



Operational Satellite Oceanography Symposia

Presented to CGMS-50 Plenary session, agenda item [6]

Executive summary of the WP

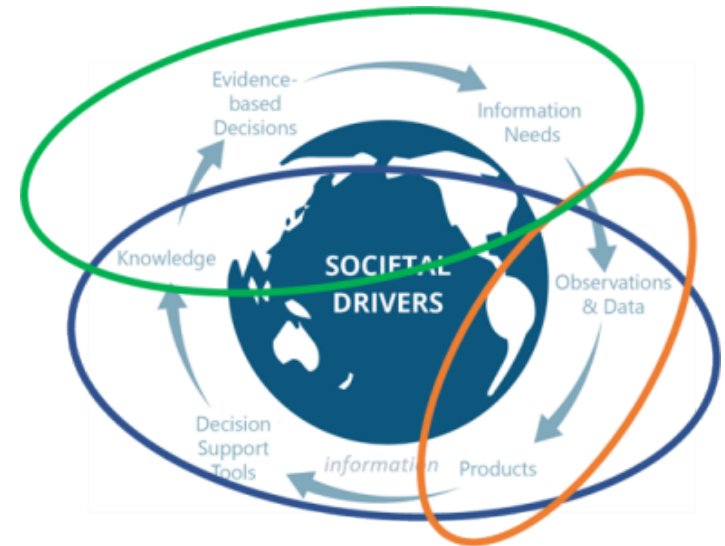
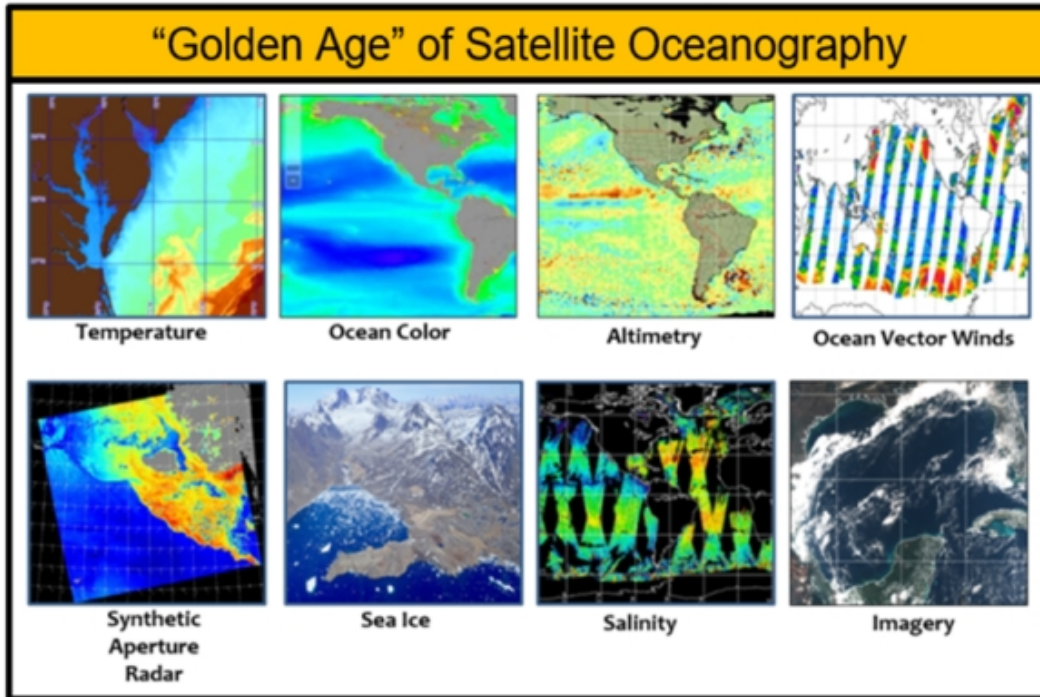
The international Operational Satellite Oceanography symposia (OSOS) biennial series is intended to facilitate the efficient exploitation of satellite observations to substantially improve ocean and coastal environmental applications and decision-making. The series was conceived by the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and the National Oceanic and Atmospheric Administration (NOAA) in 2017 for the purpose of bringing together the international community of providers and users of operational satellite oceanographic data and products.

This paper provides an overview of the OSOS series and request endorsement for OSOS-3 in 2023.

Key issues of relevance to CGMS:

- Ocean observations from space provide essential information for weather forecasting, ecological forecasting, climate forecasting, marine resource management, safety and navigation, research, blue economy, and other applications.
- Many ocean observations from satellites are now operational: mature, robust, validated, documented, and routinely available.
- Potential users are not aware of or perceive barriers to using satellite ocean remote sensing data in their operational applications.
- CGMS has a role to promote the optimal exploitation of the investments made in satellite observations and ocean remote sensing.

Many satellite observations for oceans and coasts are now operational but remain under-exploited for applications and decision-making.



In 2017 and 2018, a series of discussions between operational agencies NOAA and EUMETSAT resulted in the genesis of the “Operational Satellite Oceanography” symposium series.

**28 March 2017,
College Park, MD USA**

**18 August 2017,
College Park, MD USA**



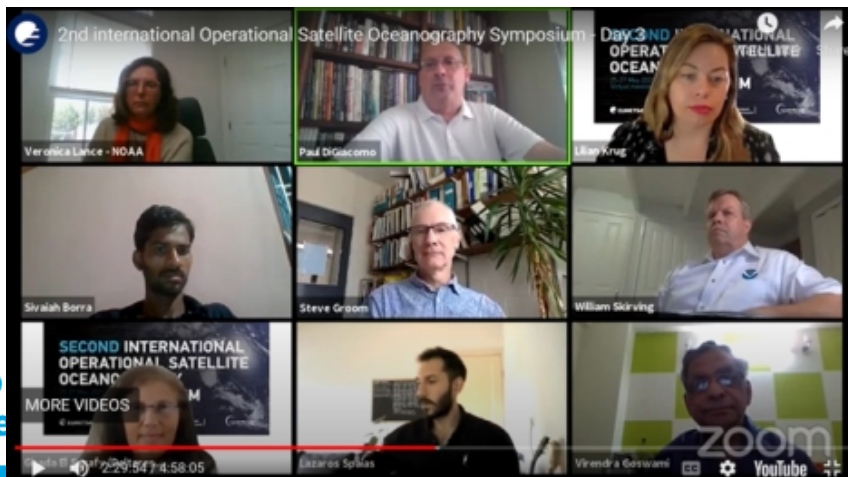
**19 September 2018,
Tallinn, Estonia**

Coordination Group for Meteorological Satellites - CGMS

The first OSOS was held in 2019 at the NOAA Center for Weather and Climate Prediction building in College Park, Maryland, USA.



OSOS-2 was held 25-27 May 2021 virtually (originally planned for Darmstadt).



Coordination Group
Meteorological Satellites





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FIRST INTERNATIONAL OPERATIONAL SATELLITE OCEANOGRAPHY SYMPOSIUM

18-20 June 2019,
College Park, MD, USA

[Presentations](#)

Themes: [Symposium website](#)

Redefining the Operational Paradigm
Linking Providers and Users
Helping Users Shop in the Data Supermarket
Commercial Provider Forum
Government to High Level Users and End-to-End Integration

**Coordination Group for
Meteorological Satellites**



Changing the “Operational” paradigm

Despite maturity and availability, challenges (real and perceived) remain to achieving more-routine, effective, and sustained uses of satellite oceanographic data.

One Challenge: Changing Perceptions about what “operational” actually means

Operational=

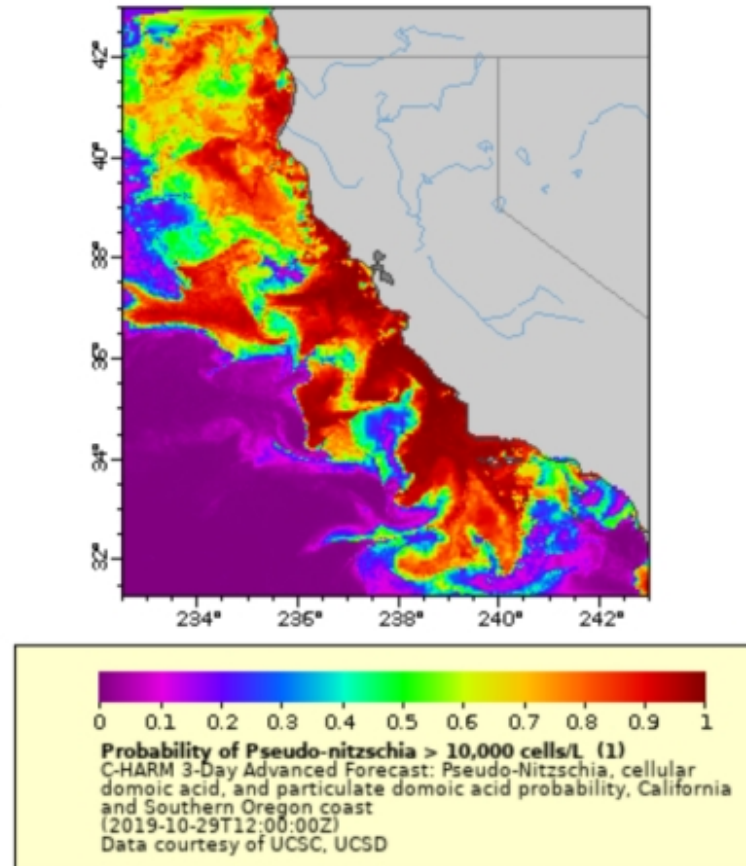
- Routine and sustained provision of accurate, consistent and fit for purpose quality, well-described and discoverable oceanographic satellite observations spanning different time-scales (i.e., NRT to climate) for multiple users (e.g., research, applications and services)
- Can be high assurance/high-service, or moderate assurance/moderate-service

Two examples of “operational satellite oceanography”: routine production for NOAA mission applications.

Forecasting the probability of harmful algal toxin

A nowcast plus 1-, 2-, and 3-day forecasts from C-HARM¹, a model that predicts harmful alga (*Pseudo-nitzschia*) and toxin (domoic acid) occurrence in California and Oregon coastal waters. The model uses satellite chlorophyll and remote sensing reflectance data.

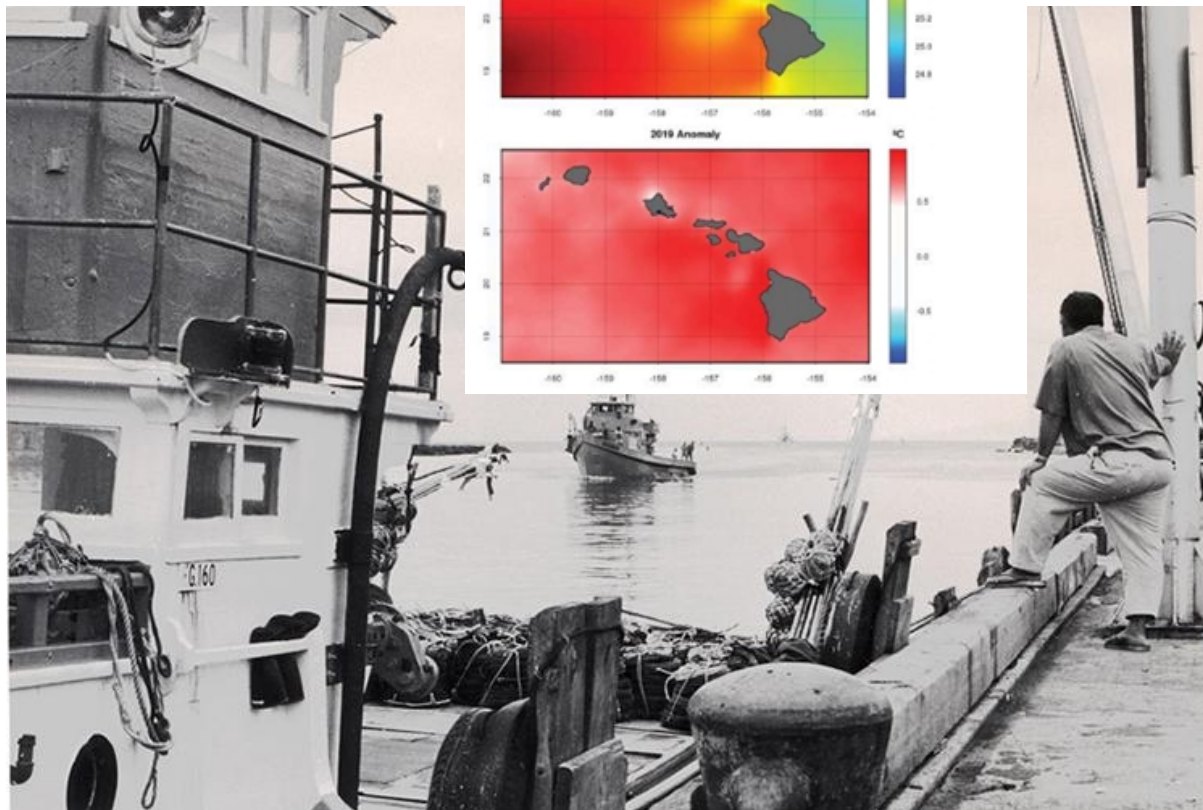
Criticality. For protection of human health and wildlife health, and for protection and management of shellfish aquaculture



Source: West Coast Node of NOAA CoastWatch in collaboration with Southern California Coastal Ocean Observing System

Two examples of “operational satellite oceanography”: routine production for NOAA mission applications.

Stock Assessment and Fisheries Evaluation (SAFE) Reports



Satellite data are used in the annual Stock Assessment and Fisheries Evaluation (SAFE) Reports for:

- the Hawaii-based longline fishery grounds
- Hawaii
- American Samoa
- the Mariana Archipelago
- the Pacific Remote Island Area.

SAFE Reports help the Central Pacific Fisheries Council comply with the Magnuson-Stevens Act – National Standard 2 to manage fisheries using of the best scientific available information.

Source: *OceanWatch Central Pacific Node of NOAA CoastWatch*

Some highlights from OSOS-1



**GMES
AND AFRICA**



1st Operational Satellite Oceanography Symposium **Marine and Coastal Areas Management in Western Africa:** **A Case of EO data Application**

GLOBAL MONITORING FOR ENVIRONMENT AND SECURITY & AFRICA (GMES & AFRICA)

Bennet Atsu Foli

(University of Ghana)

18-20 June 2019




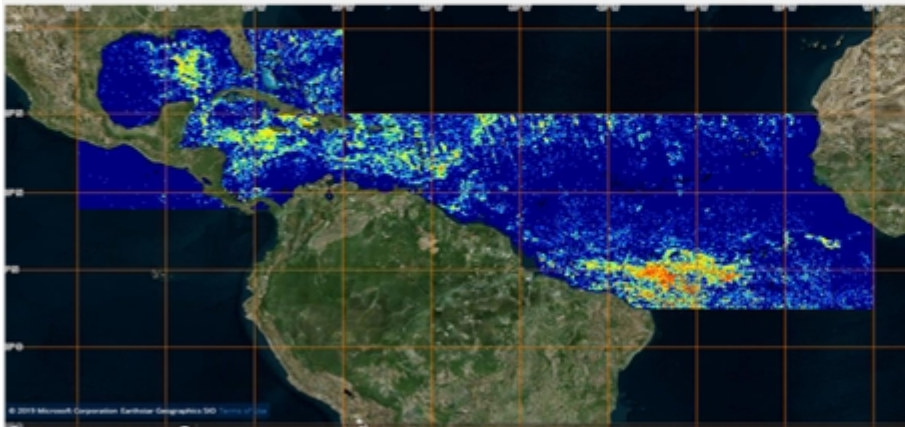
Some highlights from OSOS-1



SARGASSUM ALGAE MONITORING



Early Detection by satellite 



- ✓ Synergy of **optical sensors**
 - MODIS/Aqua
 - OLCI/Sentinel- 3A and 3B
 - MSI/Sentinel-2A and 2B
 - OLI/ Landsat-8
- ✓ **Normalized Floating Algae Index**
- ✓ Spatial resolution: **300m -> 20m**

OSOS-1 Recommendations

1. Take outcomes and actions to the **Committee on Earth Observation Satellites (CEOS) and the Coordination Group for Meteorological Satellites (CGMS)** regarding satellite observations and requirements
2. Establish better linkages with Ocean Predict vis-à-vis satellite observations to facilitate their greater **assimilation and support for improved ocean forecasting**.
3. Construct a framework and mechanism to better coordinate and **integrate among data providers, information providers, and end users**.
4. **Long term merged time series for all parameters**, as well as training resources and best practices are needed especially for ecosystem applications.
5. Improve connections between the ocean, atmosphere & terrestrial domains (e.g. **coupled models**), and establish connections **to socio-economic drivers** with global to local anthropogenic influences.
6. Potential foci for future Symposia: Extracting information from products toward development of **improved indicators and indices; synergistic ocean forecasting, including linking ocean to weather prediction** - in cooperation with large weather organizations; application support, especially for the coastal zone and its diverse users – which have significant socio-economic ramifications.

SECOND INTERNATIONAL OPERATIONAL SATELLITE OCEANOGRAPHY SYMPOSIUM

25-27 May 2021,
Virtual meeting

[Home Page](#)[Committee](#)[Programme](#)[Training Day](#)[Registration](#)[Presentation guideline](#)[Abstract submission](#)[Contact](#)

Programme

You can download the programme [HERE](#).

25 May 2021

WATCH DAY 1 📺

Grace E. Kim, Ph.D.
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Booz Allen Hamilton

NOAA/EUMETSAT
OPERATIONAL SATELLITE OCEANOGRAPHY SYMPOSIUM
25-27 MAY 2021

zoom

CONSULTING | ANALYTICS | DIGITAL SOLUTIONS | ENGINEERING | CYBER

Themes:

- 1) Ocean data assimilation
- 2) Coupled Models
- 3) Ocean Services
- 4) Applications

[Symposium Report](#)

[Meeting Link](#)

Some highlights from OSOS-2

Projecting future changes in distributions of small-scale pelagic fisheries of the southern Colombian Pacific Ocean

John Josephraj Selvaraj, Leidy Viviana Rosero Henao, María Alejandra Cifuentes Ossa

Universidad Nacional de Colombia, Palmira campus, Engineering Department, Hydrobiological Resources Research Group



Seerfish
(Scomberomorus sierra)
17m and 54m depth



Black skipjack
(Euthynnus lineatus)
0m and 27m depth

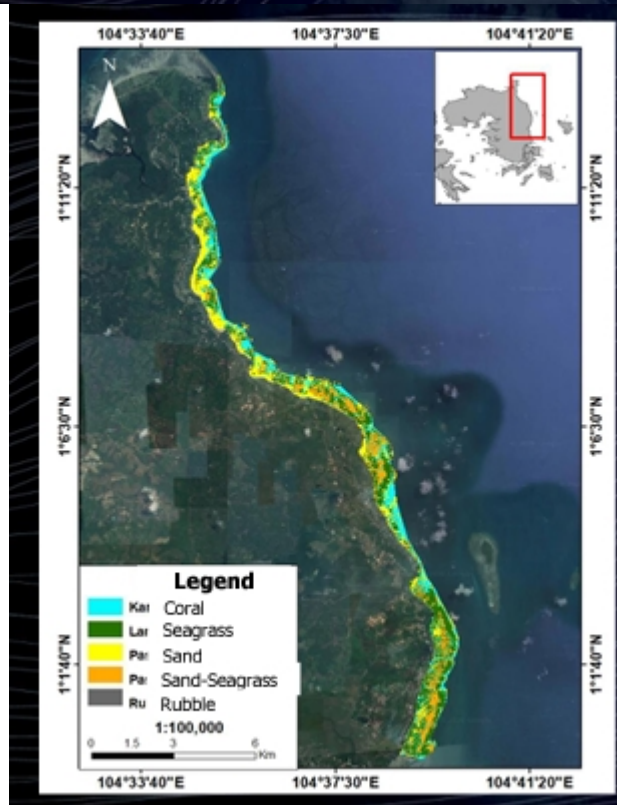


Whitefin weakfish
(Cynoscion albus)
0m and 41m depth

Some highlights from OSOS-2

Mapping of Seagrass Ecosystem Using Google Earth Engine in Bintan Waters: A Case Study of Teluk Bakau, Malang Rapat and Berakit Villages

Turissa Pragunanti, Bisman Nababan, Vincentius P Siregar, Dony Kushardono, Hawis Madduppa



OSOS-2 Key Recommendations

Regarding Data and Products

- Reduce latency for NRT but maintain non-time critical higher quality products;
- Fill gaps in observations: currents, waves, salinity, bathymetry;
- Generate consistently processed, accurate, state-of-the-art, operational multi-mission long-term time-series, especially needed for analysing climate trends.

Regarding Data usage

- Expand use of satellite observations for initialisation or data assimilation in models.

Regarding Data ‘democratisation’

- Improve outreach, training and communication;
- Adopt methodologies to assess the value of satellite observations and apply them consistently and systematically.

OSOS-3 Justification and Planning

- 1) Geographical focus on Asia, Australia and the Pacific, including blue water oceanography and climate (how satellite data can be applied to understanding trends and addressing impacts).
- 2) Continue to engage users for better definition of priorities and needs, production of consistent, accurate, state-of-the-art, operational multi-mission long-term time-series.
- 3) Continue to highlight methods and applications for use of satellite data in ocean/atmosphere/climate coupled models, reinforce communication and coordination on science and expertise between the coupled model producers, and the producers of the satellite observations.
- 4) Bring attention to methods and studies that quantify the socio-economic benefits leveraged from global agency investments in earth-observing satellite missions and coordination of virtual constellations.
- 5) Continue capacity building by providing user training in association with the OSO symposium and in coordination with CEOS Capacity Building team (WGCapD).

OSOS-3

Tentatively South Korea

Spring 2023

Backup

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- CGMS has a role to promote the optimal exploitation of the investments made in satellite observations and ocean remote sensing.
- References to HLPP
 - 1 ENSURE OPERATIONAL CONTINUITY AND PERFORM CONTINGENCY PLANNING
 - 3.6 Increase operational access to data and products in support to the ocean user community
 - 3.9.2 Promote the product metadata standards within ocean communities, such as on SST, ocean colour, ocean vector surface wind and ocean surface topography, to facilitate common data representation and near-real time exchange. This must be done in dialogue with the relevant CEOS Virtual Constellations.
 - 4.4 Maintain, enhance and improve the methods to describe the error characteristics of satellite data and products
 - 7 OUTREACH AND TRAINING
 - Others relevant even if not “ocean” specific

To be considered by CGMS:

- In light of the growing role of ocean satellite observations for operational applications and “the blue economy” as well as their importance in weather and climate forecasting, CGMS is urged to leverage the knowledge and expertise of the organizing committees and the outcomes and recommendations of the International Operational Satellite Oceanography symposia.
- For endorsement... We request CGMS endorsement for the upcoming Third International Operational Satellite Oceanography Symposium (OSOS-3), planned for spring 2023 to be held in South Korea. We plan to request continued endorsements for future symposia (a series of 5 symposia).