ERDDAP: Easier access to scientific data

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OOI DDCI Kickoff Meeting, October 30, 2018

What is ERDDAP?

A data brokerage service, reading from many different types of files, databases and services, and providing access via a single standardized interface

RESTful API for access in scientific analysis packages (Matlab, Python, R), web application developers (JavaScript), and by numerical modelers (Fortran, Bash)

Advanced search built-in, and also generates ISO and json-ld metadata records to allow search via sites like data.gov, and Google Dataset Search.

Widely used for delivery of “FAIR” data in the geoscience community (more than 50 server deployments worldwide)

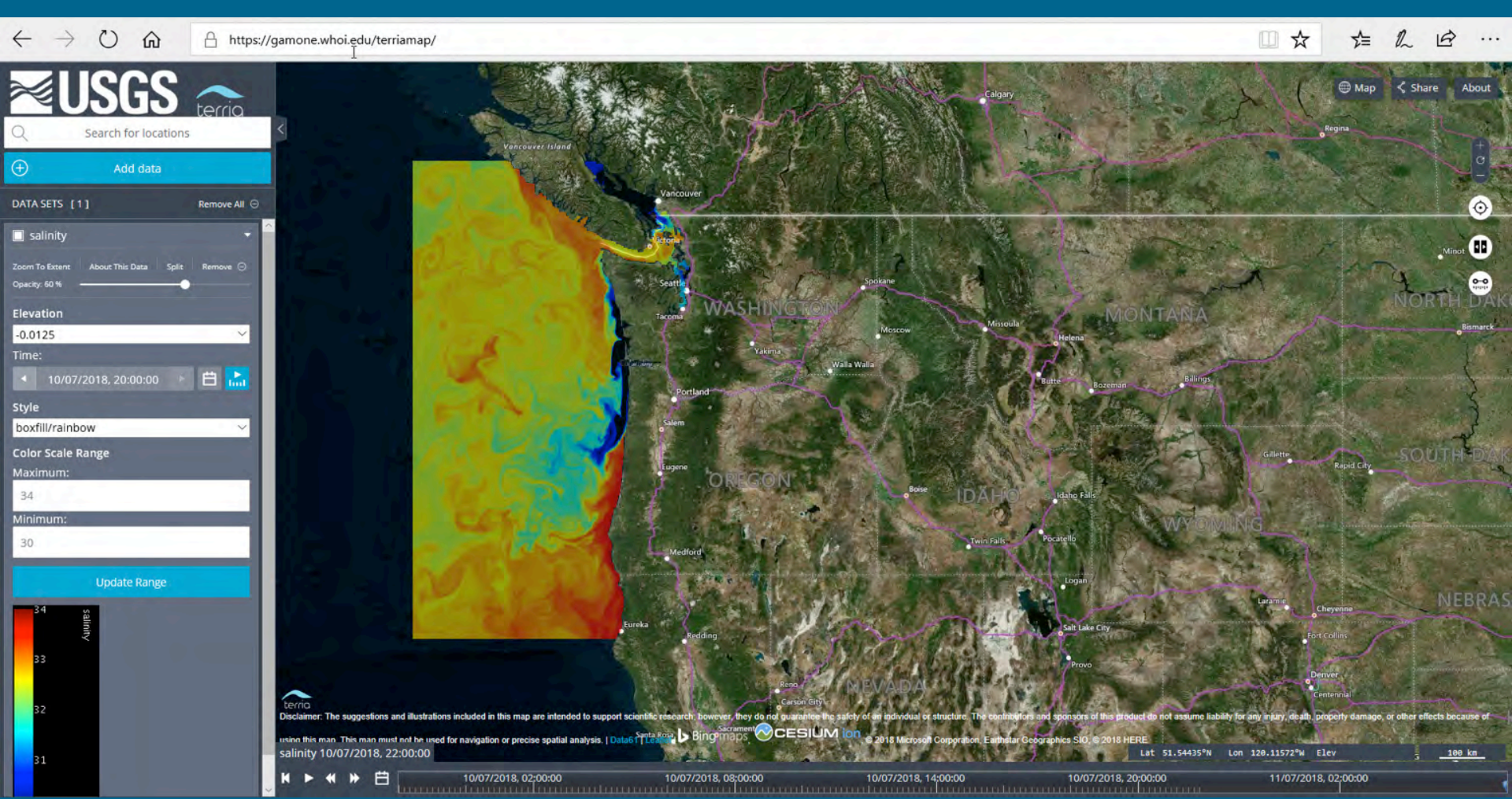
USGS Integrated Ocean Observing System

11 Regional Associations

17 Federal Partners

Web Standards:

Grid: OPeNDAP
Sensor: ERDDAP
Image: WMS
Metadata: CSW


https://gamone.whoi.edu/terriamap/
USGS
terria
Search for locations
Add data
DATA SETS [1]
Remove All
salinity
Zoom To Extent
About This Data
Split
Remove
Opacity: 60 %
Elevation
-0.0125
Time:
10/07/2018, 20:00:00
Style
boxfill/rainbow
Color Scale Range
Maximum:
34
Minimum:
30
Update Range
34
33
32
31
salinity
Map
Share
About
Vancouver Island
Calgary
Regina
Vancouver
Victoria
Seattle
Spokane
Tacoma
WASHINGTON
Moscow
Missoula
MONTANA
Helena
Minot
Bismarck
Yakima
Walla Walla
Butte
Bozeman
Billings
Portland
Salem
Eugene
OREGON
Boise
IDAHO
Idaho Falls
Gillette
Rapid City
WYOMING
Twin Falls
Pocatello
Medford
Logan
Laramie
Cheyenne
Eureka
Redding
Salt Lake City
Fort Collins
Provo
Denver
Centennial
Reno
Carson City
NEVADA
Disclaimer: The suggestions and illustrations included in this map are intended to support scientific research; however, they do not guarantee the safety of an individual or structure. The contributors and sponsors of this product do not assume liability for any injury, death, property damage, or other effects because of using this map. This map must not be used for navigation or precise spatial analysis. | Data61 | Leaflet | Bing Maps | CESIUM ion © 2018 Microsoft Corporation, Earthstar Geographics SIO, © 2018 HERE
salinity 10/07/2018, 22:00:00
Lat 51.54435°N Lon 120.11572°W Elev
100 km
10/07/2018, 02:00:00
10/07/2018, 08:00:00
10/07/2018, 14:00:00
10/07/2018, 20:00:00
11/07/2018, 02:00:00

ERDDAP > Advanced Search

Directions: Specify as many or as few search criteria as you want, then click `Search`.
Only the datasets that match **all** of the search criteria will appear in the results.

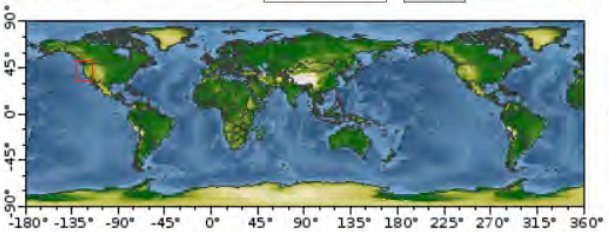
Full Text Search for Datasets

Search for Datasets by Category

protocol	=	(ANY)
cdm_data_type	=	(ANY)
institution	=	(ANY)
ioos_category	=	(ANY)
keywords	=	(ANY)
long_name	=	(ANY)
standard_name	=	sea_water_practical_salinity
variableName	=	(ANY)

Search for Datasets that have Data within Longitude, Latitude, and Time Ranges

Maximum Latitude	=	50.0	
Min and Max Longitude	=	-132.0	-117.0
Minimum Latitude	=	33.0	Clear



Minimum Time	=	2018-07-01
Maximum Time	=	2018-07-15

Search

Search

Advanced Search Results

42 matching datasets, listed in alphabetical order.

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	Dataset ID
	set	data	graph		files	CE01ISSM BUOY CTDBP3		F I M	background	RSS		Coastal and Globa...	CE01ISSM-BUOY-001-CTDBP-FLORT
	set	data	graph		files	CE01ISSM MFN CTDBP2		F I M	background	RSS		Coastal and Globa...	CE01ISSM-MFN-001-CTDBP-DOSTA
	set	data	graph		files	CE01ISSM NSIF CTDBP1		F I M	background	RSS		Coastal and Globa...	CE01ISSM-NSIF-001-CTDBP-DOSTA
	set	data	graph		files	CE01ISSM NSIF FLORT		F I M	background	RSS		Coastal and Globa...	CE01ISSM-NSIF-001-FLORT
	set	data	graph		files	CE01ISSM NSIF SUNA		F I M	background	RSS		Coastal and Globa...	CE01ISSM-NSIF-002-NUTNR
	set	data	graph		files	CE01ISSP CSPP CTDPF Recovered		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-002-CTDPF
	set	data	graph		files	CE01ISSP CSPP CTDPF Telemetry		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-001-CTDPF
	set	data	graph		files	CE01ISSP CSPP FLORT Recovered		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-002-FLORT
	set	data	graph		files	CE01ISSP CSPP FLORT Telemetry		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-001-FLORT
	set	data	graph		files	CE01ISSP CSPP NUTNR Recovered		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-002-NUTNR
	set	data	graph		files	CE01ISSP CSPP OPTAA Recovered		F I M	background	RSS		Coastal and Globa...	CE01ISSP-CSPP-002-OPTAA
	set	data	graph		files	CE02SHSM BUOY METBK		F I M	background	RSS		Coastal and Globa...	CE02SHSM-BUOY-001-METBK
	set	data	graph		files	CE02SHSM NSIF CTDBP		F I M	background	RSS		Coastal and Globa...	CE02SHSM-NSIF-001-CTDBP
	set	data	graph		files	CE02SHSM NSIF FLORT		F I M	background	RSS		Coastal and Globa...	CE02SHSM-NSIF-001-FLORT
	set	data	graph		files	CE02SHSM NSIF NUTNR		F I M	background	RSS		Coastal and Globa...	CE02SHSM-NSIF-001-NUTNR
	set	data	graph		files	CE02SHSP CSPP NUTNR Recovered		F I M	background	RSS		Coastal and Globa...	CE02SHSP-CSPP-002-NUTNR
	set	data	graph		files	CE04OSSM BUOY METBK		F I M	background	RSS		Coastal and Globa...	CE04OSSM-BUOY-001-METBK
	set	data	graph		files	CE04OSSM NSIF CTDBP		F I M	background	RSS		Coastal and Globa...	CE04OSSM-NSIF-001-CTDBP
	set	data	graph		files	CE04OSSM NSIF FLORT		F I M	background	RSS		Coastal and Globa...	CE04OSSM-NSIF-001-FLORT
	set	data	graph		files	CE04OSSM NSIF NUTNR		F I M	background	RSS		Coastal and Globa...	CE04OSSM-NSIF-001-NUTNR
	set	data	graph		files	CE06ISSM BUOY CTDBP3		F I M	background	RSS		Coastal and Globa...	CE06ISSM-BUOY-001-CTDBP-FLORT
	set	data	graph		files	CE06ISSM MFN CTDBP2		F I M	background	RSS		Coastal and Globa...	CE06ISSM-MFN-001-CTDBP-DOSTA

OOI Coastal Endurance Array
Easier access to OOI Coastal Endurance Array data

ERDDAP > tabledap > Make A Graph

Dataset Title: **CE06ISSP CSPP CTDPF Telemetry** RSS
Institution: Coastal and Global Scales Nodes (CGSN) (Dataset ID: CE06ISSP-CSPP-001-CTDPF)
Range: longitude = -124.27258 to -124.272°E, latitude = 47.133 to 47.13382°N, depth = 29.0 to 29.0m, time = 2017-07-26T07:45:49Z to 2018-07-20T07:58:35Z
Information: Summary | License | FGDC | ISO 19115 | Metadata | Background | Subset | Data Access Form | Files

Graph Type: markers
X Axis: time
Y Axis: pressure
Color: salinity

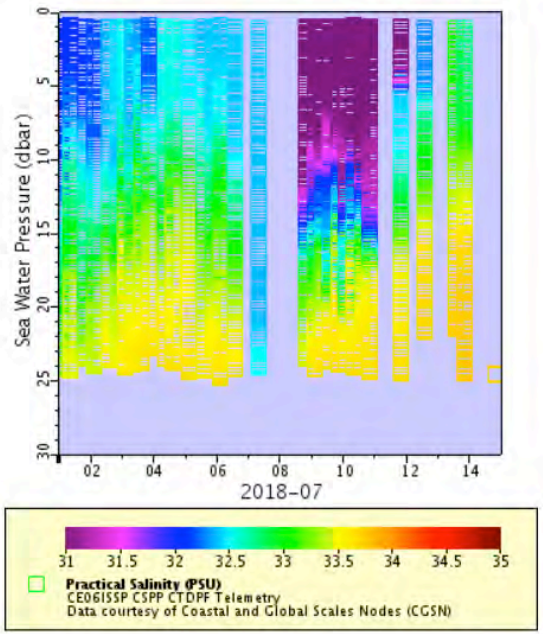
Time range: 14 day(s)

Constraints	Optional Constraint #1	Optional Constraint #2
time	>= 2018-07-01T00:00:00Z	<= 2018-07-15T00:00:00Z
	>=	<=
	>=	<=
	>=	<=
	>=	<=

Server-side Functions
distinct()

Graph Settings
Marker Type: Square Size: 10
Color:
Color Bar: Rainbow Continuity: Scale:
Minimum: 31 Maximum: 35 N Sections:
Y Axis Minimum: Maximum: Ascending: descending

Redraw the Graph (Please be patient. It may take a while to get the data.)



OOI Coastal Endurance Array
Easier access to OOI Coastal Endurance Array data

Brought to you by the team at OOI EA

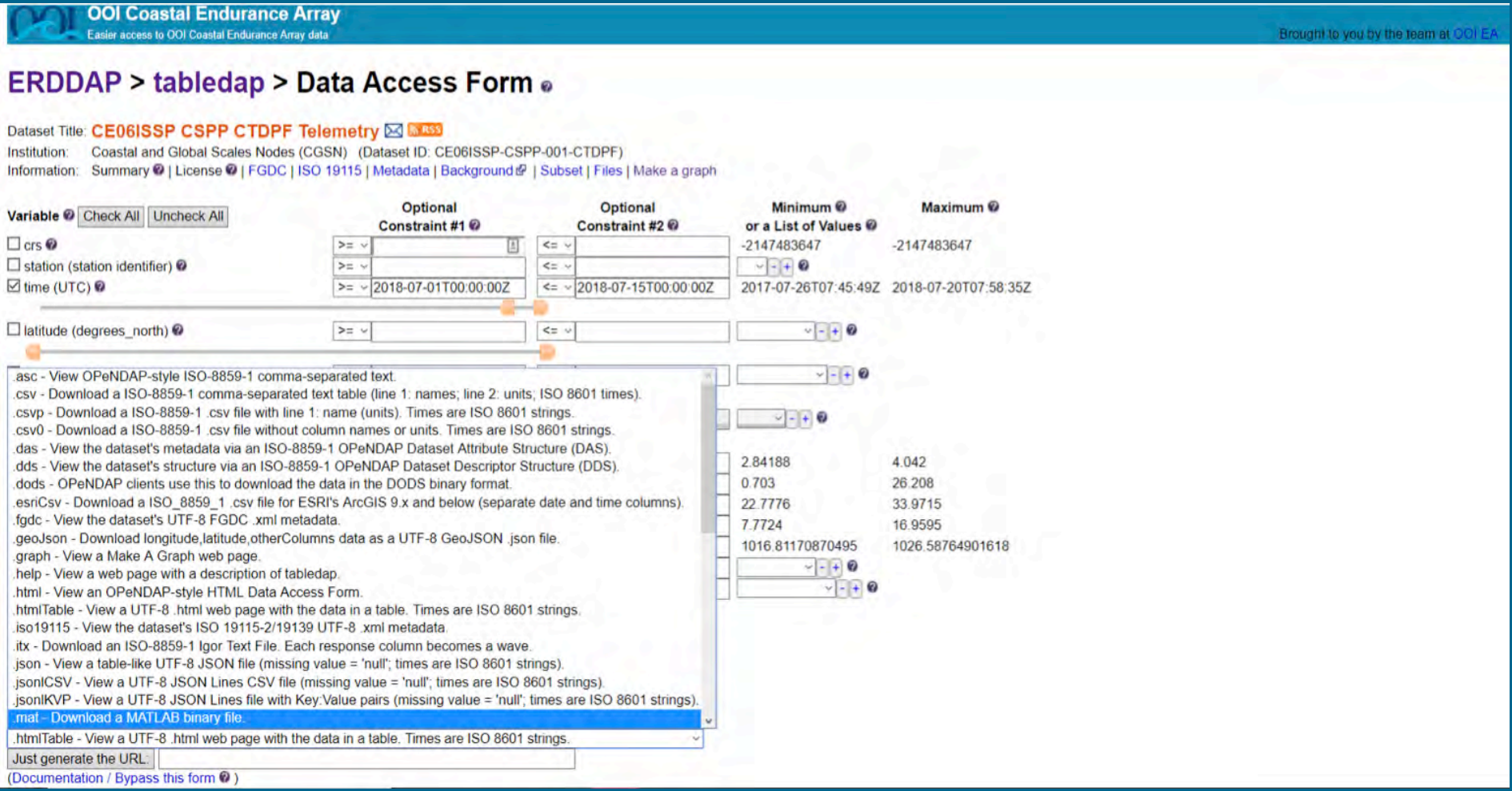
ERDDAP > tabledap > Data Access Form

Dataset Title: **CE06ISSP CSPP CTDPF Telemetry** RSS
Institution: Coastal and Global Scales Nodes (CGSN) (Dataset ID: CE06ISSP-CSPP-001-CTDPF)
Information: Summary | License | FGDC | ISO 19115 | Metadata | Background | Subset | Files | Make a graph

Variable (Check All / Uncheck All)	Optional Constraint #1	Optional Constraint #2	Minimum or a List of Values	Maximum
crs	>=	<=	-2147483647	-2147483647
station (station identifier)	>=	<=		
time (UTC)	>= 2018-07-01T00:00:00Z	<= 2018-07-15T00:00:00Z	2017-07-26T07:45:49Z	2018-07-20T07:58:35Z
latitude (degrees_north)	>=	<=		
longitude (degrees_east)	>=	<=		
depth (Site Depth, m)	>=	<=		
conductivity (Sea Water Conductivity, mS cm-1)	>=	<=	2.84188	4.042
pressure (Sea Water Pressure, dbar)	>=	<=	0.703	26.208
salinity (Practical Salinity, PSU)	>=	<=	22.7776	33.9715
temperature (degree_Celsius)	>=	<=	7.7724	16.9595
in_situ_density (kg m-3)	>=	<=	1016.81170870495	1026.58764901618
deploy_id (Deployment ID, 1)	>=	<=		
profile_id (1)	>=	<=		

Server-side Functions
distinct()
(" ")

File type: (more info)
.htmlTable - View a UTF-8 .html web page with the data in a table. Times are ISO 8601 strings.
Just generate the URL:
(Documentation / Bypass this form)


OOI Coastal Endurance Array
Easier access to OOI Coastal Endurance Array data
Brought to you by the team at OOI EA
ERDDAP > tabledap > Data Access Form
Dataset Title: CE06ISSP CSPP CTDPF Telemetry
Institution: Coastal and Global Scales Nodes (CGSN) (Dataset ID: CE06ISSP-CSPP-001-CTDPF)
Information: Summary | License | FGDC | ISO 19115 | Metadata | Background | Subset | Files | Make a graph
Variable Check All Uncheck All
Optional Constraint #1
Optional Constraint #2
Minimum or a List of Values
Maximum
crs -2147483647 -2147483647
station (station identifier)
time (UTC) 2018-07-01T00:00:00Z 2018-07-15T00:00:00Z 2017-07-26T07:45:49Z 2018-07-20T07:58:35Z
latitude (degrees_north)
.asc - View OPeNDAP-style ISO-8859-1 comma-separated text.
.csv - Download a ISO-8859-1 comma-separated text table (line 1: names; line 2: units; ISO 8601 times).
.csvp - Download a ISO-8859-1 .csv file with line 1: name (units). Times are ISO 8601 strings.
.csv0 - Download a ISO-8859-1 .csv file without column names or units. Times are ISO 8601 strings.
.das - View the dataset's metadata via an ISO-8859-1 OPeNDAP Dataset Attribute Structure (DAS).
.dds - View the dataset's structure via an ISO-8859-1 OPeNDAP Dataset Descriptor Structure (DDS).
.dods - OPeNDAP clients use this to download the data in the DODS binary format.
.esriCsv - Download a ISO_8859_1 .csv file for ESRI's ArcGIS 9.x and below (separate date and time columns).
.fgdc - View the dataset's UTF-8 FGDC .xml metadata.
.geoJson - Download longitude,latitude,otherColumns data as a UTF-8 GeoJSON .json file.
.graph - View a Make A Graph web page.
.help - View a web page with a description of tabledap.
.html - View an OPeNDAP-style HTML Data Access Form.
.htmlTable - View a UTF-8 .html web page with the data in a table. Times are ISO 8601 strings.
.iso19115 - View the dataset's ISO 19115-2/19139 UTF-8 .xml metadata.
.itx - Download an ISO-8859-1 Igor Text File. Each response column becomes a wave.
.json - View a table-like UTF-8 JSON file (missing value = 'null'; times are ISO 8601 strings).
.jsonlCSV - View a UTF-8 JSON Lines CSV file (missing value = 'null'; times are ISO 8601 strings).
.jsonlKVP - View a UTF-8 JSON Lines file with Key:Value pairs (missing value = 'null'; times are ISO 8601 strings).
.mat - Download a MATLAB binary file.
2.84188 4.042
0.703 26.208
22.7776 33.9715
7.7724 16.9595
1016.81170870495 1026.58764901618
.htmlTable - View a UTF-8 .html web page with the data in a table. Times are ISO 8601 strings.
Just generate the URL:
(Documentation / Bypass this form)

IOOS Access 03: Accessing IOOS and OOI glider data from the IOOS Glider DAC via ERDDAP and erddapy

Emilio Mayorga, University of Washington & NANOOS. 2018-8-21.

IOOS Glider Data Assembly Center (DAC): "The mission of the Glider DAC is to provide glider operators with a simple process for submitting glider data sets to a centralized location, enabling the data to be visualized, analyzed, widely distributed via existing web services and the Global Telecommunications System (GTS) and archived at the National Centers for Environmental Information (NCEI)." *A lot of OOI glider data are also available on the Glider DAC (at least through March 2018).*

Glider DAC data are available for access online via user applications such as the Glider Map as well as via other applications and data services for machine-to-machine access. **ERDDAP** (see here and here) is one of those applicattions. "ERDDAP is a data server that gives you a simple, consistent way to download data in the format and the spatial and temporal coverage that you want. ERDDAP is a web application with an interface for people to use. It is also a RESTful web service that allows data access directly from any computer program (e.g. Matlab, R, or webpages)."

A typical ERDDAP RESTful URL looks like:

https://data.ioos.us/gliders/erddap/tabledap/whoi_406-20160902T1700.mat?depth,latitude,longitude,salinity,temperature,time&time>=2016-07-10T00:00:00Z&time<=2017-02-10T00:00:00Z &latitude>=38.0&latitude<=41.0&longitude>=-72.0&longitude<=-69.0

Let's break it down to smaller parts:

- **server**: https://data.ioos.us/gliders/erddap/
- **protocol**: tabledap
- **dataset_id**: whoi_406-20160902T1700
- **response**: .mat
- **variables**: depth,latitude,longitude,temperature,time
- **constraints**:
  - time>=2016-07-10T00:00:00Z
  - time<=2017-02-10T00:00:00Z
  - latitude>=38.0
  - latitude<=41.0
  - longitude>=-72.0
  - longitude<=-69.0

This Jupyter notebook is based on a notebook from the IOOS gallery, at http://ioos.github.io/notebooks_demos/notebooks/2018-03-01-erddapy/. A newer version of that notebook is available at https://pyoceans.github.io/erddapy/quick_intro.html, and an even newer version at this gist from https://github.com/ocefpaf.

In [1]:
```
import pandas as pd
from erddapy import ERDDAP
from erddapy.utilities import urlopen
import hvplot.pandas
%matplotlib inline
```

In [5]:
```
min_time = '2018-07-01T00:00:00Z'
max_time = '2018-07-15T00:00:00Z'
min_lon, max_lon = -127, -123.75
min_lat, max_lat = 43, 48
standard_name = 'sea_water_practical_salinity'

kw = {
    'standard_name': standard_name,
    'min_lon': min_lon,'max_lon': max_lon,'min_lat': min_lat,'max_lat': max_lat,
    'min_time': min_time,'max_time': max_time,
}
```

In [6]:
```
search_url = e.get_search_url(response='csv', **kw)
search_df = pd.read_csv(urlopen(search_url))
search_df = search_df[['Institution', 'Dataset ID','tabledap']]
search_df
```

Out[6]:

	Institution	Dataset ID	tabledap
0	Coastal and Global Scales Nodes (CGSN)	CE01ISSM-BUOY-001-CTDBP-FLORT	https://cgoms.coas.oregonstate.edu/erddap/tabl...
1	Coastal and Global Scales Nodes (CGSN)	CE01ISSM-MFN-001-CTDBP-DOSTA	https://cgoms.coas.oregonstate.edu/erddap/tabl...
2	Coastal and Global Scales Nodes (CGSN)	CE01ISSM-NSIF-001-CTDBP-DOSTA	https://cgoms.coas.oregonstate.edu/erddap/tabl...
3	Coastal and Global Scales Nodes (CGSN)	CE01ISSM-NSIF-001-FLORT	https://cgoms.coas.oregonstate.edu/erddap/tabl...
4	Coastal and Global Scales Nodes (CGSN)	CE01ISSM-NSIF-002-NUTNR	https://cgoms.coas.oregonstate.edu/erddap/tabl...
5	Coastal and Global Scales Nodes (CGSN)	CE01ISSP-CSPP-002-CTDPF	https://cgoms.coas.oregonstate.edu/erddap/tabl...
6	Coastal and Global Scales Nodes (CGSN)	CE01ISSP-CSPP-001-CTDPF	https://cgoms.coas.oregonstate.edu/erddap/tabl...
7	Coastal and Global Scales Nodes (CGSN)	CE01ISSP-CSPP-002-FLORT	https://cgoms.coas.oregonstate.edu/erddap/tabl...
8	Coastal and Global Scales Nodes (CGSN)	CE01ISSP-CSPP-001-FLORT	https://cgoms.coas.oregonstate.edu/erddap/tabl...

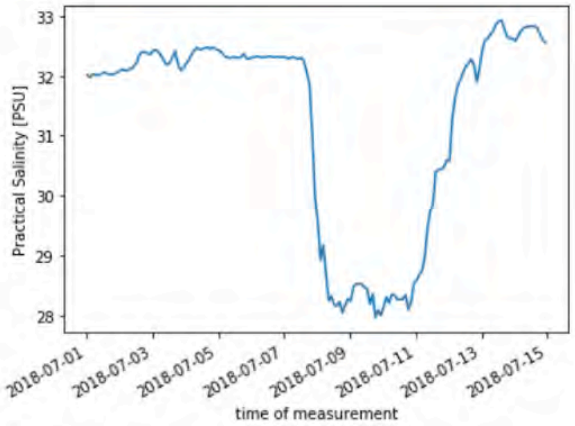
Construct the ERDDAP URL to get the data

In [8]:
```
e.dataset_id = dataset_id
e.constraints = {'time>=': min_time,'time<=': max_time}
e.response='csv'
e.variables = [ 'time', e.get_var_by_attr(dataset_id=dataset_id, standard_name=standard_name)[0]]
print(e.get_download_url())
```

```
https://cgoms.coas.oregonstate.edu/erddap/tabledap/CE06ISSM-BUOY-001-CTDBP-FLORT.csv?time,psu&time>=1530403200.0&time<=1531612800.0
```

Read the data into Xarray

In [9]:
```
ds = e.to_xarray(decode_times=True)
ds = ds.swap_dims({'row':'time'})
[ds[var].plot() for var in ds.data_vars];
```



jupyter 04_OOI_timeseries_erddapy Last Checkpoint: 12 minutes ago (autosaved)

Logout Control Panel

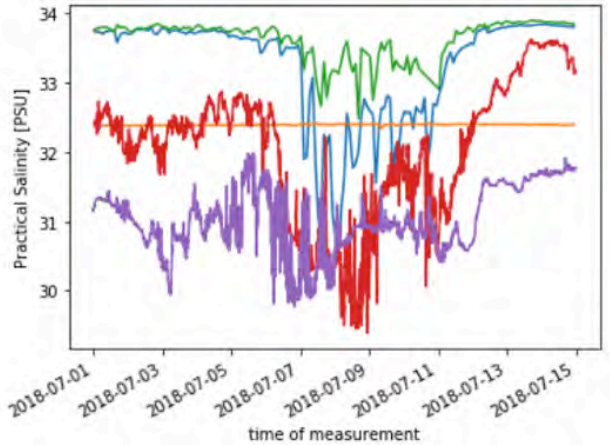
File Edit View Insert Cell Kernel Widgets Help Trusted Python [conda root]

In [11]:
```
ds
```

Out[11]:
```
<xarray.Dataset>
Dimensions:  (time: 168)
Coordinates:
  * time     (time) datetime64[ns] 2018-07-01T00:30:14.438000128 ... 2018-07-14T22:30:16.593999872
Data variables:
    psu      (time) float64 ...
Attributes:
    acknowledgement:                 National Science Foundation
    cdm_data_type:                   TimeSeries
    cdm_timeseries_variables:        latitude, longitude, feature_type_instan...
    comment:                         Mooring ID: CE06ISSM-00009
    Conventions:                     CF-1.6,ACDD-1.3, COARDS
    creator_email:                   cwingard@coas.oregonstate.edu
    creator_name:                    Christopher Wingard
    creator_url:                     http://oceanobservatories.org
    date_created:                    2018-10-29T06:55:00Z
    date_issued:                     2018-10-29T06:55:00Z
    date_metadata_modified:          2018-10-29T06:55:00Z
    date_modified:                   2018-10-29T06:55:00Z
    defaultGraphQuery:               time,temperature&time>=max(time)-7day&.d...
    featureType:                     TimeSeries
    geospatial_bounds:               POINT(-124.272 47.133)
    geospatial_bounds_crs:           EPSG:4326
    geospatial_lat_resolution:       0.0
    geospatial_lat_units:            degrees_north
    geospatial_lon_resolution:       0.0
    geospatial_lon_units:            degrees_east
    geospatial_vertical_positive:    down
    geospatial_vertical_resolution:  0
    geospatial_vertical_units:       m
    history:                         2018-10-29T06:55:00Z - pyaxiom - File cr...
    id:                              CE06ISSM-BUOY-001-CTDBP-FLORT_715c_7f90_...
```

```
df_list = []
for dataset_id in ctdbp['Dataset ID'].values:
    e.dataset_id = dataset_id
    e.variables = [ 'time', e.get_var_by_attr(dataset_id=dataset_id, standard_name=standard_name)[0]]
    try:
        ds = e.to_xarray(decode_times=True)
        ds = ds.swap_dims({'row':'time'})
        df_list.append(ds)
        print(dataset_id)
        [ds[var].plot() for var in ds.data_vars];
    except:
        pass
    if len(df_list)==5: break
```

```
CE01ISSM-BUOY-001-CTDBP-FLORT
CE01ISSM-MFN-001-CTDBP-DOSTA
CE01ISSM-NSIF-001-CTDBP-DOSTA
CE02SHSM-NSIF-001-CTDBP
CE04OSSM-NSIF-001-CTDBP
```



Plotting Time Series Data from NetCDF

In this example we show how to programatically download and work with OOI NetCDF time series data. We will use data from the Global Argentine Basin Flanking Subsurface Mooring A Mooring Riser CTD at 30 m. You will learn:

- how to find the data you are looking for
- how to use the machine to machine API to request data
- how to load the NetCDF data into your notebook, once the data request has completed
- how to plot data

For the instrument in this example, you will need the Reference Designator, Stream and Data Delivery Method to make the request to the M2M API. More information about the instrument can be found here: http://ooi.visualocean.net/instruments/view/GA03FLMA-RIM01-02-CTDMOG040

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ERDDAP_timeseries_explorer

Simple interactive ERDDAP time series explorer using Jupyter Widgets

Jupyter Notebook ★ 1 MIT Updated 2 days ago

ERDDAP_glider_search

Find and display glider data using ERDDAP

Jupyter Notebook 1 MIT Updated on May 22

OBIS_and_R

Using OBIS with R in Jupyter

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Explore ERDDAP timeseries data using Jupyter Widgets

Inspired by Jason Grout's excellent ESIP Tech Dive talk on "Jupyter Widgets", this notebook uses the `ipyleaflet` and `bqplot` widgets to interactively explore the last two weeks of time series data from an ERDDAP Server. Select a `standard_name` from the list, then click a station to see the time series.

NOTE: To access a protected ERDDAP endpoint is protected, you can add a `~/.netrc` file like this:

```
machine cgoms.coas.oregonstate.edu
login <username>
password <password>
```

In [1]:
```
import numpy as np
import pandas as pd
```

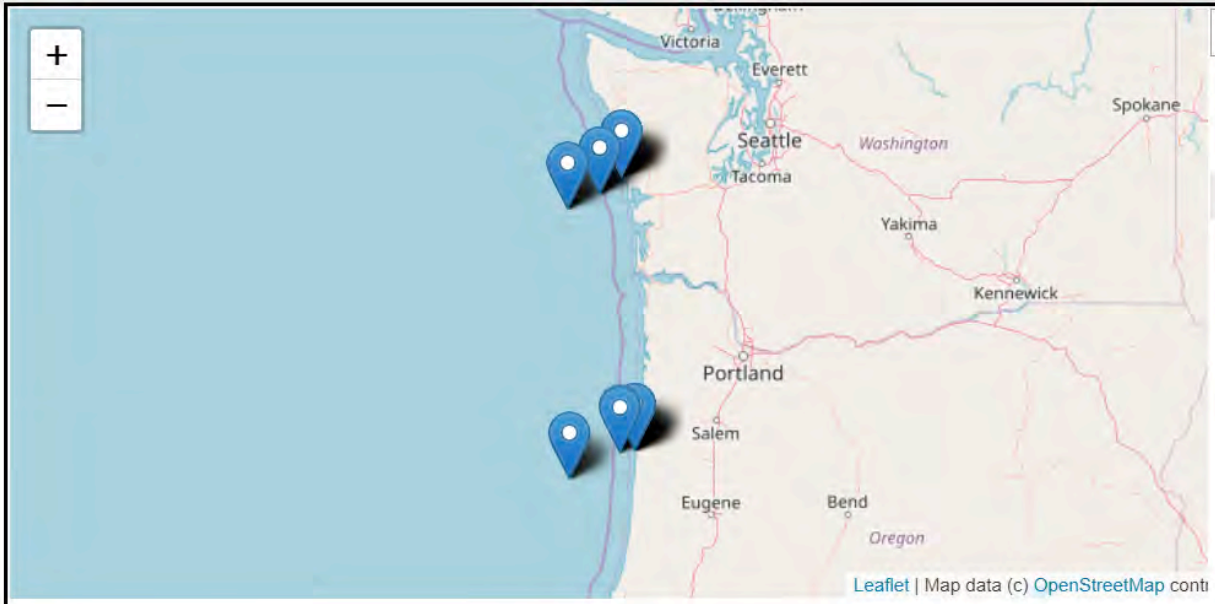
In [2]:
```
import pendulum
```

`ipyleaflet` and `bqplot` are both Jupyter widgets, so can interact with Python like any other widget. Since we want to click on a map in a notebook and get an interactive time series plot, they are perfect tools to use here.

In [3]:
```
import ipyleaflet as ipyl
import bqplot as bq
import ipywidgets as ipyw
```

To make working with ERDDAP simpler, we use `erddapy`, a high-level python interface to ERDDAP's RESTful API

In [4]:
```
from erddapy import ERDDAP
from erddapy.utilities import urlopen
```

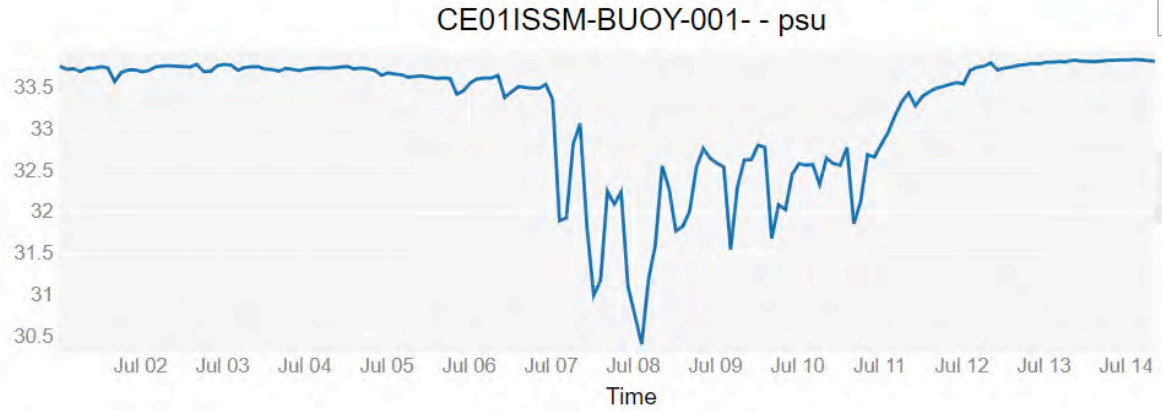


sea_water_practical_salinity

Search Min 2018-07-01 00:00:00

Search Max 2018-07-15 00:00:00

Update search



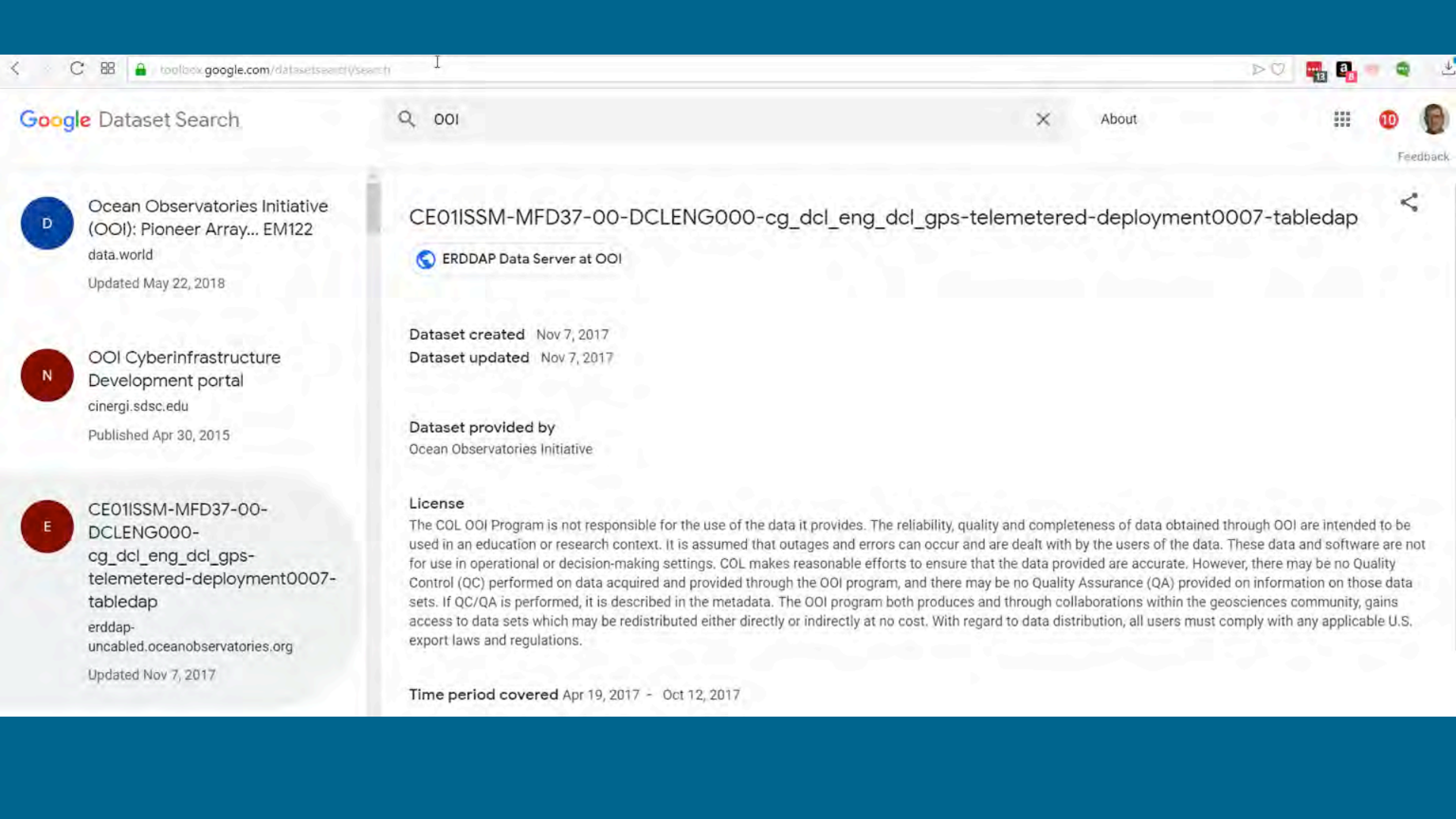
CE01ISSM-BUOY-001-CTDBP-FLORT

Plot Min 2018-07-01 00:00:00

Plot Max 2018-07-15 00:00:00

Update TimeSeries

CGSN Dashboard


toolbox.google.com/datasetsearch/search
Google Dataset Search
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Ocean Observatories Initiative (OOI): Pioneer Array... EM122
data.world
Updated May 22, 2018
N
OOI Cyberinfrastructure Development portal
cinergi.sdsc.edu
Published Apr 30, 2015
E
CE01ISSM-MFD37-00-DCLENG000-cg_dcl_eng_dcl_gps-telemetered-deployment0007-tabledap
erddap-uncabled.oceanobservatories.org
Updated Nov 7, 2017
CE01ISSM-MFD37-00-DCLENG000-cg_dcl_eng_dcl_gps-telemetered-deployment0007-tabledap
ERDDAP Data Server at OOI
Dataset created Nov 7, 2017
Dataset updated Nov 7, 2017
Dataset provided by
Ocean Observatories Initiative
License
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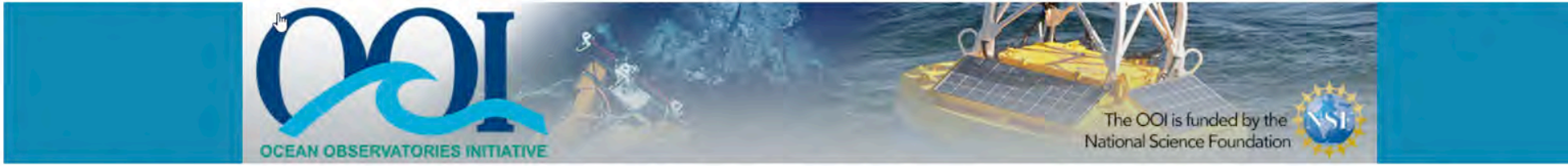
Time period covered Apr 19, 2017 - Oct 12, 2017



ERDDAP > info > CE01ISSM-MFD37-00-DCLENG000-cg_dcl_eng_dcl_gps-telemetered-deployment0007-tabledap

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	WMS	Source Data Files	Title	Sum-mary	FGDC, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	
		data	graph			Coastal Endurance Oregon Inshore Surface Mooring Seafloor Multi-Function Node (MFN) Data Concentrator Logger (DCL) cg_dcl_eng_dcl_gps - Deployment 0007 (telemetered)		F I M	background	RSS		OOI	CE01ISSM-MFD37-00-DCLENG000-cg_dc

The Dataset's Variables and Attributes

Row Type	Variable Name	Attribute Name	Data Type	Value
attribute	NC_GLOBAL	cdm_data_type	String	Point
attribute	NC_GLOBAL	collection_method	String	telemetered
attribute	NC_GLOBAL	Conventions	String	CF-1.6, COARDS, ACDD-1.3, NCCSV-1.0
attribute	NC_GLOBAL	creator_name	String	Ocean Observatories Initiative
attribute	NC_GLOBAL	creator_url	String	http://oceanobservatories.org/
attribute	NC_GLOBAL	date_created	String	2017-11-07T19:47:21.731626
attribute	NC_GLOBAL	date_modified	String	2017-11-07T19:47:21.731631
attribute	NC_GLOBAL	Easternmost_Easting	double	-124.0954
attribute	NC_GLOBAL	featureType	String	Point
attribute	NC_GLOBAL	geospatial_lat_max	double	44.65692
attribute	NC_GLOBAL	geospatial_lat_min	double	44.65665
attribute	NC_GLOBAL	geospatial_lat_resolution	double	0.1
attribute	NC_GLOBAL	geospatial_lat_units	String	degrees_north
attribute	NC_GLOBAL	geospatial_lon_max	double	-124.0954

ERDDAP vs M2M

	ERDDAP	M2M
RESTful Interface	Yes	Yes
Widely used by community	Yes	No
Advanced Search	Yes	No
ISO, JSON-LD Metadata	Yes	No
Output types	40 (NetCDF, json, mat, csv …)	2 (NetCDF, json)

Summary

- ERDDAP allows easier access to OOI Data
- ERDDAP makes OOI "FAIR" (Findable, Accessible, Interoperable, Reusable)
- ERDDAP works with the existing system
- Easier access to OOI Data results in more use by researchers
- Easier access to OOI Data allows more efficient data analysis, leaving more time for actual science
- Let's make ERDDAP a first class citizen in OOI
- Let's build OOI science and end-user applications using ERDDAP as a backend for data search and access