

2024 Pacific Islands GIS & Remote Sensing Users conference



NOAA CoastWatch & PacIOOS: Training Course to Access and Use Data for Ocean and Coastal Applications, Nov 26, 1-6pm, Suva, Fiji

Introduction to NOAA CoastWatch

the CoastWatch Training Team



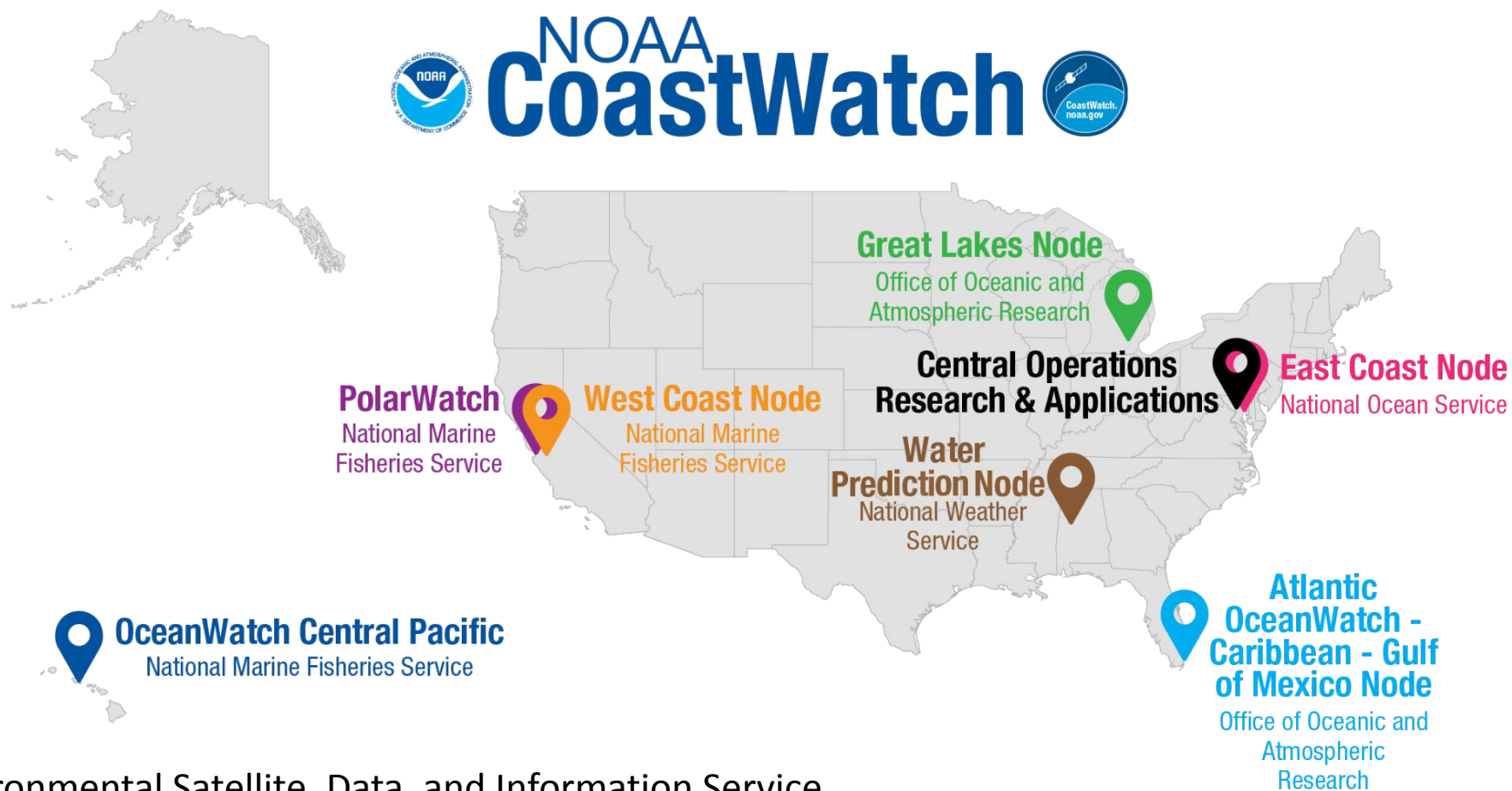
Pacific GIS and
Remote Sensing Council

coastwatch.info@noaa.gov



NOAA CoastWatch is a national program funded by NOAA/NESDIS¹

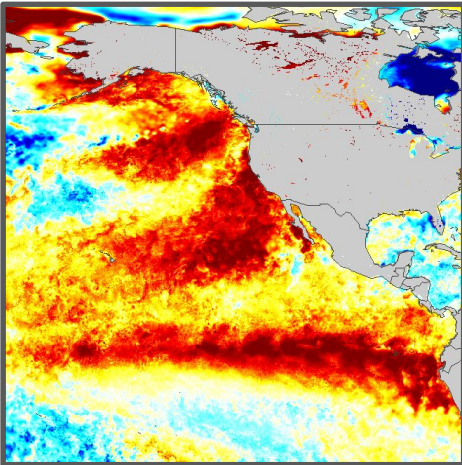
MISSION: PROVIDE ACCESS TO AND PROMOTE THE USE OF SATELLITE DATA PRODUCTS
for oceanic, freshwater, & polar applications



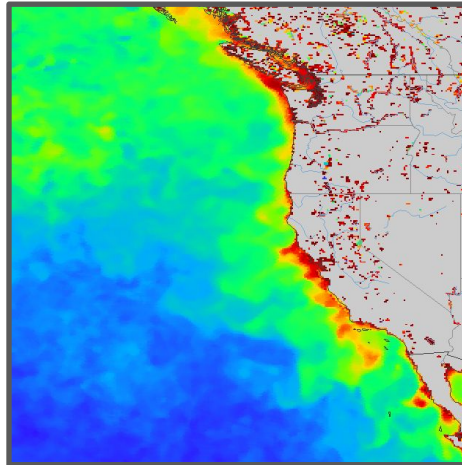
¹National Environmental Satellite, Data, and Information Service



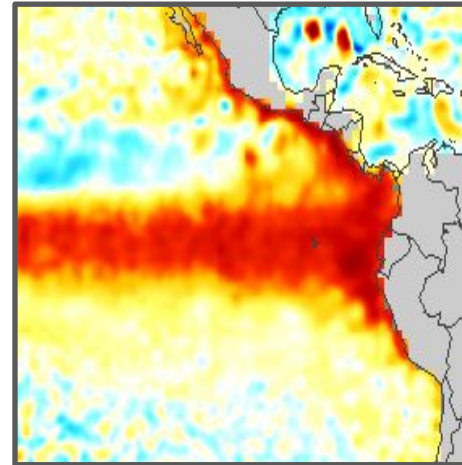
CoastWatch distributes ocean satellite data



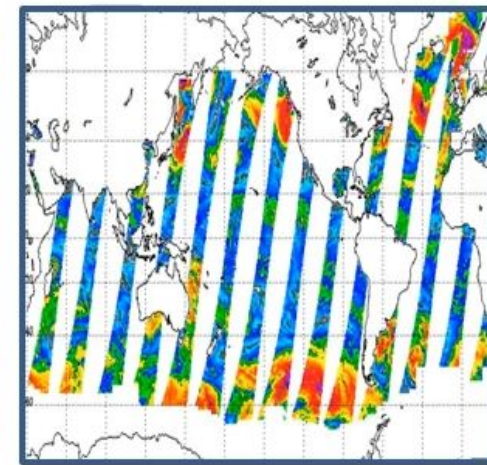
Temperature



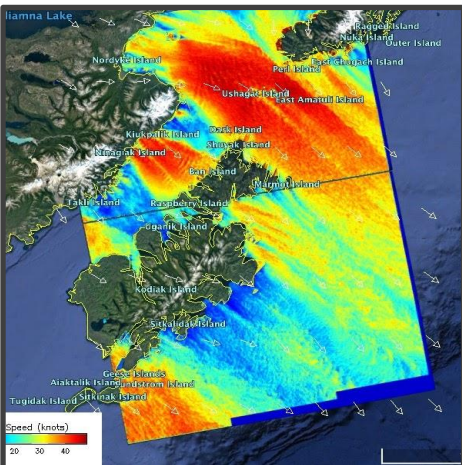
Ocean Color



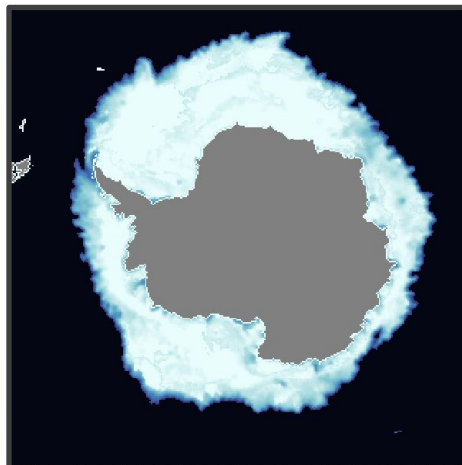
Altimetry



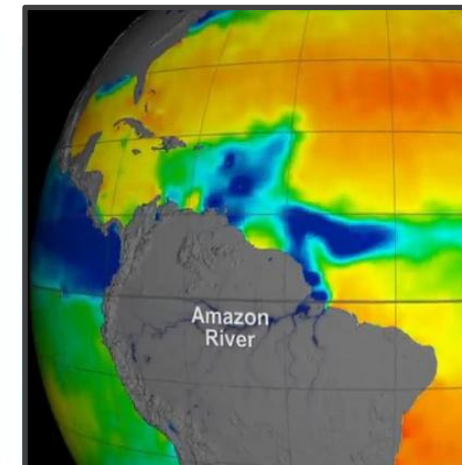
Ocean Vector Winds



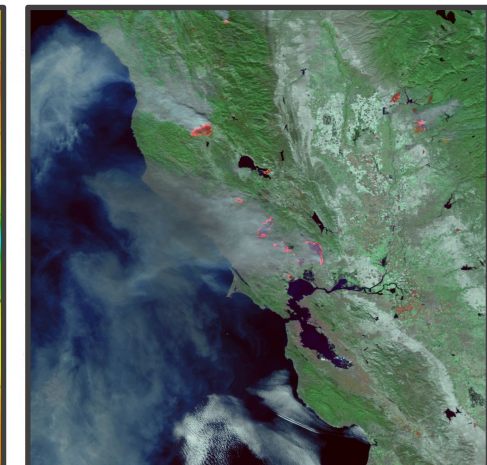
**Synthetic
Aperture Radar**



Sea Ice



Salinity

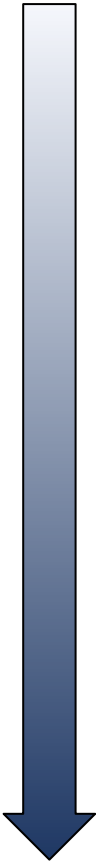


Imagery



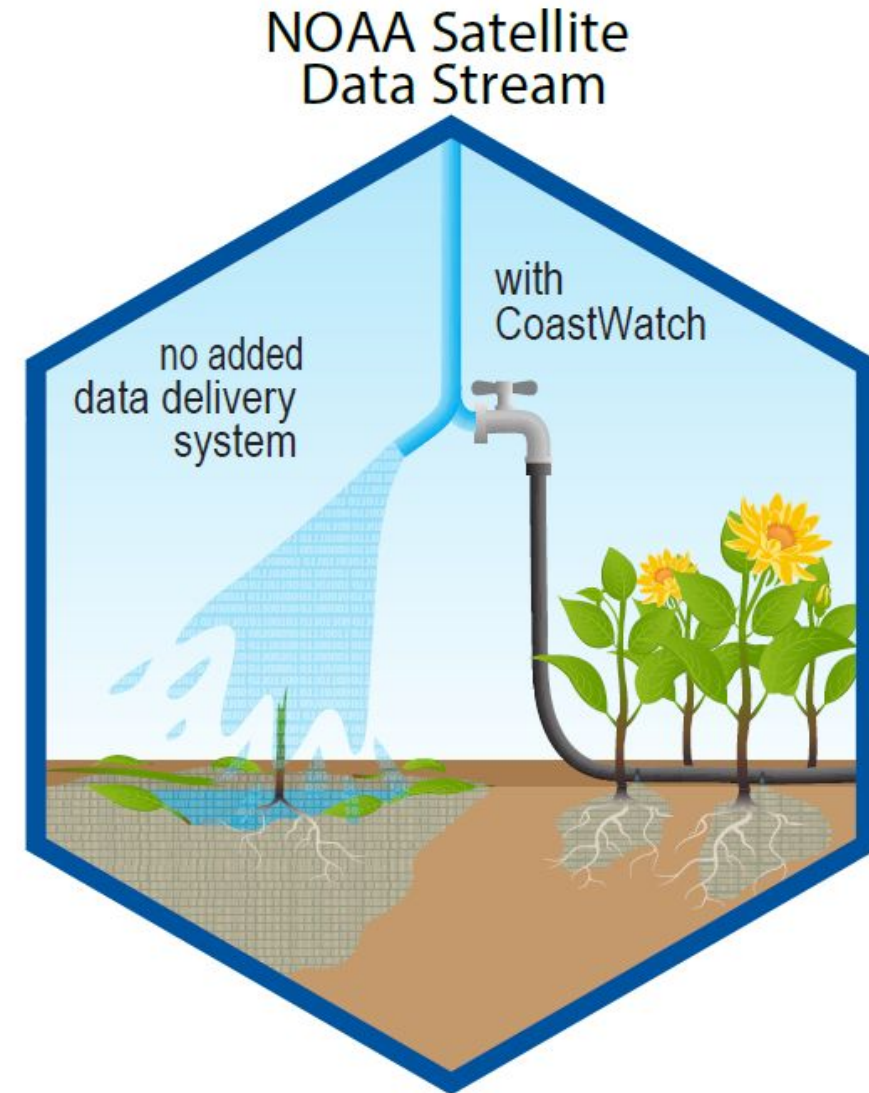
CoastWatch offers several levels of service to help users with satellite data

INCREASING
ASSISTANCE TO USER

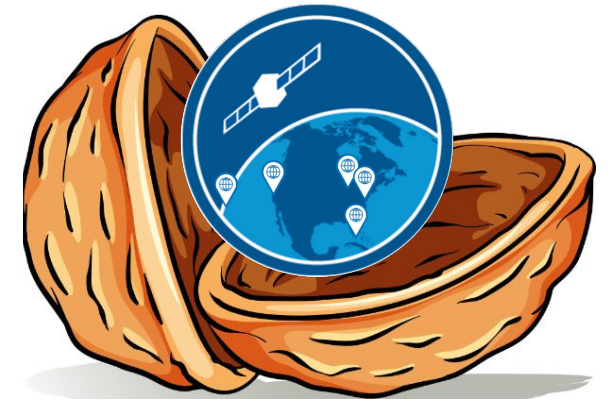


- Provide access to datasets with data servers
- Develop tools and tutorials to help users interact with the server and use the data
- Provide training and hands-on assistance
- Find or create products and tools to address users needs
- Work directly with users on projects

COASTWATCH IS A VALUE ADDED PROVIDER



NOAA CoastWatch Resources in a Nutshell



- Easy access to satellite datasets using ERDDAP
- Online (short, ~20 minutes) videos explaining the basics of all the satellite products (SST, ocean color, sea surface height, etc.)
- Code notebooks in R and Python on GitHub to demonstrate basic data extraction (from ERDDAP) and plotting examples
- Periodic courses offered on understanding and accessing satellite data
- Helpdesk: Coastwatch.info@noaa.gov

Recorded Lectures are Available on the CoastWatch Learning Portal

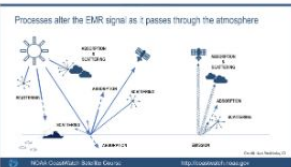
Presently housed on the University of Maryland learning management system:

<https://umd.instructure.com/courses/1336575/pages/all-lectures>

Transitioning to Github:

<https://coastwatch-training.github.io/CoastWatch-Workshops/>

All lectures are available as audio-recorded PowerPoint files, videos or transcripts.



Processes after the EMR signal as it passes through the atmosphere

NOAA CoastWatch Satellite Course

Satellite 101

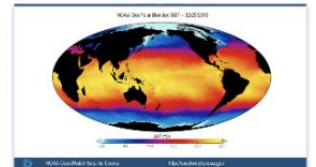


Ocean color data products

- Ocean color remote sensing applications at various scales
- Ocean color remote sensing (satellite, aircraft, ship-based)
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NOAA CoastWatch Satellite Course

Ocean Color



NOAA CoastWatch Satellite Course

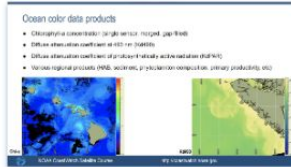
Sea Surface Temperature



Ocean features can be tracked with wind data

NOAA CoastWatch Satellite Course

Sea Surface Height, Winds, Salinity



Ocean color data products

- Ocean color remote sensing (satellite, aircraft, ship-based)
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NOAA CoastWatch Satellite Course

Water Quality



Datasets: Sea Ice Properties

- Sea Ice Concentration
- Sea Ice Thickness
- Ice Type/Age
- Ice Edge

NOAA CoastWatch Satellite Course

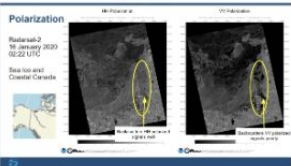
Sea Ice



HAB detection using satellite

NOAA CoastWatch Satellite Course

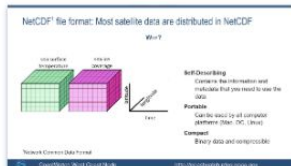
HABs



Polarization

NOAA CoastWatch Satellite Course


Synthetic Aperture Radar (SAR)



NetCDF file format: Most satellite data are distributed in NetCDF

NOAA CoastWatch Satellite Course

Tools & Strategy



Balance the Needs of Your Project

NOAA CoastWatch Satellite Course

Selecting a Dataset

Tutorials are Available on the CoastWatch Learning Portal

Presently housed on the University of
Maryland learning management system:

<https://umd.instructure.com/courses/1336575/pages/tutorials-and-user-guides>

Transitioning to Github. The R and python
code on GitHub are the most up-to-date
versions:

<https://github.com/coastwatch-training/CoastWatch-Tutorials>

The image shows a screenshot of the CoastWatch Learning Portal. At the top is a blue navigation bar with the following links: Home, Training Classes, Lectures, Tutorials, Example Applications, User Forums, Help, and CoastWatch. Below the navigation bar is the text: "Step-by-step instructions, exercises, User Guides, and videos." Below this text is a grid of eight tutorial thumbnails, each with a title below it:

- ArcGIS
- CoastWatch Data Portal
- CoastWatch Utilities
- ERDDAP
- Matlab
- Panoply
- Python
- R



<https://coastwatch.noaa.gov/cwn/products.html>

CoastWatch Product Search Tool

Please visit our [Product Glossary](#) to view the terms used by this search tool.

10 entries per page Search Table:

Search Panel

Filters Active - 0 Clear All

Product Family

- Field Observations (In situ) 1
- Ocean Color 10
- Ocean Currents 2
- Ocean Heat Content 1

Product Measurement

- Along-track Significant Wave Height
- Chlorophyll-a Anomaly Difference
- Chlorophyll-a Anomaly Ratio
- Chlorophyll-a Concentration

Processing Algorithms

- ACSP0 8
- MSL12 7
- N/A (Unspecified) 21

Product	Begins	Ends	Summary
ACSP0 Global 0.02° Gridded Super-collated SST and Thermal Fronts from Low-Earth-Orbiting Platforms (L3S-LEO)	2000	Present	NOAA Advanced Clear-Sky Processor for Ocean (ACSP0) L3S-LEO SST is a family of multisensor gridded ("L3") 0.02° resolution super-collated ("S") products. The L3S-LEO family is organized into three lines: PM, AM and Daily. The AM and PM lines correspond to 9:30am/pm and 1:30am/pm equator crossing times, respectively. The Daily line combines PM and AM (day and night) SSTs into a single daily L3S SST that is normalized to 1:30am viewing conditions.
ACSP0 Global SST from ABI	2017	Present	The ABI SST data are produced from GOES-East (GOES-16) and GOES-West (at present GOES-18, before 2023/01/10 GOES-17) satellite using the NOAA Advanced Clear-Sky Processor for Ocean (ACSP0) v2.xx enterprise system. Currently, near-real time (NRT) data are produced at STAR, with a ~2-6 hour latency. A Reanalysis (RAN) dataset for GOES-16 is also available. The data are available in NetCDF4 format, compliant with the GHRSSST Data Specifications v2 (GDS2). Currently, the data are archived on PO.DAAC and available at this Coast Watch page as a 2week rotated buffer.

ERDDAP at NOAA CoastWatch

Type	Remote Data Server Web Application
Webpage	Link to ERDDAP at NOAA CoastWatch
Description	The ERDDAP data server provides a simple, consistent way to subset and download gridded (Level 3 and above) environmental datasets in common file formats with options to make graphs and maps. At NOAA CoastWatch / OceanWatch / PolarWatch, all of the regional nodes and the CoastWatch Central hub now have ERDDAP servers in place as an option for data access.
Screenshot	

ERDDAP at NOAA CoastWatch

Easier access to scientific data

NOAA CoastWatch
Central Operations

ERDDAP

ERDDAP is a data server that gives you a simple, consistent way to download subsets of scientific datasets in common file formats and make graphs and maps. This particular ERDDAP installation has oceanographic data (for example, data from satellites and buoys).

Easier Access to Scientific Data

Our focus is on making it easier for you to get scientific data.

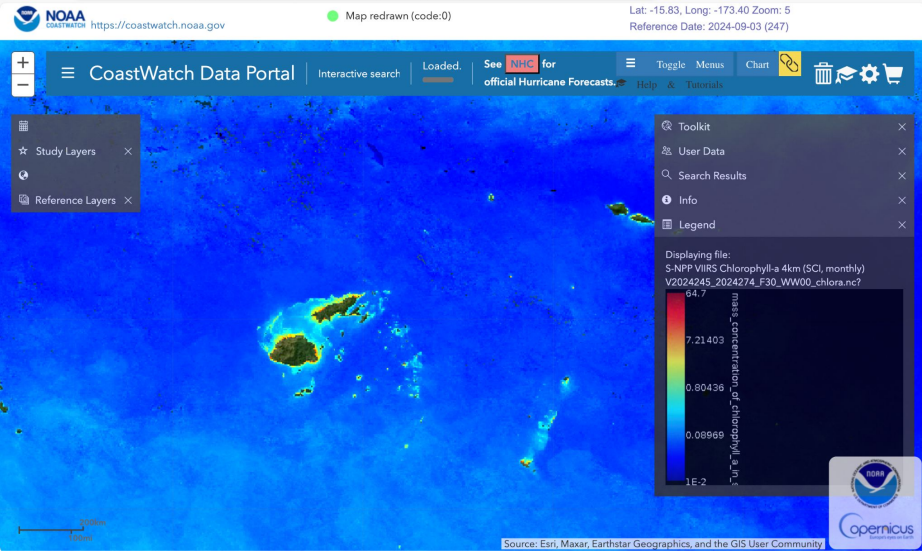
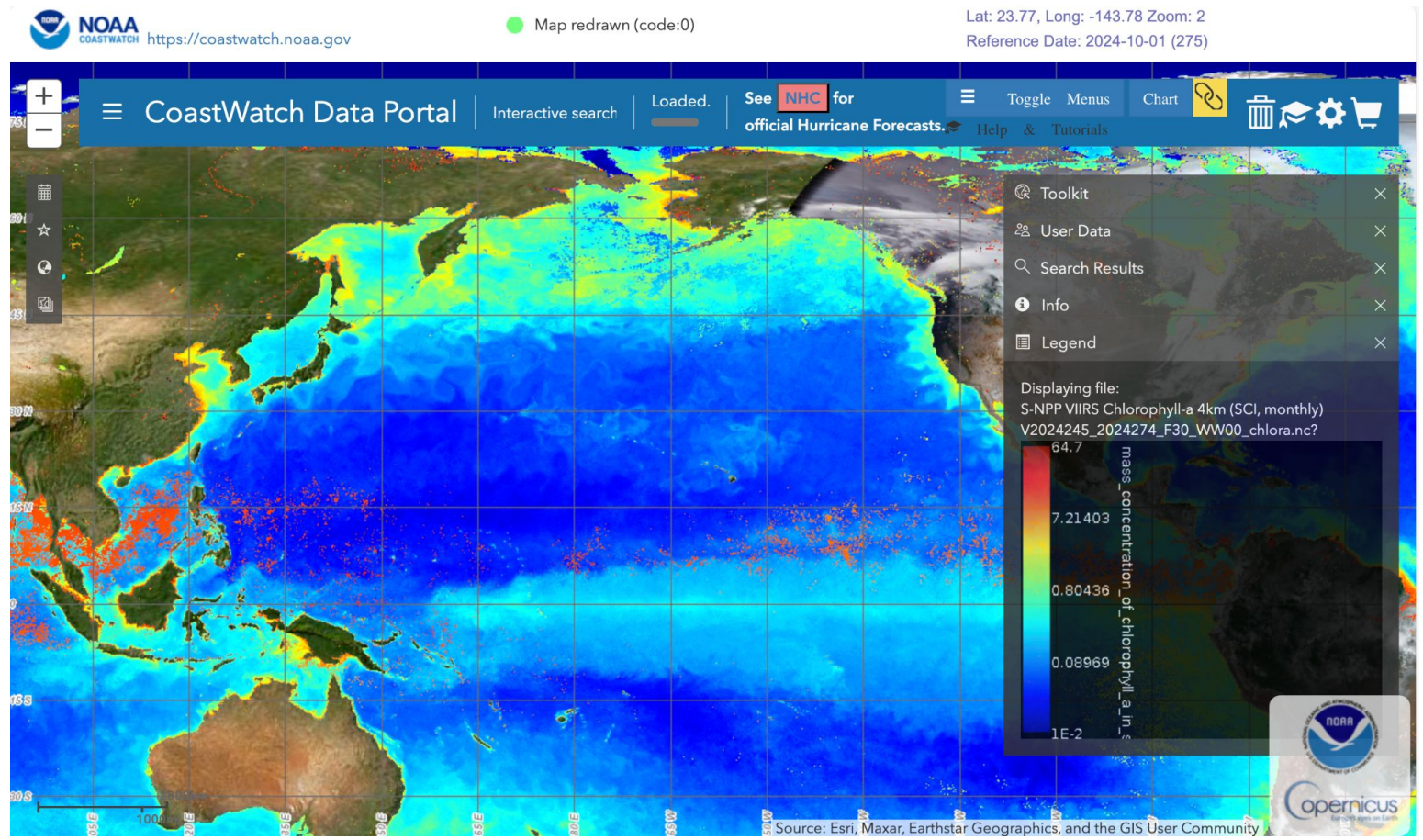
Different scientific communities have developed different types of data servers.

Start Using ERDDAP: Search for Interesting Datasets

- Do a Full Text Search for Datasets
- View a List of All 847 Datasets
- Search for Datasets by Category

CoastWatch Data Portal

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



<https://umd.instructure.com/courses/1336575/pages/coastwatch-data-portal-tutorials>

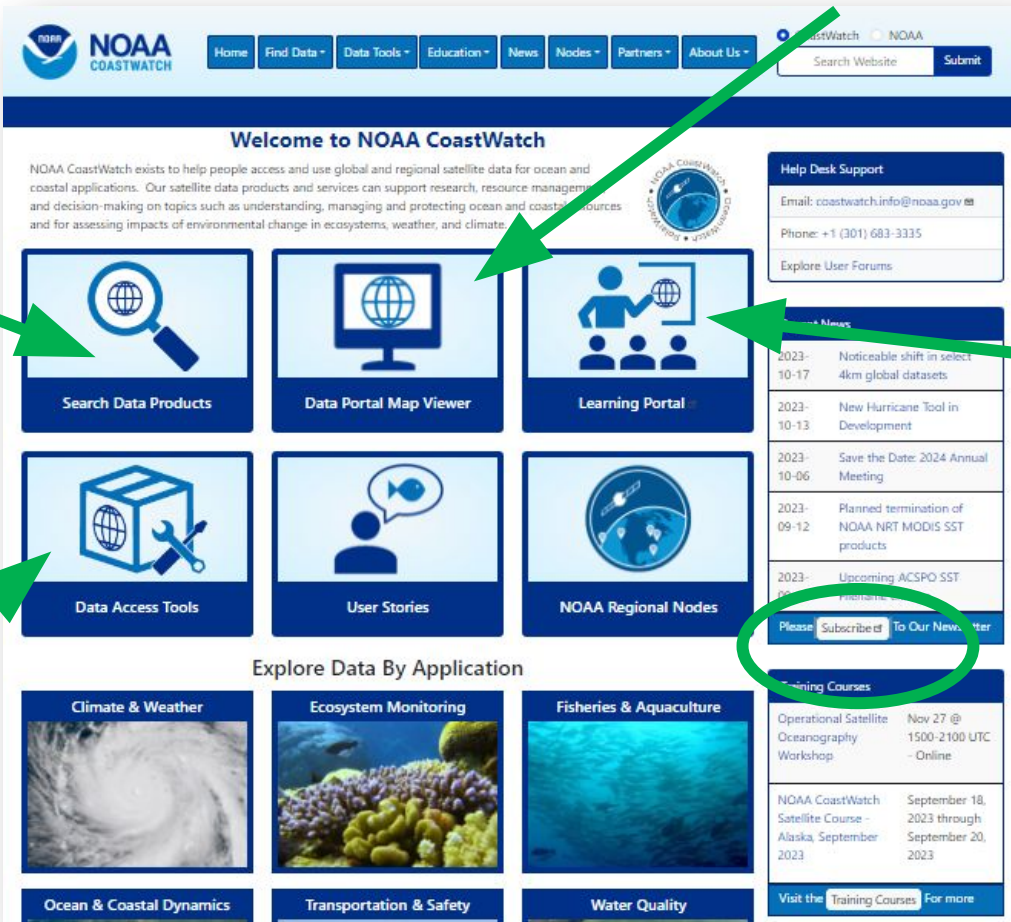


Website: coastwatch.noaa.gov

Data portal for visualization

Data searching tool for satellite products

Data access through ERDDAP and more



Learning Portal has links to recorded lectures and tutorials

Subscribe to our newsletter for announcements for satellite classes

Questions? coastwatch.info@noaa.gov

