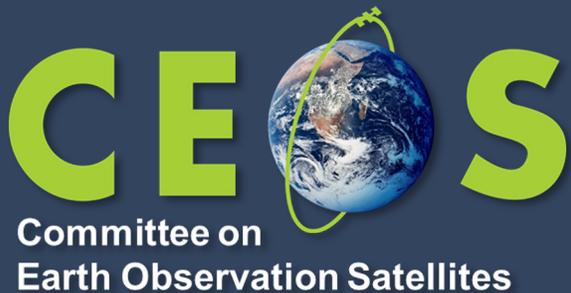


SIT-38 2023



COVERAGE CEOS Ocean Variables Enabling
Research & Applications for GEO

Summary & Evaluation



Nadya Vinogradova Shiffer

NASA HQ

#5.3

SIT-38, ESA/ESRIN

29th - 30th March 2023

1. What did COVERAGE propose to do?
2. What did we accomplish?
3. Who are our main stakeholders?
4. Looking ahead in the context of NASA open science



1. What did we propose to do



❖ Objectives:

Implement a five-year CEOS-endorsed New Initiative to visualize and access diverse ocean satellite and in situ observations
Complement CEOS (e.g., COAST) and GEO activities (e.g., MBON, BluePlanet), CEOS Ocean VCs (SST, OST, OSVW, OCR), UN Decade
Demonstrate its utility for marine biodiversity and sustainable resource management

COVERAGE = **C**EOS **O**cean **V**ariables **E**nabling **R**esearch & **A**pplications for **GEO**

❖ Motivation:

Respond directly to user needs for improved and integrated access to analysis-ready data (e.g., UN-SDG 14)
Enable wider use of ocean data to support science and applications

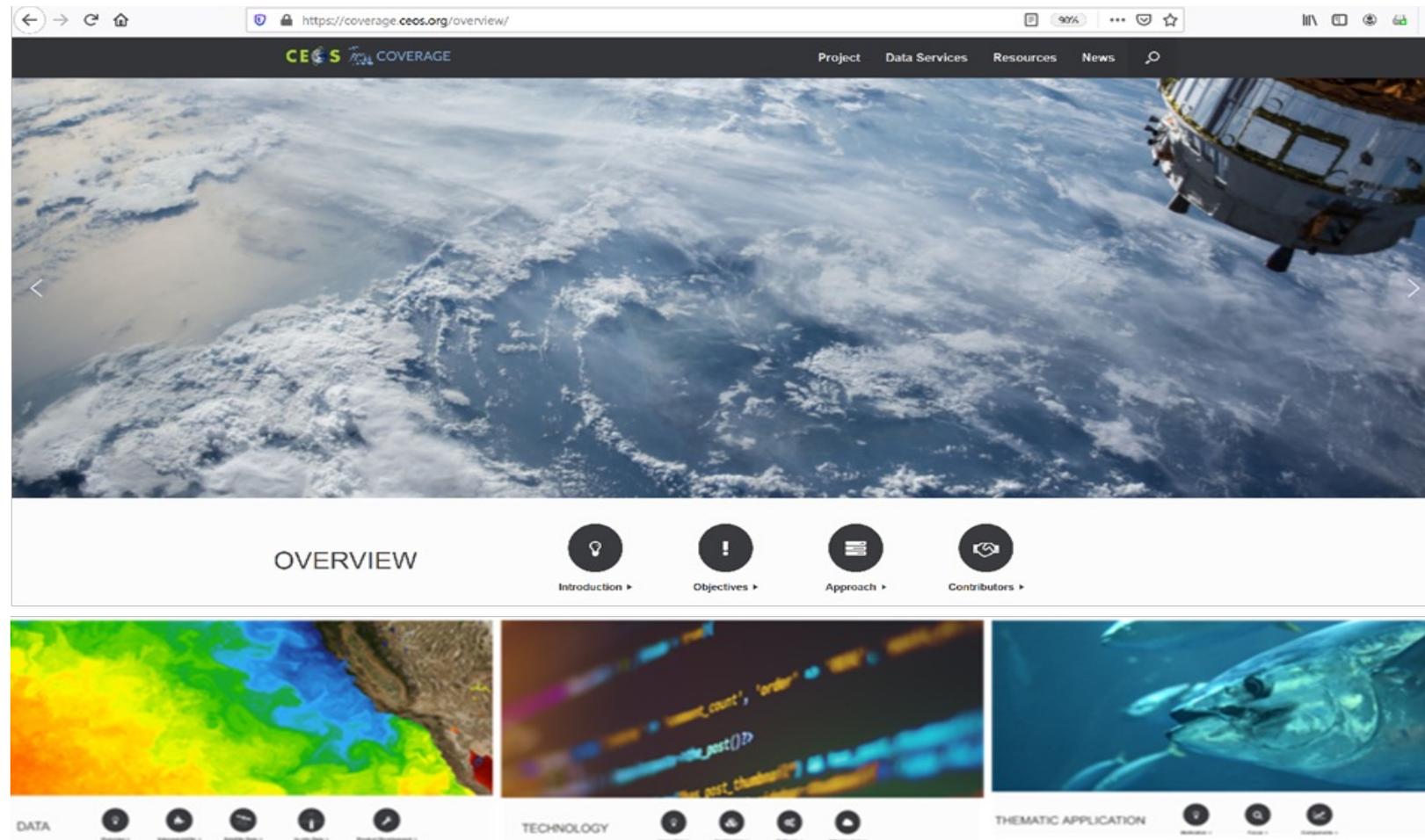
❖ Project structure:

Period of performance: 2017-2022 (5 years)

Engineering and science team: 4-6 members (NASA JPL)

Advisory Board: 17 members of stakeholders and contributors from NASA, EUMETSAT, CNES, NOAA, EU Copernicus, Australia Bureau of Meteorology, Australian Integrated Marine Observing System, University of Tasmania, the Council for Scientific and Industrial Research-South Africa, and Sargasso Sea Commission.

2. What did we accomplish

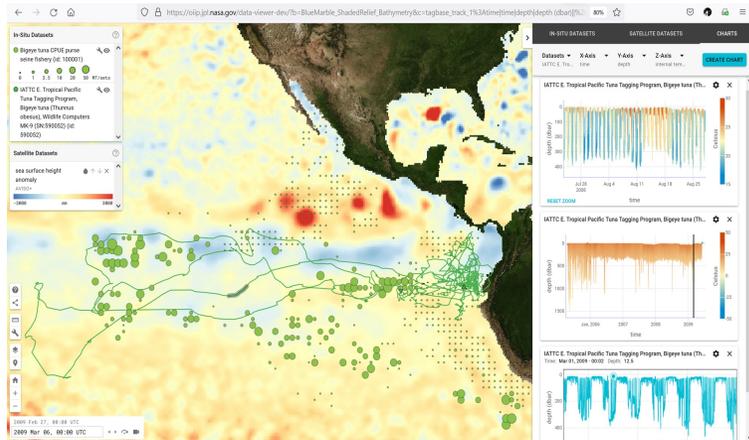


COVERAGE team implemented a cloud-enabled technical platform that provides harmonized access and analysis of satellite and in situ ocean data from distributed sources.

2. What did we accomplish (cont.)



Visualize

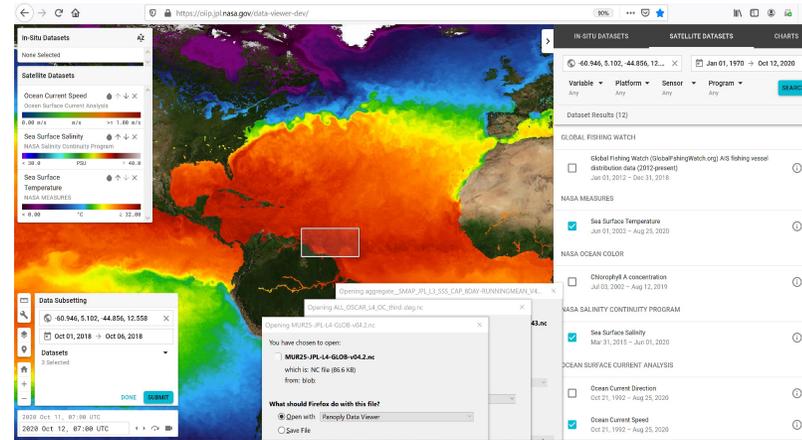


Integrated visualization of satellite & in situ data

Synchronized views of data (surface grids and vertical profiles), and their evolution over time

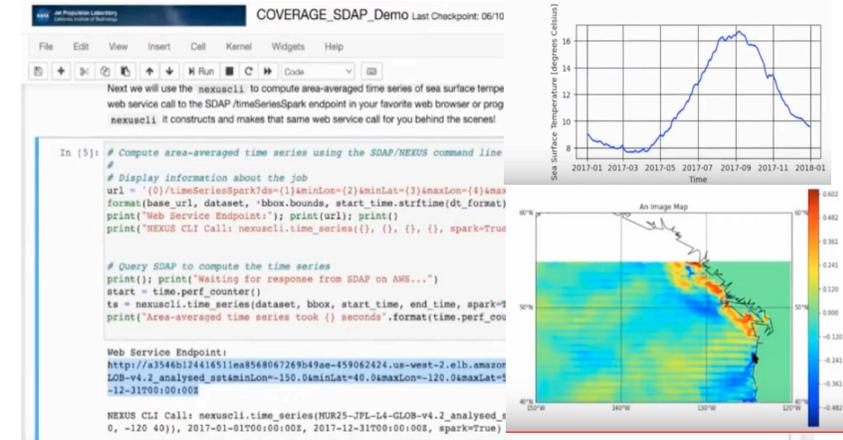
E.g.: SPURS-1, 2, SMODE in situ data; Argo; satellite SST, SSS, OVW, CHL-A, OST.

Access



“One-stop” Data Subsetting capability (satellite & in-situ)

Analyze



Jupyter notebook and other interfaces

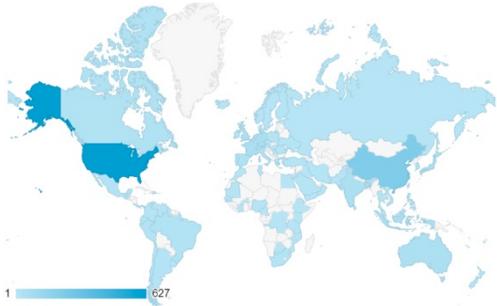
Open-source software (Github)

“Enabling Big Data Science without Download”

Satellite & in situ collocation capability

Production of multi-mission L4 CHL-A product

3. Stakeholder engagement



Visitors from 94 Countries

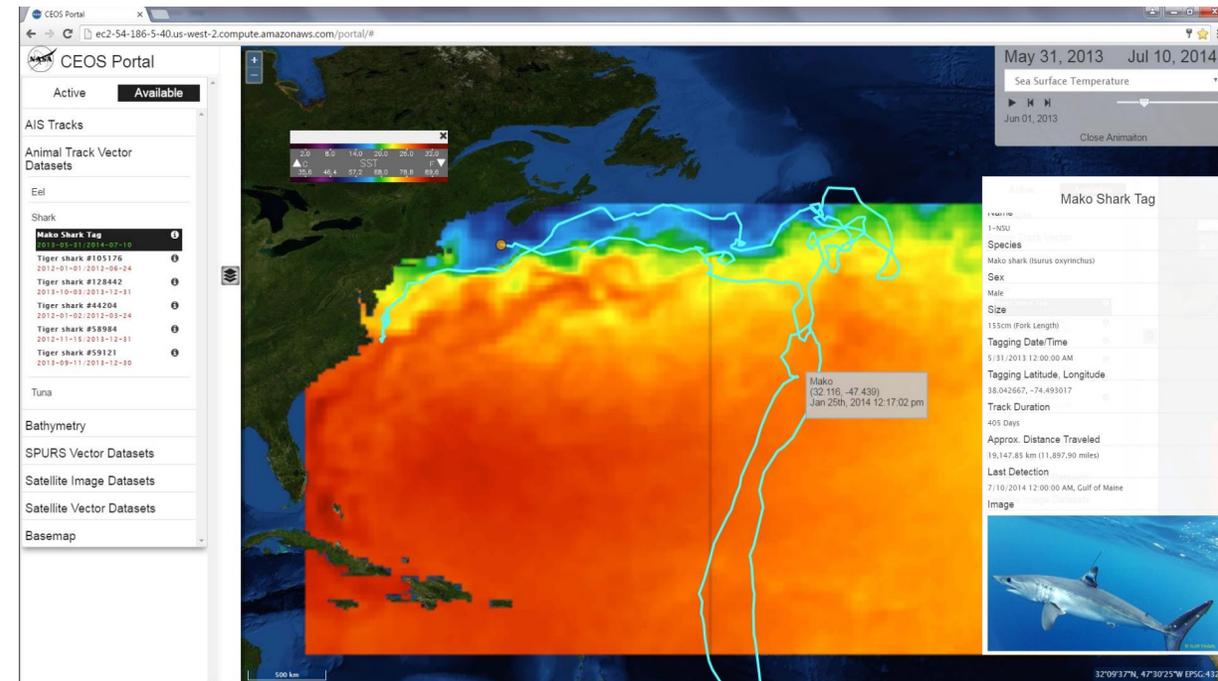
Users by Country ISO Code		
Users		
3,624 +1,830 (↑ 102.01%)		
	United States	1,230 +524 (↑ 74.22%)
	China	573 +324 (↑ 130.12%)
	Japan	122 +81 (↑ 197.56%)
	France	121 +65 (↑ 116.07%)
	United Kingdom	121 +68 (↑ 128.3%)
	Germany	120 +59 (↑ 96.72%)
	India	116 +65 (↑ 127.45%)
	Australia	112 +66 (↑ 143.48%)
	Indonesia	83 +29 (↑ 53.7%)
	Canada	75 +37 (↑ 97.37%)

~3K users, globally

Multiple community training and workshops

Thematic Marine Ecosystem applications for societal benefit, "the environment and high sea pelagic fisheries":

E.g., "SARGADOM" project with Sargasso Sea Commission to provide integrative data system and diagnostic capabilities of the environmental state in the Sargasso Sea



4. Summary & Looking Ahead



- ❖ COVERAGE is (another) example of NASA open science in action, delivering transferrable, open-source software to develop upon.
- ❖ COVERAGE paves the way for future integrated and analysis-ready data platforms at NASA and in the CEOS community.
- ❖ COVERAGE achieved all stated objectives:
 - ❖ Endorsed as a CEOS New Initiative, fully-compliant with the CEOS New Initiative Process
 - ❖ Developed a web-based platform for unified access to a curated set of inter-agency satellite and in situ data spanning four CEOS Ocean VCs
 - ❖ Completed activities on schedule by December 2022 , and as tracked in successive CEOS Work Plans since 2017
- ❖ We thank Vardis Tsontos, Jorge Vazquez, and the COVERAGE team at NASA JPL for leading this five-year effort and our CEOS partners, EUMETSAT, CNES, NOAA, and the European Commission.
- ❖ We express our appreciation to the members of the COVERAGE Advisory Board, including EUMETSAT, NOAA, the Australia Bureau of Meteorology, Australian Integrated Marine Observing System and the University of Tasmania, the Council for Scientific and Industrial Research-South Africa, and Sargasso Sea Commission, for their cooperation in the successful development and implementation of the COVERAGE Initiative.