



Introduction to CoastWatch and the CoastWatch Satellite Training

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NOAA CoastWatch
UMD CISESS

CoastWatch Course - Micronesia 2024

coastwatch.info@noaa.gov

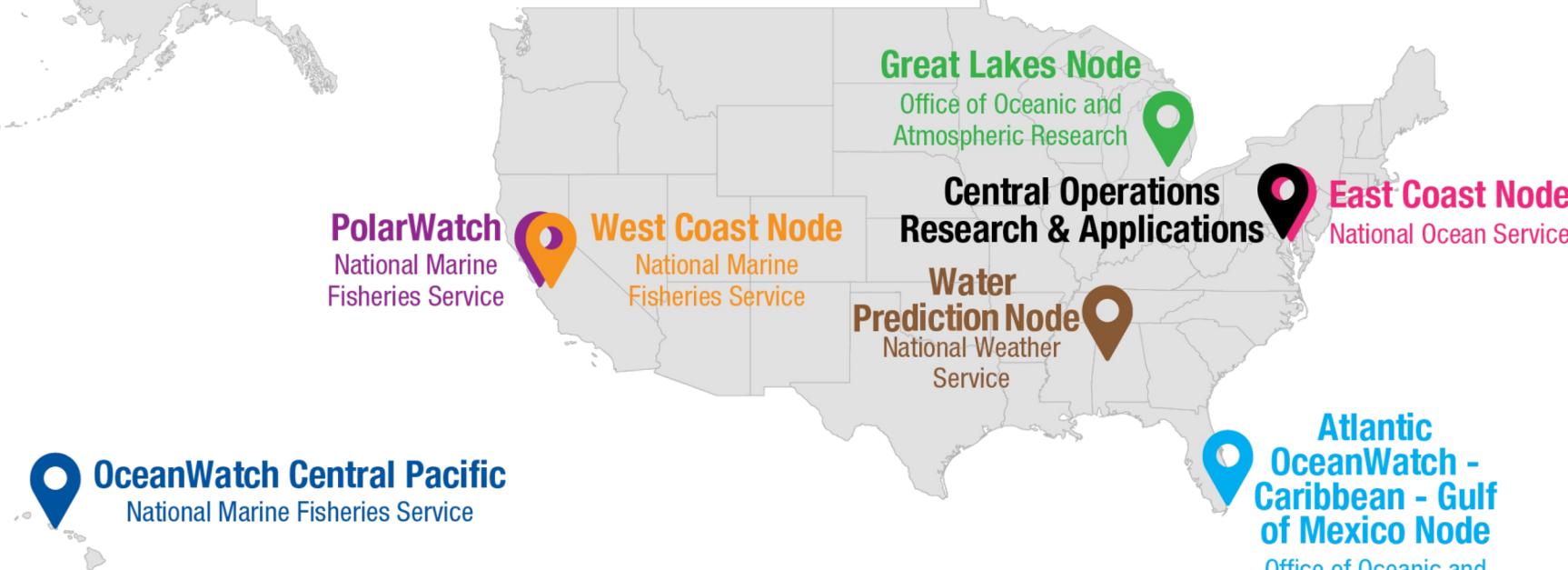


NOAA CoastWatch is a national program funded by NOAA/NESDIS¹

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



NOAA CoastWatch

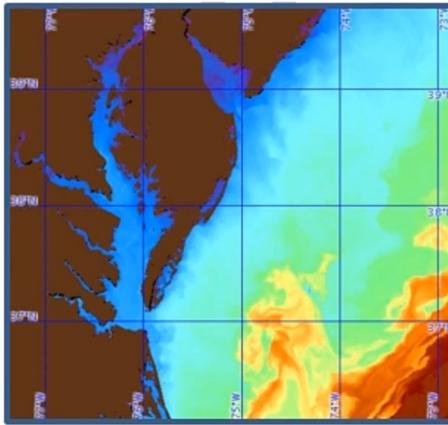


OceanWatch Central Pacific
National Marine Fisheries Service

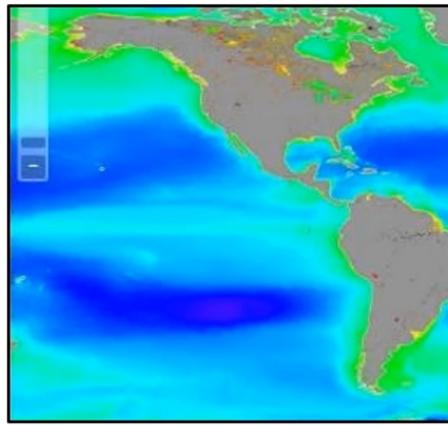
¹National Environmental Satellite, Data, and Information Service



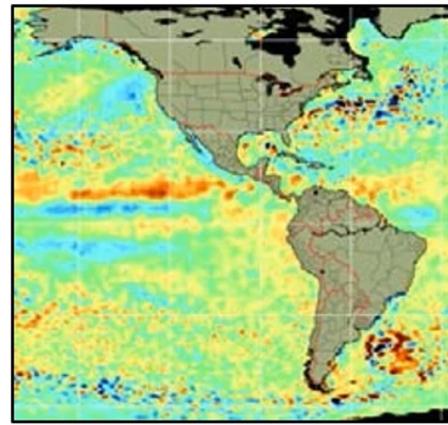
CoastWatch distributes ocean satellite data



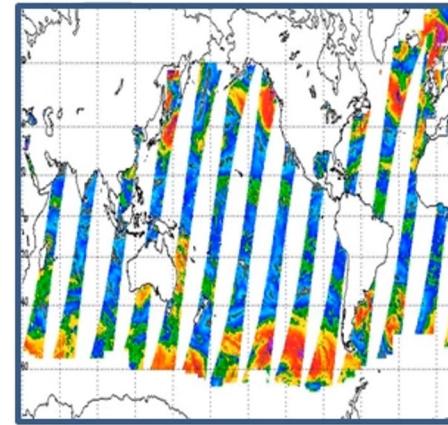
Temperature



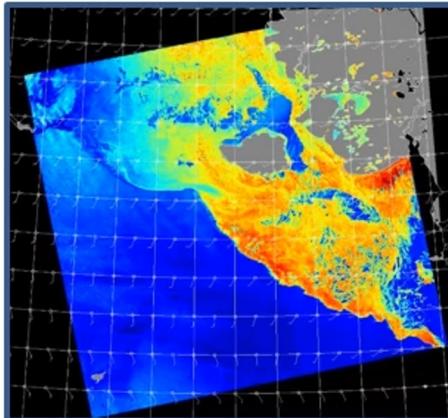
Ocean Color



Altimetry



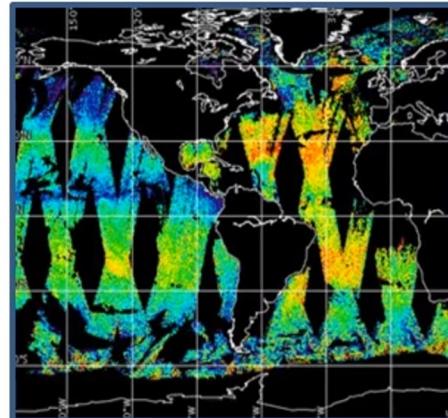
Ocean Vector Winds



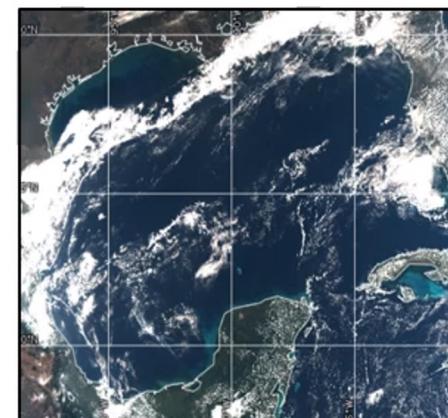
Synthetic
Aperture
Radar



Sea Ice



Salinity

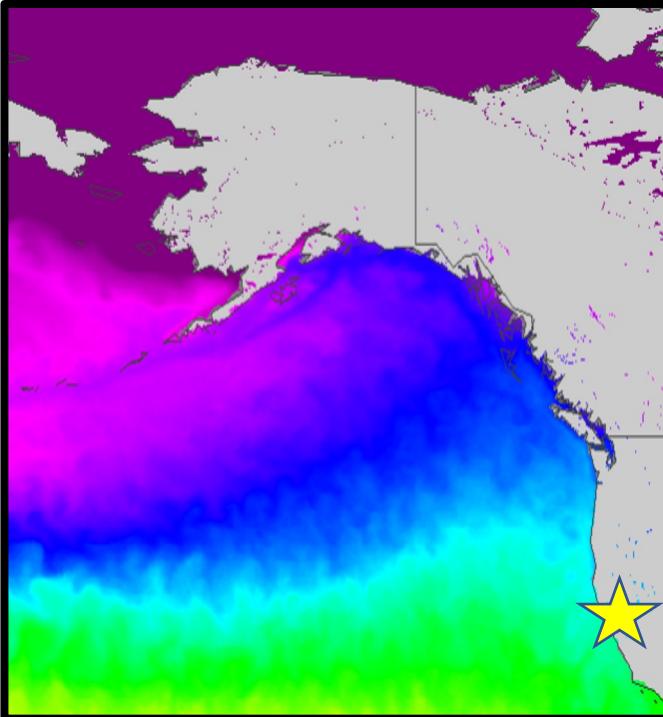


Imagery



West Coast Node (WCN) – NOAA Fisheries

SERVICE AREA - US WEST COAST FROM CALIFORNIA TO ALASKA



Personnel at NMFS/SWFSC

Dale Robinson – Coordinator

Cara Wilson – Manager

User Community

Users from Alaska to California

Extensive data holdings

Eastern Pacific and global coverage

One stop shopping with easy data access

1000's of datasets from NOAA, NASA and other sources

<https://coastwatch.pfeg.noaa.gov>



PolarWatch (PW) – NOAA Fisheries

Personnel

Cara Wilson – Manager

Dale Robinson – Deputy Manager

Sunny Bak Hospital – Coordinator

Location

Housed at SWFSC, CA

Focused on high latitude regions



Node Highlights

Providing easier access to polar satellite data

Previewing data online with polar maps

Serving sea ice datasets

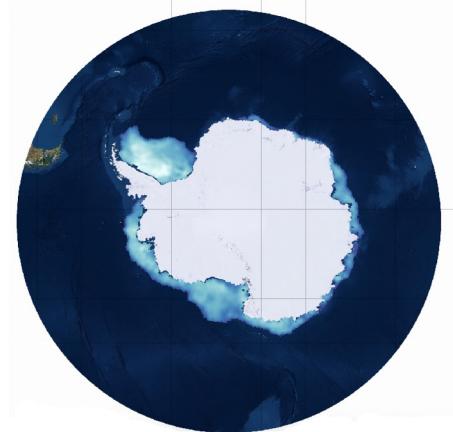
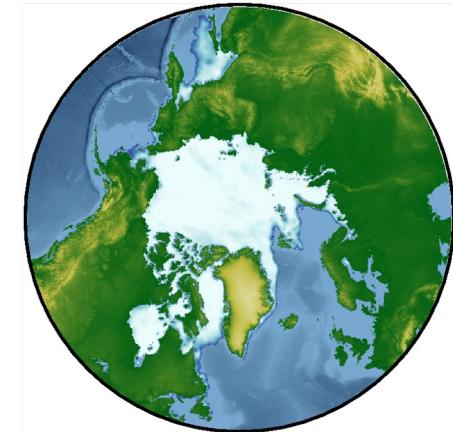
Serving polar projected datasets

Collaborators

National Ice Center

National Snow and Ice Data Center

STAR Science Teams (Sea Ice, SAR, LSA)



<https://polarwatch.noaa.gov/>



OceanWatch Central Pacific (OWCP) – NOAA Fisheries

Personnel

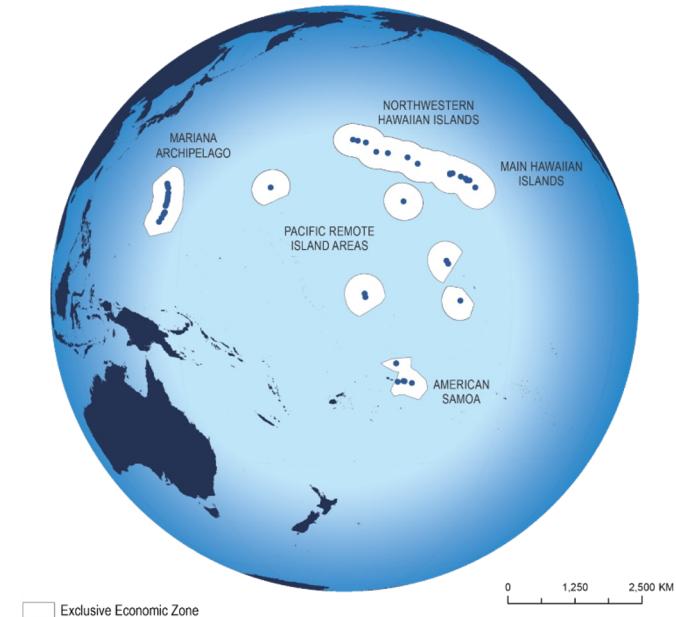
Ryan Rykaczewski – Manager

Daisy Shi – Operations Manager

Location

Housed at PIFSC, HI

Focused on the Pacific Islands Region



Node Highlights

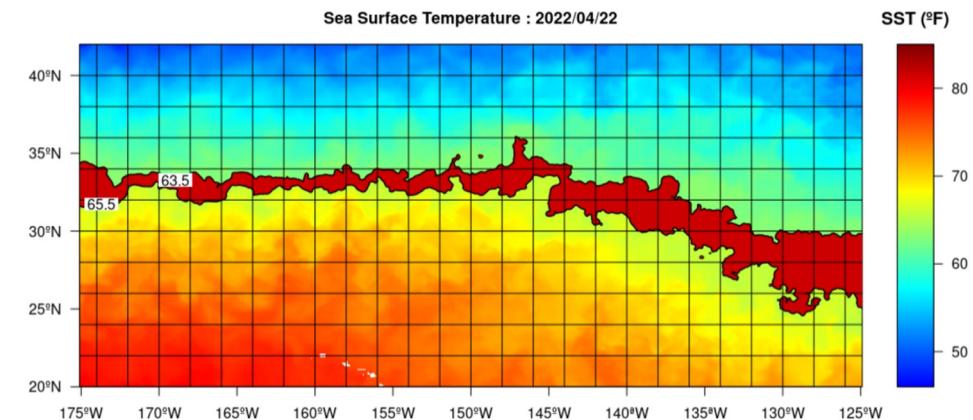
Focused on user needs in the tropics and the subtropical gyre from island-scale to basin-scale.

Providing easier access to satellite data across the dateline.

TurtleWatch

Oceanic and Climate indicators

Capacity Building



<https://oceanwatch.pifsc.noaa.gov/>

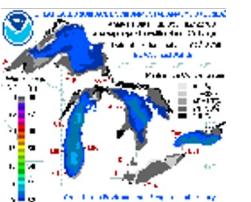
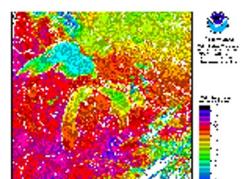
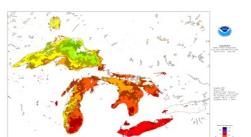
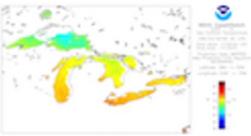


Great Lakes Node – NOAA Research (OAR)

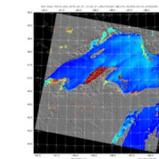
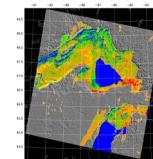
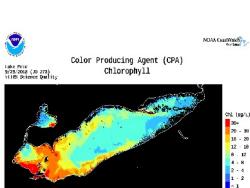
Personnel

Andrea Vander Woude – Manager

Songzhi Liu – Operations Manager



<https://coastwatch.glerl.noaa.gov/>



Node Highlights

Established in 1990

Housed at NOAA Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, MI

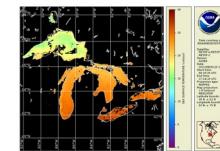
The service area is the Great Lakes region

User Community

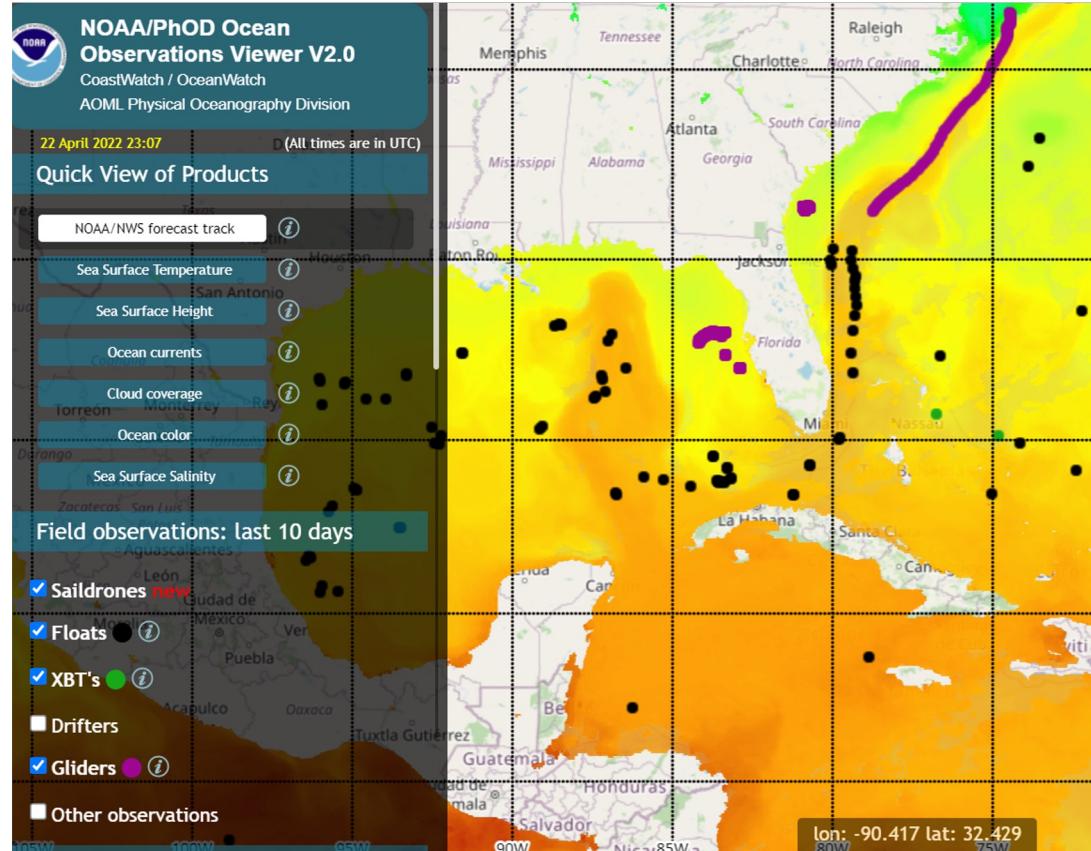
GLERL, NCEP, NWS, US Coast Guard, Local Government agencies, Universities, and Public Users

Satellite Data Products

Hundreds of datasets including water surface temperature, color producing agents, ice concentration and ice type classification



Gulf of Mexico Node – NOAA Research (OAR)



Personnel

Joaquín Trinanes – Ops Manager
Gustavo Goñi – Manager

User Community

Gulf of Mexico & Caribbean

Focus

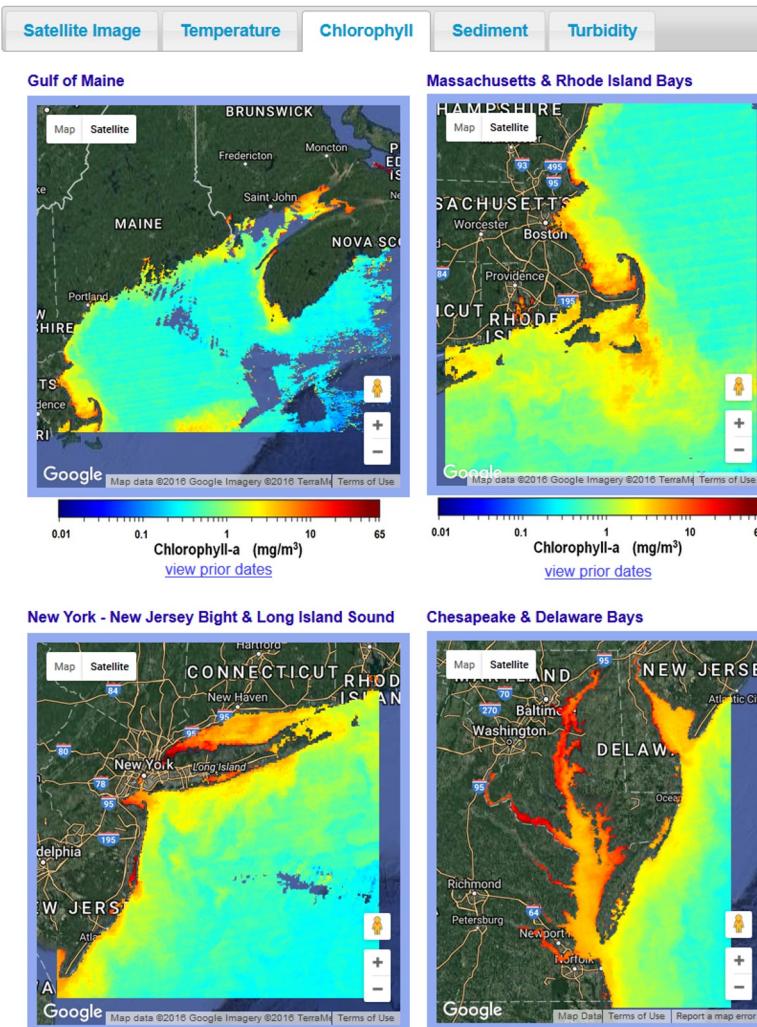
Hurricanes, Sargassum, Vibrio, Seascapes

<https://cwcaribbean.aoml.noaa.gov/>



East Coast Node (ECN) – NOAA Ocean Service (NOS)

SERVICE AREA - US EAST COAST FROM MAINE TO FLORIDA



Personnel at National Ocean Service, NOAA Chesapeake Bay Office, and Center for Satellite Applications & Research

Shelly Tomlinson – Manager

Ron Vogel – Coordinator

User Community

Environmental decision-makers, researchers, commercial data providers & the general public from Maine to Florida

Providing Support

Making data usable for water quality, fisheries, aquaculture, algal bloom tracking, climate change, and more

Building tailored applications by engaging directly with stakeholders

Data holdings in temperature, water clarity, chlorophyll

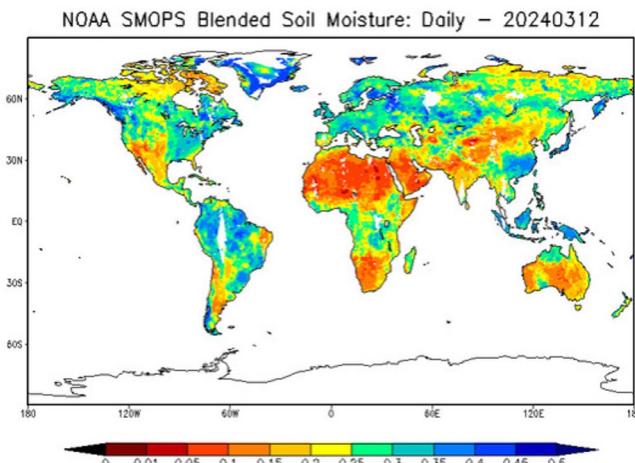
<https://eastcoast.coastwatch.noaa.gov>



Water Prediction Node – NOAA Office of Water Prediction



Inundated extents



Personnel

David Vallee – Manager

Dylan Lee – Operations Manager

User Community

National Water Center, NOAA River Forecast Centers,
Researchers at Cooperative Institute for Research to
Operations in Hydrology (CIROH)

Focus

Remotely sensed inundated extents, snow cover,
soil moisture, vegetation indices, estimates
of hydraulic geometry

Node Summary

Founded in 2023 as a thematic node dedicated
to remote sensing data related to inland and
coastal hydrology

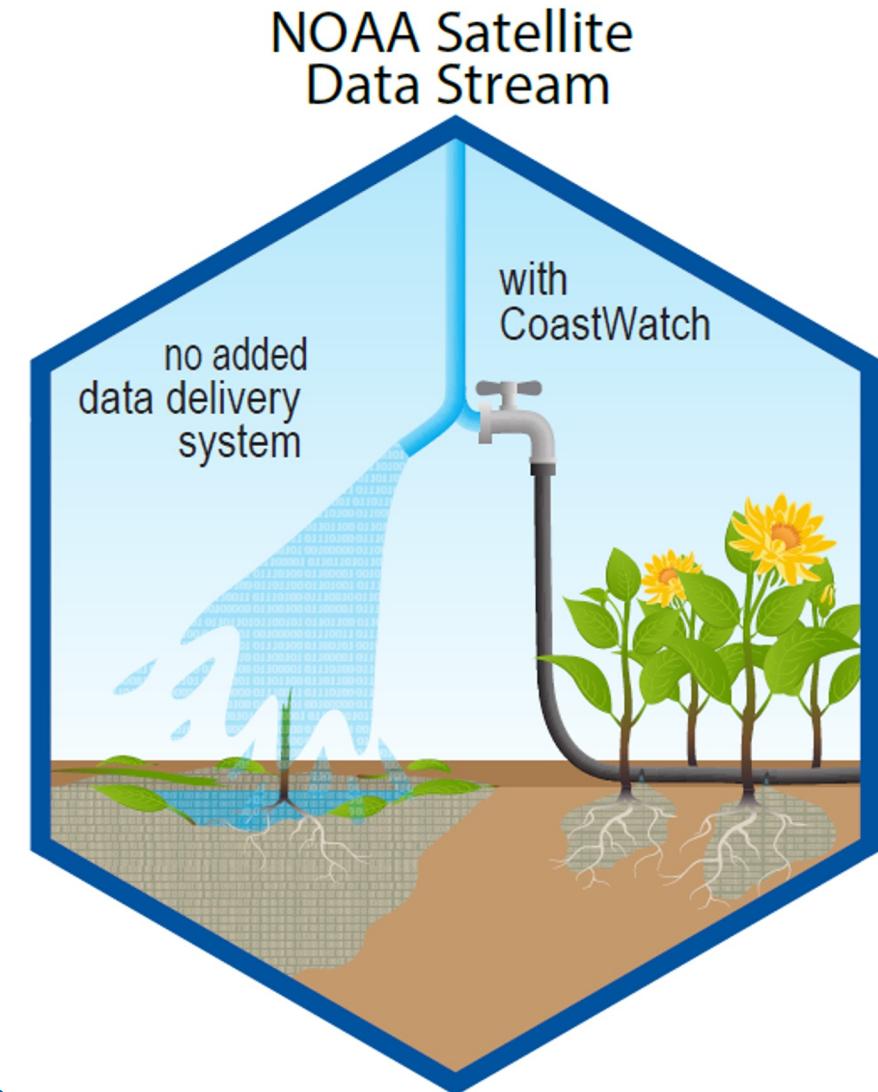
<https://waternode.ciroh.org/>



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 Satellite Course Philosophy

- The objective of the course is to show people how to access satellite data and use it in the environment they are used to working in – a somewhat challenging task!
- We focus on the software used the most widely by participants – primarily R, ArcGIS, and python, and to a lesser extent Matlab. However it is not necessary to have any experience with any of these software in order to take the course.
- Not a “GIS course”, or “R course” or “Python” course but it includes all those elements.
- The course focuses on datasets available on CoastWatch ERDDAPs



Course Schedule

- Day 1: Satellite 101 (2 pts), tools & strategies, ERDDAP, Panoply
- Day 2: Ocean Color, SST, SSH/Winds/Altimetry/Salinity, Software modules
- Day 3: Water Quality, Sea Ice (optional), Project work
- Day 4: HABs, SAR, Submit your slide!
- Day 5: Student presentations - 1 slide, 1 minute!



Getting help during the course

- Post questions on Slack

This is the most efficient easy for us to share information. If one participant has the question, channels are many others so as well and by posting it on slack the answer will be available to everyone

- Ask during the daily session at 9 AM ChST

- Schedule a one-on-one appointment with any of the instructors. Their schedules are available on the Instructors page.

We encourage everyone to schedule a one-on-one appointment so that we have a chance to talk with you about your projects, datasets etc.



Course Project

The course project reflects what you want to get out of the course. Some generic examples include:

- making maps of satellite data
- making timeseries of satellite data
- comparing satellite data to other in-situ datasets



Cloud computing resources (JupyterHub)

- We have cloud computing resources equipped with pre-installed QGIS, RStudio and Python, ready for use.
<https://training.coastwatchhub.org/>
- As the resource is limited, please coordinate with your instructors regarding availability or contact Sunny (sun.bak-hospital@noaa.gov) for more information
- This is our first time using JupyterHub so there might be some issues

Instructions: <https://coastwatch-training.github.io/coastwatchhub/>



Project Slide

Your project slide should include:

- Your name
- Where you work
- What you are trying to do
- A figure you were able to make as a result of this course
- What datasets and software you used
- Any challenges you faced, or datasets you wished you had (optional)



CoastWatch Learning Portal



Welcome to the NOAA CoastWatch Learning Portal

This learning portal is a one-stop shop for all CoastWatch learning resources. Everything is self-paced and publicly available for free.

CoastWatch regularly organizes satellite training classes or workshops featuring lectures, tutorials, & tool demonstrations.

For questions or more information about CoastWatch and the satellite training classes, please visit the [NOAA CoastWatch website](#) or email coastwatch.info@noaa.gov.

<https://umd.instructure.com/courses/1364405>



Training Classes

Courses familiarize users with different types of ocean satellite data, various tools, and teach participants how to use satellite data in their own projects using their choice of software.



Lectures

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



Tutorials

Step-by-step instructions, exercises, User Guides, and videos for ArcGIS, the CoastWatch Data Portal, CoastWatch Utilities, ERDDAP, Matlab, Panoply, Python, and R.



Example Applications

This page is under construction.



User Forums

The NOAA CoastWatch Forum provides information relevant to CoastWatch products and software and vary in technical details.



Help

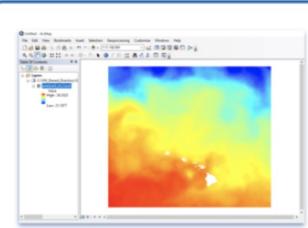
This page is under construction.
Information on who to contact, navigating this Learning Portal, Forums, troubleshooting rerddapXtracto, and FAQs.



CoastWatch Learning Portal

Home Training Classes Lectures Tutorials Example Applications User Forums Help CoastWatch

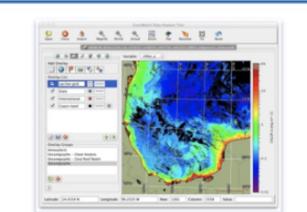
Step-by-step instructions, exercises, User Guides, and videos.



ArcGIS



CoastWatch
Data Portal



CoastWatch
Utilities



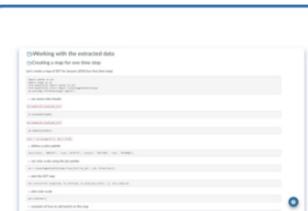
ERDDAP



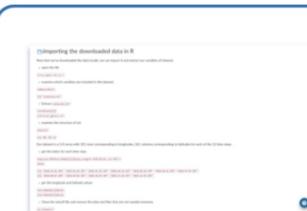
Matlab



Panoply



Python

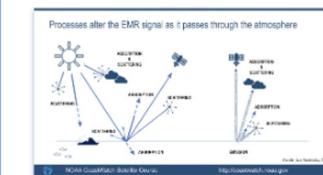


R



CoastWatch Learning Portal

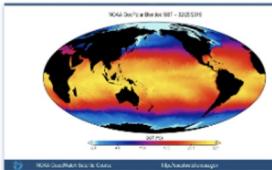
All lectures are available as audio-recorded PowerPoint files, videos or transcripts.



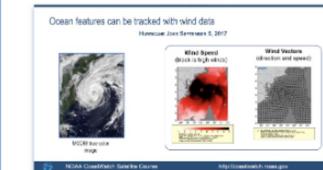
Satellite 101



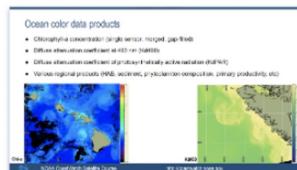
Ocean Color



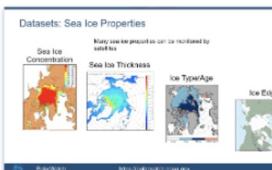
Sea Surface Temperature



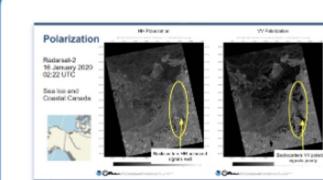
Sea Surface Height, Winds, Salinity



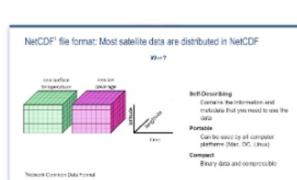
Water Quality



Sea Ice



Synthetic Aperture Radar (SAR)



Tools & Strategy



Selecting a Dataset

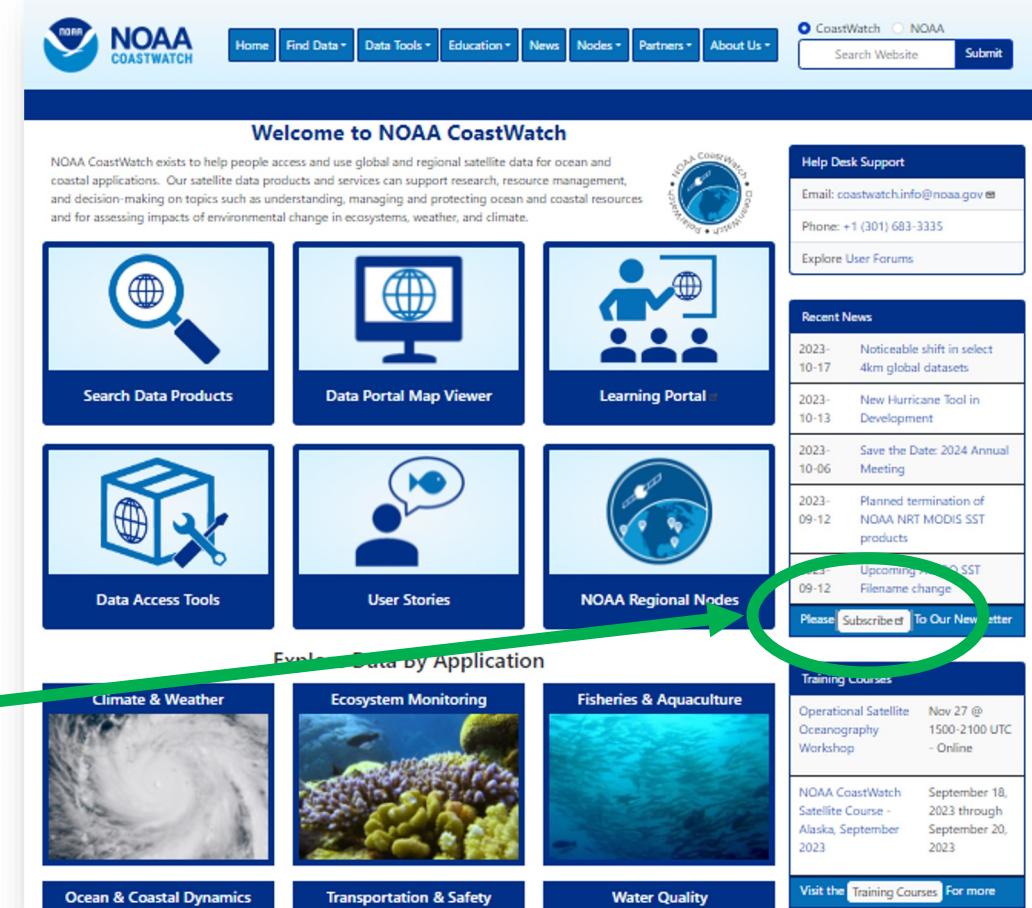


Questions? Coastwatch.info@noaa.gov

Subscribe to our newsletter for
announcements for satellite classes:

subscribe

coastwatch.noaa.gov



The screenshot shows the NOAA CoastWatch homepage. At the top, there's a navigation bar with links for Home, Find Data, Data Tools, Education, News, Nodes, Partners, and About Us. Below the navigation is a section titled "Welcome to NOAA CoastWatch" with a brief description of the service's purpose. To the right is a "Help Desk Support" box containing contact information. A "Recent News" sidebar lists several news items with dates. In the center, there's a grid of six icons representing different services: Search Data Products, Data Portal Map Viewer, Learning Portal, Data Access Tools, User Stories, and NOAA Regional Nodes. A green arrow points from the "subscribe" button on the left towards the "NOAA Regional Nodes" icon. Below this grid is a section titled "Explore Data by Application" featuring three rows of three images each, representing Climate & Weather, Ecosystem Monitoring, Fisheries & Aquaculture, Ocean & Coastal Dynamics, Transportation & Safety, and Water Quality. On the far right, there's a "Training Courses" sidebar with details about upcoming events.

