T20:00:00Z",
  "properties": {
    "river-stage-m": 4.25,
    "isco-sample": 0,
    "discharge-cms": 84.72,
    "source": "http://data.imlcrno.org/clowder/files/55e61685e4b07aec0f3d77b2",
    "qaqc": "Preliminary",
    "source-line-number": 18251
  },
  "type": "Feature",
  "geometry": {
    "type": "Point",
    "coordinates": [
      -88.4449935793094,
      40.1712060862677,
      0
    ]
  },
  "stream_id": "112",
  "sensor_id": "73",
  "sensor_name": "ISWS105"
}
```
Download Datapoints

http://data.imlczo.org/clowder/api/geostreams/datapoints?

geocode=39.095962936305504%2C-89.791259765625%2C40.59727063442027%2C-89.791259765625%2C40.59727063442027%2C-86.781005859375%2C39.095962936305504%2C-86.781005859375&

since=2013-01-01+1%3A00%3A00&
until=2014-12-31+11%3A59%3A59&

sources=iml-czo&

attributes=Nitrate-N&
attributes=River+Discharge&

format=json
Automatic Data Ingestion

ISWS Windows Share

- Logger File (.csv)
- Logger File (.csv)
- Logger File (.csv)

Files API

Raw Files

Harvester

Provenance

Datapoints API

PostGIS
Spatial PostgreSQL
Year 3-5
Gather More Data

With the technology in place we will focus on:

• User training
• More data sources
• Simplify and enhance user interfaces
  • Submission
  • Visualization
CZO Data JSON to YODA

- YAML Observation Data Archive & Exchange (YODA) Format

```json
{
    "id": 1466475,
    "created": "2015-09-01T22:15:19Z",
    "start_time": "2015-07-12T20:00:00Z",
    "end_time": "2015-07-12T20:00:00Z",
    "properties": {
        "river-stage-m": 4.25,
        "isoe-sample": 0,
        "discharge-cms": 84.72,
        "source": "http://data.imceoz.org/clouds/files/55e616d54e3073e0f3d7d2",
        "qaqc": "Preliminary",
        "source-line-number": 18251
    },
    "type": "Feature",
    "geometry": {
        "type": "Point",
        "coordinates": [-88.4469935793094, 40.17120460862677, 0]
    },
    "stream_id": "112",
    "sensor_id": 733,
    "sensor_name": "IDWS105"
}
```
Extractor Based Data Ingestion

Logger File (.csv) → User upload → Clowder → Raw Files → Extractor → Datapoints API → PostGIS

River Stage

- Date
- River Stage

0.00 1.00 2.00 3.00 4.00
Mar 10 Mar 15 Mar 20 Mar 25 Mar 30 Apr 5 Apr 10

- Spatial PostgreSQL