CZOData Cyber-Seminar #3: 2014-03-20

Protocols for sharing CZOData: Part 2: Registering data via CriticalZone.org

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Tom Whitenack, SDSC.
Anthony K. Aufdenkampe, Stroud Water Research Center

Kerstin Lehnert, IEDA/Columbia.
Ilya Zaslavsky, SDSC.
Jeff Horsburgh, USU.
Emilio Mayorga, UW-APL
David Tarboton, USU

STROUD WATER RESEARCH CENTER

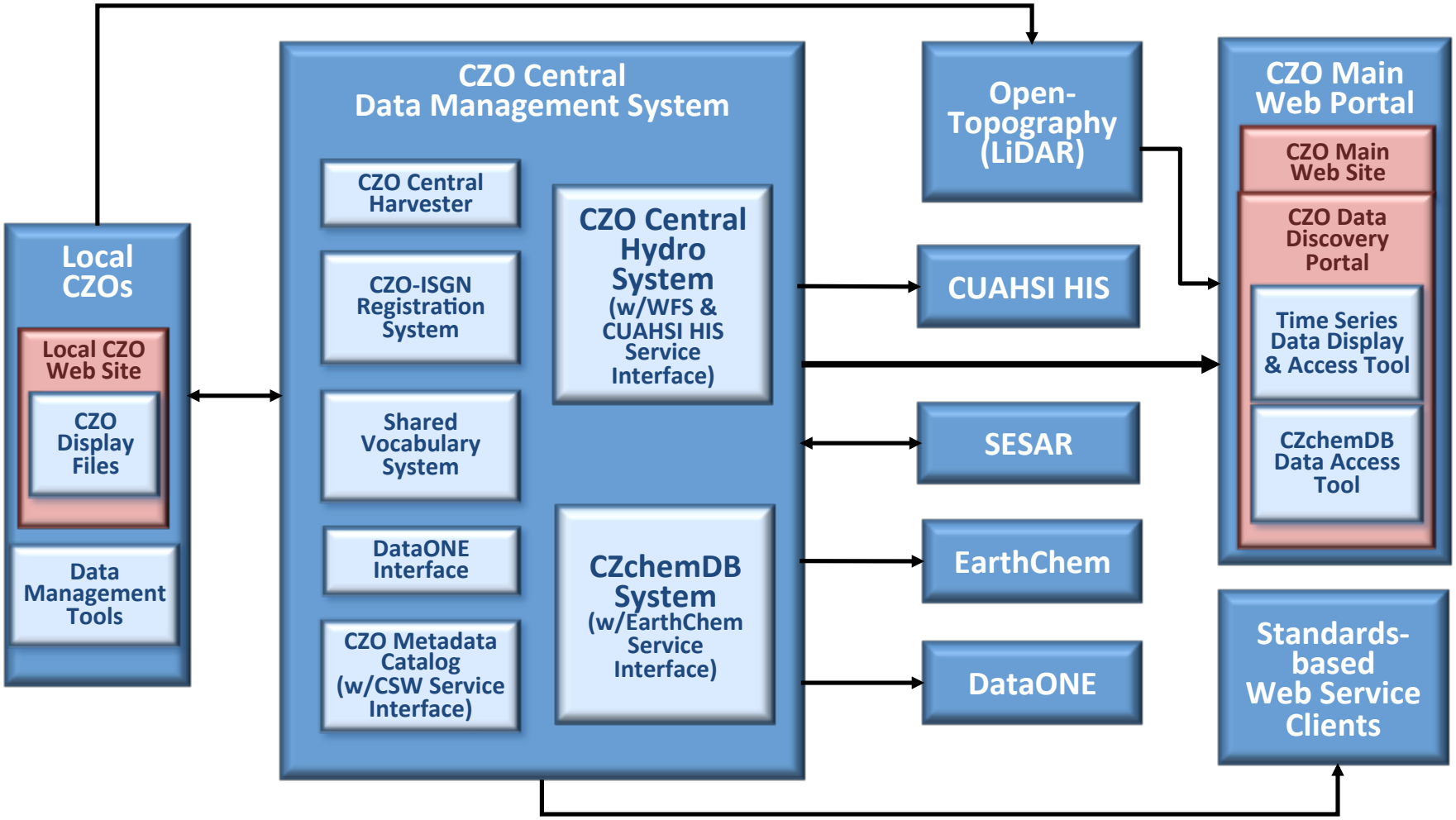
UtahState University

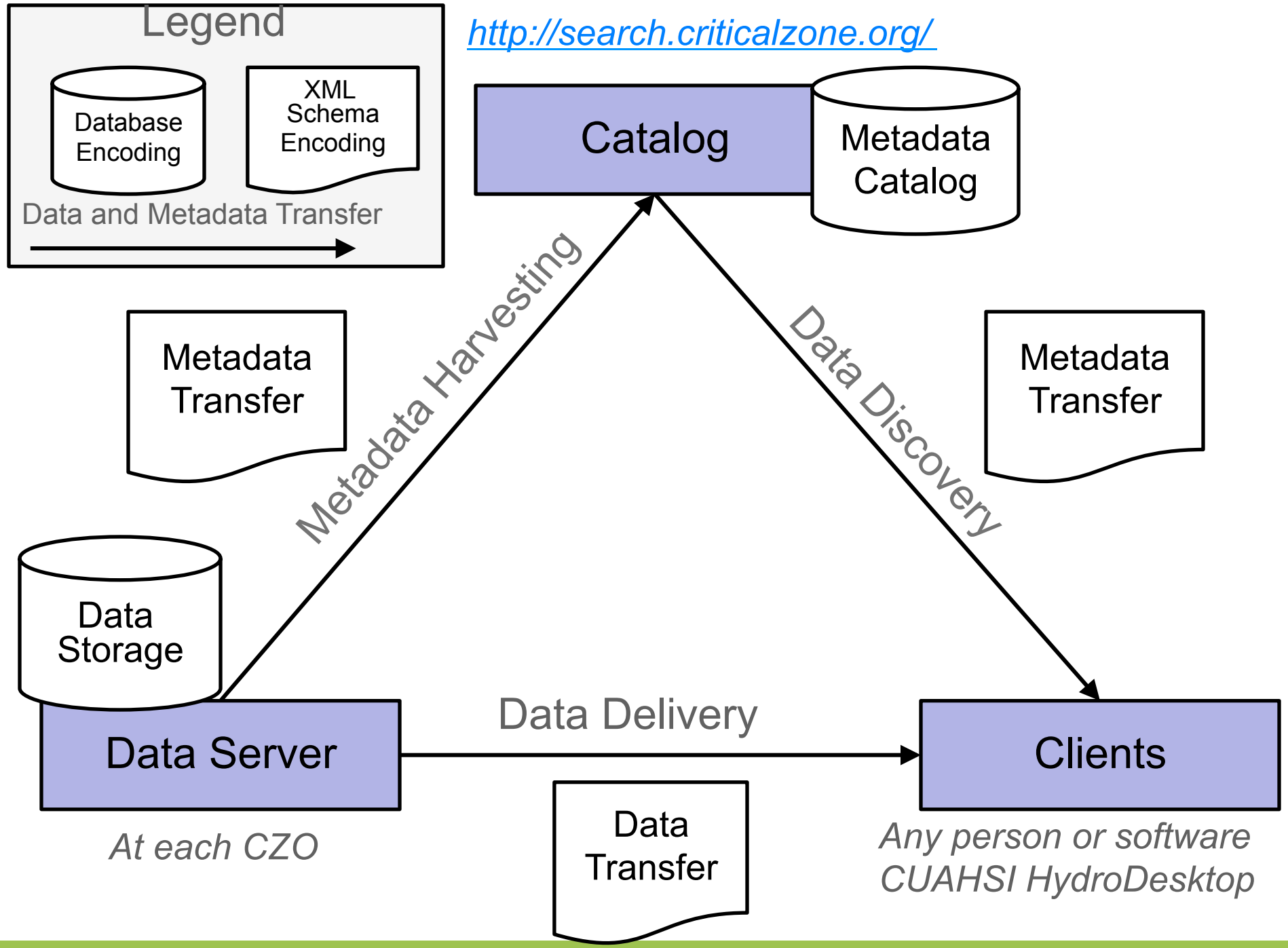
SDSC SAN DIEGO SUPERCOMPUTER CENTER

UNIVERSITY of WASHINGTON

IEDA INTEGRATED EARTH DATA APPLICATIONS

CZOData II Architecture

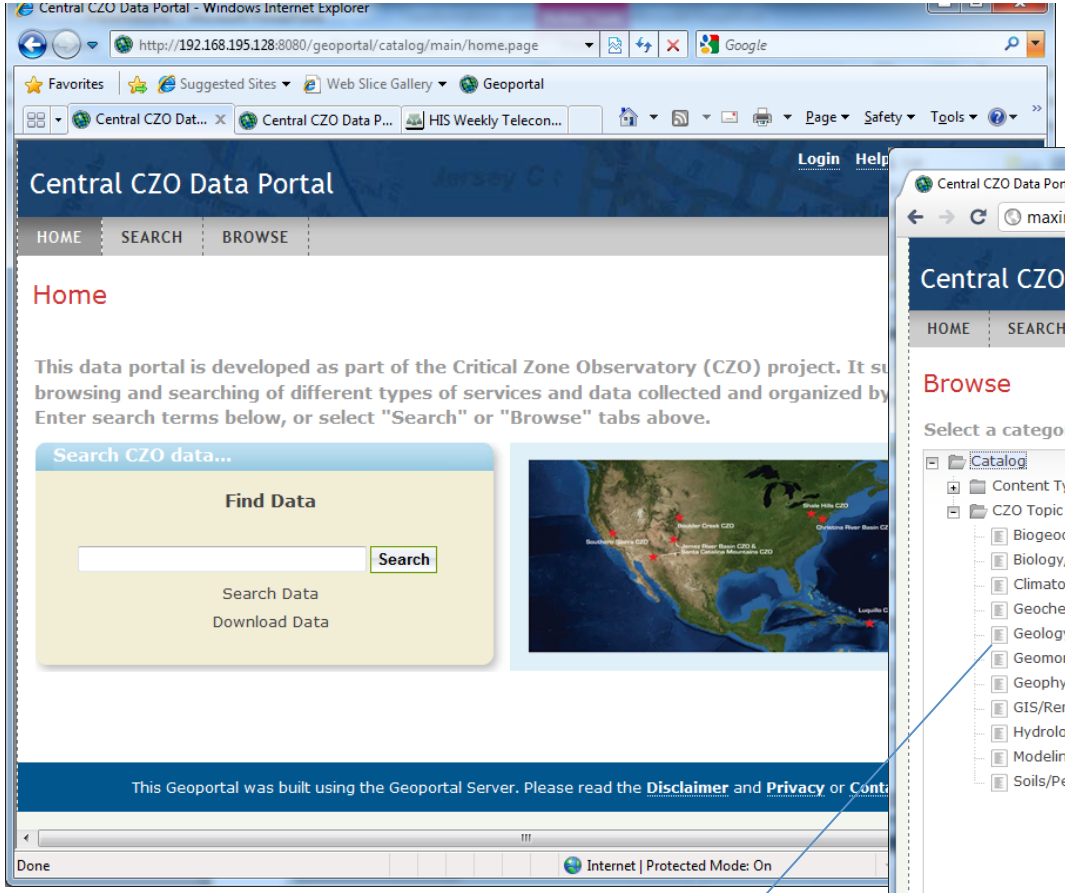


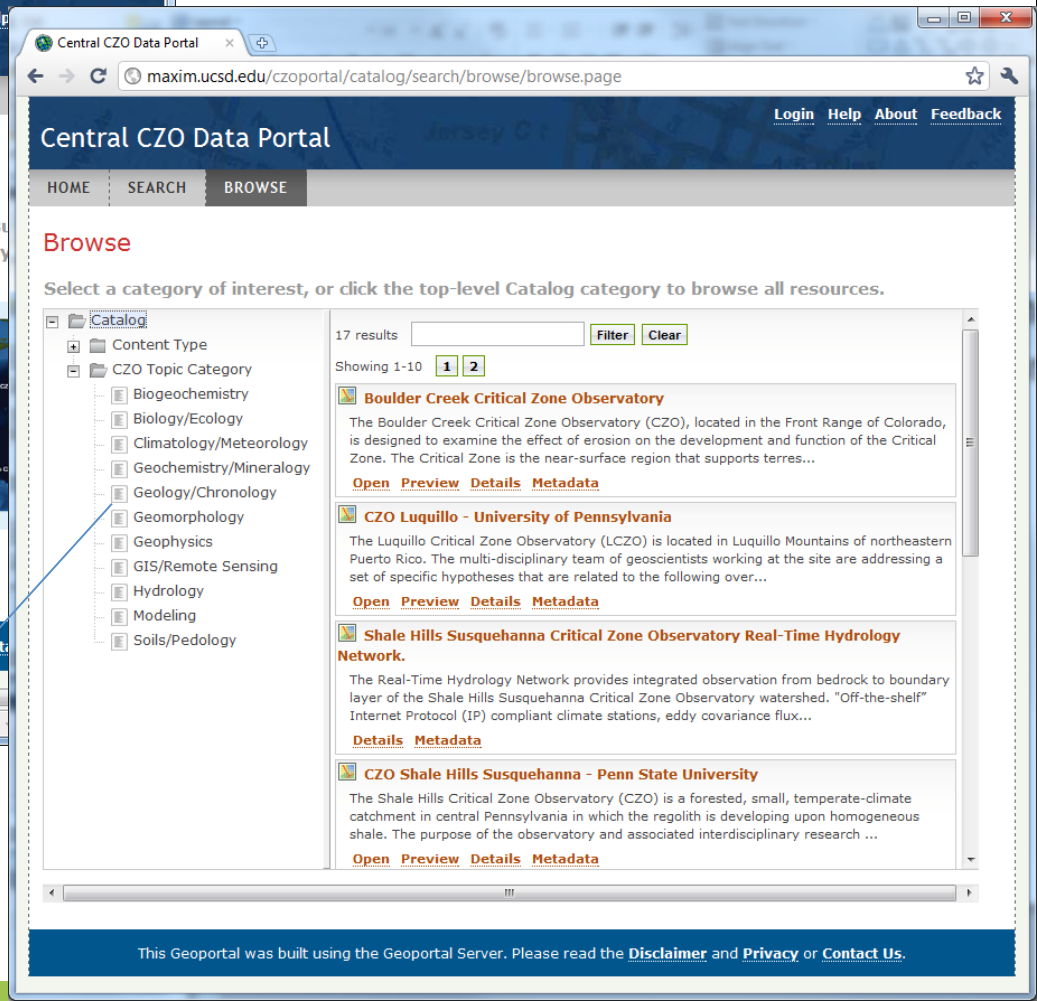

Legend
Database Encoding
XML Schema Encoding
Data and Metadata Transfer
http://search.criticalzone.org/
Catalog
Metadata Catalog
Metadata Transfer
Metadata Harvesting
Data Discovery
Metadata Transfer
Data Storage
Data Server
Data Delivery
Clients
At each CZO
Data Transfer
Any person or software
CUAHSI HydroDesktop

CZO Data Portal

At http://search.criticalzone.org/

Built on Geoportal metadata catalog software:
https://github.com/Esri/geoportal-server





Registered data are organized by CZO thematic categories

Data Publication Process

(for hydrologic time series)

\doc

TITLE. Streamflow data for Jemez River Basin.

ABSTRACT. 30 minute streamflow data measured and computed for
National Preserve).

INVESTIGATOR. Peter Troch, Department of Hydrology and Water
Tucson, [illegible]

VARIABLE NAMES. Streamflow.

KEYWORDS. hydrology, streamflow, Valle Caldera, New Mexico.

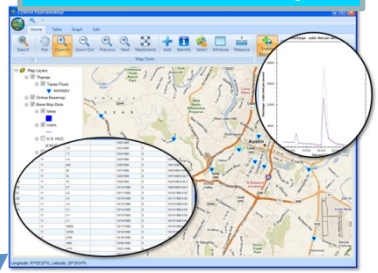
CITATION. [1] Broxton P.D., Troch P.A., and Lyon S.W. (2009)
small mountainous catchments. Water Resources Research 45: W0
[2] The following acknowledgment should accompany any publica
data were provided by the NSF-supported Jemez River Basin and

CZO Display File

ODM

WaterML Service

CZO Desktop



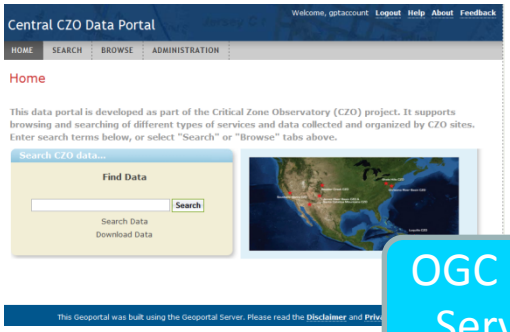
CZO Central Catalog

Catalog Search Service

Raw Display file metadata Is registered with the CZO data portal, to assure original data is discoverable and downloadable.

OGC WFS Service

WFS Service Is registered with the CZO data portal



OGC CSW Service

Broader internet community accessing data using standard protocols.

CZO Portal utilizes the OGC CSW (catalog services for the web)

Dataset

Christina River Basin - Stream Suspended Sediment (1993-2012)

TSS concentrations and elemental/isotopic composition (starting 2005) of baseflow and stormflow.

Variables: Solids_ total suspended, carbon to nitrogen molar ratio, carbon_ particulate organic, nitrogen_ particulate organic, nitrogen-15 stable isotope ratio delta

Date Range: (1993-2012)

Dataset Creators/Authors: Aufdenkampe, A.K.; Newbold, J.D.; Anderson, B. A.; Richardson, D.; Damiano, S.G.

Contact: Sara Geleskie Damiano, Stroud Water Research Center, 970 Spencer Road, Avondale, PA 19311, sgeleskie@stroudcenter.org

Field Area: Boulton Run | Christina River Basin | Forest Endmember: Spring Brook | White Clay Creek @ SWRC | Construction Endmember: White Clay Creek below landfill | Lower White Clay Creek | Agricultural Endmember: South Branch Doe Run

Water Chemistry
Geomorphology
Biogeochemistry
Hydrology
Geochemistry / Mineralogy

Christina

Description | Keywords | Citation | Publications | Acknowledgements

Description

Total suspended solids (TSS) and Volatile Suspended Solids (VSS) from White Clay Creek near the Stroud Water Research Center, Avondale, PA, USA. The purpose is to quantify export of inorganic and organic particulate matter from the 725-hectare watershed. Samples consist of those taken at monthly intervals, normally the first Wednesday of each month regardless of weather or flow conditions and those taken after precipitation events. The monthly samples are manual grab samples collected in 5-L polyethylene "space saver" bottles from a few centimeters below the surface and without disturbance to the stream bed. The event samples were collected in response to precipitation of 20 mm or more using an ISCO automated sampler which collected 1-L samples s in polyethylene bottles at hourly intervals through an intake approximately 20 cm above the bed. Each of approximately four events per year are represented by approximately 10 samples selected from the hourly series to characterize the rise, peak, and falling limb of the hydrograph. Additional events are represented by the three samples nearest peak flow.

Data

Christina River Basin - Stream Suspended Sediment 1993

(.csv) Data Level 1, Metadata

CZO Field Areas

Boulton Run

Christina River Basin

Forest Endmember: Spring Brook

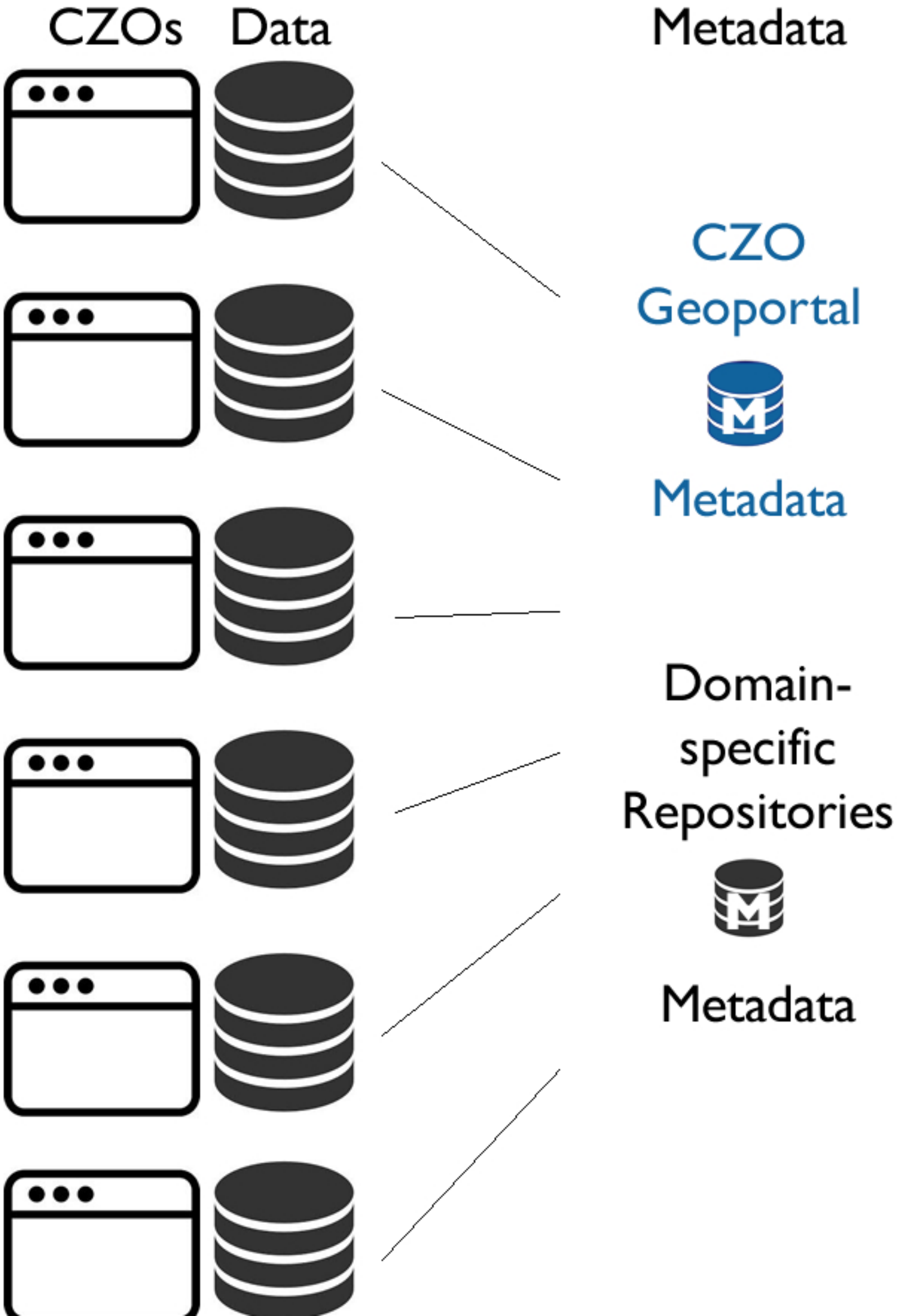
CZO | CRITICAL ZONE OBSERVATORIES
U.S. NSF NATIONAL PROGRAM

Entering Dataset Metadata into the CMS
(CriticalZone.org)
&
Automatic registration of CMS Dataset Metadata into Geoportal
(Search.CriticalZone.org)

David Lubinski
CZO "Webmaster"

INSTAAR
CU-Boulder

A year ago... Only a small fraction of metadata widely available



CZO Geoportal

2014 Website - Google Dr | CMS Dataset Fields and Me | Central CZO Data Portal | How to change slide size i

search.criticalzone.org/czoportal/catalog/main/home.page

Apps | Trello | soma | Read Later | INSTAAR | My Sites | CU | CZO | EE | Photos | Bookmarklets | tools

Login Help About Feedback

Central CZO Data Portal

HOME SEARCH BROWSE LAUNCH MAP VIEWER

Home

This data portal is developed as part of the Critical Zone Observatory (CZO) project. It supports browsing and searching of different types of services and data collected and organized by CZO sites. Enter search terms below, or select "Search" or "Browse" tabs above.

Search CZO data...

Find Data

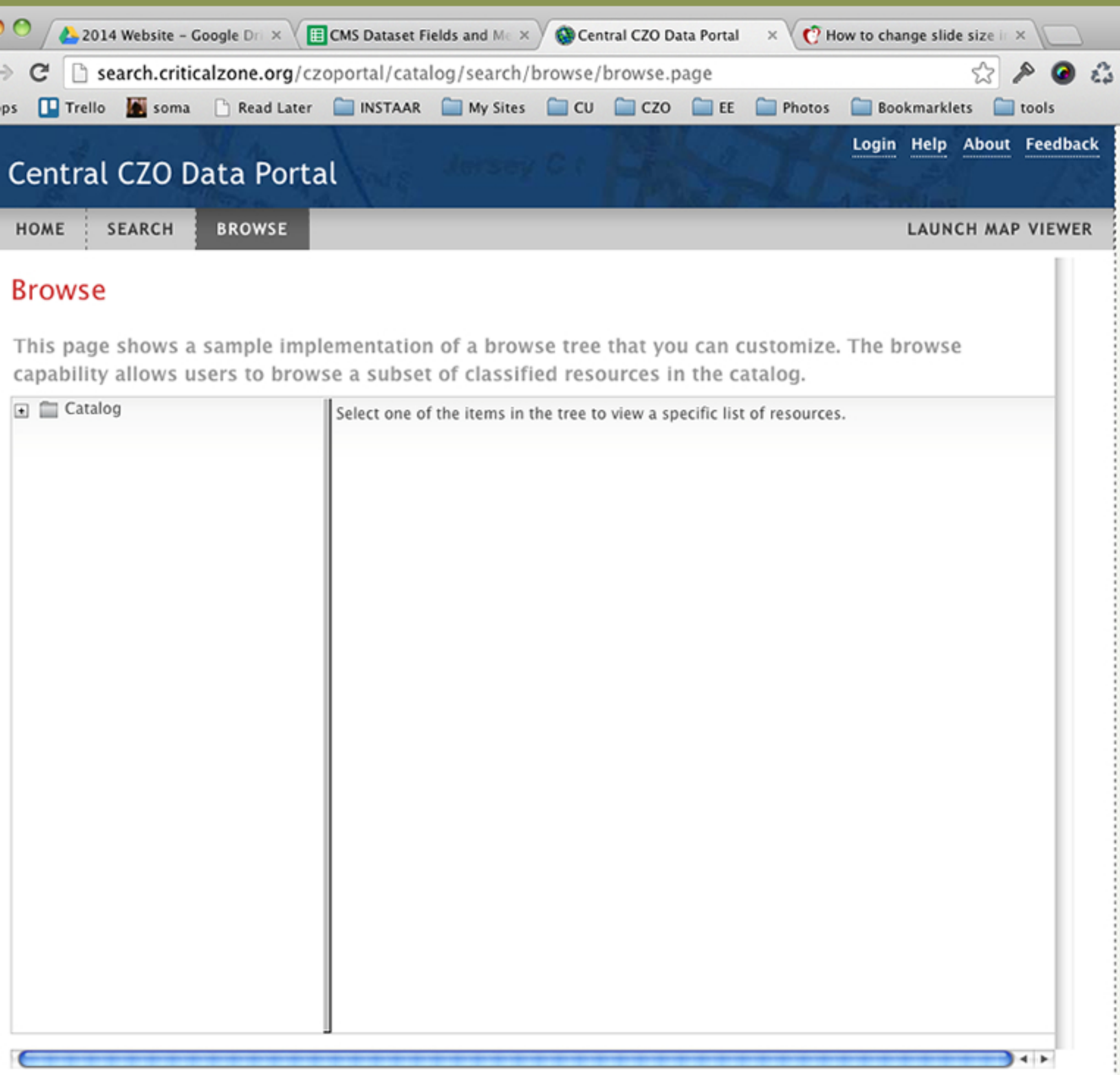
Search

Search Data

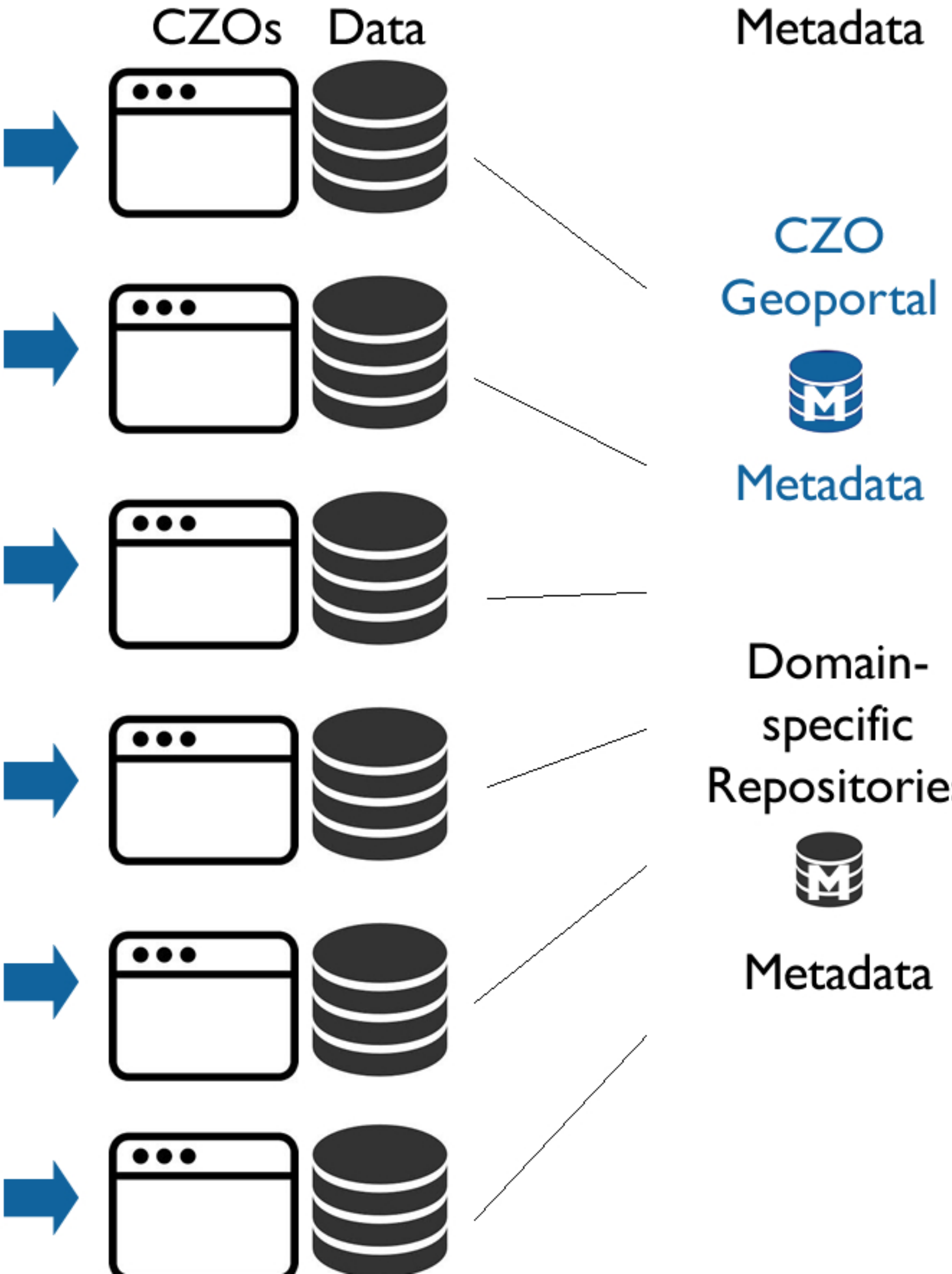
Download Data

This Geoportal was built using the Geoportal Server. Please read the Disclaimer and Privacy or Contact Us.

CZO Geoportal



Even more data...



Triple whammy of Difficult Data Discovery

Workflow/Training/Capabilities

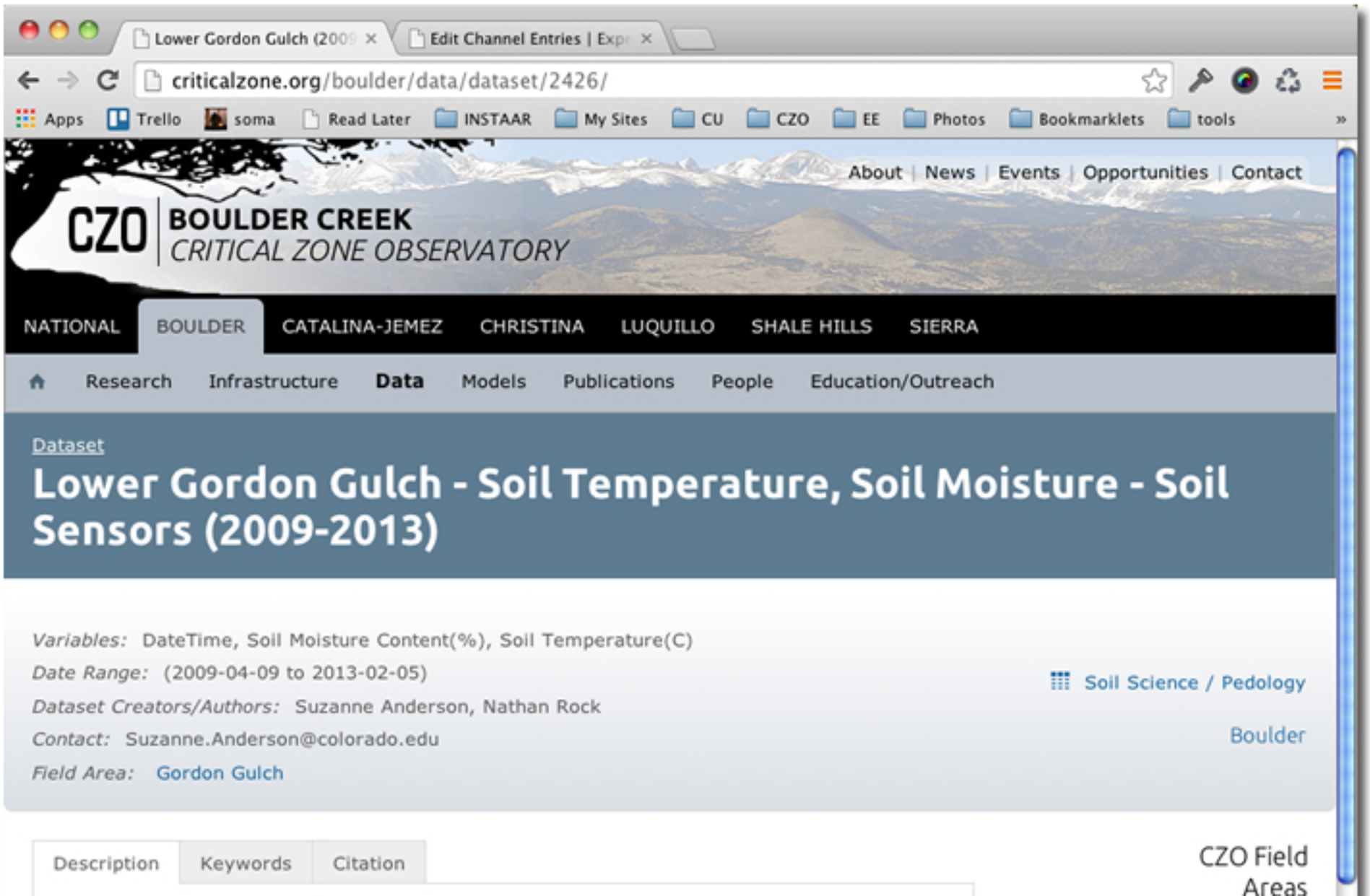
Default Geoportal UI

More data coming in...

Solution: Use the CMS

Dec 2012
Meeting at Stroud

Winter-Spring 2013
Collaborative Design
Development



179 Datasets entered

Each dataset consists of 1-30 components that point to individual online data resources.

1018 dataset component resources are listed for the 179 datasets.

These resources are all online, mostly on individual CZO web servers.

Data

Jemez River Basin - Flux Tower data
(.jsp) Data Level 1

Jemez River Basin - Flux Tower data 2007
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2007
(.csv) Data Level 2, Metadata

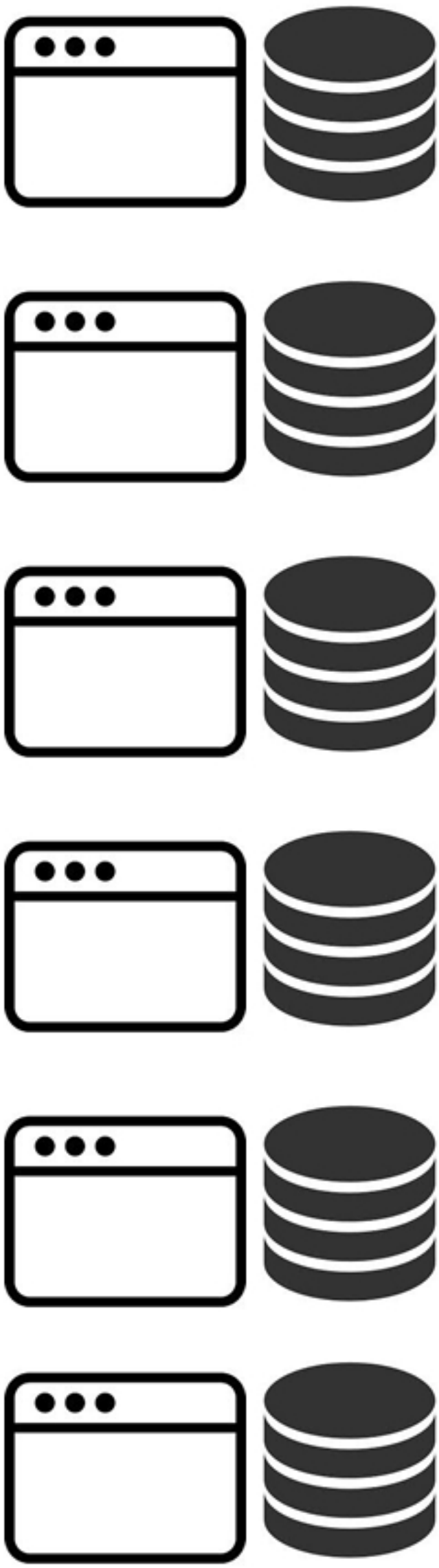
Jemez River Basin - Flux Tower data 2008
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2008
(.csv) Data Level 2, Metadata

Jemez River Basin - Flux Tower data 2009

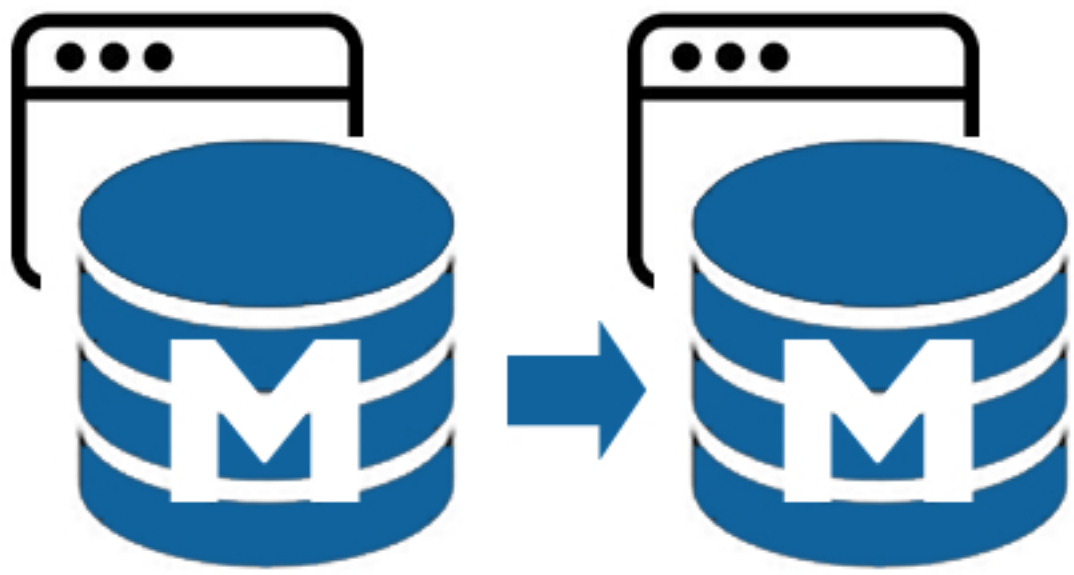
One-way metadata sync

CZOs Data



CMS metadata

CZO Geoportal metadata



CZOs Data

One-way metadata sync

CMS metadata

CZO Geoportal metadata

CMS-triggered Data Value Harvesting

CZO Central

Dataset

Lower Gordon Gulch - Soil Temperature, Soil Moisture - Soil Sensors (2009-2013)

Variables: DateTime, Soil Moisture Content(%), Soil Temperature(C)
Date Range: (2009-04-09 to 2013-02-05)
Dataset Creators/Authors: Suzanne Anderson, Nathan Rock
Contact: Suzanne.Anderson@colorado.edu
Field Area: Gordon Gulch

Soil Science / Pedology

Boulder

Description | Keywords | Citation

Description

Soil Moisture and Temperature Array at various depths at Snow Transect Pole 3, 4,5,6,9, and 10

CZO Field Areas

Gordon Gulch

Data

Lower Gordon Gulch Pole 3 - Soil Temperature & Moisture
(html) Data Level 1

Lower Gordon Gulch Pole 4 - Soil Temperature & Moisture
(html) Data Level 1

Lower Gordon Gulch Pole 5 - Soil Temperature & Moisture
(html) Data Level 1

Lower Gordon Gulch Pole 6 - Soil Temperature & Moisture
(html) Data Level 1

Lower Gordon Gulch Pole 9 - Soil Temperature & Moisture
(html) Data Level 1

Lower Gordon Gulch Pole 10 - Soil Temperature & Moisture

Dataset

Jemez River Basin - Flux Tower - Ponderosa Pine (2007-2012)

Valles Caldera Ponderosa Pine Flux Tower

Biology / Ecology
Climatology / Meteorology

Catalina-Jemez

Variables: Friction velocity, Temperature, Wind direction, Wind speed, Carbon dioxide flux, Sensible heat flux, Latent heat flux, Precipitation, Relative humidity, Barometric pressure, Carbon dioxide, Vapor pressure deficit, Volumetric water content, Radiation net, Radiation incoming PAR, Radiation incoming shortwave, Radiation outgoing shortwave, Radiation incoming longwave, Radiation outgoing longwave, Water vapor concentration, Ecosystem respiration, Gross primary productivity.

Date Range: (2007-2012)

Dataset Creators/Authors: Marcy Litvak, Paul Brooks

Contact: Marcy Litvak, Biology Department, University of New Mexico, Biology MSC03 2020, 167 Castetter Hall, Albuquerque, NM 87131, mlitvak@unm.edu.

Field Area: Jemez River Basin

Description | Keywords | Citation

Description

The flux tower is located in the Jemez River basin of the Jemez Mountains in north-central New Mexico at the southern margin of the Rocky Mountain ecoregion in the Valles Caldera National Preserve. The climate can be characterized as semi-arid, montane. Vegetation at this site is composed of a Pinus ponderosa overstory with Gambel oak scrubland (Quercus gambelii) understory. Tower height is 25 m.

CZO Field Areas

Jemez River Basin

CZO Authors

Paul Brooks

Data

Jemez River Basin - Flux Tower data
(.jsp) Data Level 1

Jemez River Basin - Flux Tower data 2007
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2007
(.csv) Data Level 2, Metadata

Data

Jemez River Basin - Flux Tower data
(.jsp) Data Level 1

Jemez River Basin - Flux Tower data 2007
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2007
(.csv) Data Level 2, Metadata

Jemez River Basin - Flux Tower data 2008
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2008
(.csv) Data Level 2, Metadata

Jemez River Basin - Flux Tower data 2009
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2009
(.csv) Data Level 2, Metadata

Jemez River Basin - Flux Tower data 2010
(.csv) Data Level 1, Metadata

Jemez River Basin - Flux Tower data gap filled 2010
(.csv) Data Level 2, Metadata

Jemez River Basin - Flux Tower data 2011
(.csv) Data Level 1, Metadata, **[Private]**

Jemez River Basin - Flux Tower data gap filled 2011
(.csv) Data Level 2, Metadata, **[Private]**

Jemez River Basin - Flux Tower data 2012
(.csv) Data Level 1, Metadata, **[Private]**

Jemez River Basin - Flux Tower data gap filled 2012
(.csv) Data Level 2, Metadata, **[Private]**

Sites - Methods
(mez/) Data Level

CZO Authors

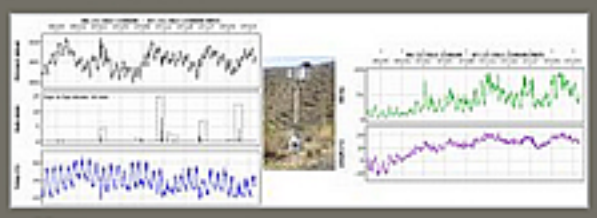
Paul Brooks

Data Use Policy | Data Sharing Policy | Research Groups/Foci

Data Sharing Policy

UNDER CONSTRUCTION — DRAFT v.0.2.5

DATA - Catalina-Jemez



+ More

Catalina-Jemez Datasets >

Catalina-Jemez Data Catalog Website

Move laterally: National | Boulder | Catalina-Jemez | Christina | Luquillo | Shale Hills | Sierra

Search for Datasets

Search [Search Tips]

Featured Dataset

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)

All Catalina-Jemez Datasets >

Integrated Data System

We are working with other CZOs to develop cross-CZO capabilities for sharing, integrating, analyzing, and preserving CZO data.

More Info >

CZO datasets are a powerful resource for developing and testing Earth system models. CZOs produce a large volume of data from a wide range of physical, chemical, and biological disciplines as well as spatial and temporal scales. This "flood" of disparate observational data partly reflects a new generation of integrated measurements. For example, most CZOs are using LIDAR imagery, copious isotopic samples, and low-cost sensors; others are also using eddy correlation and embedded sensor networks.

The Santa Catalina Mountains and Jemez River Basin CZO is collecting data from two field areas:

- Santa Catalina Mountains located north of Tucson in southern Arizona - three sites
- Jemez River Basin located in north-central New Mexico in the Valles Caldera National Preserve - two zero order basins.

Our efforts thus far have concentrated on:

1. Land and Atmosphere
    a) Airborne LiDAR: Digital Surface Model (DSM), Digital Elevation Model (DEM), Canopy height, intensity,

Datasets

Move laterally: National | Boulder | Catalina-Jemez | Christina | Luquillo | Shale Hills | Sierra

Search for Catalina-Jemez Datasets

Search [Search Tips]

Featured Dataset

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)

All Featured Datasets >

Browse 32 Datasets

Sort By: Title | Field Area | Topic | Discipline Tag | Start Date | End Date | Featured

B2 Desert Site - Meteorology (2009-2013)
7 components • B2 Desert Site (Low-Elevation) • Climatology / Meteorology • Peter Troch, Nate Abramson, Matej Durcik, Angie Jardine

B2 Desert Site - Precipitation (2009-2013)
6 components • B2 Desert Site (Low-Elevation) • Climatology / Meteorology • Peter Troch, Nate Abramson and Angie Jardine

B2 Desert Site - Soil Moisture, Soil Temperature (2010-2013)
17 components • B2 Desert Site (Low-Elevation) • Soil Science / Pedology • Peter Troch, Nate Abramson

Jemez 2011 Burned ZOB - Meteorology - Lower Site (2011-2012)
4 components • Jemez 2011 Burned ZOB • Climatology / Meteorology, Hydrology • Shirley Papuga, Mark Losleben and Jessica Swetish

Jemez 2011 Burned ZOB - Meteorology - Upper Site (2011-2012)
4 components • Jemez 2011 Burned ZOB • Climatology / Meteorology • Shirley Papuga, Mark Losleben and Jessica Swetish

Jemez 2013 Burned ZOB - Meteorology - South-West Site (2011-2013)
5 components • Jemez 2013 Burned ZOB • Climatology / Meteorology • Shirley Papuga, Mark Losleben and Jessica Swetish

Jemez 2013 Burned ZOB - Meteorology - South-East Site (2010-2013)
6 components • Jemez 2013 Burned ZOB • Climatology / Meteorology, Hydrology • Shirley Papuga, Scott Compton, Krystine Nelson, Mark Losleben, Jessica Swetish and Rebecca Minor

Jemez 2013 Burned ZOB - Sap Flow - South-West (2011-2012)
5 components • Jemez 2013 Burned ZOB • Biology / Ecology • Shirley Papuga, Bhaskar Mitra, Mark Losleben

Datasets

Move laterally: National | Boulder | Catalina-Jemez | Christina | Luquillo | Shale Hills | Sierra

Search for Catalina-Jemez Datasets

Search [Search Tips]

Featured Dataset

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)

All Featured Datasets >

Browse Datasets

Sort By: Title | Field Area | Topic | Discipline Tag | Start Date | End Date | Featured

SANTA CATALINA MOUNTAINS

805-2790 m elevation, 11-18 °C, 420-940 mm/yr

The Santa Catalina Mountains (Catalina) are located northeast of Tucson in southern Arizona. This location includes three sites: one in the Sonoran desert on the mountain foothill; the second in the mid elevation and the third - high elevation in the Marshall Gulch Creek catchment.

Santa Catalina Mountains - Soil Water Chemistry (2006-2010)
2 components • Santa Catalina Mountains • Water Chemistry, Geochemistry / Mineralogy • Jon Chorover, Peter Troch, Julia Perdrial, Ingo Heidbuechel, Nate Abramson

Santa Catalina Mountains - Stream Water Chemistry, Rainfall Chemistry (2006-2010)
3 components • Santa Catalina Mountains • Water Chemistry • Jennifer McIntosh, Paul Brooks, Peter Troch, Ingo Heidbüchel, Nate Abramson

Santa Catalina Mountains - GIS/Map Data - EEMT (2010)
1 components • Santa Catalina Mountains • GIS / Remote Sensing, Biology / Ecology • Craig Rasmussen and Matej Durcik

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)
1 components • Susquehanna Shale Hills Critical Zone Observatory, Bisley, Boulder Creek Watershed, Northeastern Puerto Rico and the Luquillo Mountains, Santa Catalina Mountains • Geochemistry / Mineralogy, Biogeochemistry • Niu, Xianzeng; Williams, Jennifer; Brantley, Susan; Miller, Doug; Bills, Brian

Datasets

Move laterally: National | Boulder | Catalina-Jemez | Christina | Luquillo | Shale Hills | Sierra

Search for Catalina-Jemez Datasets

Search [Search Tips]

Featured Dataset

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)

All Featured Datasets >

Browse Datasets

Sort By: Title | Field Area | Topic | Discipline Tag | Start Date | End Date | Featured

Flux Tower

Jemez River Basin - Flux Tower - Mixed Conifer (2007-2012)
14 components • Jemez River Basin • Biology / Ecology, Climatology / Meteorology • Marcy Litvak, Paul Brooks

Jemez River Basin - Flux Tower - Ponderosa Pine (2007-2012)
14 components • Jemez River Basin • Biology / Ecology, Climatology / Meteorology • Marcy Litvak, Paul Brooks

GIS/Map Data

Jemez River Basin - GIS/Map Data - EEMT (2010)
1 components • Jemez River Basin • Biology / Ecology, GIS / Remote Sensing • Craig Rasmussen and Matej Durcik

Santa Catalina Mountains - GIS/Map Data - EEMT (2010)
1 components • Santa Catalina Mountains • GIS / Remote Sensing, Biology / Ecology • Craig Rasmussen and Matej Durcik

Groundwater Depth

Marshall Gulch - Piezometer, Groundwater Depth (2007-2013)
15 components • Bigelow Tower/Marshall Gulch (High-Elevation) • Hydrology • Peter Troch, Ingo Heidbüchel, Nate Abramson

LiDAR

Datasets

Move laterally: National | Boulder | Catalina-Jemez | Christina | Luquillo | Shale Hills | Sierra

Search for Catalina-Jemez Datasets

Search [Search Tips]

Featured Dataset

Shale Hills, Boulder, Luquillo, JRB-SCM - Soil Geochemistry (2001-2013)

All Featured Datasets >

Browse Datasets

Sort By: Title | Field Area | Topic | Discipline Tag | Start Date | End Date | Featured

✱ All Disciplines

Biogeochemistry

Biology / Ecology

Jemez 2013 Burned ZOB - Sap Flow - South-East (2011-2012)
5 components • Jemez 2013 Burned ZOB • Biology / Ecology • Shirley Papuga, Bhaskar Mitra, Mark Losleben

Jemez 2013 Burned ZOB - Sap Flow - South-West (2011-2012)
5 components • Jemez 2013 Burned ZOB • Biology / Ecology • Shirley Papuga, Bhaskar Mitra, Mark Losleben

Jemez River Basin - Flux Tower - Mixed Conifer (2007-2012)
14 components • Jemez River Basin • Biology / Ecology, Climatology / Meteorology • Marcy Litvak, Paul Brooks

Jemez River Basin - Flux Tower - Ponderosa Pine (2007-2012)
14 components • Jemez River Basin • Biology / Ecology, Climatology / Meteorology • Marcy Litvak, Paul Brooks

Jemez River Basin - GIS/Map Data - EEMT (2010)
1 components • Jemez River Basin • Biology / Ecology, GIS / Remote Sensing • Craig Rasmussen and Matej Durcik

Marshall Gulch - Sap Flow - Granite (2011-2012)
5 components • Bigelow Tower/Marshall Gulch (High-Elevation) • Biology / Ecology • Shirley Papuga, Bhaskar Mitra, Nate Abramson

Dataset Search Results

Datasets

soil moisture | Search | [Search Tips]

6 datasets for 'soil moisture'

soil moisture ⊗ Remove all filters

By Relevance

1. **Marshall Gulch - Soil Moisture (2007-2013)**
   15 components • Bigelow Tower/Marshall Gulch (High-Elevation) • Climatology / Meteorology, Soil Science / Pedology, Hydrology • Peter Troch, Ingo Heidbüchel, Nate Abramson, Maite Guardiola-Claramonte
   "Soil moisture data measured in various depths at 11 different pits located in the Marshall Gulch catchment (high elevation site in the Santa Catalina Mountains). 3 pits are located at the granite site and 8 pits at the schist site. Volumetric water content is measured by EC-20 Soil Moisture Smart..."

2. **B2 Desert Site - Soil Moisture, Soil Temperature (2010-2013)**
   17 components • B2 Desert Site (Low-Elevation) • Soil Science / Pedology • Peter Troch, Nate Abramson
   "30 minute soil moisture and temperature measured in various depth for 14 pits located in the B2 desert - lower elevation site (Santa Catalina Mountains). 7 pits are located in the granite area and 7 pits are located in the schist area. Decagon EC-5 and ECT are used to measure..."

3. **Oracle Ridge - Soil Moisture, Soil Temperature (2010-2013)**
   9 components • Oracle Ridge (Mid-Elevation) • Soil Science / Pedology • Peter Troch, Nate Abramson
   "30 minute soil moisture and temperature measured in various depth for 8 pits located in the mid elevation site (Santa Catalina Mountains). Three pits are located in the lower part of the catchment, three in the middle part and two in the upper part. Decagon EC-5 and ECT are used..."

4. **Santa Catalina Mountains - Soil Water Chemistry (2006-2010)**
   2 components • Santa Catalina Mountains • Water Chemistry, Geochemistry / Mineralogy • Jon Chorover, Peter Troch, Julia Perdrial, Ingo Heidbuechel, Nate Abramson
   "Soil solution samples in the SCM field sites are collected with three types of soil solution samples: i) Prenart Super Quartz suction cups (www.prenart.dk) and ii) SoilMoisture suction cups (SoilMoisture Equipment Corp., Santa Barbara, CA) and iii) custom made zero-tension sampler (Hinckley et al., 2008). Prenart suction cups are optimized..."

5. **Jemez River Basin - Flux Tower, Ponderosa Pine (2007-2013)**

Narrow Your Results

FIELD AREA
- ☐ B2 Desert Site (Low-Elevation) 1
- ☐ Bigelow Tower/Marshall Gulch (High-Elevation) 1
- ☐ Jemez River Basin 2
- ☐ Oracle Ridge (Mid-Elevation) 1
- ☐ Santa Catalina Mountains 1

TOPIC
- ☐ Flux Tower 2
- ☐ Soil Moisture 3
- ☐ Soil Temperature 2
- ☐ Soil Water Chemistry 1

DISCIPLINE TAG
- ☐ Biology / Ecology 2
- ☐ Climatology / Meteorology 3
- ☐ Geochemistry / Mineralogy 1
- ☐ Hydrology 1
- ☐ Soil Science / Pedology 3
- ☐ Water Chemistry 1

CP Home

Search Entries

Channel is **Datasets**

Category **is** **Boulder**

Show 25 results Order by **Entry Date** **Descending order**

Search

Saved searches

- News
- People A-Z
- infrastructure
- sierra pubs

Showing results 1 to 25 out of 46 results

Save this search

1 2

Title	Categories	SUBTITLE	COMPONENT DATA	DATASET CREATORS/AUTHORS - CZO	CZO FIELD AREA(S)	Status	#
Gordon Gulch (2008-2011). Stream Water Chemistry,	Boulder	Gordon Gulch Surface Water Chemistry	Show matrix	Anderson, Suzanne	Gordon Gulch	Open	3065
Betasso (2008-2011). Stream Water Chemistry,	Boulder	Stream water chemistry samples collected in Betasso	Show matrix	Anderson, Suzanne	Betasso	Open	3064
Boulder Creek (2010). LiDAR, Point Cloud Data at OpenTopography.com (Snow off)	Boulder		Show matrix		Boulder Creek Watershed	Open	2921
Upper Gordon Gulch (2009-2011). Streamflow / Discharge,	Boulder	at gauge GGU_SW_0	Show matrix		Gordon Gulch	Open	2919
Lower Gordon Gulch (2010-2012). Streamflow / Discharge,	Boulder		Show matrix		Gordon Gulch	Open	2918
Boulder Creek (2010). LiDAR, Derived DEM from LIDAR	Boulder		Show matrix		Boulder Creek Watershed	Open	2915
Lower Gordon Gulch (2012-2013). Air Temperature, Meteorology, South-Facing Meteorological Tower	Boulder		Show matrix		Gordon Gulch	Open	2889
Lower Gordon Gulch (2012-2013). Air Temperature, Meteorology, North-Facing Met Tower	Boulder, Luquillo		Show matrix		Gordon Gulch	Open	2888
Boulder Creek (2010-2013). GIS/Map Data, Google Earth with BCCZO locations and LIDAR	Boulder		Show matrix		Boulder Creek Watershed	Featured	2866
Green Lakes Valley (1985-2011). Stream Water Chemistry, (data from Niwot Ridge LTER)	Boulder		Show matrix		Green Lakes Valley	Open	2865

CP Home

Search Entries

Channel is: Datasets

Category	is	Boulder
Entry title	contains	soil sensors

Show 25 results | Order by: Entry Date | Descending order

Search

Saved searches

- News
- People A-Z
- infrastructure
- sierra pubs

Showing result 1 to 1 out of 1 result

Save this search

	Title	Categories	SUBTITLE	COMPONENT DATA	DATASET CREATORS/AUTHORS - CZO	CZO FIELD AREA(S)	Status	#
☐	Lower Gordon Gulch (2009-2013). Soil Temperature, Soil Moisture, Soil Sensors	Boulder		Show matrix		Gordon Gulch	Open	2426

Entries: Edit

Categories: Add | Remove

Edit Entry

Publish | Other Fields | Maps

INSTRUCTIONS

LOCATION

Instructions: 50 character limit. Your concise location name may or may not match a CZO Field Area name. (e.g., Gordon Gulch).

Lower Gordon Gulch

START DATE

Instructions: When did sampling for the dataset begin? Be sure to enter all three values, approximations are OK. To easily pick a year low on the list, type the year and press return.

2009-04-09 09:00 AM

Localized

END DATE

Instructions: When did sampling for the dataset end? Be sure to enter all three values, approximations are OK. To easily pick a year low on the list, type the year and press return.

2013-02-05 09:00 AM

Localized

TOPIC

Instructions: Choose one or more brief topics, which may be similar to a parameter group name, If you can't find an appropriate topic on the list, you'll first need to create a new entry for a different channel (Publish > Dataset Topics). Then you can return here and choose the topic you just created.

Filter by keywords

- Air Temperature
- Chlorophyll
- Climate
- Cosmogenic Radionuclides
- Diatoms
- Digital Elevation Model (DEM)
- Electrical Conductivity
- Flux Tower
- Geophysics

Selected:

- Soil Temperature
- Soil Moisture

SUBTOPIC

Instructions: OPTIONAL. Maximum of 50 Characters. Add refinements or details that provide needed clarification to the Topic field. Your Subtopic should NOT include Location, Start Year, or End Year. (e.g., Depths of 15, 30, and 75 cm)

Soil Sensors

SHOW FULL DATES ON WEBSITE?

Instructions: Don't want the full Day, Month, and Year to appear on the website? If so, switch to "NO" and only the year will be displayed

NO | YES, Show full dates

DATE RANGE COMMENTS

Instructions: OPTIONAL. Additional info about the date range such as periodicity or consistency (e.g., weekly, irregular).

SUBTITLE

Instructions: OPTIONAL. Additional important information that doesn't fit within the auto-generated composite title format of Location - Topic, Subtopi StartYear-EndYear. Try to keep concise. (e.g. Sampled at depths of 15 cm, 40 cm and 70 cm.)

Categories

- [ ] National
- [x] Boulder
- [ ] Calhoun
- [ ] Catalina-Jemez
- [ ] Christina
- [ ] Eel
- [ ] IML
- [ ] Luquillo
- [ ] Reynolds
- [ ] Shale Hills
- [ ] Sierra

Status

Open

Author

Chi Yang

Categories

- [ ] National
- [x] Boulder
- [ ] Calhoun
- [ ] Catalina-Jemez
- [ ] Christina
- [ ] Eel
- [ ] IML
- [ ] Luquillo
- [ ] Reynolds
- [ ] Shale Hills
- [ ] Sierra

Status

Open

Author

Chi Yang

COMPONENT DATA

Instructions: Enter information about the individual data components of the dataset.
LOCATION Add additional info as needed, such as offset.
TOPIC Add additional info as needed.
URL Each component must have a URL, which points to a data file or a web page where you can access the data.
PRIVATE Website will show a label saying "Private". Restricting access is the responsibility of the individual CZO.
DATA LEVEL. For more info on the five Data Levels, see http://sv.criticalzone.org/edit.aspx?id=517576882&tbl=DataLevel&.
DOI (Optional). Digital Object Identifier. Just give the identifier, not a link. A URL link will be automatically generated for you.
HARVEST UNIQUE METADATA? (Optional). If you want unique metadata to be harvested to SDSC for just this one component row, you must paste in a unique URL from your CZO's webserver. If left blank, then atuomatic harvesting will be based on a combination of the other columns in this component row (ie Location, Topic) and the overall dataset field values (ie Description/Abstract, Citation for this Dataset, Contact Person & Info, Subject/Keywords, Variables, Comments).

	*LOCATION 50 character limit. (e.g., Gordon Gulch)	*TOPIC 100 character limit. (e.g., Soil Temperature & Moisture 2011)	*URL e.g., http://myczo.edu/datafile.html	*PRIVATE? Is the dataset currently private?	*DATA LEVEL See above instructions	DOI Digital Object Identifier (DOI) (e.g., 10.1029/2007GL031765)	HARVEST UNIQUE METADATA? See above Instructions.
1	Lower Gordon Gulch Pole 3	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://
2	Lower Gordon Gulch Pole 4	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://
3	Lower Gordon Gulch Pole 5	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://
4	Lower Gordon Gulch Pole 6	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://
5	Lower Gordon Gulch Pole 9	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://
6	Lower Gordon Gulch Pole 10	Soil Temperature & Moisture	http://czo.colorado.edu/q	NO / YES	1		http://

DESCRIPTION/ABSTRACT

Instructions: Who?, What?, When? Where?, Why? and How? Please make your text helpful to people unfamiliar with this dataset and with CZO. Length may be from a few words to multiple paragraphs.

words to multiple paragraphs.

Soil Moisture and Temperature Array at various depths at Snow Transect Pole 3, 4,5,6,9, and 10

DATASET CREATORS/AUTHORS

Instructions: Data requires authors for the same reasons journal articles require authors. Please list specific people (e.g., Brantley, Susan L.; Ketchum, Blake; White, Tim; Sullivan, Pamela L.). If individuals not known, enter the organization/entity name.

Suzanne Anderson, Nathan Rock

CITATION FOR THIS DATASET

Instructions: Data requires citations for the same reasons journal articles require citations. Please provide the following: author, title, year of publication, publisher (for data this is often the archive where it is housed), edition or version, and access information (a URL or other persistent identifier). For further guidance refer to http://libguides.lib.msu.edu/citedata

none

DATASET CREATORS/AUTHORS - CZO

Instructions: OPTIONAL. Are some of the dataset creators associated with CZO? If so, choose them.

Filter by keywords

- Aalto, Rolf
- Abramson, Nate
- Adams, Hallie
- Almaraz, Maya
- Anarde, Katherine
- Anders, Alison M
- Anderson, Ray
- Anderson, Robert S.
- Anderson, Suzanne
- Anderson, William

CONTACT PERSON & INFO

Instructions: Name and contact info. (e.g., Denis Newbold, Stroud Water Research Center, 970 Spencer Road, Avondale, PA 19311. newbold@stroudcenter.org)

Suzanne.Anderson@colorado.edu

CONTACT PERSON IS FROM CZO?

Instructions: Is the contact person associated with CZO? If "Yes", then the top person on the CZO Contributors list will be the main contact.

NO YES, CZO PERSON

KEYWORDS

Instructions: Freeform list to help with data discovery. Please use comma separator. (e.g., hydrology, stream temperature, stroud water research center, christina river)

Soil, Moisture and Temperature Sensors, Lower Gordon Gulch

VARIABLES

Instructions: Comma delimited (or comma+space delimited since only for display purposes). If a variable name has commas within it, please replace with spaces or underscores. Follow format of CZO Display File Specification, including adherence to shared vocabulary (see http://sv.criticalzone.org/edit.aspx?id=821577965&tbl=VariableName&. (e.g., pH, Specific Conductance, Carbon_dissolved organic, Alkalinity_total, Silicon, Silica, Calcium, Magnesium, Sodium, Potassium, Chloride, Sulfate, Nitrogen_ nitrate (NO3))

DateTime, Soil Moisture Content(%), Soil Temperature(C)

NATIONAL DISCIPLINE TAG

Instructions: Choose one or more tags that best describe the subject of this dataset. Many datasets have 2-3 tags. If in doubt, use fewer tags.

- All Disciplines
- Biogeochemistry
- Biology/Ecology
- Biology/Molecular
- Climatology/Meteorology
- DataManagement/CyberInfrastructure

- SoilScience/Pedology

- Anderson, William

KEYWORDS

Instructions: Freeform list to help with data discovery. Please use comma separator. (e.g., hydrology, stream temperature, stroud water research center, christina river)

Soil, Moisture and Temperature Sensors, Lower Gordon Gulch

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DateTime, Soil Moisture Content(%), Soil Temperature(C)

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- Biogeochemistry
- Biology/Ecology
- Biology/Molecular
- Climatology/Meteorology
- DataManagement/CyberInfrastructure
- Engineering/MethodDevelopment
- Geochemistry/Mineralogy
- Geology/Chronology
- Geomorphology

- SoilScience/Pedology

CZO FIELD AREA(S)

Instructions: Choose one or more CZO Field Areas. Please choose just the smallest appropriate area; do not include the parent area too. To filter the choices down to just one CZO, click the "+" symbol and choose a Category for that CZO.

Filter by keywords

- 1160 m Flux Tower, Soaproot Saddle
- 2015 m Flux Tower, Providence Creek subcatchment P301
- 2700 m Flux Tower, Short Hair Creek
- 405 m Flux Tower, San Joaquin Experimental Range
- Agricultural Endmember: South Branch Doe Run
- Alabama A&M AL
- B2 Desert Site (Low-Elevation)
- Betasso
- Bigelow Tower/Marshall Gulch (High-Elevation)
- Bisley

- Gordon Gulch

Entry Date

Submit

Edit Entry

Publish | Other Fields | Maps

DATASET DOI

Instructions: Does this whole dataset have a Digital Object Identifier? If so, just list the DOI number. A full URL will be automatically built from the number (e.g., 10.1029/2007GL031765)

EXTERNAL LINKS

Instructions: List links to external resources, especially related datasets managed by non-CZO groups. Do NOT include links to the component data files/pages, which are listed in a different matrix.

*LINK URL (e.g., http/someplace.edu/superduperdata)	*LINK TEXT (e.g., Discharge Data archived by Super Duper Agency)

AWARD/GRANT NUMBER(S)

Instructions: Was this dataset funded by an agency?

*AWARD/GRANT NUMBER (e.g., 0724971)	*FUNDING AGENCY (e.g., National Science Foundation)	URL FOR AWARD/GRANT (e.g., http://www.nsf.gov/awardsearch/showAward?AWD_ID=0724971)

COMMENTS

Instructions: Any comments? Additional metadata that didn't fit elsewhere?

RELATED DATASETS

Instructions: Does this dataset relate to others?

Filter by keywords

- B2 Desert Site (2009-2013). Meteorology,
- B2 Desert Site (2009-2013). Precipitation,
- B2 Desert Site (2010-2013). Soil Moisture, Soil Temperature,
- Betasso (2010-2012). Snow Depth, Air Temperature, measured by Judd Snow Sensors
- Betasso (2008). Land Cover,
- Betasso (2008-2011). Stream Water Chemistry,
- Betasso (2009). Geophysics, Shallow Seismic Refraction
- Betasso (2009-2013). Meteorology,
- Betasso (2009-2014). Air Temperature, Climate, Meteorology, Live Meteorological from Betasso Meteoro

PRIMARY PUBLICATIONS

Instructions: Only include "original" publications, not subsequent publications that used the data. If publication isn't yet in the system, enter it and return back to this entry form to choose it.

PRIMARY PUBLICATIONS

Instructions: Only include "original" publications, not subsequent publications that used the data. If publication isn't yet in the system, enter it and return back to this entry form to choose it.

Filter by keywords

- Aalto & Nittrouer, 2012 - 210Pb geochronology of flood events in large tropical river systems
- Adams et al., 2012 - Ecohydrological consequences of drought- and infestation- triggered tree die-of
- Adams et al., 2013 - Nonstructural leaf carbohydrate dynamics of Pinus edulis during drought-induced
- Aiken et al., 2002 - Assessment of relative accuracy in the determination of organic matter concentr
- Ajami et al., 2011 - Quantifying mountain block recharge by means of catchment-scale storage-dischar
- Anderson et al 2012 - Landscape scale linkages in critical zone evolution

PUBLICATIONS THAT USE THIS DATASET

Instructions: Choose datasets that use this dataset. Do NOT include primary (original) publications. If publication is missing, enter it via the Publications channel and return to this entry form to choose it.

Filter by keywords

- Aalto & Nittrouer, 2012 - 210Pb geochronology of flood events in large tropical river systems
- Adams et al., 2012 - Ecohydrological consequences of drought- and infestation- triggered tree die-of
- Adams et al., 2013 - Nonstructural leaf carbohydrate dynamics of Pinus edulis during drought-induced
- Aiken et al., 2002 - Assessment of relative accuracy in the determination of organic matter concentr
- Ajami et al., 2011 - Quantifying mountain block recharge by means of catchment-scale storage-dischar
- Anderson et al 2012 - Landscape scale linkages in critical zone evolution

LOCAL DISCIPLINE / RESEARCH GROUP

Instructions: If this dataset is connected to one or more Local Discipline groups (disciplinary-based formal or informal working groups), choose the group(s). If in doubt, choose fewer groups.

Filter by keywords

- Boulder - Cosmogenic Nuclide Dating
- Boulder - Geomorphology
- Boulder Creek - Geophysics
- Boulder Creek - GIS & Remote Sensing
- Boulder Creek - Glacial Geology
- Boulder Creek - Hydrology
- Boulder Creek - Meteorology
- Boulder Creek - Soil Science & Weathering
- Boulder Creek - Stream Chemistry
- Luquillo - Biogeochemistry

LOCAL RESEARCH FOCI

Instructions: If this dataset is connected to one or more research foci (local research objectives or cross-disciplinary themes), choose the foci. If in doubt, use fewer foci.

Filter by keywords

- Calhoun - Eco-hydrology and Erosion-Carbon Modeling
- Calhoun - Education-Outreach

Instructions: Choose datasets that use this dataset. Do NOT include primary (original) publications. If publication is missing, enter it via the Publications channel and return to this entry form to choose it.

Filter by keywords

- Aalto & Nittrouer, 2012 - 210Pb geochronology of flood events in large tropical river systems
- Adams et al., 2012 - Ecohydrological consequences of drought- and infestation- triggered tree die-of
- Adams et al., 2013 - Nonstructural leaf carbohydrate dynamics of Pinus edulis during drought-induced
- Aiken et al., 2002 - Assessment of relative accuracy in the determination of organic matter concentr
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- Boulder Creek - Glacial Geology
- Boulder Creek - Hydrology
- Boulder Creek - Meteorology
- Boulder Creek - Soil Science & Weathering
- Boulder Creek - Stream Chemistry
- Luquillo - Biogeochemistry

LOCAL RESEARCH FOCI

Instructions: If this dataset is connected to one or more research foci (local research objectives or cross-disciplinary themes), choose the foci. If in doubt, use fewer foci.

Filter by keywords

- Calhoun - Eco-hydrology and Erosion-Carbon Modeling
- Calhoun - Education-Outreach
- Calhoun - Flux tower with deep belowground sensing
- Calhoun - Interdisciplinary modeling
- Calhoun - Land-use history plot location and instrumentation
- Calhoun - Watershed re-instrumentation and sampling
- Catalina-Jemez - Critical Zone Services
- Catalina-Jemez - Ecohydrology and Hydrologic Partitioning
- Catalina-Jemez - Geo-Ecological Feedbacks
- Catalina-Jemez - Landscape Evolution

Submit

Edit Entry

Publish | Other Fields | Maps

MAP INSTRUCTIONS

GENERAL MAP UPLOADS

Instructions: OPTIONAL. Upload general maps as images (e.g., png, jpg).

*TITLE	*MAP FILE	CAPTION	*MAP SIZE
Enter a map title	Upload or choose existing image file.	(OPTIONAL) Description of the map	Pick a size for the website

GENERAL MAP LAYER UPLOADS

Instructions: OPTIONAL. Upload general map layers as images (e.g., png, jpg). Each map layer image should be the exact same pixel dimensions.

*TITLE	*MAP FILE	CAPTION
Enter a very short title for the layer (e.g., Satellite)	Upload or choose existing image file.	(OPTIONAL) Description of the map layer

CENTROID LONGITUDE (dd)

Instructions: Longitude of the approximate center of the area, in decimal degrees (e.g., -105.469). It's needed for Google Maps.

CENTROID LATITUDE (dd)

Instructions: Latitude of the approximate center of the area, in decimal degrees (e.g., 40.0128). It's needed for Google Maps.

POINT MARKERS

Instructions: Optional. Enter information for up to 15 point markers that will appear in the Google Map. If you need more than 15 markers, please create and upload kml files.

*MARKER TITLE	*LATITUDE (dd)	*LONGITUDE (dd)	DESCRIPTION	COLOR
Brief title of the marker (e.g., Flux Tower A1B200).	Marker latitude in decimal degrees (e.g., 40.0128)	Marker longitude in decimal degrees (e.g., -105.469)	Brief description of the marker (100 characters max)	Pick a color

KML/KMZ FILES

Instructions: OPTIONAL. Upload one or more KML or KMZ files in a Google Maps compatible format to plot points, polygons, polylines, and imagery. Consider uploading at least a single kml with a polygon border around your area.

CONTROL MAP EXENT?	*TITLE	*KML/KMZ FILE	DESCRIPTION
Do you want the locations within this kml/kmz file to control map extent? CHOOSE ONLY ONE FILE. Multiple controls may create undesired results.	Brief title of the file (e.g., soil pit locations)	Upload a kml or kmz file in Google Maps compatible format or choose an existing file.	Description of the file (e.g., Locations of soil pits dug in 2011 and 2012, includes popup info windows with site id)

MAP FREEFORM TEXT & CODE

Instructions: Have some additional geospatial info or metadata that doesn't fit elsewhere and needs to be discussed? Want to include links to external resources? Need to embed a dynamic map that's is housed elsewhere? Include those items or anything else here.

Source | Format | Styles

portal.westcoastoceans.org

2014 Website - Google Dr | CMS Dataset Fields and Me | West Coast Ocean Data Por

portal.westcoastoceans.org

Apps | Trello | soma | Read Later | INSTAAR | My Sites | CU | CZO | EE | Photos | Bookmarklets | tools | web apps

WEST COAST OCEAN DATA PORTAL

A project of the West Coast Governors Alliance on Ocean Health

DISCOVER CONNECT INFORM ABOUT

WELCOME

Discover & contribute valuable data resources to inform ocean planning, policy development and resource management on the West Coast. ▶

187

registered resources

SEARCH

DISCOVER

Biological Data

DISCOVER

Marine Debris Data

DISCOVER

Human Use Data

DISCOVER

Physical Data

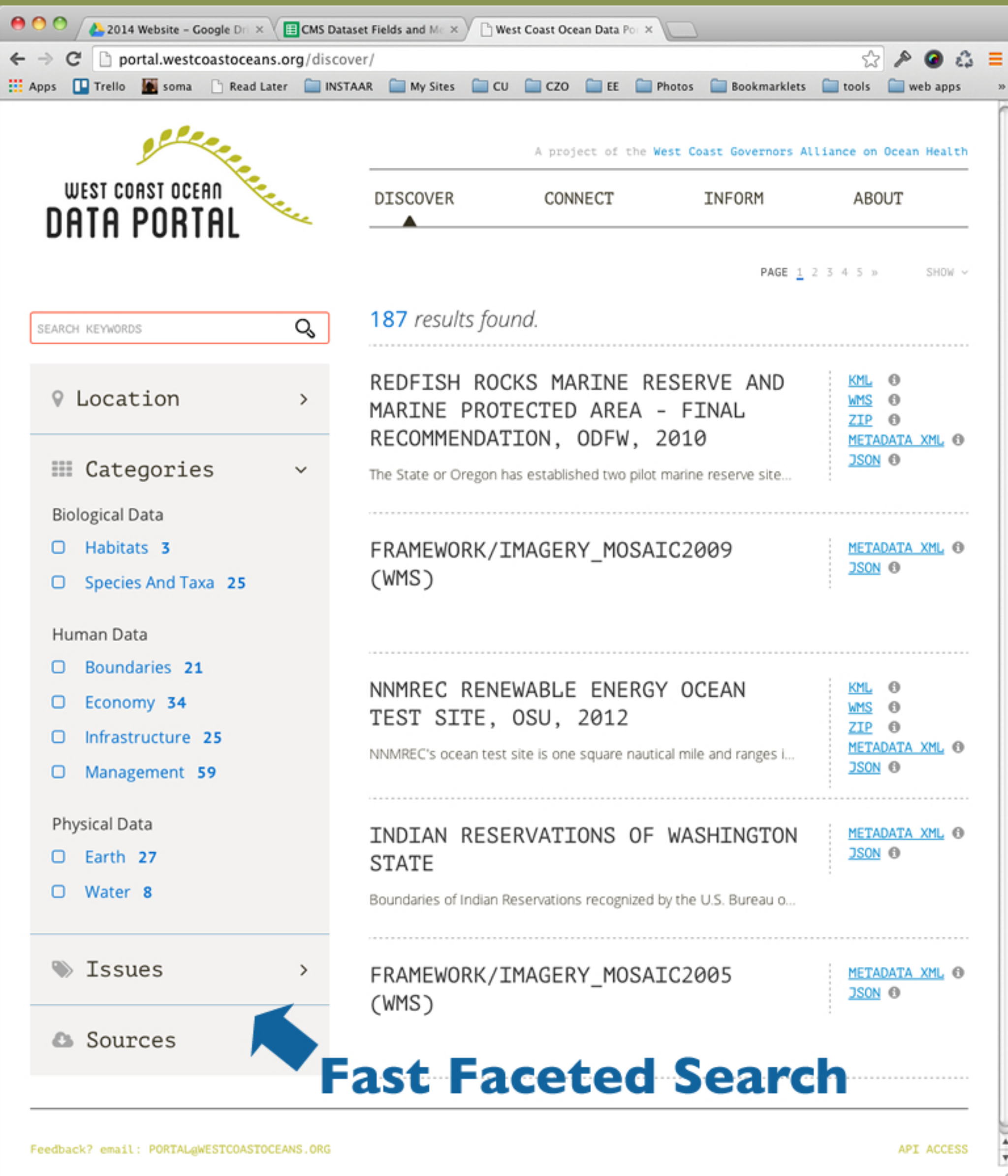
EXPLORE

Contributors: see who is contributing to the registry. ▶

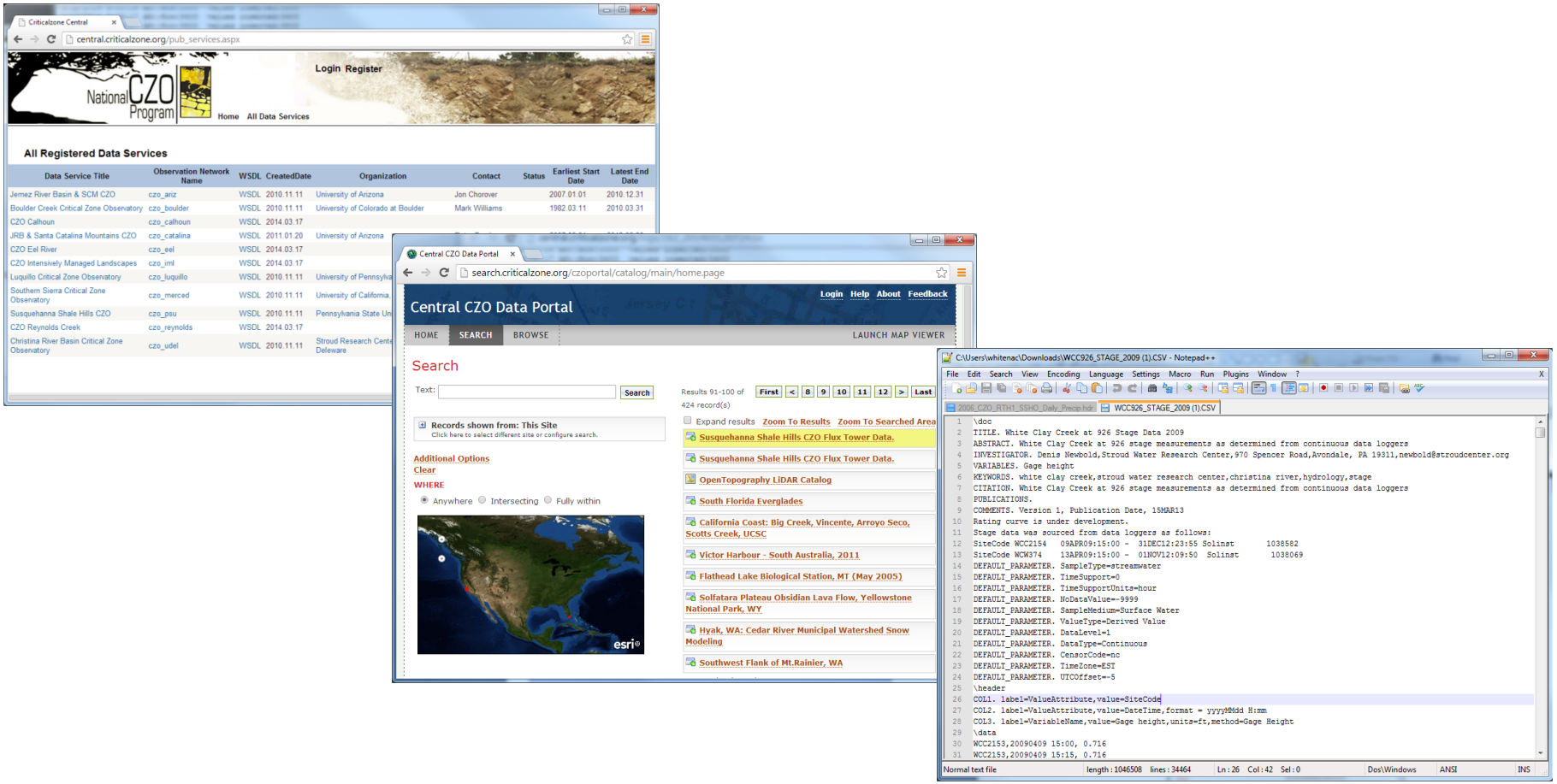
Feedback? email: PORTAL@WESTCOASTOCEANS.ORG

API ACCESS

portal.westcoastoceans.org



CZO Central, Geoportal Search interface, and Display Files

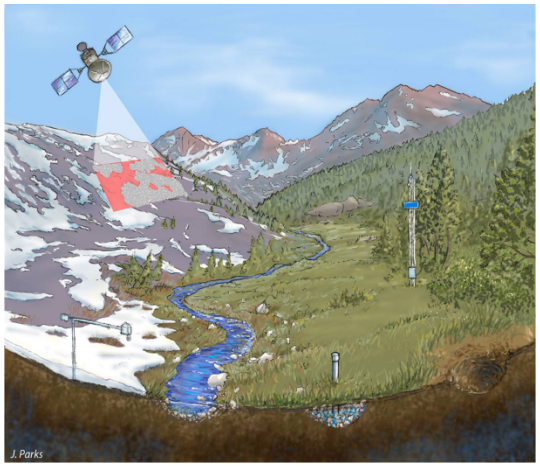


Outline

- How registering data at central.criticalzone.org works with ODM/hydroservers, and how those hydroservers are visible from cuahsi clients
- Display files formats.
- Explain the relationship with Central.critcialzone.org, and www.criticalzone.org, and search.criticalzone.org
- Was is Geoportal? Our plans for the criticalzone search interface.

Integrated CZO data system

Synthesizing information management experience and software from CZO partners and neighboring earth science projects into a standards-based system for publishing environmental data to emphasize the "critical zone" nature of our shared data sets



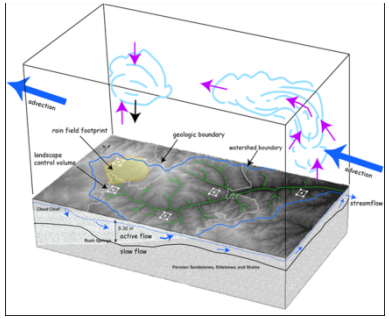
LTER

CUAHSI HIS
Sharing hydrologic data

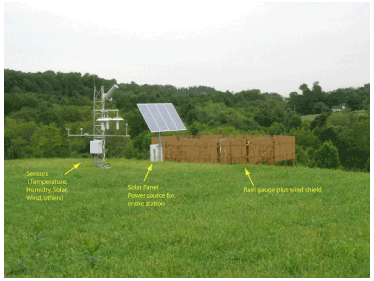
Critical Zone Exploration Network

neon
National Ecological Observatory Network, Inc.

earthchem
ADVANCED DATA MANAGEMENT IN SOLID EARTH GEOCHEMISTRY



OGC®
Open Geospatial Consortium, Inc.



Southern Sierra CZO - KREW

Type	Name	Size	Last Modified
	Bull Creek Lower Met		2008-03-25 09:20
	Bull Creek Upper Met		2008-03-25 09:20
	Critical Zone Tree		2009-05-29 10:57
	Documents		2009-12-11 11:36
	Maps		2010-03-22 13:35
	P301 Flux Tower		2010-07-22 14:15
	P301 Water Balance Transect		2009-05-29 11:50

CZO Data Publication System

CZO Data Repository and Indexing (CZO Central)

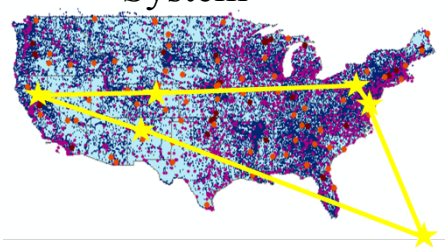
External cross-project registries

Standard CZO Services

CZO Metadata | Ontology | Shared vocabularies | Archive | Harvester

CZO Data Products

CZO Web-based Data Discovery System



CZO Desktop Applications

- CZO Desktop
- Matlab
- R
- Excel
- ArcGIS
- Modeling

Standard CZO data display formats

Web site | Web site | Web site

Local CZO DB | Local CZO DB | Local CZO DB

Spatial, hydrologic, geophysical, geochemical, imagery, spectral…

CZO Central web service registry

CZO Central - Windows Internet Explorer

http://hydro13.sdsc.edu/czocentral/default.aspx

File Edit View Favorites Tools Help

Favorites | CZO Central

National CZO Program

Login Register

Home All Data Services

Critical Zone Observatory Central Web Service

POINT OBSERVATION DATA SERVICES

This website supports the sharing of hydrologic data published using WaterOn
publication services support the publication of data by the research community
Data Model (ODM). For more informatin on publishing hydrologic data, visit: Us
1. Server Set-up. Establish a relational database server to host the data you wa
2. Data Loading. Load the data into ODM.
3. Network Set-up. Establish web services to make the data from ODM publica
4. Data Indexing. Register the web services with CUAHSI so that they are acce

WEB SERVICE REGISTRATION SYSTEM

- Listing of registered public data services (47 registered services)
- Hydrologic Concept Ontology (requires java).

CZO display file is automatically ingested in CZO data repository, a service is updated, making new data available

Boulder Creek CZO web service

CZO Central - Windows Internet Explorer

http://hydro13.sdsc.edu/czocentral/pub_network.aspx?n=145

File Edit View Favorites Tools Help

Favorites | CZO Central

National CZO Program

Login Register

Home All Data Services

Boulder Creek Critical Zone Observatory

University of Colorado at Boulder

czo_boulder

http://192.31.21.100/czo_boulder/cuahsi_1_0.asmx?WSDL

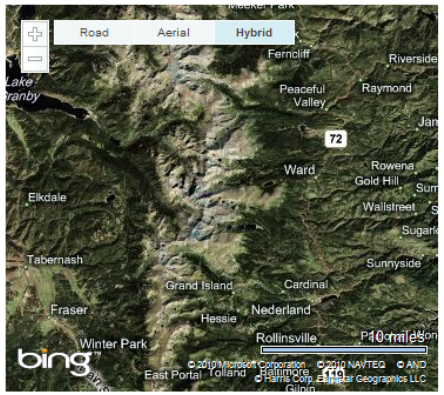
Contact: Mark Williams
markw@snobear.Colorado.edu
303-492-8830

Service Statistics:

Sites:	1
Variables:	31
Values:	11834

Geographic Extent:

40.05479
-105.6165 -105.6165
40.05479



Abstract

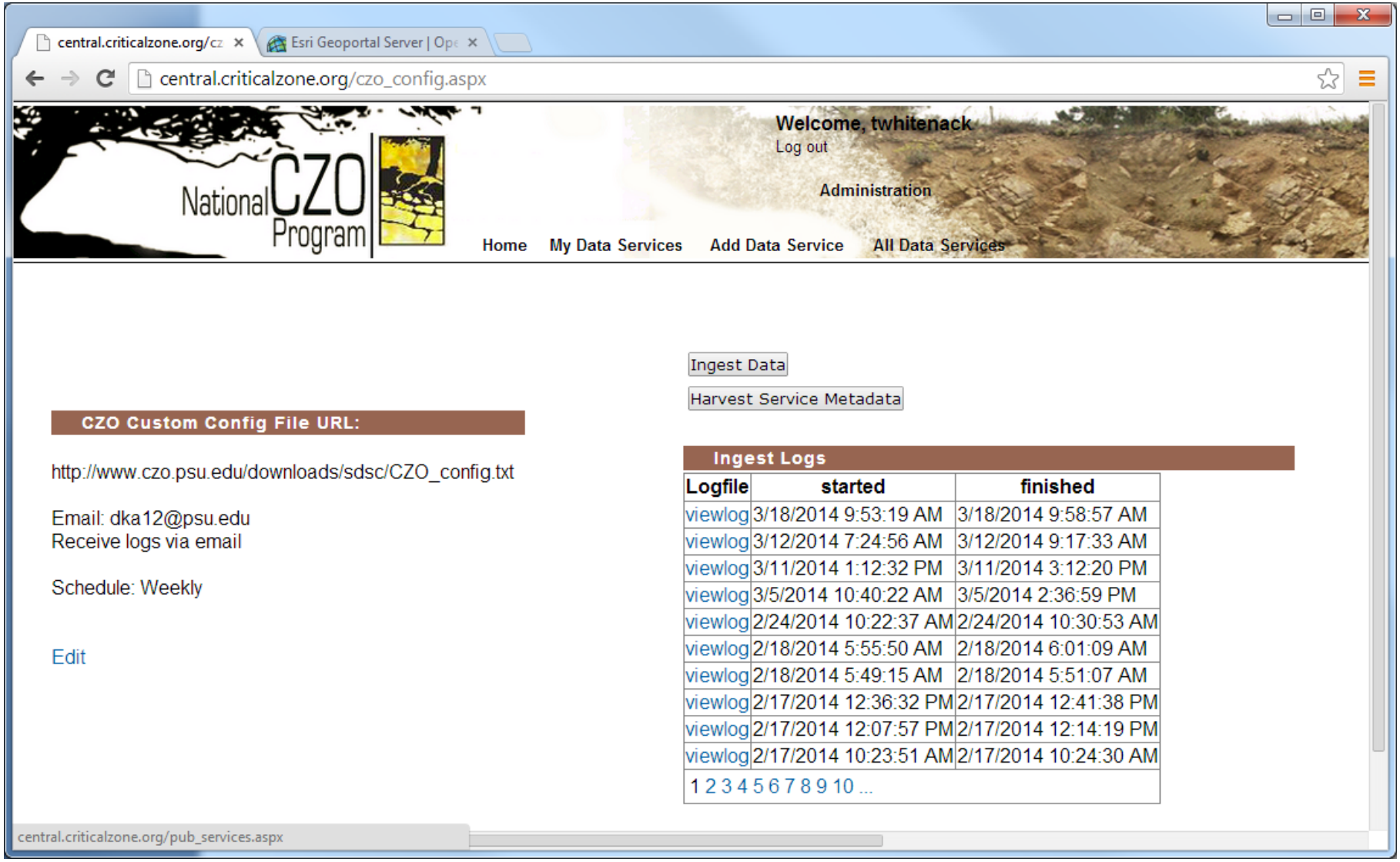
The Boulder Creek Critical Zone Observatory (CZO), located in the Front Range of Colorado, is designed to examine the effect of erosion on the development and function of the Critical Zone. The Critical Zone is the near-surface region that supports terrestrial life, extending vertically from the base of groundwater to the upper reaches of the vegetation canopy. The Boulder Creek Watershed is about 1160km2 and drains the Front Range from the Continental Divide (4120m) to the eastern plains (1480) (Murphy, 2000). In the upper reaches of Boulder Creek, it has 3 tributaries – North Boulder Creek, Middle Boulder Creek and South Boulder Creek. The confluence of North Boulder Creek and Middle Boulder Creek is at ?m. South Boulder Creek joins Boulder Creek near the City

Citation

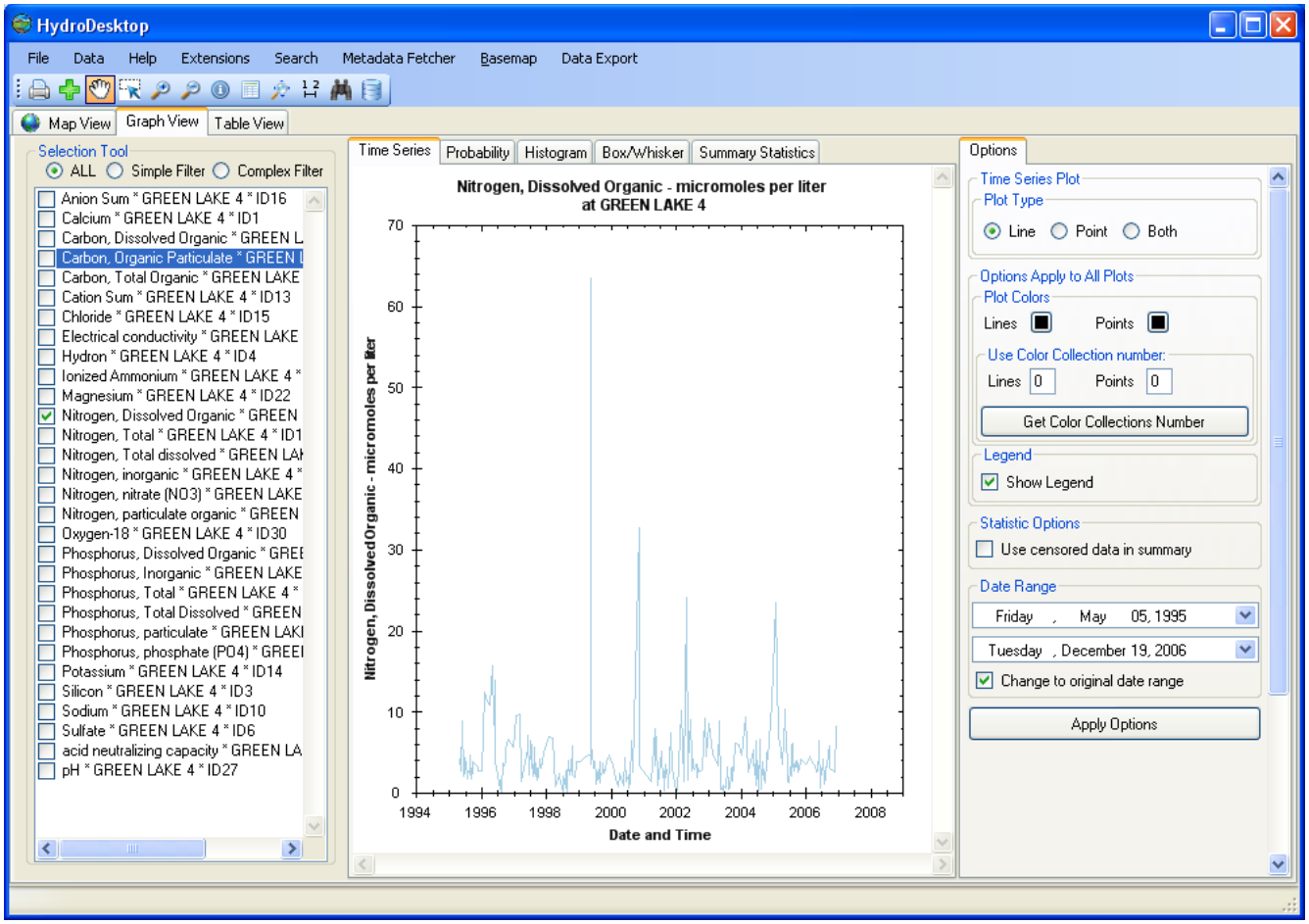
Logistical support and/or data were provided by the NSF-supported Boulder Creek Critical Zone

Done | Internet | 100%

Central Configuration page



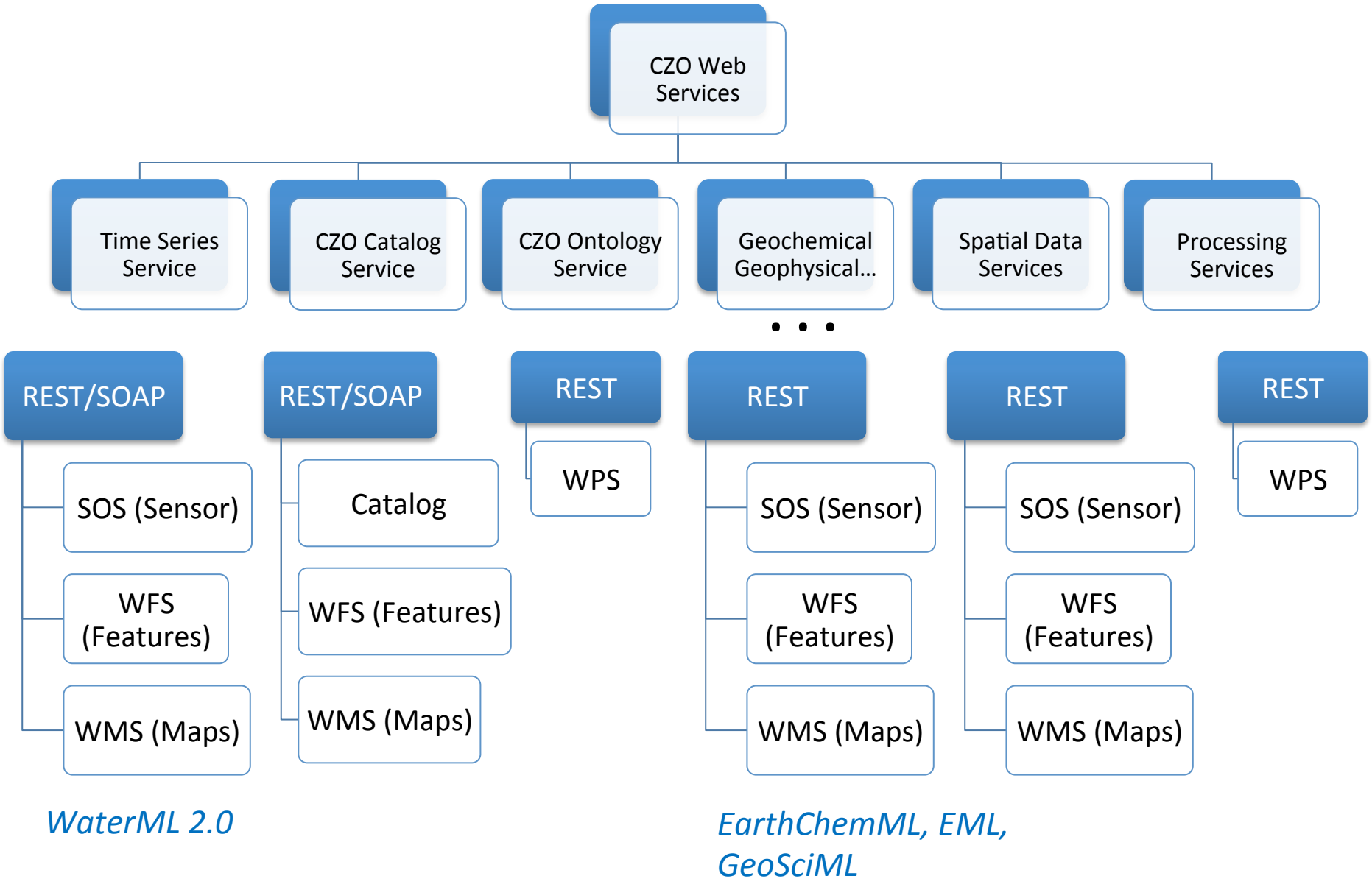
Working with CZO Time Series Data



HydroDesktop, showing one of 31 newly ingested time series

Once CZO web service is updated and registered in CZO Central, it can be discovered in HydroDesktop an open source application with rich mapping and time series analysis capabilities

CZO Web Services Model



CZO Data Publication Model

- Relies on individual CZO data management systems to generate display files
  - Display file is modeled on LTER data file, and allows adding series-level and data value-level attributes as defined in CUAHSI Observations Data Model
- When additional display files are generated and referenced in the config file, they are picked up and ingested in a CZO repository / hydroserver at SDSC
- The time series in the files are then automatically exposed as water data services (WaterML-compliant web services used by CUAHSI HIS)
- These services are available for data discovery and analysis by a variety of applications: CZO Desktop (a version of HydroDesktop), Google Earth, etc.
- A non-intrusive system: no change in how one would normally publish data on CZO web sites; no additional software/hardware needed.
- Can be a good model for the community wishing to publish their data in an easy and inexpensive way
  - note the NSF requirement for data management plans with every proposal from October 2010

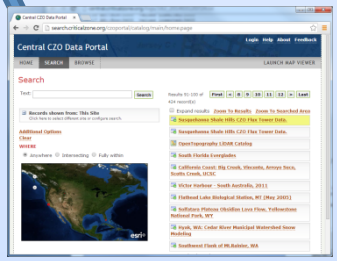
SDSC

CZO Data Interpreter

ODM

ODM

<metadata/>



Hydroserver

Central Harvester

WaterML Services

CZO Central Metadata Catalog

Central Search Services

CZO Raw Data Files

- Luquillo CZO
- Christina River CZO
- Boulder CZO
- Shale Hills Susquehanna CZO
- Southern Sierra CZO
- Jemez River CZO
- Calhoun CZO
- IML CZO
- Reynolds Creek CZO
- Eel River CZO

Client Applications can download CZO data

Config file

\Root_URL

http://www.czo.psu.edu/downloads/sdsc/

\Category Hydrological Time Series

\Sites

sites.csv

\Methods

methods.csv

\Headers

ts_precip/daily/2006_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2007_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2008_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2009_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2010_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2011_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/daily/2012_CZO_RTH1_SSHO_Daily_Precip.hdr

ts_precip/hourly/2006_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2007_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2008_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2009_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2010_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2011_CZO_RTH1_SSHO_Hourly_Precip.hdr

ts_precip/hourly/2012_CZO_RTH1_SSHO_Hourly_Precip.hdr

Sites file

SiteCode,SiteName,Latitude,Longitude,LatLongDatum,Elevation,VerticalDatum,LocalX,LocalY,LocalProjection,Pos Accuracy,Comments

CZO_RTH1,CZO RTH 1,40.6658173,-77.9040146,WGS84,302.7,NAVD88,,,,,weather station

CZO_RTH2_1,CZO RTH 2 SM1,40.66522,-77.90315,NAD 1983,279.875398,NAVD88,587053.5885,147909.778,PA South,x-y < 10 cm; z < 5 cm,soil moisture 1

CZO_RTH2_2,CZO RTH 2 SM2,40.66522,-77.90315,NAD 1983,279.761841,NAVD88,587041.7909,147907.6064,PA South,x-y < 10 cm; z < 5 cm,soil moisture 2

CZO_RTH2_3,CZO RTH 2 SM3,40.66522,-77.90315,NAD 1983,277.155926,NAVD88,587049.6105,147898.5509,PA South,x-y < 10 cm; z < 5 cm,soil moisture 3

CZO_RTH3_1 ,CZO RTH 3 SM1 ,40.6645164,-77.90552,NAD 1983,266.057135,NAVD88,586855.3065,147828.4402,PA South,x-y < 10 cm; z < 5 cm,soil moisture 1 and groundwater well 1

Methods file

Methodcode,methodDescription,methodLink

253MP,Water (matric) potential Campbell Scientific 253 probes calib using mfr sugg eqn fr raw mV measure,http://www.campbellsci.com

AirRH_HMP45C,Relative humidity measured w Campbell Scientific HMP45C Temperature and Rel Humidity Probe,http://www.campbellsci.com

AirTemp_CR1K,measured with internal sensors in the CR1000 data loggers,http://www.campbellsci.com

AirTemp_CSat3,Air temperature measured with a Campbell Scientific CSAT3 Three Dimensional Sonic Anemometer, http://www.campbellsci.com

AirTemp_HMP45C,Air temperature measured with a Campbell Scientific HMP45C Temperature and Relative Humidity Probe,http://www.campbellsci.com

Header File / Display File

\doc
TITLE. White Clay Creek at 926 Stage Data 2009
ABSTRACT. White Clay Creek at 926 stage measurements as determined from continuous data loggers
INVESTIGATOR. Denis Newbold,Stroud Water Research Center,970 Spencer Road,Avondale, PA 19311,newbold@stroudcenter.org
VARIABLES. Gage height
KEYWORDS. white clay creek,stroud water research center,christina river,hydrology,stage
CITATION. White Clay Creek at 926 stage measurements as determined from continuous data loggers
PUBLICATIONS.
COMMENTS. Version 1, Publication Date, 15MAR13
Rating curve is under development.
Stage data was sourced from data loggers as follows:
SiteCode WCC2154 09APR09:15:00 - 31DEC12:23:55 Solinst 1038582
SiteCode WCW374 13APR09:15:00 - 01NOV12:09:50 Solinst 1038069
DEFAULT_PARAMETER. SampleType=streamwater
DEFAULT_PARAMETER. TimeSupport=0
DEFAULT_PARAMETER. TimeSupportUnits=hour
DEFAULT_PARAMETER. NoDataValue=-9999
DEFAULT_PARAMETER. SampleMedium=Surface Water
DEFAULT_PARAMETER. ValueType=Derived Value
DEFAULT_PARAMETER. DataLevel=1
DEFAULT_PARAMETER. DataType=Continuous
DEFAULT_PARAMETER. CensorCode=nc
DEFAULT_PARAMETER. TimeZone=EST
DEFAULT_PARAMETER. UTCOffset=-5
\header
COL1. label=ValueAttribute,value=SiteCode
COL2. label=ValueAttribute,value=DateTime,format = yyyyMMdd H:mm
COL3. label=VariableName,value=Gage height,units=ft,method=Gage Height
\data
WCC2153,20090409 15:00, 0.716
WCC2153,20090409 15:15, 0.716

How www.criticalzone.org and search.criticalzone.org will work together

- Metadata will be created from Datafiles registered at www.criticalzone.org, and synced with geoportal*
- Data files that comply with the “displayfile” specification, will also be ingested into the hydroserver.*

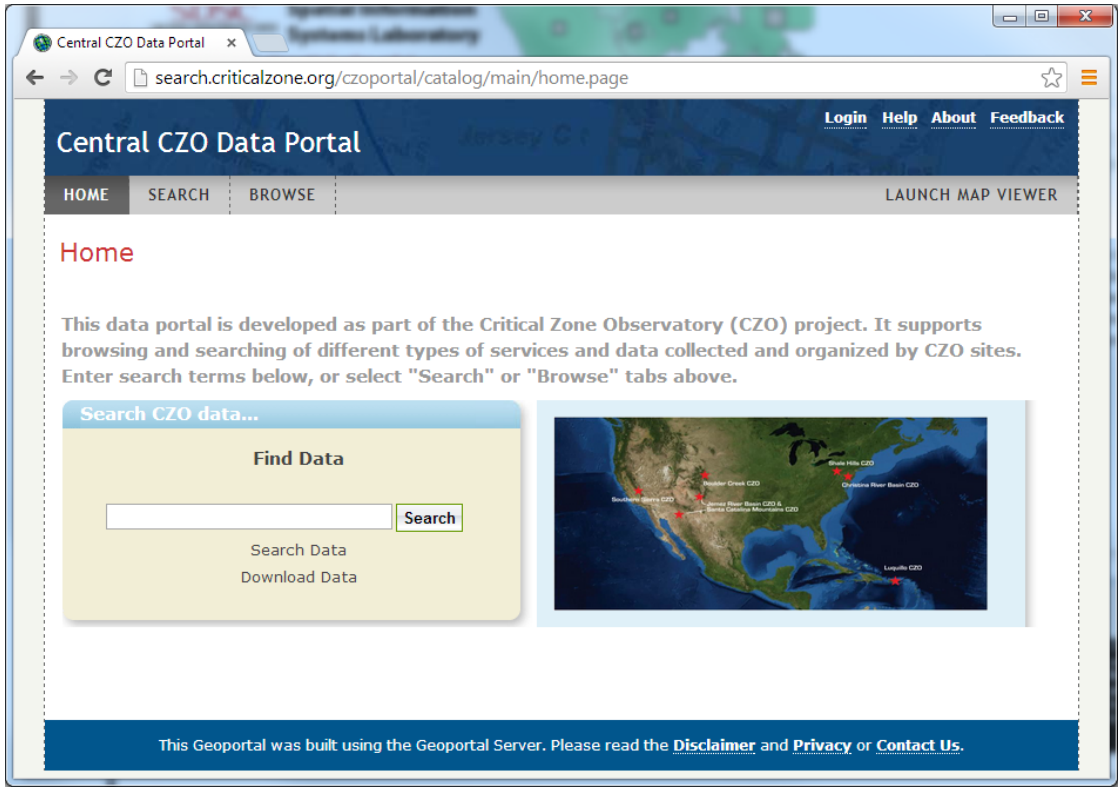
*not yet functionally complete

What are the roles of each?

- www.criticalzone.org: The main, public facing site.
- Search.criticalzone.org: Search
- Central.criticalzone.org: not intended to be a public site. Only used by data managers to control ingest of display files into the hosted hydroserver.

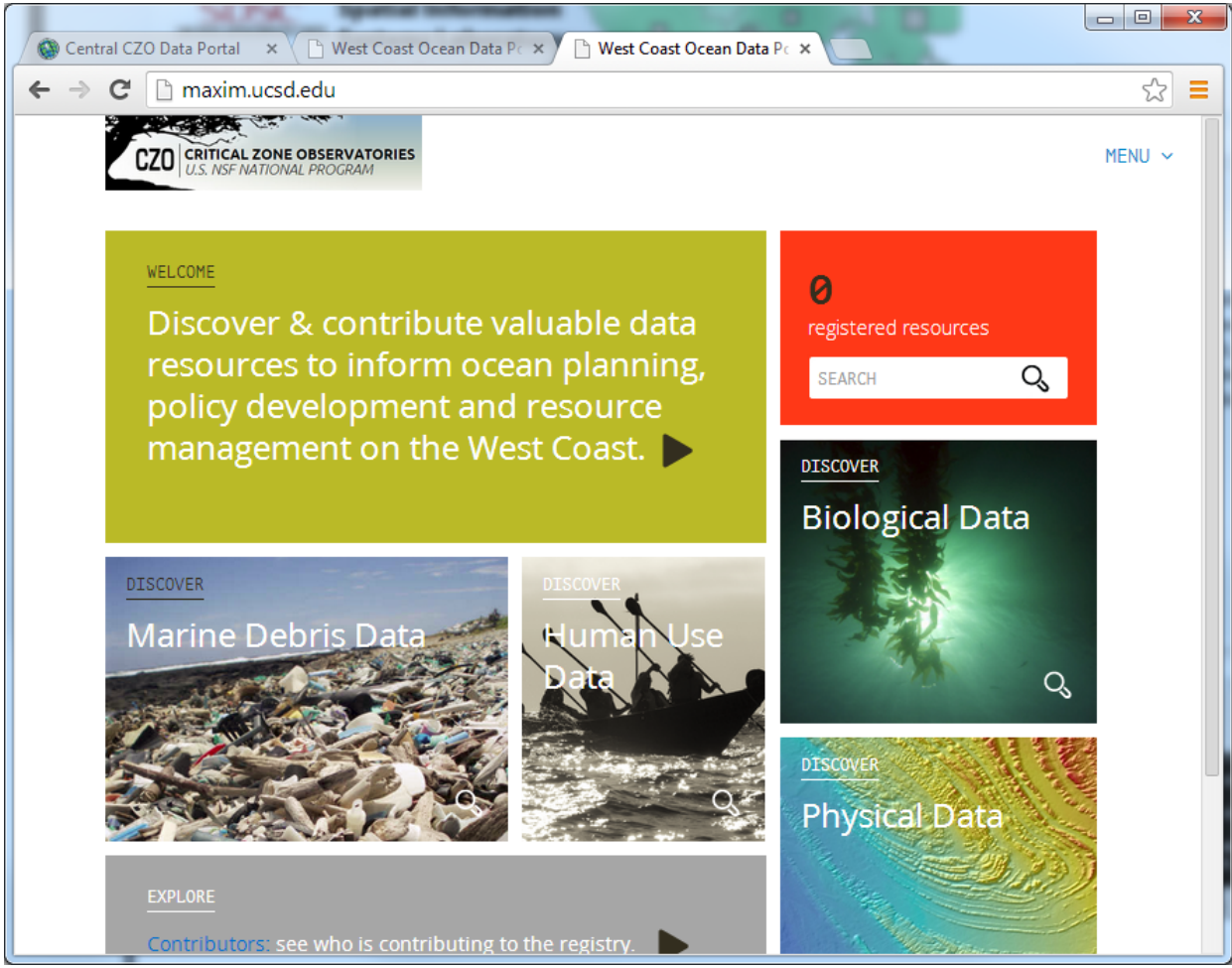
Geoportal

- OGC compliant services for CSW (catalog services for the web).
- Open source, but developed and supported by ESRI.
- Extendable.



Geoportal Facets and Custom Interfaces

- Utilizes Apache Solr technology for fast searching.
- Custom interface from ecotrust.org



Questions? Comments?

CZO Display File v1

Requirements:

- Human readable
- Machine parsable
- Conform to ODM 1.1 & CZO Shared Vocabulary

Solution:

- ASCII text file, with comma-separated data
- Header with detailed, structured metadata
- Separate Sites and Methods files
- http://criticalzone.org/national/publications/pub/whitenack-et-al-2011-czo-display-file-specification/

CZO Display File v1

Issues:

- Many parsing errors,
- Limited applicability to many disciplinary data
  - Designed around CUAHSI HIS
  - Can't handle soil intervals, specimen genealogies, etc.
  - Only accepts terms from CZO Shared Vocabulary
- Relatively "flat" information model.
  - Not rich enough for modern data systems (incl. ODM2)
- Does not meet archival requirements!
  - Separate "header" file for metadata
  - No explicit in-file references to Sites or Methods file/info
- Do not open nicely in Excel

CZO Display File v2

Requirements:

- Human readable & Machine parsable
- Conform to ODM2 & new Shared Vocabulary

Solution:

- JSON text file, with comma-separated data array
- Header with detailed, structured metadata
  - Structural validation likely via http://json-schema.org/
- Separate Sites and Methods files
  - but with clear links in each file
- Still working on specification

Thank You