2025 CoastWatch & ATN Training

Aug 14 & 15, 2025 Virtual
10am - 1pm (Pacific Time)

Resources

- Coastwatch Tutorials (on GitHub)
- Coastwatch Lecture series
- Animal telemetry Network

Schedule

Thursday, August 14, 2025

Time (PST)	Topic	Presenter
10:00 - 10:15	Training Overview - CoastWatch, ATN and the workshop component	Cara Wilson
10:15 - 11:30	Coastwatch satellite datasets and data portals	Cara Wilson
11:30 - 11:45	Break	
11:45 - 12:15	Using the ERDDAP data server	Cara Wilson
12:15 - 12:45	Accessing ERDDAP using scripts (R, python)	Cara Wilson
12:45 - 1:00	Day 1 wrap-up	

Friday, August 15, 2025

Time (PST)	Topic	Presenter
10:00 - 10:30	Intro to ATN and the DAC	Megan McKinzie
10:30 - 11:00	Demo of ATN data portal	Megan McKinzie
11:00 - 11:30	Accessing public ATN datasets	Megan McKinzie
11:30 - 11:45	Break	
11:45 - 12:00	Workshop, part 1: Linking CoastWatch and ATN data using scripts	Daisy Shi
12:00 - 12:45	Workshop, part 2: Hand's on time	
12:45 - 13:00	Wrap up and final discussion	All

Introduction to NOAA CoastWatch and ATN Animal Telemetry Data Course

Cara Wilson

NOAA Southwest Fisheries Science Center, Monterey, CA

PI of PolarWatch and West Coast node of CoastWatch

ICFT (International Conference on Fish Telemetry) Training Course - Aug 14 & 15, 2025

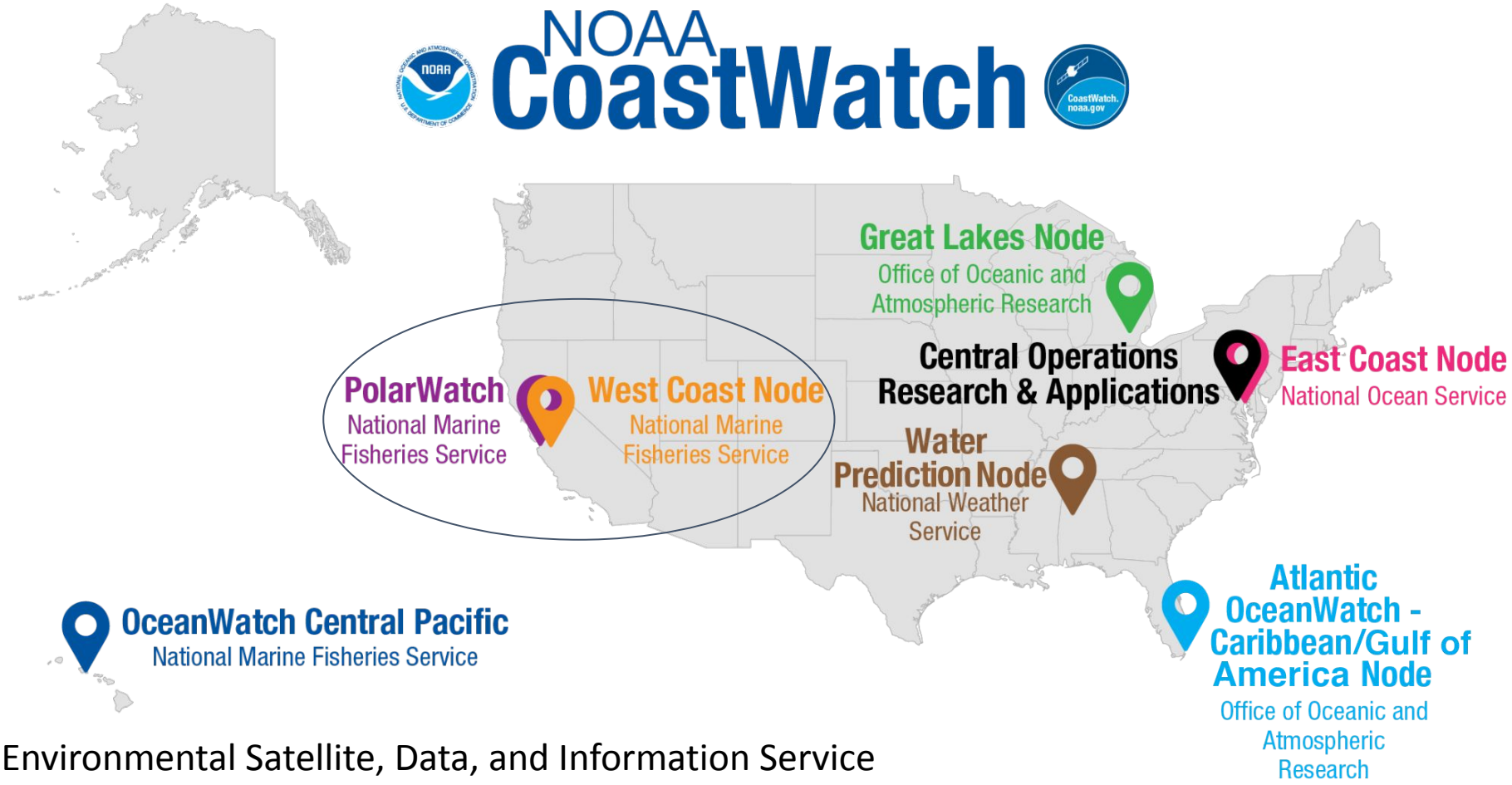
coastwatch.info@noaa.gov

NOAA CoastWatch and the Animal Telemetry Network organized an in-person training that was supposed to occur as part of the ICFT meeting in June , 2025. It had to be cancelled due to travel restrictions placed on federal employees.

https://coastwatch-training.github.io/CoastWatch-Workshops/courses/icft25.html

NOAA CoastWatch is a national program funded by NOAA/NESDIS[1]

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

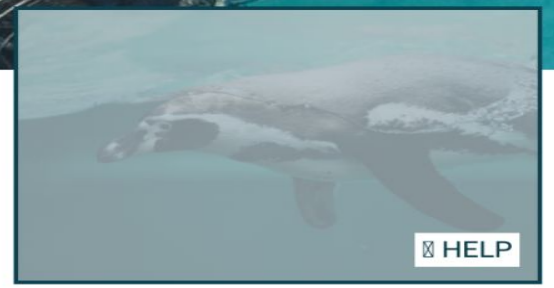


[1]National Environmental Satellite, Data, and Information Service

IOOS | Integrated Ocean Observing System

IOOS DATA VIEWERS DACS REGIONAL ASSOCIATIONS ABOUT

Animal Telemetry Network

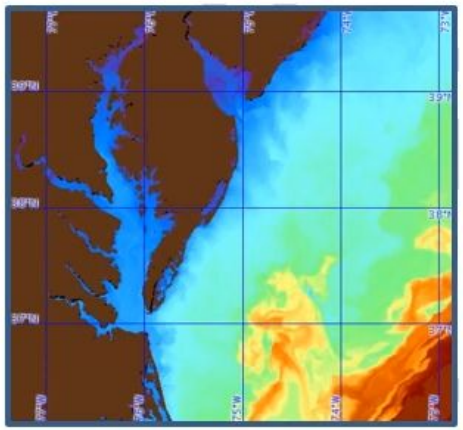


The ATN data management vision includes a regionally distributed data collection, management and sharing capacity that builds on and integrates as many existing data links as possible to enable local and regional needs to be addressed. At the heart of this system is a centralized data assembly center (DAC) currently located at Axiom Data Science. This DAC is a community resource where regional telemetry data is aggregated in a single place and one-stop-shopping is provided for access to all U.S. national animal telemetry data. The DAC both serves national stakeholder needs effectively as well as enables cost/time savings to principal investigators.

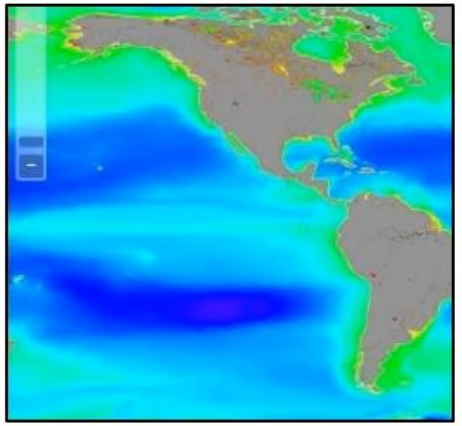
Quick Links

Covering ARGOS Fees through the ATN

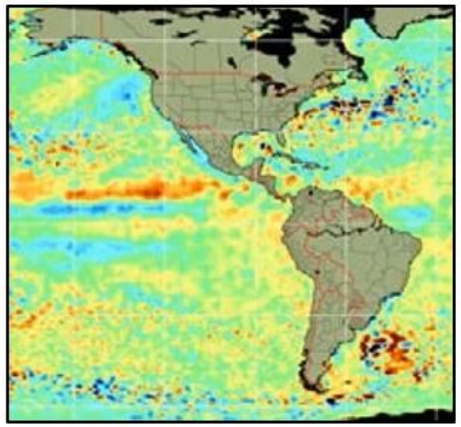
CoastWatch distributes ocean satellite data



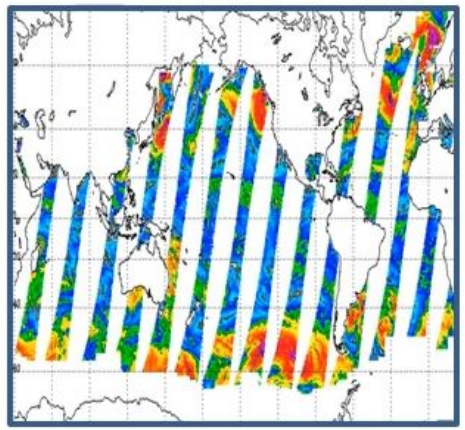
Temperature



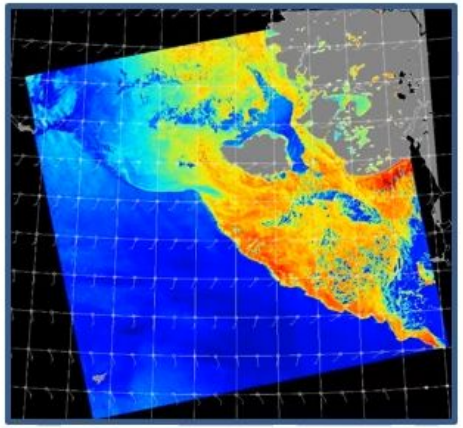
Ocean Color



Altimetry

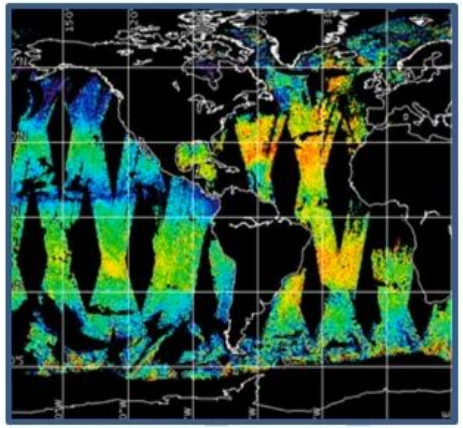


Ocean Vector Winds

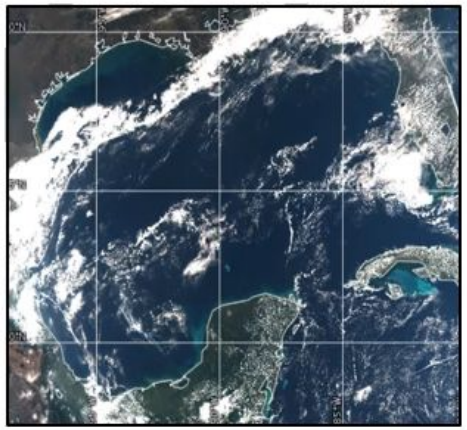


Synthetic Aperture Radar

Sea Ice



Salinity



Imagery

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

INCREASING ASSISTANCE TO USER

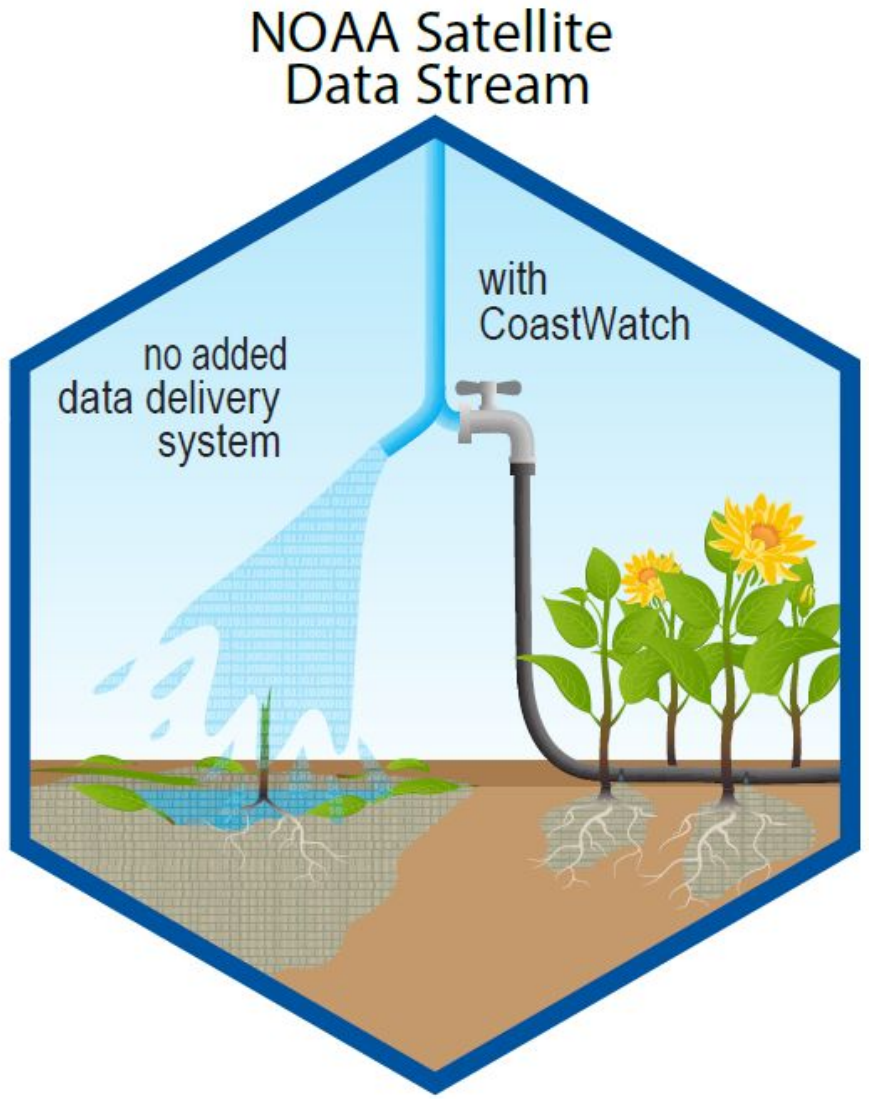
Provide access to datasets with data servers

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

Some roadblocks to using satellite data

- getting a good overview on the available data sets
- Figuring out what dataset covered by years of interest, and then downloading only the files from my area of interest is not always straightforward, depending on the data portal used.
- Formatting and manipulating datasets to work in R
- downloading data within a bounding box and timeframe
- full work flow of data - from download, to filtering, and analysis
- data sets, matching to telemetry data, coding
- locating it and decoding it for use
- Many..!
- Finding easy data portals with good coverage and resolution (temporal and spatial). Dealing with gaps/clouds.
- Working with large datasets (esp. daily resolution) and figuring out how to subsample or average those..
- The mind-boggling and ever-changing myriad of satellite products available

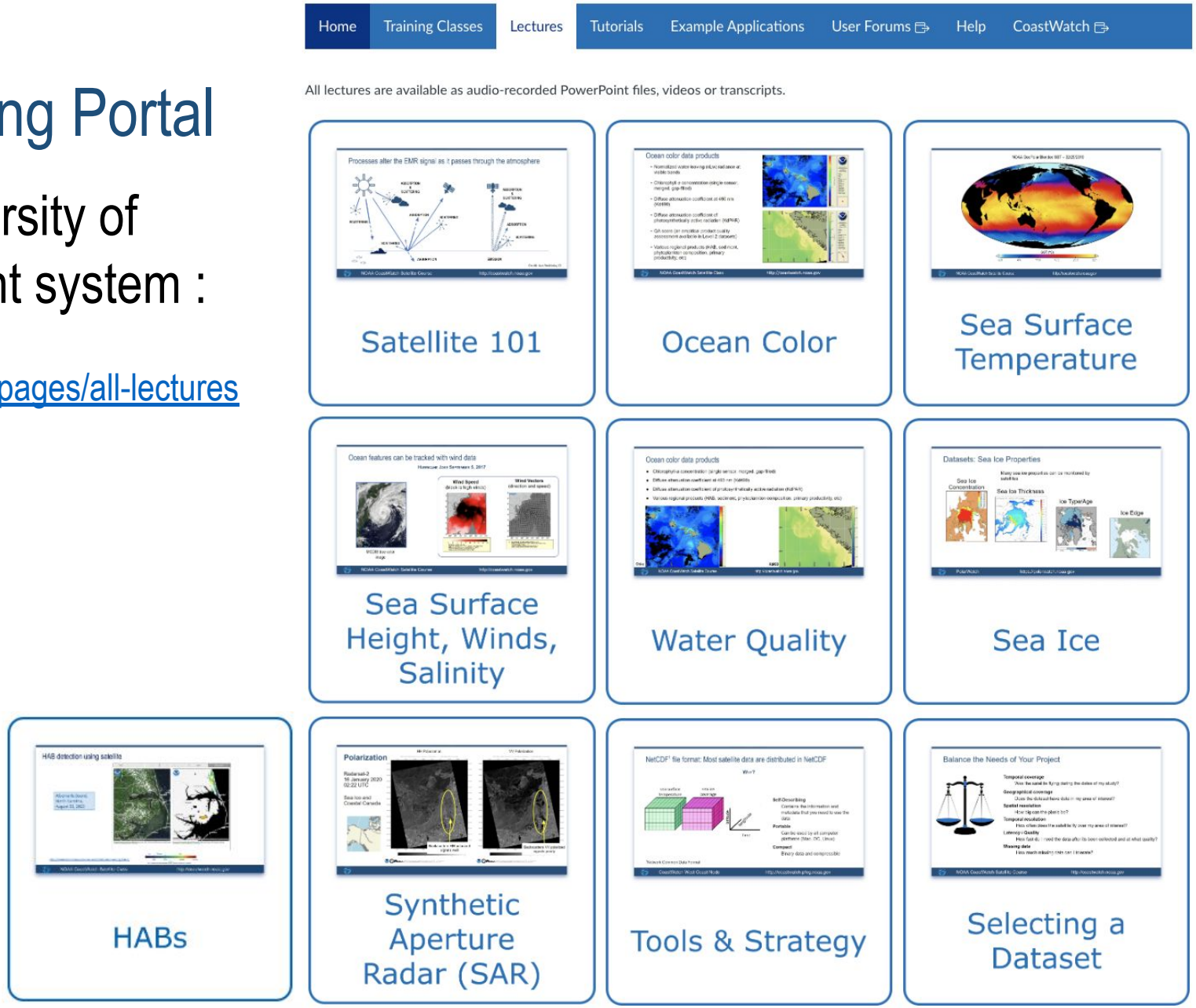
NOAA CoastWatch Resources in a Nutshell

- 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 do 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 on the CoastWatch Learning Portal

Presently housed on the University of Maryland learning management system :

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



Tutorials on the CoastWatch Learning Portal

Presently housed on the University of Maryland learning management system :

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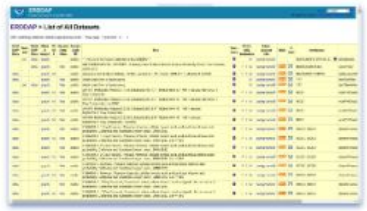
Tutorials And User Guides

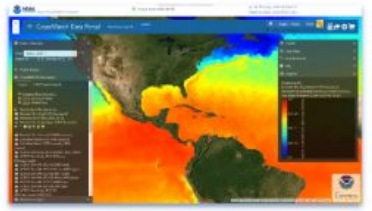
Home | Training Classes | Lectures | Tutorials | Example Applications | User Forums | Help | CoastWatch

Step-by-step instructions, exercises, User Guides, and videos.

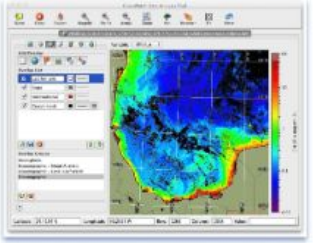


ERDDAP

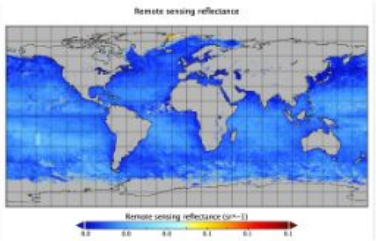
also on GitHub



CoastWatch Data Portal

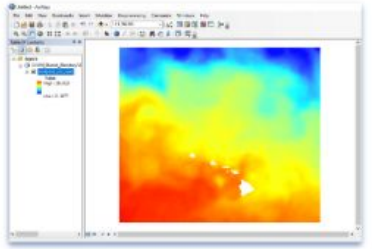


CoastWatch Utilities



also on GitHub

Panoply netCDF viewer



ArcGIS

GitHub

R • Python • MATLAB

CoastWatch Training Materials Transitioning to GitHub

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

CoastWatch Tutorials on GitHub

Tutorial Module Descriptions

- ERDDAP-basics An introduction to what ERDDAP is and an overview of the different CoastWatch ERDDAP servers. Learn how to visualize and download data from ERDDAP, and how to interpret an ERDDAP url.
- netcdf-and-panoply-tutorial Learn how to use NASA's Panoply software to open and view netCDF data.
- Tutorial1-basics Learn to access satellite data from CoastWatch ERDDAP data server and to work with NetCDF files. Visualize sea surface temperature on a map and plot time series data. **R, python and Matlab versions.**
- Tutorial2-timeseries-compare-sensors Learn common ways to download data from ERDDAP servers to access time-series chlorophyll data from four different satellite datasets and summarize and visualize the data for comparison. **R, python and Matlab versions.**
- convert-180+180-to-0-360-longitude Work with datasets with -180° to +180° longitude values in a region that crosses the antimeridian. Convert the coordinates from (-180, +180) to (0, 360) and visualize data on a map. **Python only.**
- create-virtual-buoy-with-satellite-data Create a “virtual” buoy using satellite data to fill the gaps in in-situ data collected by a physical buoy. Extract data from a location close to an existing buoy. Clean dataset by removing outliers, and aggregate (resample) to achieve a reduced temporal resolution. Plot time series data. **R and python versions.**
- extract-satellite-data-within-boundary Extract sea surface temperature satellite data for an non-rectangular geographical region from an ERDDAP server using a shapefile, make maps, and plot a timeseries of the seasonal cycle of SST within the boundary. **R, python and Matlab versions.**
- matchup-satellite-buoy-data Temporally and geospatially subset satellite data to match with buoy data (tabular), run statistical analysis and produce a map of the satellite data with overlaying buoy data. **R only**.
- matchup-satellite-data-to-track-locations Extract satellite data along a set of points defined by longitude, latitude, and time coordinates like that produced by an animal telemetry tag, a ship track, or a glider track. **R, python and Matlab versions.**

Most tutorials are available in both R and python, and a few also have a Matlab version

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

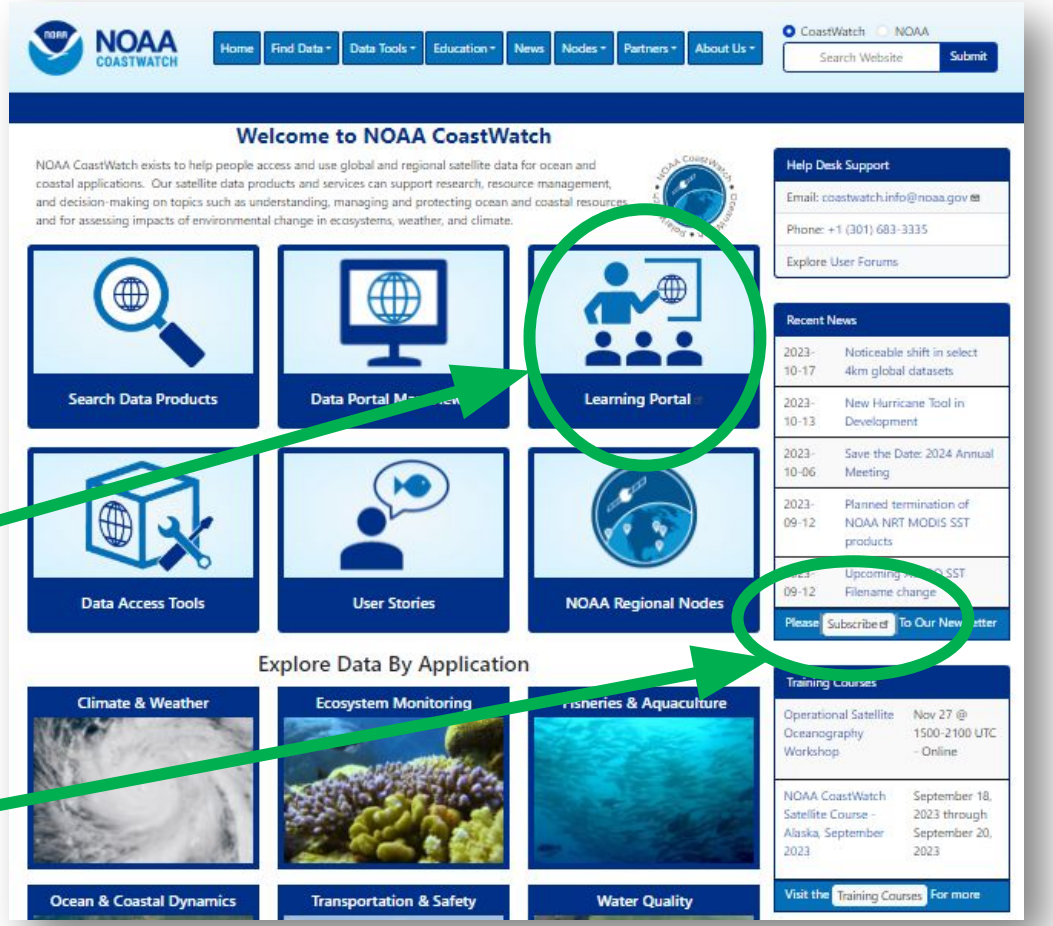
Questions?
Coastwatch.info@noaa.gov

Learning Portal has links to recorded lectures and tutorials

Subscribe to our newsletter for announcements for satellite classes:

subscribe

coastwatch.noaa.gov



We will be using Slido to interact with participants:

Go to www.slido.com

#ATN2025

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