

OceanObs'19 Breakout Session

Integrated Ocean Observations I: Across Geographic Scales

Tuesday, September 17, 2019, 1400-1600 HST, Kalakaua Ballroom

Co-Chairs: Jack Barth (Oregon State University, USA) and Sung Yong Kim (Korea Advanced Institute of Science and Technology)

Co-Organizers: Nic Bax (CSIRO, Australia), Meghan Cronin (NOAA PMEL, USA), Kim Currie (NIWA, New Zealand), Patricia Miloslavich (Univ. Tasmania, Australia/Universidad Simón Bolívar, Venezuela), Eitarou Oka (Univ. Tokyo, Japan), and Artur Palacz (IOCCP, IOPAN, Poland)

Session Description

The goal of this breakout session, constituting a part of the larger thematic block on “Integrated Ocean Observations”, is to develop a set of recommendations on how the global to coastal ocean observing systems can provide information and ocean products that are most useful to society’s needs. Participants will be invited to bring forward their suggestions on, for example, what innovation is needed to enable high-quality and high resolution measurements in the coastal ocean, noting the importance of regional and global processes to the coastal ocean, or on how to make national and regional systems more interoperable based on common standards and best practices. This session will seek to integrate the different observing approaches, knowledge and experiences of coastal ocean observers and users, and put the recommendations in the context of the vision for an integrated global ocean observing system.

Motivation

The coastal ocean plays an exceptional role, disproportionate to its surface area, because of the intensity of fisheries production and extraction, and human interaction with the sea found there. The coastal oceans account for about ¼ of the wild caught seafood and are active regions of commerce and energy extraction. The effects of climate change are adversely impacting the coastal ocean now, including, for example, rising sea levels, increased waves and erosion, ocean acidification, hypoxia, and increased Harmful Algal Blooms. This huge range of phenomenon places unique demands on ocean observing, modeling and data management systems. For example, in addition to the physical, biogeochemical and biological Essential Ocean Variables that are measured in the open oceans, coastal ocean measurements must also include a more extensive list of ecosystem variables (e.g., phytoplankton and zooplankton diversity, seagrass cover and composition, macroalgal canopy cover and composition). Models of the coastal ocean must be run at high enough spatial resolution to simulate correctly the physical interactions between currents and coastline and bottom topographic features. To run at this high spatial resolution, while incorporating the influence of open-ocean interannual (e.g., El Niño/La Niña) and interdecadal (e.g., PDO, NAO) variability, requires skillful nesting or downscaling. Multi-parameter observations must be made on finer spatial and temporal scales than in the open ocean, driving innovation in ocean observing platforms like the development of vertical profiling systems. Biofouling in the coastal ocean is intense, requiring novel solutions for minimizing its affect and the need for frequent calibration of sensors. The large range of measurements and the important derived quantities like zooplankton species diversity or identifying harmful algae places extra demands on any coastal ocean data QA/QC, analysis and delivery system.

Agenda

INTRODUCTORY AND BACKGROUND TALKS (60 minutes):

- **Introduction, Motivation and Goals:** Jack Barth (OSU, U.S.A.) and Sung Yong Kim (KAIST, Korea)
- **Lightning Talks on Example Coastal Ocean Observing Systems within a Regional and Global context**
Each talk will include: a) high-level overview; b) a science question example; c) value to stakeholders; and d) challenges opportunities
 - **Australia's Marine Integrated Observing System (IMOS):** Moninya Roughan (Australia)
 - **European Union's Joint European Research Infrastructure for Coastal Observations (JERICO):** Laurent Delauney (France)
 - **Boundary Systems:** Robert Todd (USA)
 - **The United States' Integrated Ocean Observing System (IOOS):** Molly McCammon (USA)
- **Background talks on EOVs, best practices**
 - **Essential Ocean Variables and the Framework for Ocean Observing:** Patricia Miloslavich (Venezuela)
 - **Ocean Best Practices and Standards:** Jay Pearlman (France)

AUDIENCE PARTICIPATION (50 minutes)

Moderators: Jack Barth and Sung Yong Kim

Facilitated question and reply using sli.do

Questions and input requested on:

- A coastal to global ocean observing system that can provide information and ocean products that are most useful to society's needs.
- A coordinated measurement system; are coastal, regional and global systems making the same measurements so that coastal-deep ocean interactions can be assessed and data-based modeling can be seamless across these regions
- Quantifiable progress on observing EOVs, especially elevating the measurement of biological and biogeochemical EOVs to the same routine standard as accomplished to date for physical EOVs.
- Data QA/QC and delivery system across scales.
- How do we encourage and incorporate **innovation in sensors, platforms, and data delivery** to make the needed high-quality, high-resolution measurements and to deliver them to shore?
- Interoperable national, regional and global systems based on common standards and best practices.
- Capacity development and Technology Transfer (who and how)
- Who wants the information and how do we package data as information

WRAP-UP (10 minutes): Summarize important points for reporting to plenary (Jack Barth and Sung Yong Kim)

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Speakers:

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JERICO: JERICO-NEXT Technical dev. WP co-coordinator.

JERICO-S3 Coordinator (funding under EU investigation).

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