NOAA CoastWatch Data & Services

CoastWatch Data Portal

Michael Soracco,
RIVA for NOAA CoastWatch
michael.soracco@noaa.gov

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Virtual Meeting

CoastWatch Mission

NOAA CoastWatch/OceanWatch provides easy access to, and assistance in using, global and regional satellite data products for use in understanding, managing and protecting ocean and coastal resources and for assessing impacts of environmental change in ecosystems, weather, and climate.

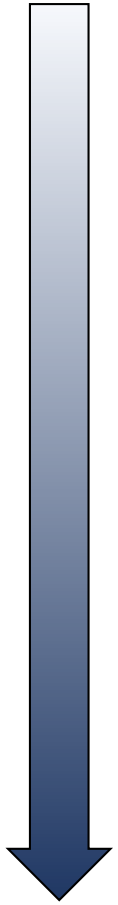
CoastWatch Mission

NOA es easy
acces l and
regio n
unde g ocean
and c impacts of
envir eather,
and c

Connecting ocean and coastal applications with satellite data

CoastWatch helps users access and use satellite data

INCREASING ASSISTANCE TO USER



Provide access to curated datasets with data servers

Develop tools and tutorials to help users access and use data

Provide training and hands-on assistance

Find or create products in response to users needs

Work directly with users on developmental projects

CoastWatch HelpDesk: CoastWatch.Info@NOAA.gov

CoastWatch helps users access and use satellite data

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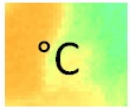
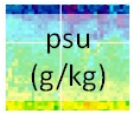
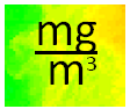
Oceanographic Satellite Data Products



- Sea Surface Temperature: S-NPP/VIIRS, NOAA-20/VIIRS, Metop-1/AVHRR, Metop-2/AVHRR, GOES-16/ABI, Himawari-8/AHI, Meteosat-11/SEVIRI, S-3A/SLSTR, S-3B/SLSTR…
- Ocean Heat Content: analyses
- L2P SST: S-NPP/VIIRS, NOAA-20/VIIRS



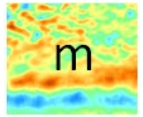
- Sea Surface Salinity: SMOS, SMAP



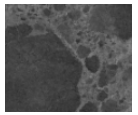
- Ocean Color: S-NPP/VIIRS, NOAA-20/VIIRS, S-3A/OLCI, S-3B/OLCI, GCOM-C1/SGLI
- L2 Ocean Color: S-NPP/VIIRS, NOAA-20/VIIRS, S-3A/OLCI, S-3B/OLCI, GCOM-C1/SGLI

- Ocean Surface Wind: Metop-1/ASCAT, Metop-2/ASCAT, DMSP/SSM-I

- True Color: S-NPP/VIIRS, NOAA-20/VIIRS, S-3A/OLCI, S-3B/OLCI, GCOM-C1/SGLI



- Altimetry: Jason-2, Jason-3, AltiKa, Cryosat-2, S-3A/SRAL, S-3B/SRAL

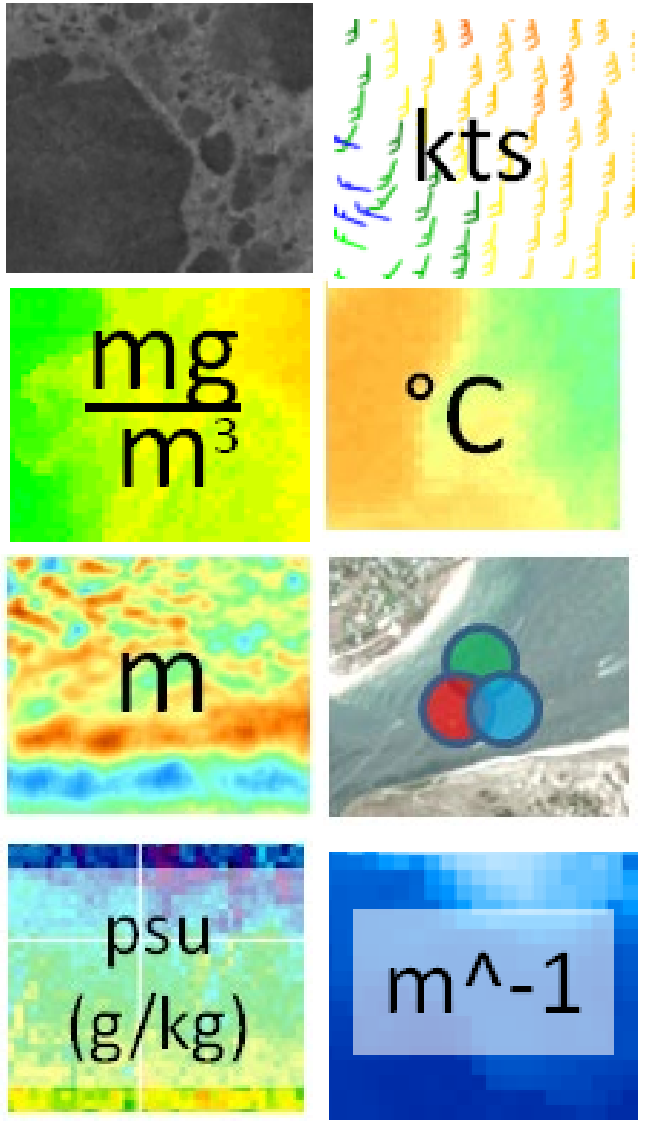


- L2 SAR NRCS: Radarsat (RCM), S-1A SAR, S-1B SAR

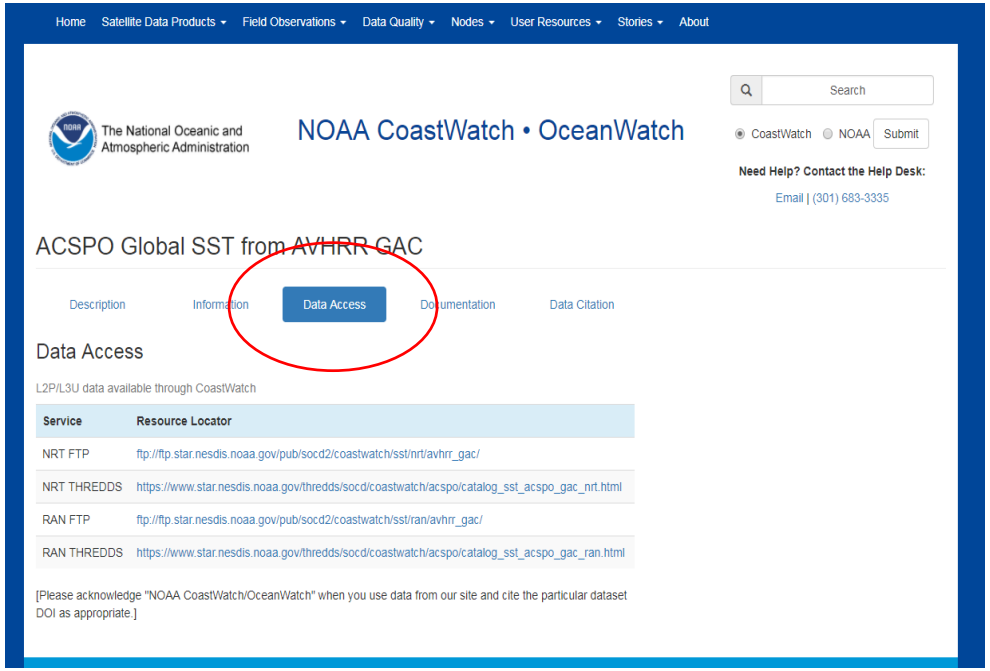
CoastWatch Data

- Level-1 / Level-2 / Level-3 / Level-4 / SDR / EDR
- Global / Regional
- Near real-time / Life-of-Mission / Science quality
- Multiple parameters

1 petabyte

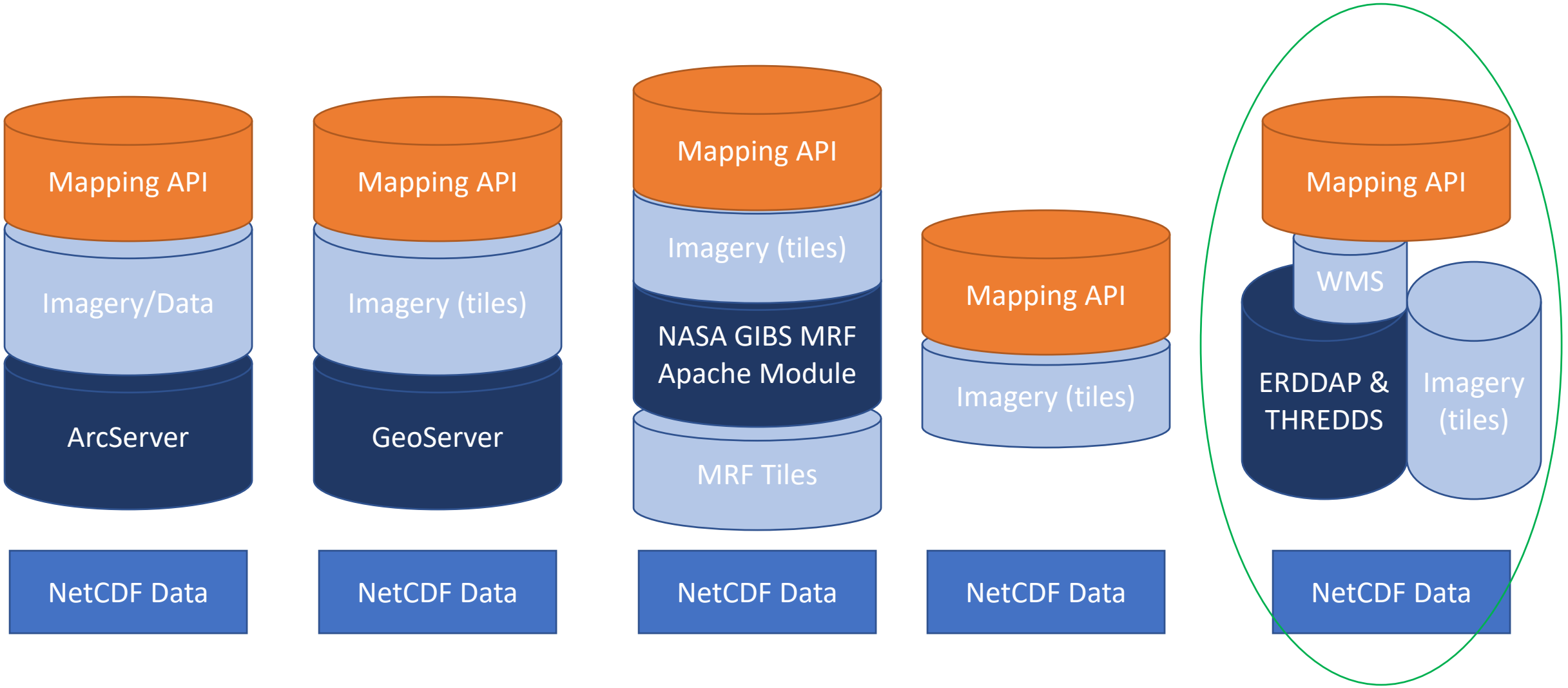


Data Access -- Direct

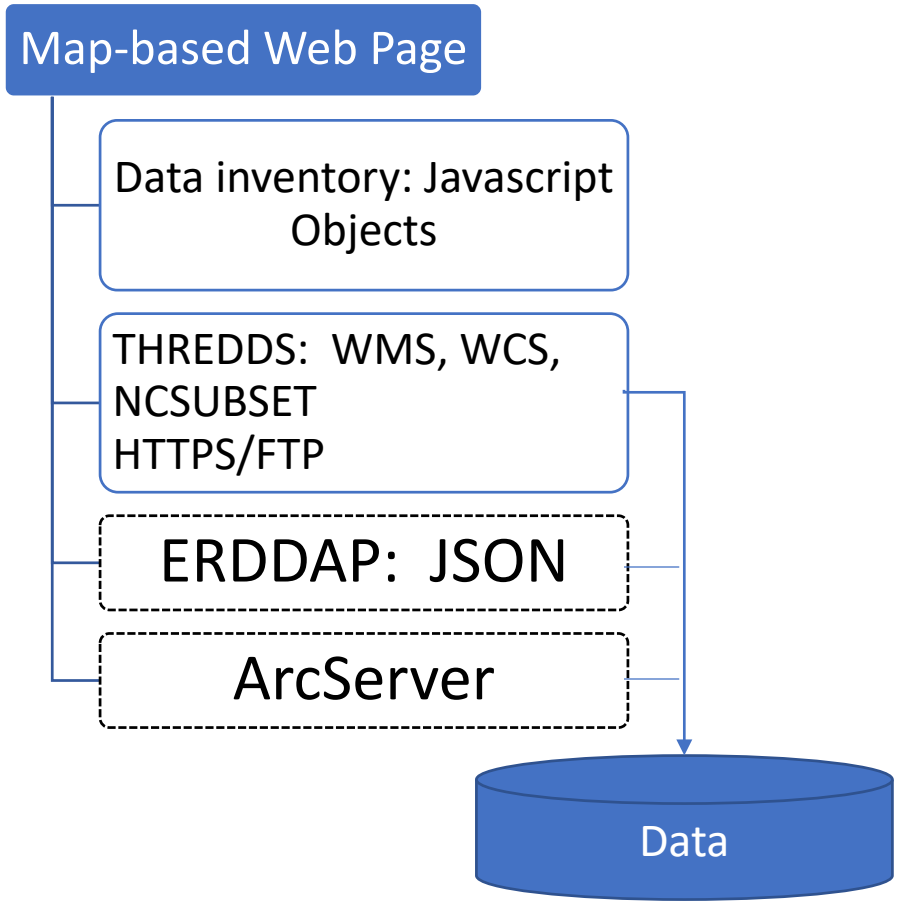


- Website: https://coastwatch.noaa.gov
  - Data Portal
  - Satellite Data Products include ‘Data Access’
- FTP Servers
  - ftp://ftpcoastwatch.noaa.gov/pub/
- THREDDS
  - https://coastwatch.noaa.gov/thredds/catalog.html
- ERDDAP
  - https://coastwatch.noaa.gov/erddap/index.html

Back-end Options

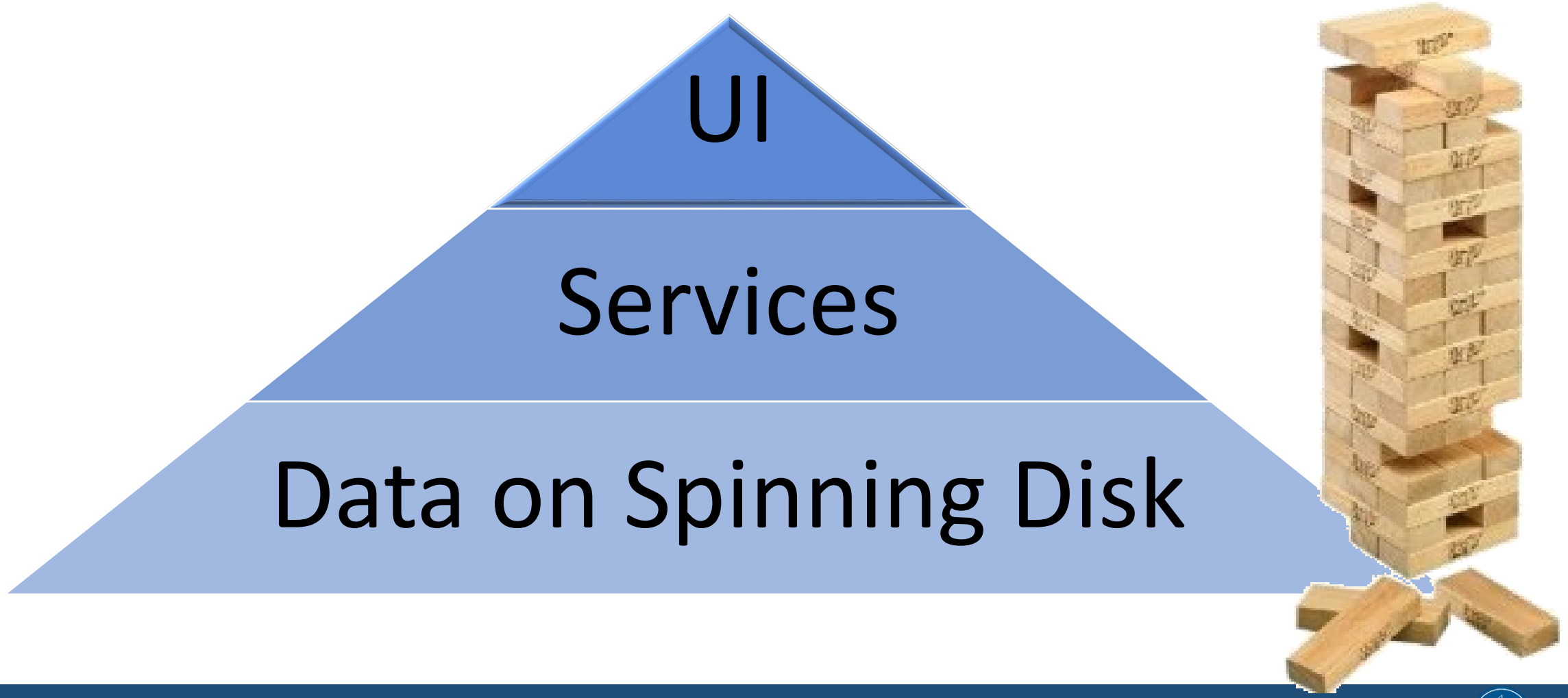


Map Viewer

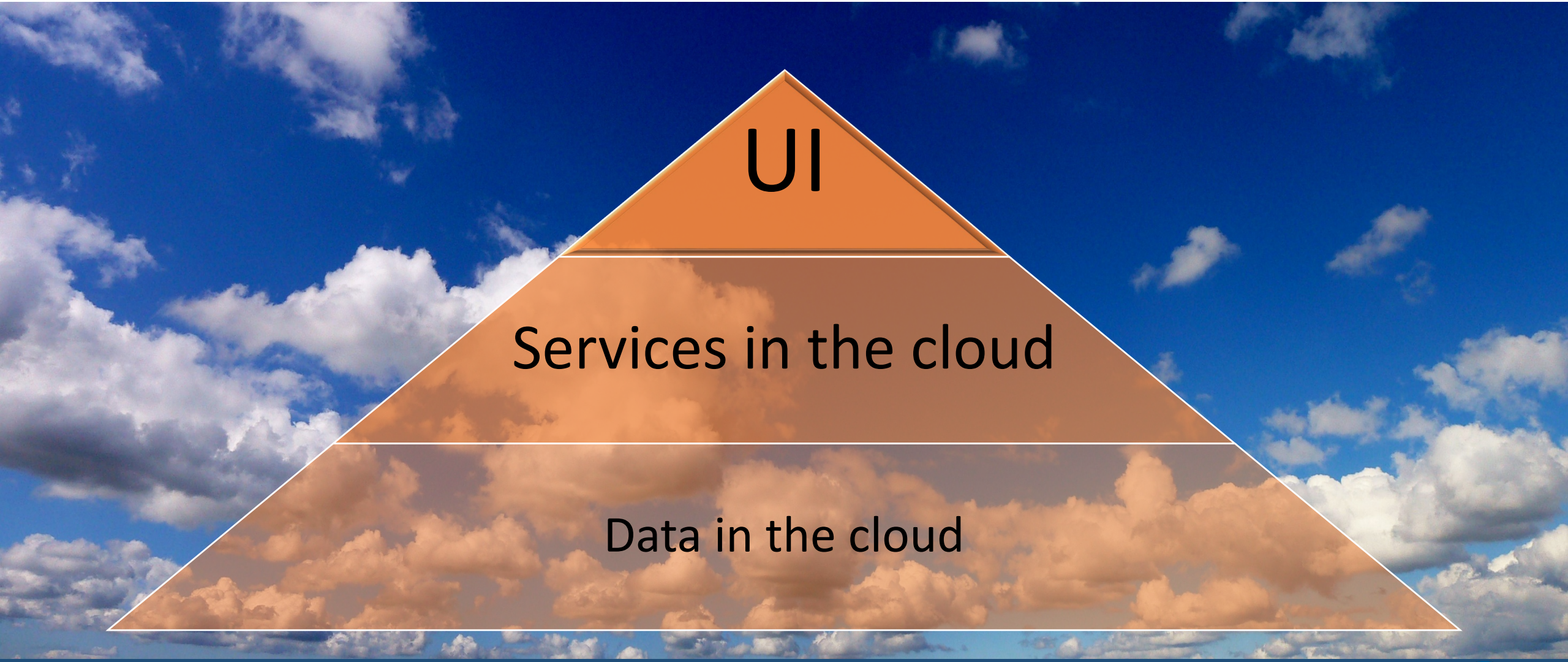

Map-based Web Page
Data inventory: Javascript Objects
THREDDS: WMS, WCS, NCSUBSET HTTPS/FTP
ERDDAP: JSON
ArcServer
Data

WCS
FTP
WA
https
OpenDAP
DDAP
ArcServer
ISO
THREDDS
WMS

CoastWatch Data Portal



CoastWatch Data Portal



CoastWatch Data Portal Map Viewer

- ESRI ArcGIS Javascript API v3.x (with early bootstrap/calcite)
- PZI of global geographic datasets; Color palette, data range, opacity adjustable
- Spatial / temporal search for L1/L2 datasets
- Access to global/view/custom ROI subset of NetCDF data
- Allows viewing datasets from multiple dates
- Leverages information and data access services of THREDDS / ERDDAP
- Pseudo tile server by making small tile requests of TDS WMS
- Easily configurable to add new dataset.
- Plan to update to either OpenLayers or ESRI v4.x Map and SceneView

Future Improvements

- Integrate map-scale transition to full resolution data
- Provide machine-ready URLs/examples for routine data capture
- Refactor code; Update Mapping API
- Integrate OpenDAP / ERDDAP / THREDDS / Cloud

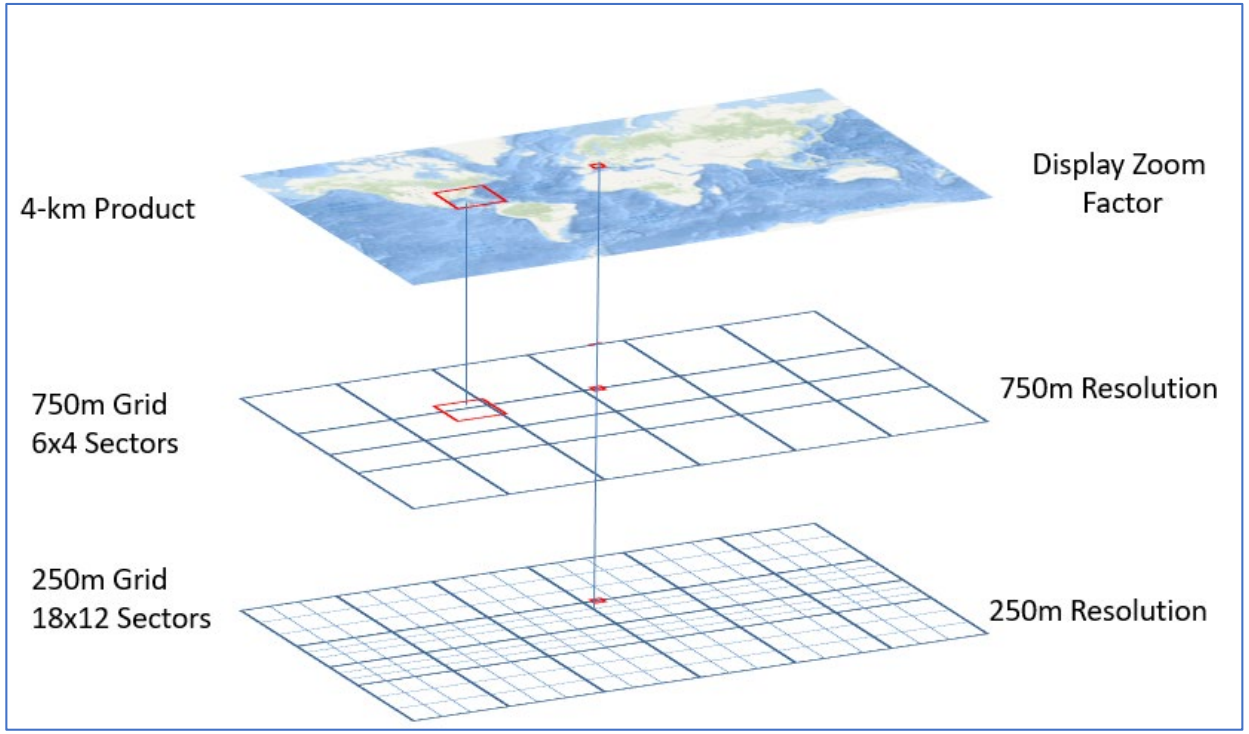


Illustration of dynamic data layer based on map scale

Live Demo

- Use of map-based data portal
- Display data
- Compare data
- Search for data
- Download data

https://coastwatch.noaa.gov/cw_html/cwViewer.html

Questions?

NOAA CoastWatch Data & Services

coastwatch.info@noaa.gov

Michael Soracco, RIVA for NOAA CoastWatch
michael.soracco@noaa.gov

Backup Slides

CoastWatch Data Portal Layout

https://coastwatch.noaa.gov

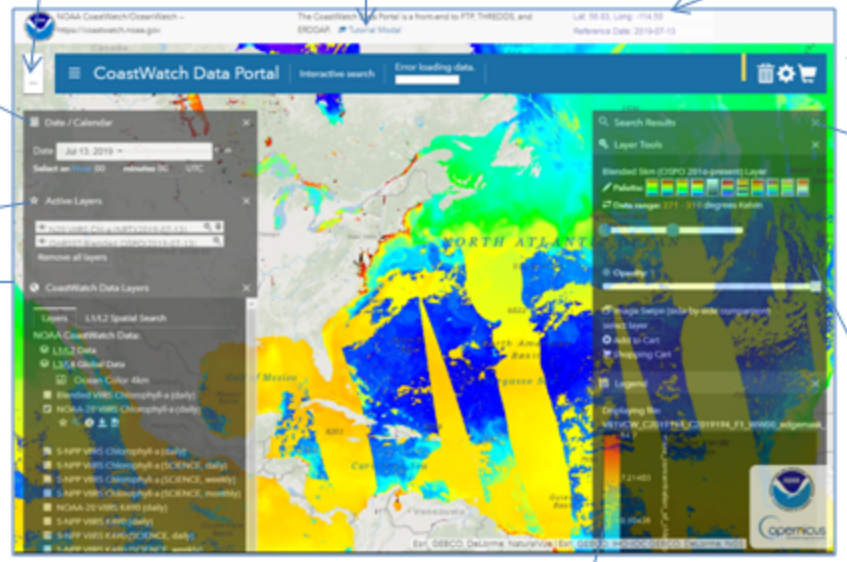
Date/Calendar

- Set single date or range
- Use the 'Apply' button when selecting a date

Map zoom controls (mouse scroll also works)

Geographic coordinates and Date for visualized layers

- Panel Menu to display closed panels
- Remove all layers
- User Settings for data download (global, view, or subset)
- Shopping Cart: URL list for data download



Active Layers

- Selects a layer for retention
- Allows comparison between different dates
- Visualization stack can be dragged to reorder layers

Search Results

- Shows Level-1/-2 swath data available for download
- Dataset footprint can be used to show extent on map

CoastWatch Data Layers

- Data layers available for visualization and download
- Datasets include Level-1/-2 swath and Level-3/-4 mapped datasets. Only mapped data can be visualized in the viewer.
- Each layer has a set of icons to configure visualization, promote to active layers, access metadata, or download.

L1/L2 Spatial Search

- Level-1/-2 Swath data that can be searched by space (point/polygon) and time.
- Calendar can be set to a date range for this feature
- Results shown in Search Results panel (upper right)

Legend

- Legend for current dataset displayed

Layer Tools

- Palettes available for rendering the current dataset
- Data range slider for rescaling palette
- Opacity (transparency) control
- Image Swipe/Add to Cart/Shopping Cart features in development

Future Enhancements

- Functional shopping cart, L1/2 Granule overlays, Legend manager, Image export, 3d Globe visualization, In situ matchups, value extraction, and more

Help & Tutorials

Icons

- Tutorial Modal: Opens this help modal
- Date / Calendar: Allows selection of a specific date for image display or date range for Level-1/2 data searches.
- Active Layers: Side panel for layers selected for retention (i.e. comparing two dates) or re-ordering (layer on top)
- Data Layers: Layer with checkbox to toggle display or set visualization parameters
- Product Category: Data listings organized by product type (SST, Color, Altimetry, etc)
- Layer Tools: Side panel for modifying display options (opacity, color table, scale)
  - Palette Selection: A user may select a palette for product display
  - Data Range: Slider control to set ranges for displaying data
  - Opacity: User control to adjust layer transparency.
- Info: Provides information on the selected parameter (Temporal/spatial range, resolution, metadata)
- Monitor: Pop-up chart of data quality and statistics from OceanWatch Monitor
- Data Download: Downloads data set (with user-settings applied)

In Development... Add to Cart: Adds current product URL (with user settings applied) to download list

- Reference Layers: Static vector overlays (i.e. Lat/Lon lines)
- Legend: Shows most recently selected product's color bar and file name
- Full Map: Available from the minimized menu, removes the title bar from the map view.
- Search: Submission button to perform search request for L1/L2 data

In Development... Shopping Cart: Feature to save URL list for future data download.

- User Settings: Modal to capture file subsetting options
- Remove Layers: Removes all user-selected layers from the map display.

Quick Start Guide

In Development... Getting Started

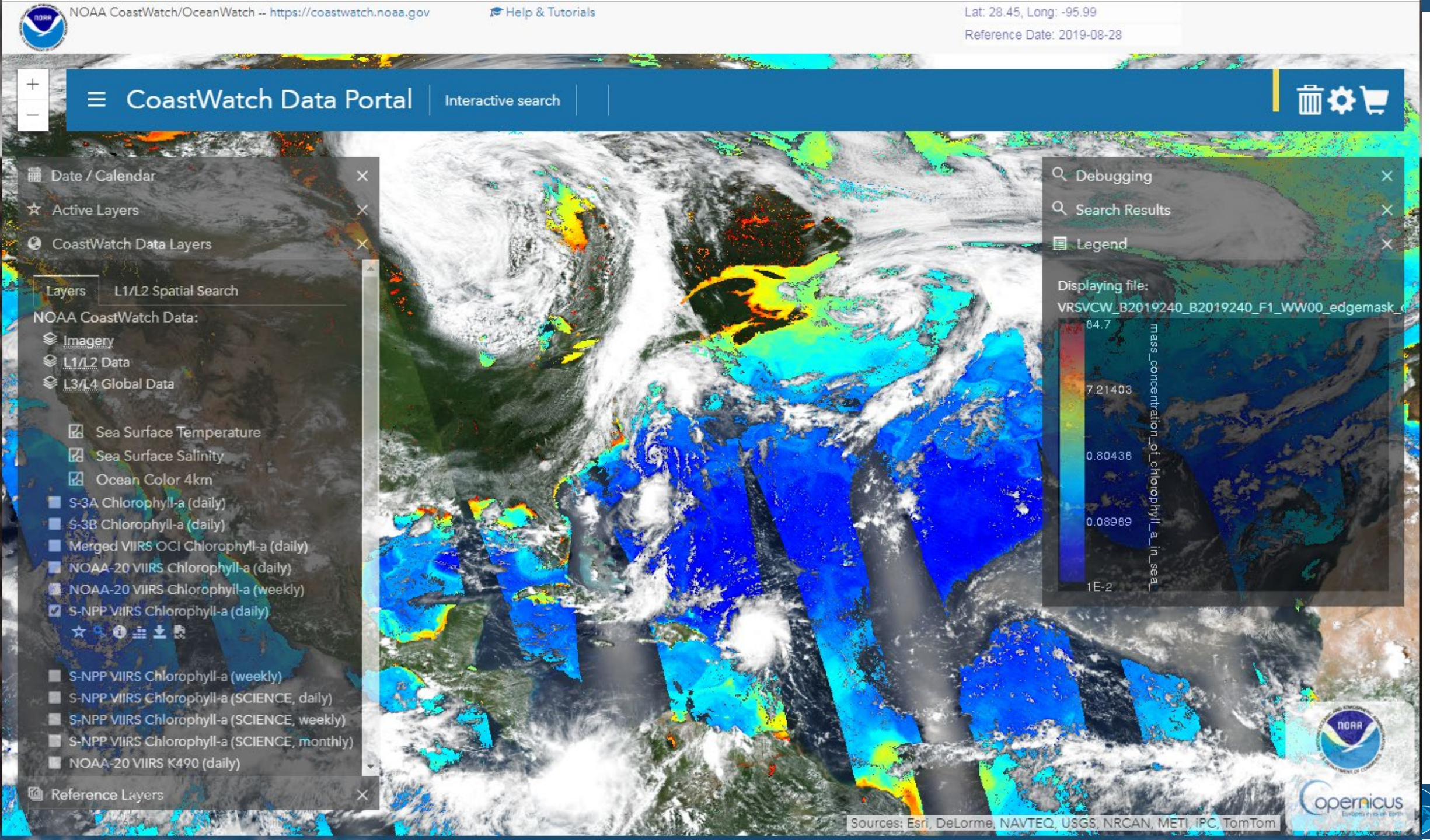
Portal Layout

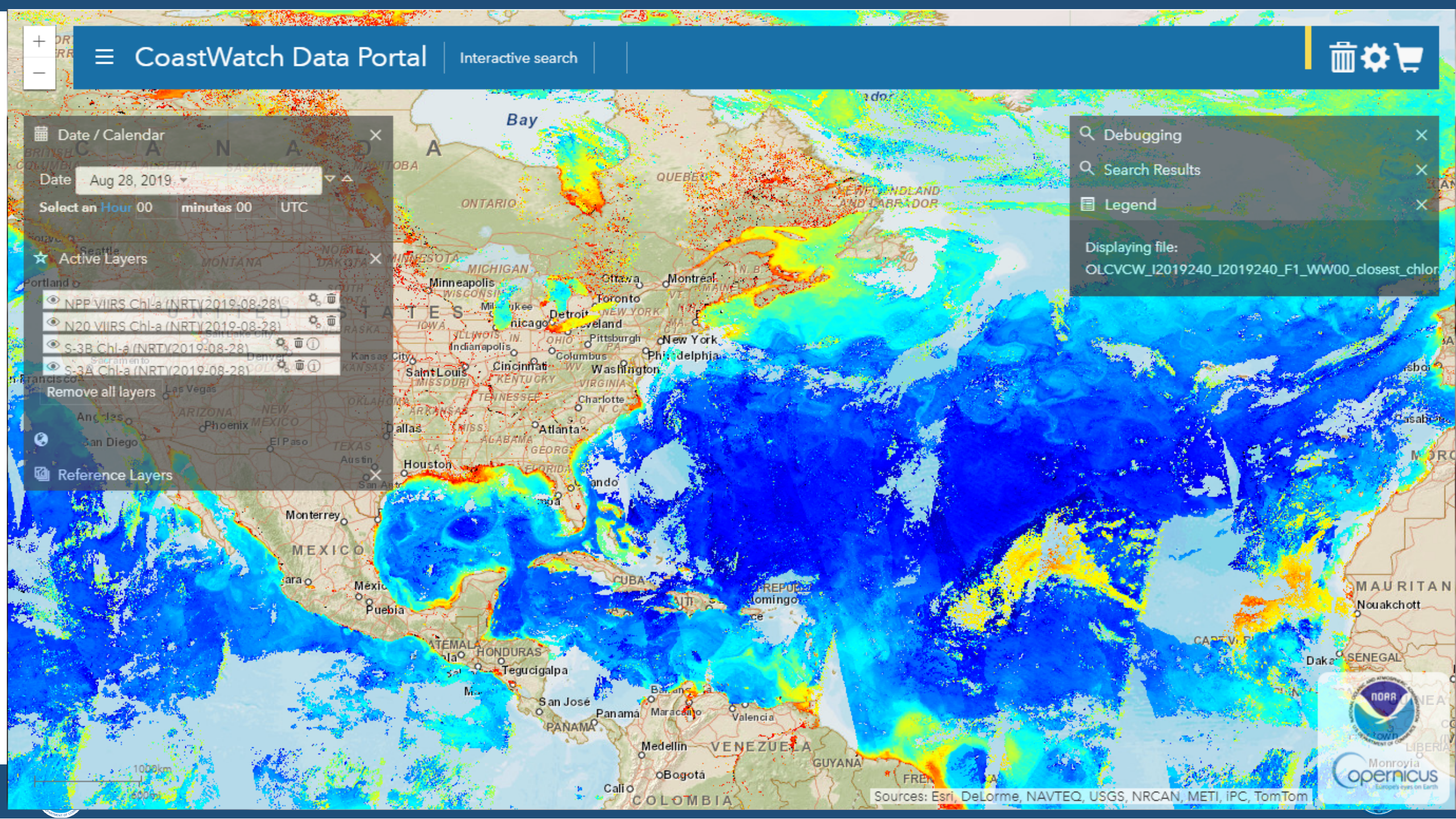
Layout diagram

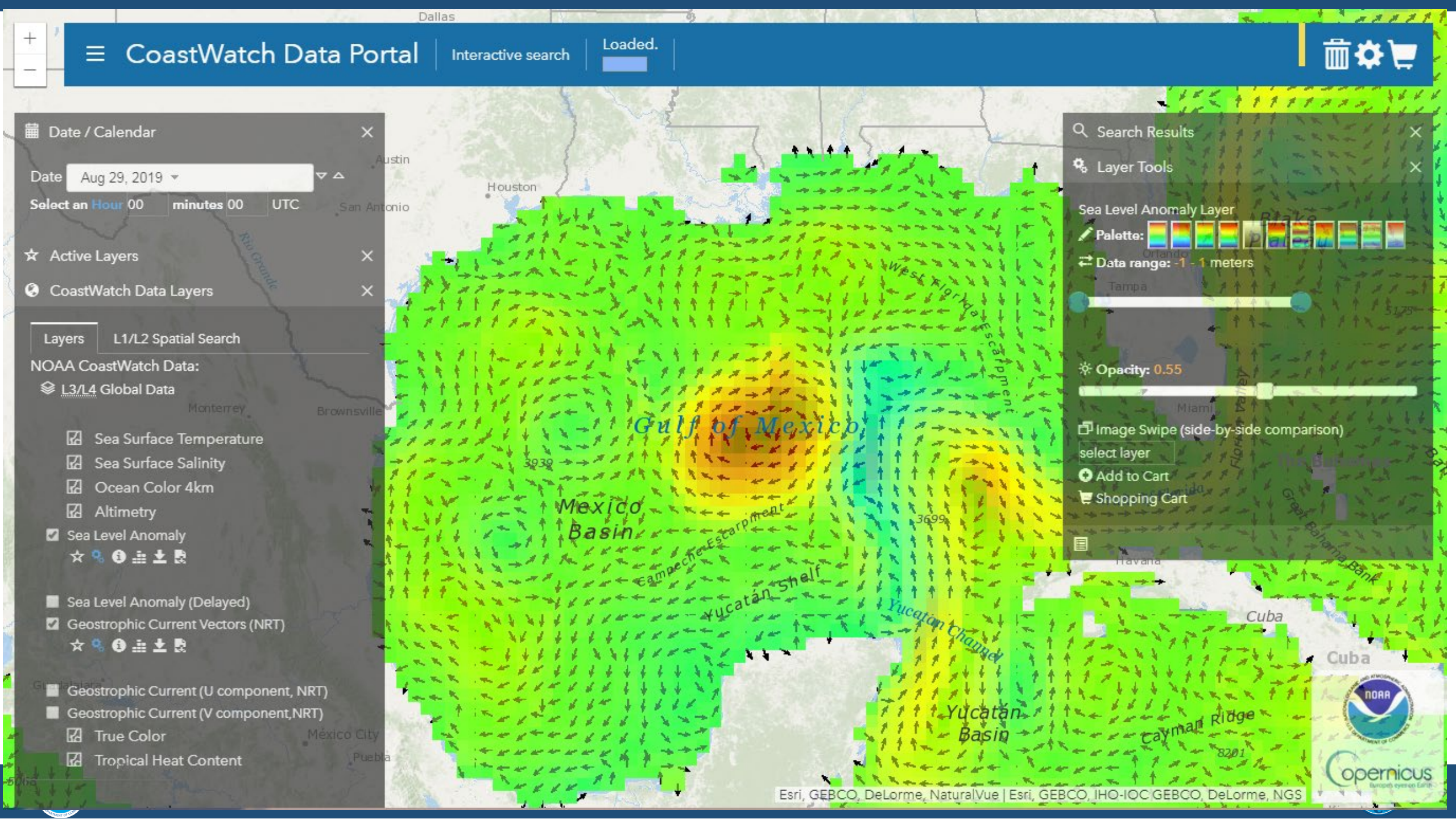
Helper Videos

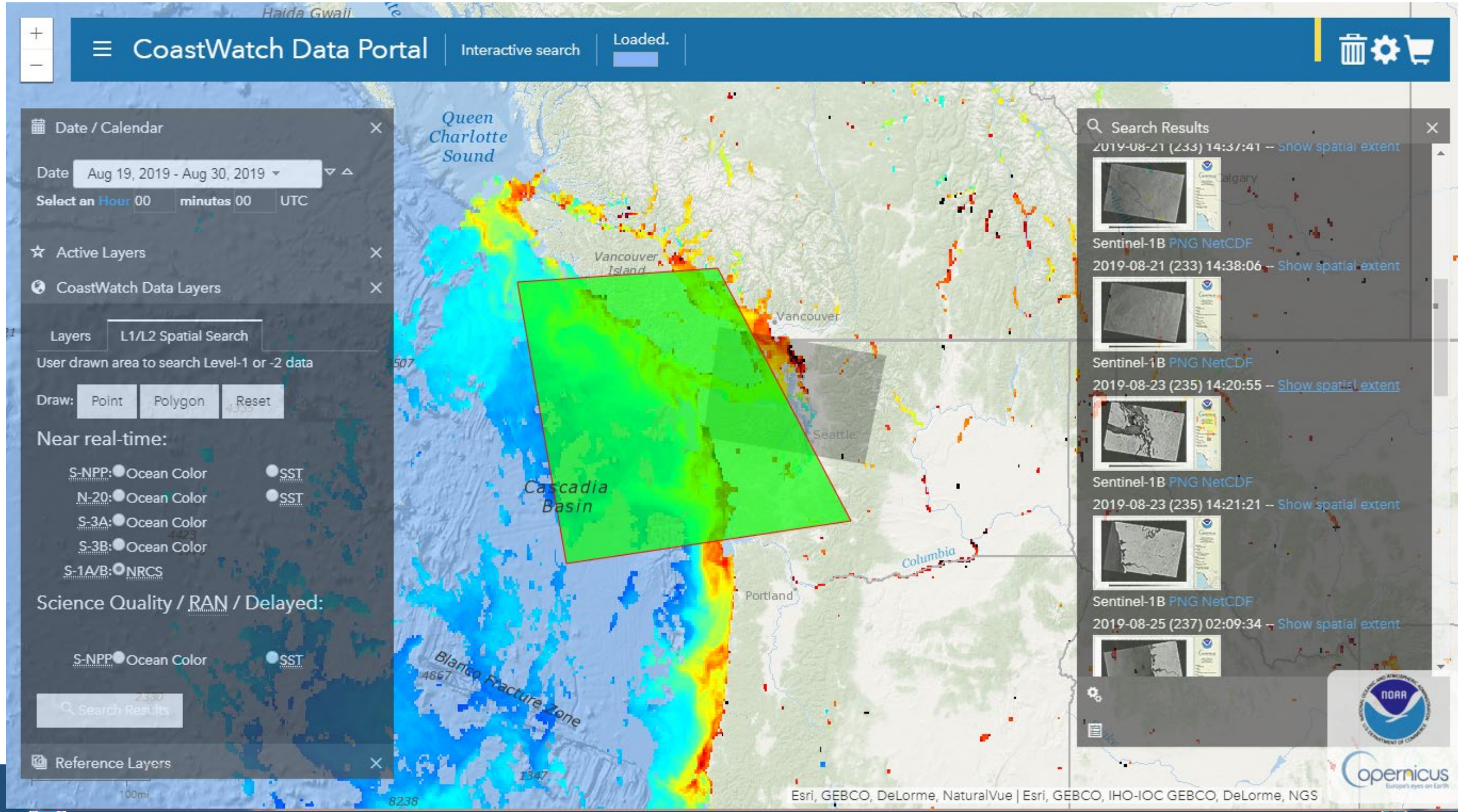
Available how to's:

- Adjusting date(s)
- Loading Data
- Using Active Layers
- Downloading / subsetting data


NOAA CoastWatch/OceanWatch -- https://coastwatch.noaa.gov
Help & Tutorials
Lat: 28.45, Long: -95.99
Reference Date: 2019-08-28
CoastWatch Data Portal
Interactive search
Date / Calendar
Active Layers
CoastWatch Data Layers
Layers
L1/L2 Spatial Search
NOAA CoastWatch Data:
Imagery
L1/L2 Data
L3/L4 Global Data
Sea Surface Temperature
Sea Surface Salinity
Ocean Color 4km
S-3A Chlorophyll-a (daily)
S-3B Chlorophyll-a (daily)
Merged VIIRS OCI Chlorophyll-a (daily)
NOAA-20 VIIRS Chlorophyll-a (daily)
NOAA-20 VIIRS Chlorophyll-a (weekly)
S-NPP VIIRS Chlorophyll-a (daily)
S-NPP VIIRS Chlorophyll-a (weekly)
S-NPP VIIRS Chlorophyll-a (SCIENCE, daily)
S-NPP VIIRS Chlorophyll-a (SCIENCE, weekly)
S-NPP VIIRS Chlorophyll-a (SCIENCE, monthly)
NOAA-20 VIIRS K490 (daily)
Reference Layers
Debugging
Search Results
Legend
Displaying file:
VRSVCW_B2019240_B2019240_F1_WW00_edgemask_
64.7
7.21403
0.80436
0.08969
1E-2
mass_concentration_of_chlorophyll_a_in_sea_
Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom
Copernicus


CoastWatch Data Portal
Interactive search
Date / Calendar
Date Aug 28, 2019
Select an Hour 00 minutes 00 UTC
Active Layers
NPP VIIRS Chl-a (NRT)(2019-08-28)
N20 VIIRS Chl-a (NRT)(2019-08-28)
S-3B Chl-a (NRT)(2019-08-28)
S-3A Chl-a (NRT)(2019-08-28)
Remove all layers
Reference Layers
Debugging
Search Results
Legend
Displaying file:
OLCVCW_I2019240_I2019240_F1_WW00_closest_chlor
Sources: Esri, DeLorme, NAVTEQ, USGS, NRCAN, METI, iPC, TomTom


CoastWatch Data Portal
Interactive search
Loaded.
Date / Calendar
Date Aug 29, 2019
Select an Hour 00 minutes 00 UTC
Active Layers
CoastWatch Data Layers
Layers
L1/L2 Spatial Search
NOAA CoastWatch Data:
L3/L4 Global Data
Sea Surface Temperature
Sea Surface Salinity
Ocean Color 4km
Altimetry
Sea Level Anomaly
Sea Level Anomaly (Delayed)
Geostrophic Current Vectors (NRT)
Geostrophic Current (U component, NRT)
Geostrophic Current (V component,NRT)
True Color
Tropical Heat Content
Search Results
Layer Tools
Sea Level Anomaly Layer
Palette:
Data range: -1 - 1 meters
Opacity: 0.55
Image Swipe (side-by-side comparison)
select layer
Add to Cart
Shopping Cart
Gulf of Mexico
Mexico Basin
Yucatán Basin
Yucatán Shelf
Campeche Escarpment
West Florida Escarpment
Yucatan Channel
Cayman Ridge
Great Bahama Bank
Cuba
Dallas
Austin
Houston
San Antonio
Monterrey
Brownsville
México City
Puebla
Tampa
Miami
Havana
Esri, GEBCO, DeLorme, NaturalVue | Esri, GEBCO, IHO-IOC GEBCO, DeLorme, NGS


CoastWatch Data Portal
Interactive search
Loaded.
Date / Calendar
Date Aug 19, 2019 - Aug 30, 2019
Select an Hour 00 minutes 00 UTC
Active Layers
CoastWatch Data Layers
Layers
L1/L2 Spatial Search
User drawn area to search Level-1 or -2 data
Draw: Point Polygon Reset
Near real-time:
S-NPP: Ocean Color SST
N-20: Ocean Color SST
S-3A: Ocean Color
S-3B: Ocean Color
S-1A/B: NRCS
Science Quality / RAN / Delayed:
S-NPP Ocean Color SST
Search Results
Reference Layers
Search Results
2019-08-21 (233) 14:37:41 -- Show spatial extent
Sentinel-1B PNG NetCDF
2019-08-21 (233) 14:38:06 -- Show spatial extent
Sentinel-1B PNG NetCDF
2019-08-23 (235) 14:20:55 -- Show spatial extent
Sentinel-1B PNG NetCDF
2019-08-23 (235) 14:21:21 -- Show spatial extent
Sentinel-1B PNG NetCDF
2019-08-25 (237) 02:09:34 -- Show spatial extent
Queen Charlotte Sound
Vancouver Island
Vancouver
Seattle
Cascadia Basin
Columbia
Portland
Blanco Fracture Zone
Esri, GEBCO, DeLorme, NaturalVue | Esri, GEBCO, IHO-IOC GEBCO, DeLorme, NGS

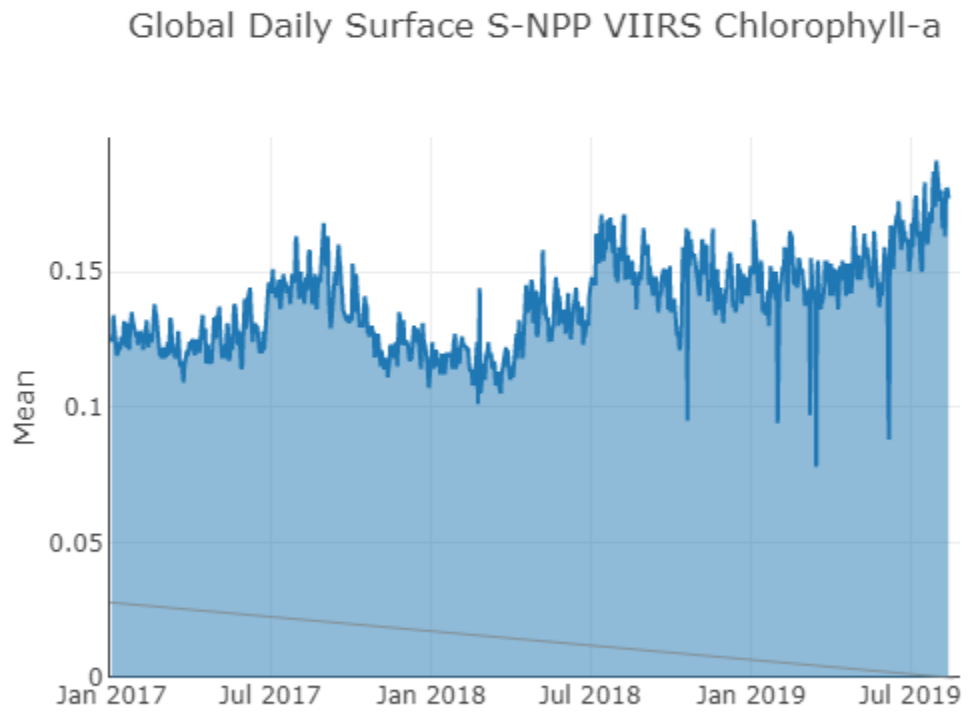
OceanWatch Data Quality Monitor

This dataset is not currently included in the OceanWatch Monitor

The OceanWatch Monitor provides a first look at the performances of products ingested in the OceanWatch systems.

◉Mean ○Observations ○Std Dev

Anomaly Image



User Settings

This modal (must be closed prior to interacting with the map) allows a user to define the extent for downloaded data. Confirm the default coverage (Global), dynamic (map view), or define a user-defined area of interest. Once a selection is made, this modal will close. Re-open if additional adjustments are desired:

Make a selection:

◉ **Global or maximum coverage**

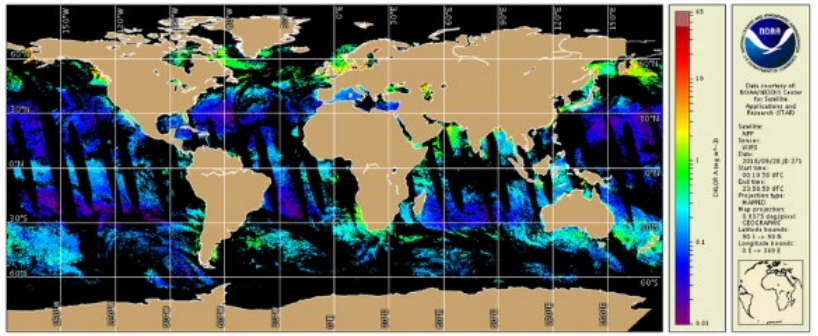
○ **Current view extent**

○ **User-defined:** Selection will close the modal and allow a user to draw a rectangle on the map. Reset clears graphic and applies global extent.

Clear/Reset

Note, the user-defined area of interest will be stored and applied to dynamically subset NetCDF datasets. Regions drawn over the dateline may provide unexpected results.

S-NPP VIIRS Chlorophyll-a (daily)



Geographic Bounds (X,Y):(-179.98,-89.76) to (179.98,89.76)

Temporal Date Range: 2012-01-02T12:00:00Z to2019-08-18T12:00:00Z

Variable(s):chlor_a

Product website link: S-NPP VIIRS Chlorophyll-a (daily)

MetaData Link: ISO 19115-2