



### GEO Blue Planet 5th Symposium

Local action in support of global traction

24 - 28 Oct 2022 | Accra, Ghana



# GEO BLUE PLANET

5<sup>th</sup> Symposium | Accra, Ghana | 24 – 28 October

2022

What are Ocean and Coastal Observations and why are they important?

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#### Objectives

- Provide high-level overview on Earth Observations.
- Review common systems and measurements involved in Ocean and Coastal Observations.
- Highlight tools and products developed using remotely sensed data.
- Discuss the role of Ocean and Coastal Observations in management and decision making.



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#### What are Earth Observations?

- Earth observation is the gathering of information about planet Earth's physical, chemical and biological systems. It involves monitoring and assessing the status of, and changes in, the natural and man-made environment.
- Includes space-based or remotely sensed data and ground-based data or in situ data.
- Observations can be atmospheric, terrestrial or oceanic.





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Ocean and Coastal Observing Systems

Involves both direct or in situ measurements as well as remote sensing spacebased technologies.







#### In situ observations

- Argo floats- drifting floats that gather ocean data in the upper regions of the world's oceans.
- Gliders- autonomous underwater vehicles used to monitor ocean conditions.
- Research vessels, buoys







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#### In situ observing systems

Profiling floats	Data Buoys	Time Series	Repeated Hydrography
Argo	A B C A B C	Ocean SITES	
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#### In situ observing systems

Sea Level	Ship Based	HF Rader	Other Networks
OBAL SEA (FLAT	ASSERVATIONS BERVATIONS FA	Global HF Radar Network	Animal Borne Sensors & Ocean Gliders



#### In situ observing systems





## Space-based systems:

- Satellites provide measurements on the world's oceans at vast spatial and temporal scales.
- Satellite orbits and spatial coverage impact types of measurements that are made.



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#### Satellite Observations

- Sea Surface Height
- Sea Surface Roughness
- Sea Surface Salinity
- Sea Surface Temperature
- Ocean Color
- Ocean Surface Vector Winds
- True Color Imagery



onthly sea surface salinity derived from Aquarius Level-2 Products, JAN 2013





#### Comparison of monitoring approaches



# How can Ocean and Coastal Observation data and products be used to support decision making?



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#### Fisheries and Aquaculture Management

- Ocean and Coastal Observations can:
- Provide information about toxic algae that may impact fisheries and aquaculture sites.
- Identify and track illegal fishing activity.
- Monitor environments that support fisheries stock species.
- ✓ Support aquaculture site selection.
- ✓ Help support safety of lives at sea.







#### Marine and Coastal Hazards

Ocean and Coastal Observations can:

- Deliver data and information required to prepare, forecast, mitigate and recover from disasters.
- Provide warnings regarding impending events such as tsunamis and storm surges.
- ✓ Identify and track oil spills, chemical spills, HABs, sargassum blooms.
- Provide information to prevent loss to marine and coastal biodiversity.











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#### **Climate Adaptation**

Ocean and Coastal Observations can:

- ✓ Provide information regarding sea surface temperature in response to ocean warming.
- Measure sea level rise through use of satellite altimeter radar measurements.
- ✓ Assess the risk of coastal communities to manifestations of climate change through forecast modeling.







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#### **Marine Pollution**

Ocean and Coastal Observations can:

- ✓ Monitor and forecast water quality conditions.
- ✓ Improve detection and tracking of marine litter.
- ✓ Manage resources to reduce risk to public health, ecosystem health and economy.
- ✓ Support the management of marine and coastal resources to reduce loss in water quality due to sewage discharge, oil spill, industrial waste and agricultural run off.







#### Decision support tool example: NOAA Coral Reef Watch

NOAA Coral Reef Watch Daily 5-km Blended Geo-Polar Nighttime Sea Surface Temperature 17 Oct 2014



#### Decision support tool example: NOAA Fisheries Products



1-Apr-2019 - 1-May-2019









Number of Whales

2

better

2



-115

-120

#### Conclusion

- Earth Observations can provide vast amounts of data on the world's oceans and coasts.
- Data from satellite derived and in situ sources can be used to develop products and tools.
- Ocean and Coastal Observation products can be used to support decision making regarding fisheries, marine pollution, coastal hazards and climate adaptation.
- When integrated into policy frameworks, Ocean and Coastal Observations can help contribute to the sustainable use of ocean and coastal resources.







24 – 28 October 2022



### Thank You. Medaase. Oyiwaladon.

