Central & Northern California Ocean Observing System

Ocean information to underpin decisions

Henry Ruhl and the CeNCOOS Community

CeNCOOS

Vision Statement

CeNCOOS will be a leader within U.S. IOOS®, and be recognized and relied upon regionally and nationally as a trusted source of data, information, and expertise to inform wise use of the ocean off central and northern California.

Mission Statement

CeNCOOS is a collaborative that enables sustained and coordinated measurements, model nowcasts and forecasts, and integrated products to inform decisions about our regional ocean.

Teams

4(5) Program Office Staff
~60 affiliate organizations
Dozens of collaborators

Alex Harper

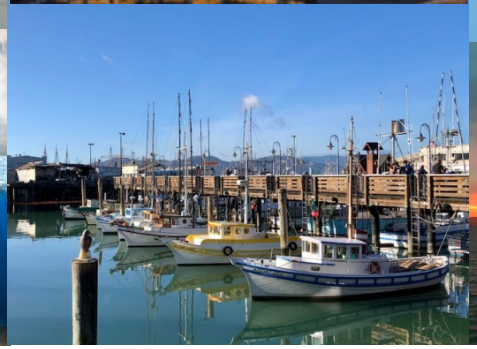
Patrick Daniel

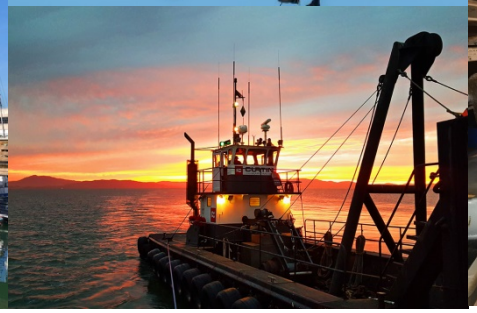
Fred Bahr

US Animal Telemetry Network

Megan McKinzie

Human Dimensions

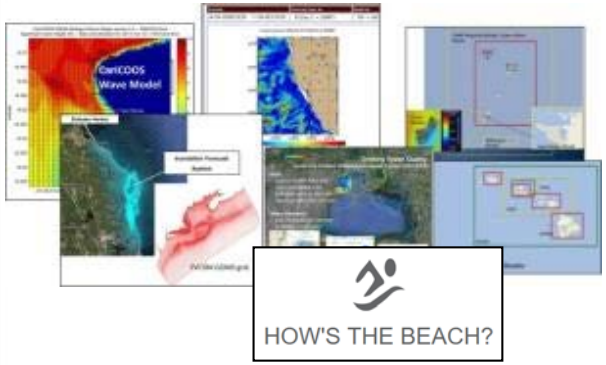


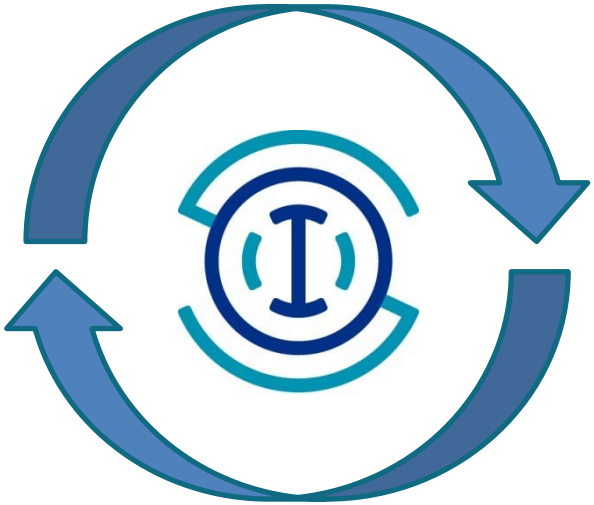


IOOS regional and national approach

Stakeholder outreach

Information products





Observations

Data Management

WMO

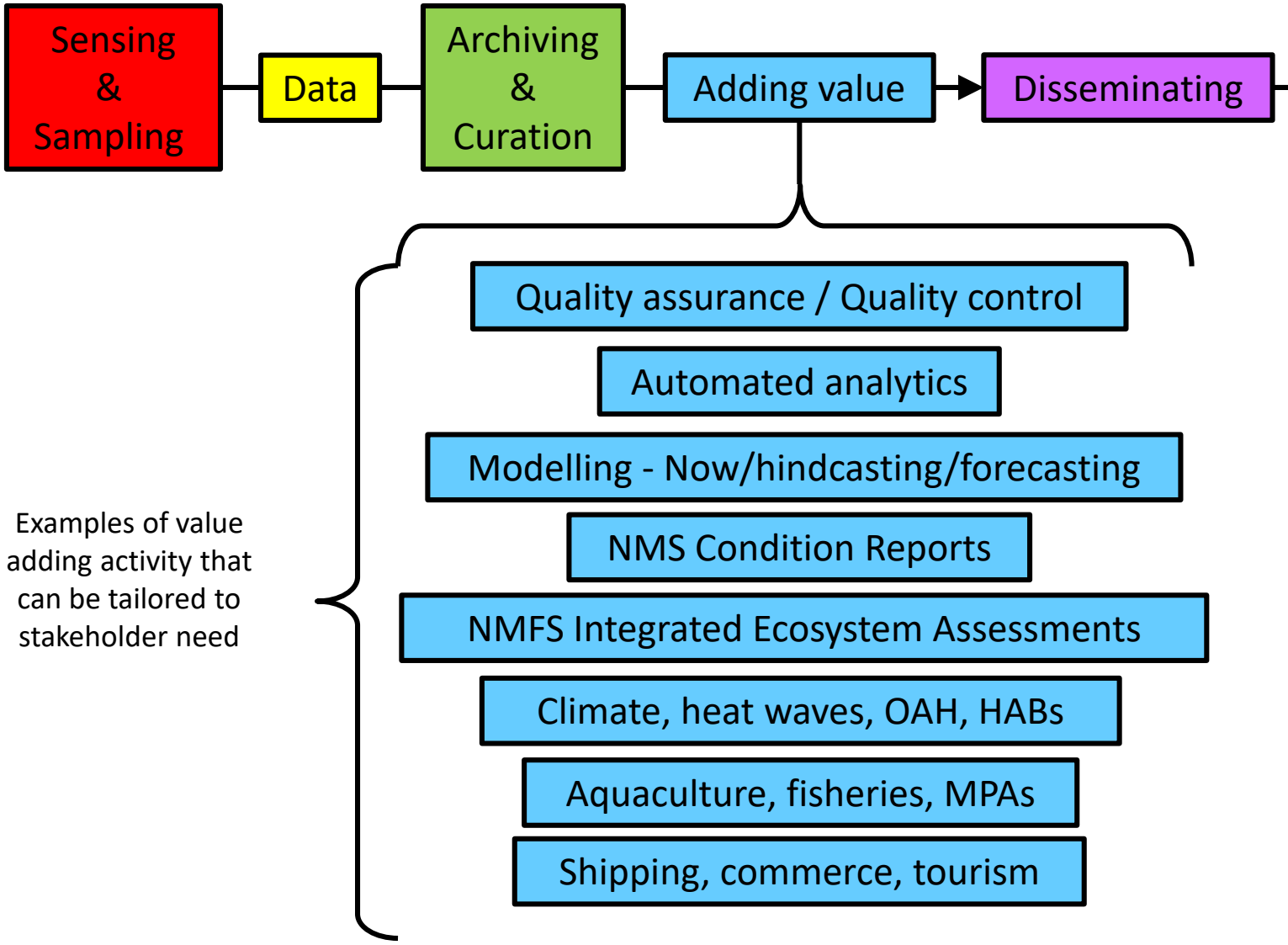
Global Telecommunication System (GTS)

NATIONAL WEATHER SERVICE

REGIONAL INFORMATION COORDINATION ENTITY CERTIFIED 2017

IOOS | EYES ON THE OCEAN

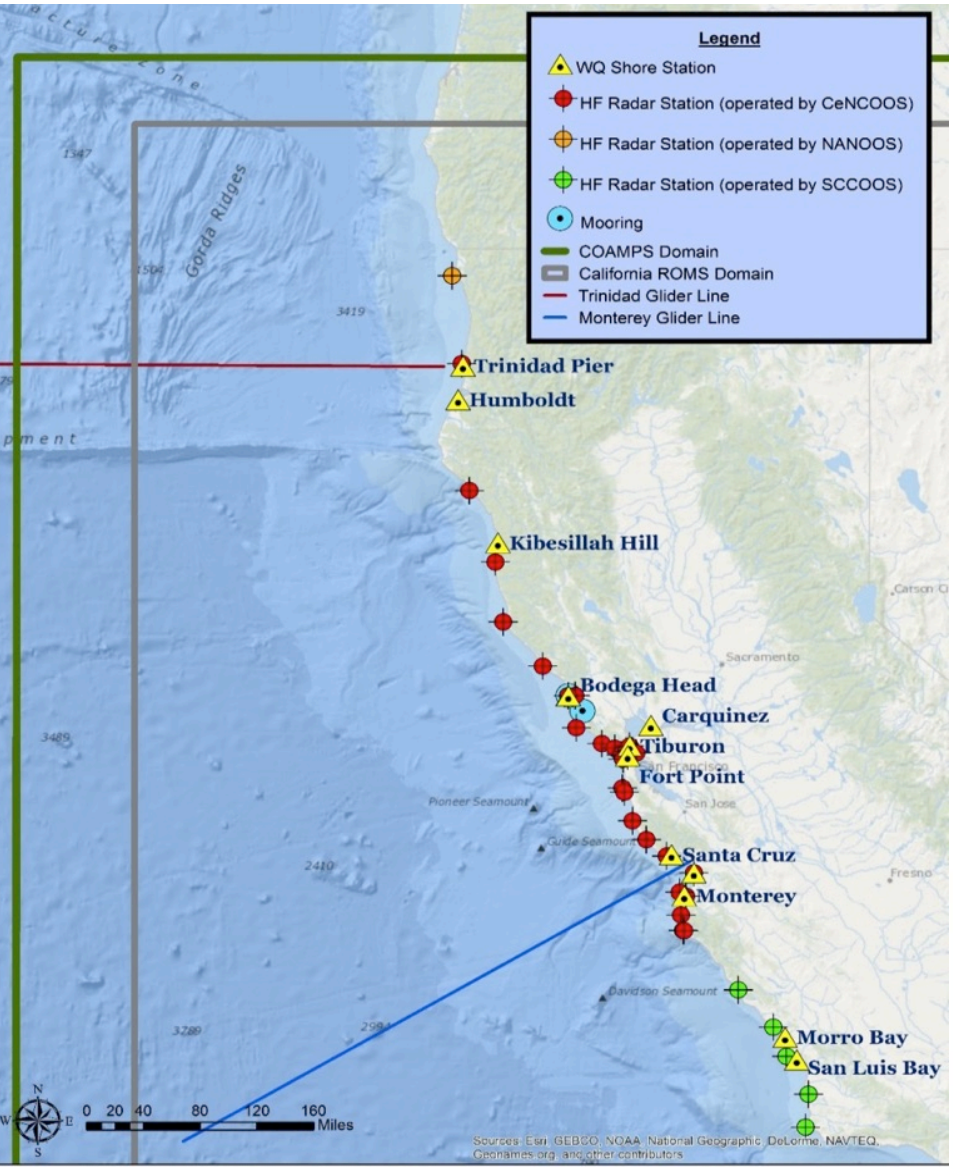
Product workflow concepts



Examples of value adding activity that can be tailored to stakeholder need

And many more!

CeNCOOS Systems



CeNCOOS supports:

-26 HFR systems (surface currents)

-15 shore stations/moorings (water properties)

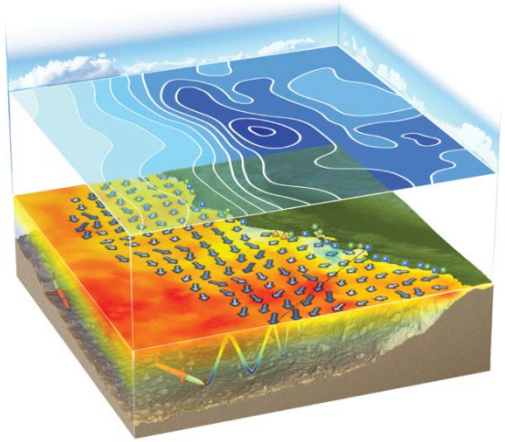
-4 models

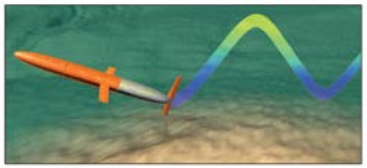
-2 profiling gliders

-1 data portal

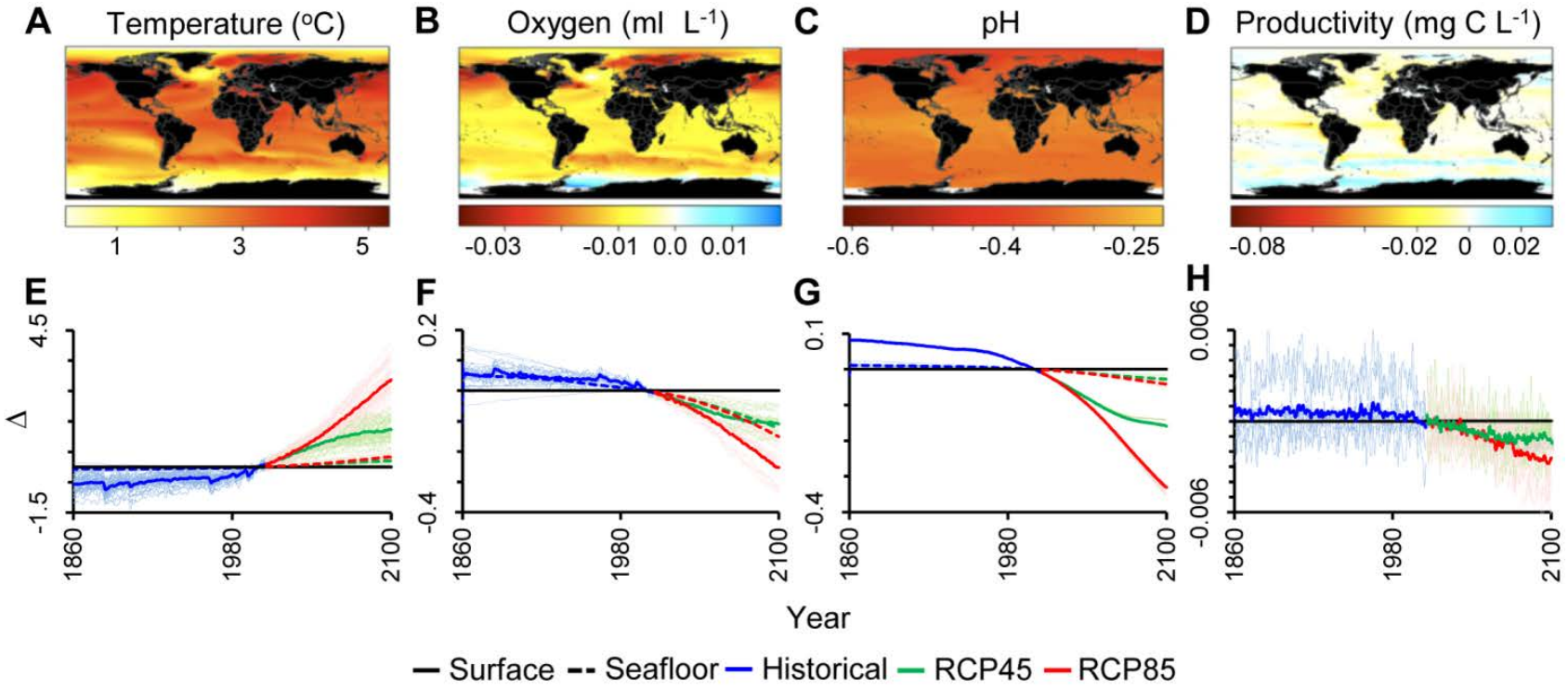
-Loads of integrated data

-Dozens of products





Multiple Stressors

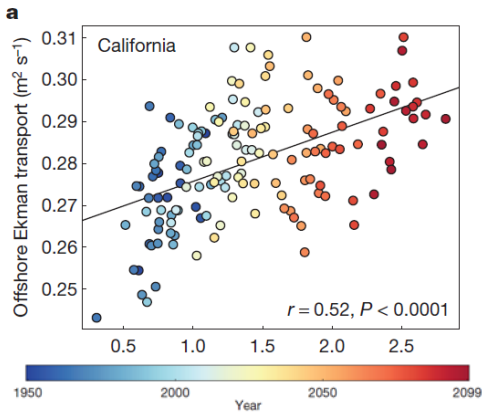


Mora et al. (2013) *PLoS Biology*

Cali Setting

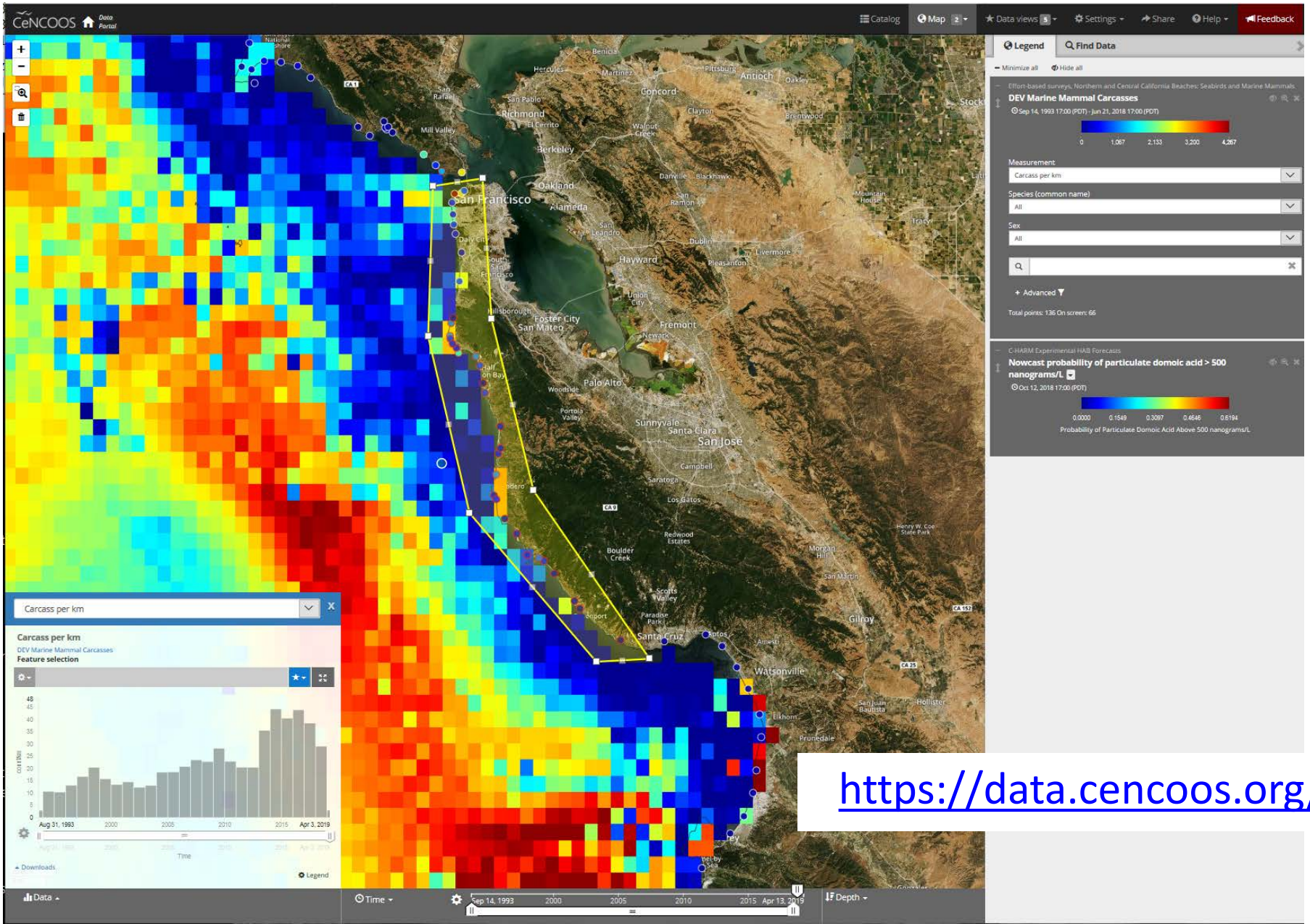
- Increased upwelling;
- Cooler temperatures;
- Nutrient rich;
- Low pH / O_2 water;

- Larger scale anomalies;
- Localized variability
- Managed areas;
- Increasing industry(?)



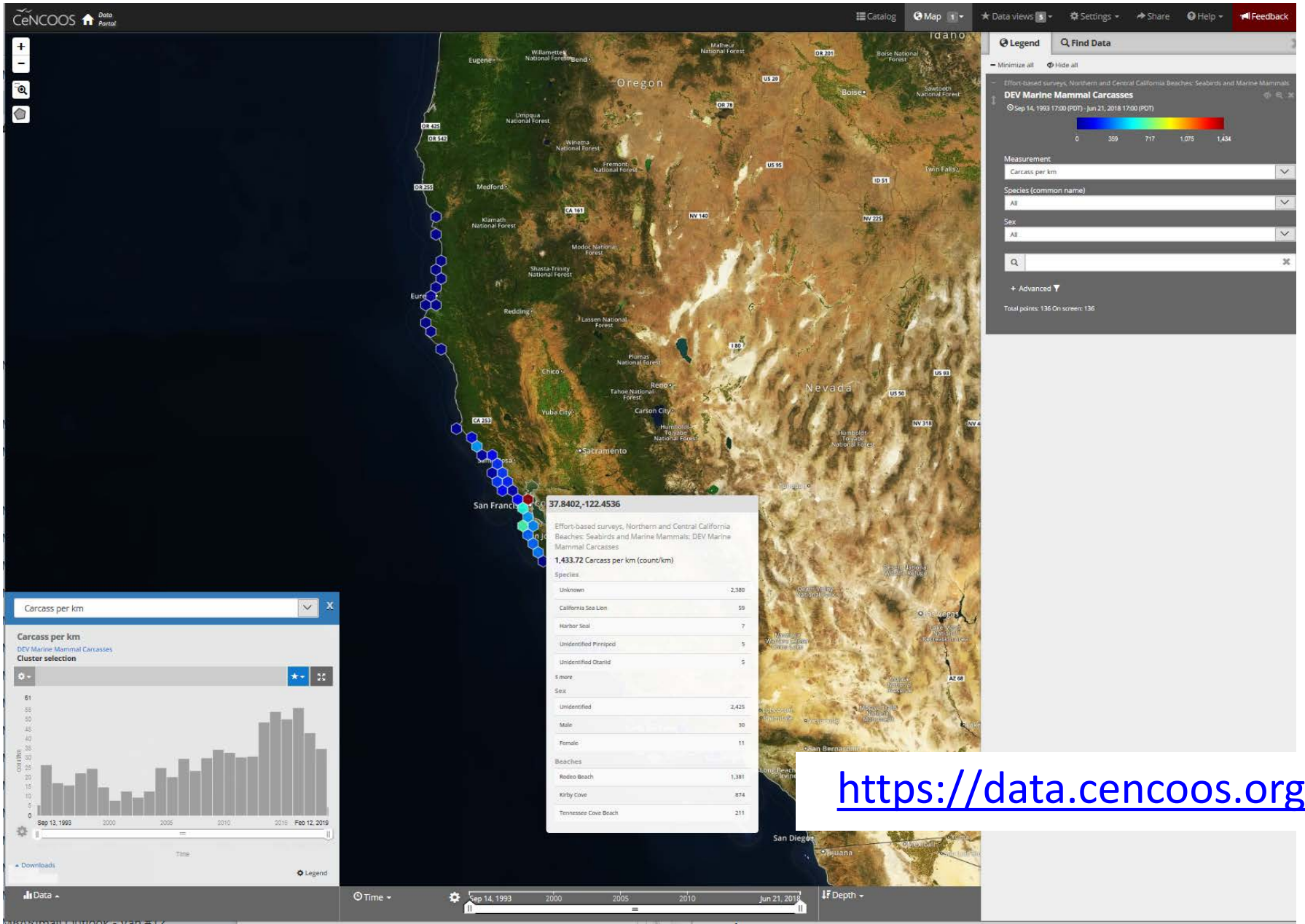
Wang et al. (2015) *Nature*

CeNCOOS Data Portal v2.7

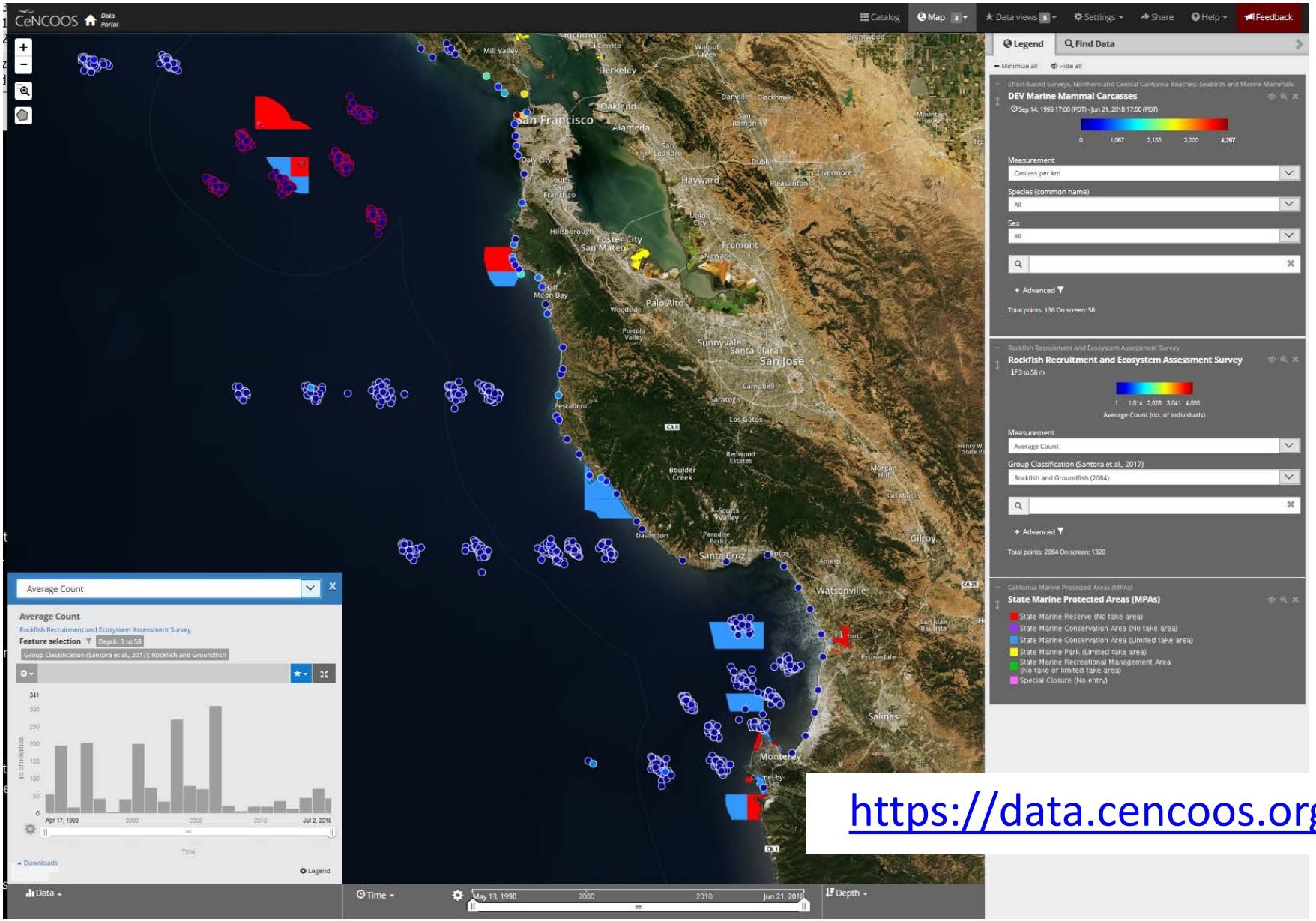


https://data.cencoos.org/

CeNCOOS Data Portal v2.7

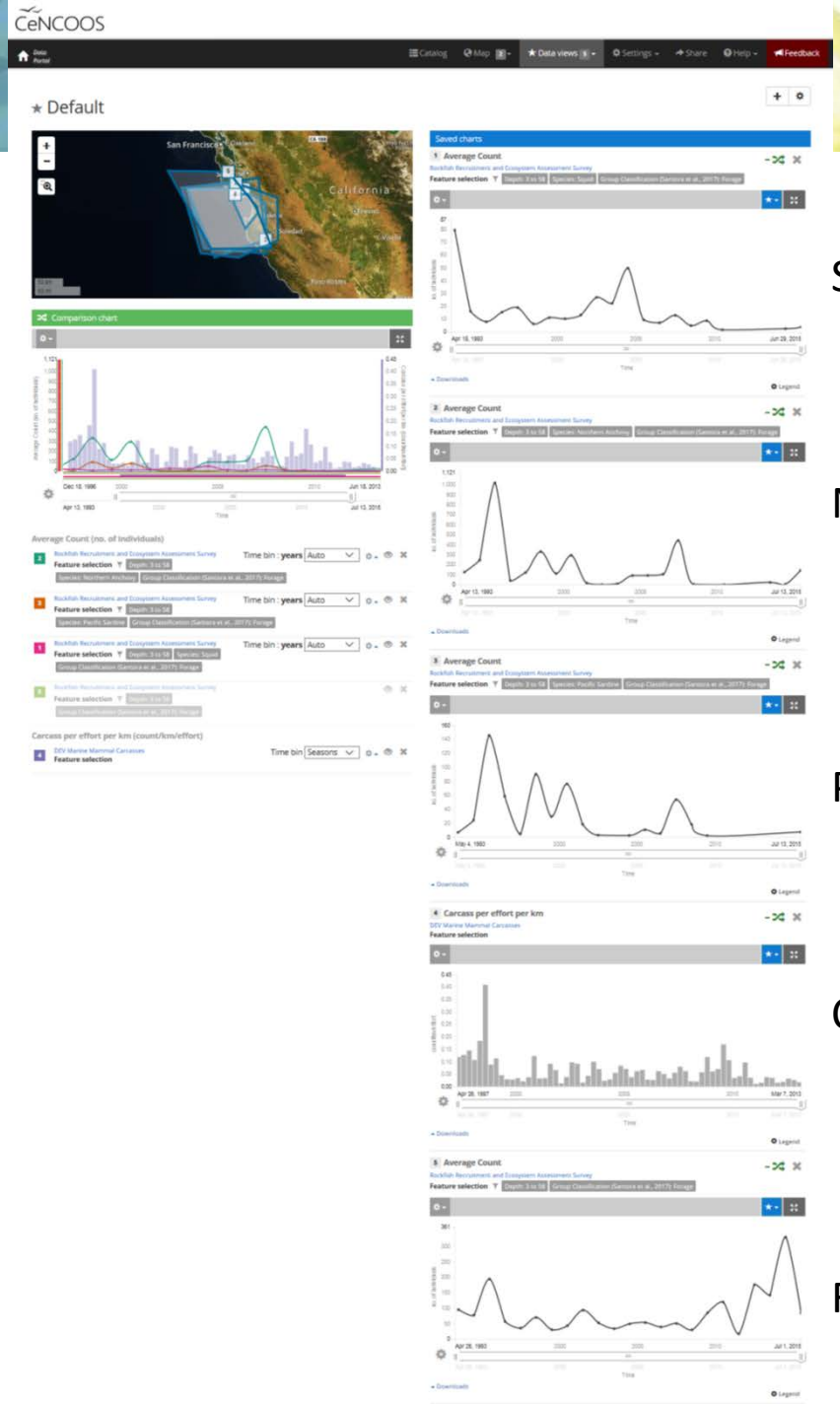


Marine Protect Areas



https://data.cencoos.org/

Curated data view



Squid

Northern Anchovy

Pacific Sardine

Carcass

Forage fish

CALIFORNIA MARINE PROTECTED AREAS

NATIONAL MARINE SANCTUARIES

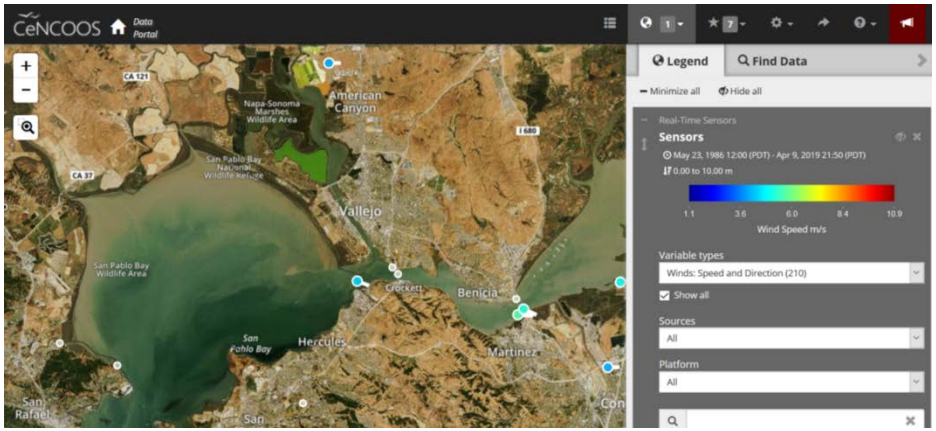
NOAA's NATIONAL MARINE FISHERIES SERVICE

And more…

Specialized Products – Pinole Shoal

Improve Tide Height Monitoring and Prediction

- Pinole Shoal is of interest to maritime traffic through San Pablo Bay.
- The particular are of focus is 5 nm long and between buoy 7 and 8 to light 15.
- Potentially install a tide gauge and integrate with model tools to help better forecast the water level for the transit.
- CeNCOOS and Harbor Safety Committee connections helping to facilitate identify challenge and scope solutions
- Could improve confidence in safety margins for loading via ‘Digital dredging’ with substantial economic value



Shore Stations & Moorings

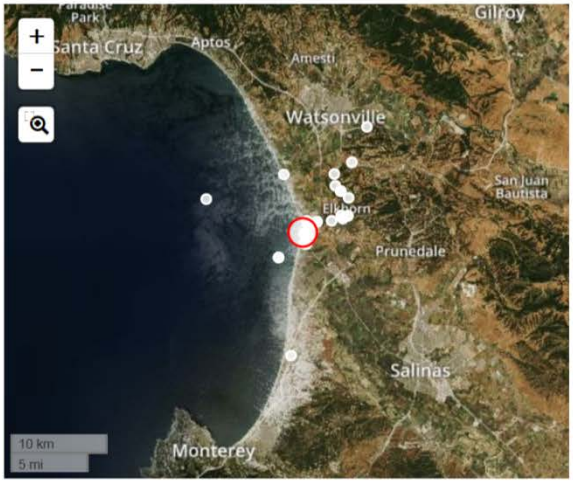
IOOS | Integrated Ocean Observing System

CeNCOOS

Data Portal | Catalog | Map 1 | ★ 4

Moss Landing Marine Laboratories (MLML)

(MLSC1) Moss Landing Marine Laboratories Sea Water Station



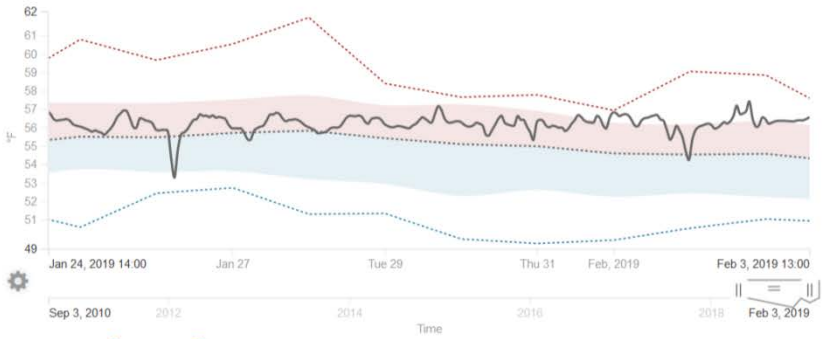
Location	36.8025,-121.7915
Temporal Coverage	Sep 3, 2010 11:11 (PDT) - Feb 3, 2019 13:58 (PST)
Platform	Fixed
Web site	http://seawater.mlml.calstate.edu/
Metadata	ERDDAP station page
URN	urn:ioos:station:mlml:mlml-sea
WMO	MLSC1

Affiliations

Moss Landing Marine Laboratories (MLML) | Web site	Source

Water Temperature

Chart Line | Autoscale | Time bin : all Auto

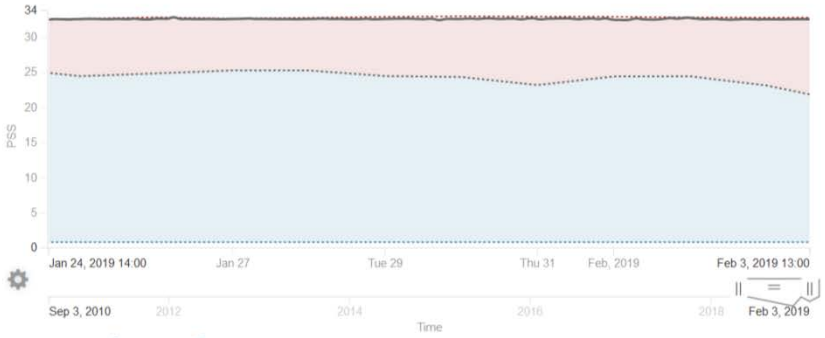


Downloads · Sensor · Source

Legend

Salinity

Chart Line | Autoscale | Time bin : all Auto



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Legend

MONTEREY BAY SEAWEEDS

Center for Aquaculture — Moss Landing Marine Laboratories

Modeling

WCOFS - West Coast Ocean Forecast System

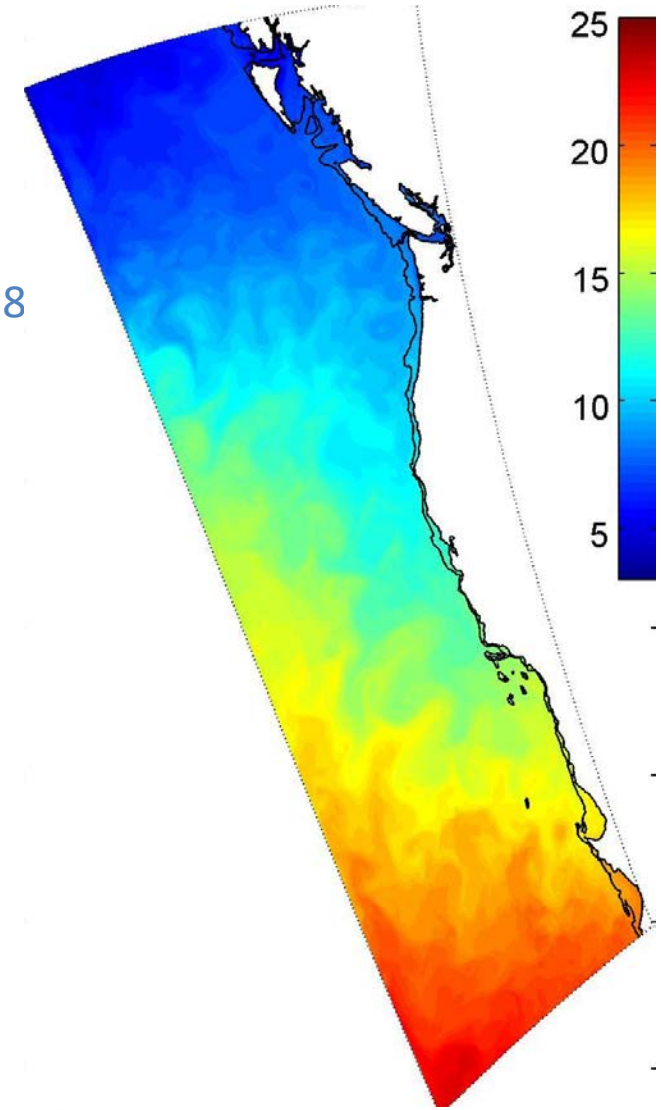
- Regional Ocean Modeling System (ROMS)
- 2 km and 4 km horizontal resolutions
- In development and testing phase at NOAA NOS
- NRT 4D-Var data-assimilative system started Jul 4, 2018 (4km)
- Daily operation with 3-7 day forecasts
- Not yet operational

California Harmful Algae Risk Mapping (C-HARM)

- Particulate DA, cellular DA and pseudo-nitzschia prob.

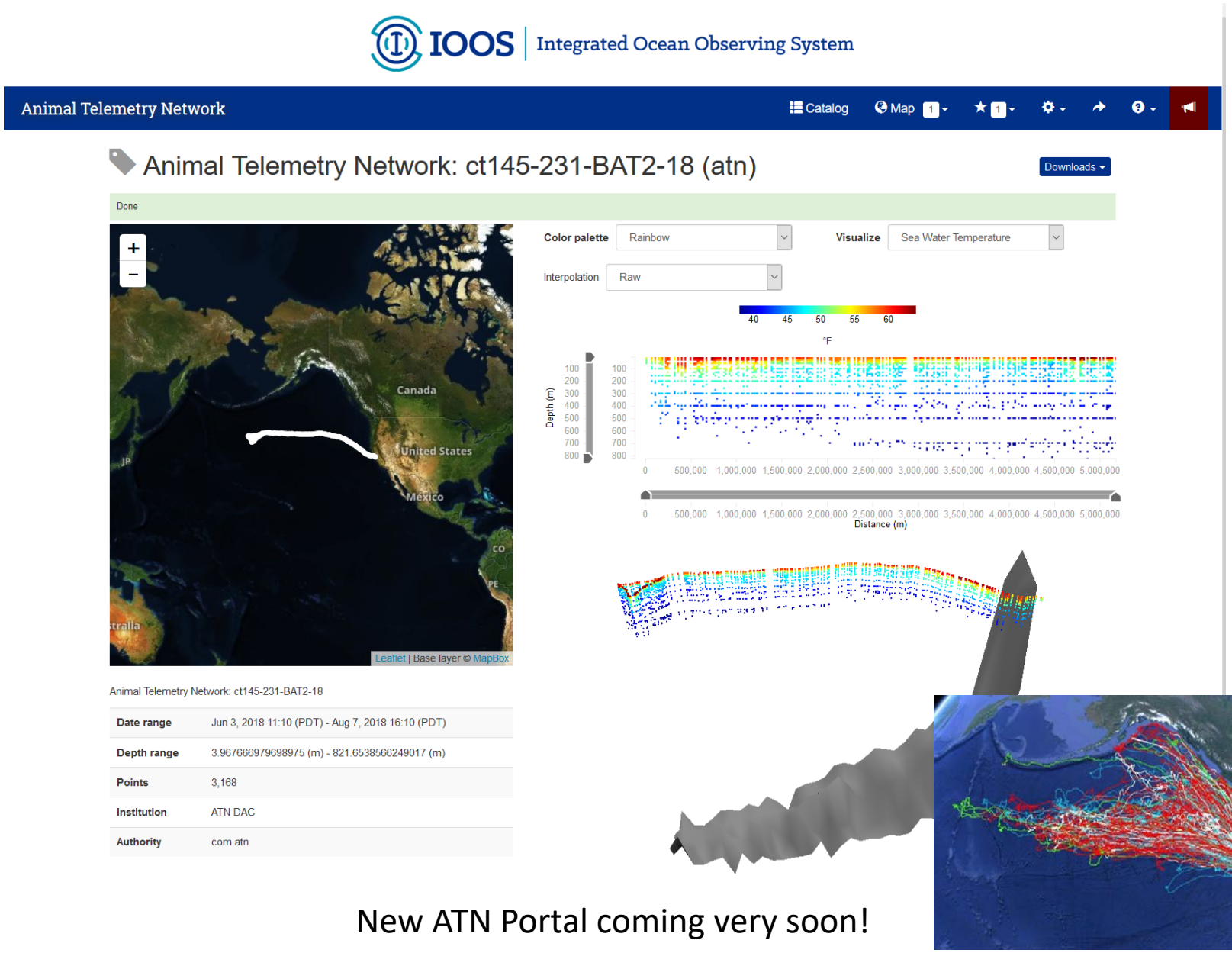
CeNCOOS funded Models continue to be served.

- West Coast ROMS (Edwards)
- California ROMS (Chao)
- Coupled Ocean/Atmosphere Mesoscale Prediction System (Doyle)



And more…

New ATN Portal coming very soon!



New ATN Portal coming very soon!

Discussion Questions

Would new data synthesis products and tools be useful to support complicated management situations?

- Aquaculture dashboards / curated data views – oyster growers
- Sanctuary Condition Report content – NOAA/NMS
- Integrated Ecosystem Assessment content – NOAA/NMFS
- Marine Protected Area assessment – OPC & CDFW
- What to people want?

How can institutions help coordinate, promote, and make progress on addressing multiple stressors to increase the efficiency of adaptation strategies?

- Be specific with observing needs where possible
- Look to generate actionable information

Are case studies on managing conflicting uses and multiple stressors needed?

- Yes, w/ socio-economic valuation as well as a scientific perspective

Can we identify best practices for undertaking new management scenarios that entail multiple stressors?

- Use sound conceptual / model / quantitative frameworks
- Integrate data – in machine readable formatting and metadata
- Automate steps where possible/sensible
- Taylor to specific needs – data for the customer in the way the want it, and when

Acknowledgements: P Daniel, A Harper, F Bahr, M McKinzie, & CeNCOOS Members

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www.cencoos.org