Welcome & Aloha!
Ocean Time-Series Data Coordination Workshop

Heather Benway, Mai Maheigan, Mary Zawoysky (Woods Hole Oceanographic Inst./OCB)

Justin Buck (National Oceanography Centre/British Oceanographic Data Centre)

Rod Johnson (Bermuda Inst. Ocean Sciences/Bermuda Atlantic Time series Study)

Danie Kinkade, Adam Shepherd (Woods Hole Oceanographic Inst./BCO-DMO)

Laura Lorenzoni (NASA, Univ. South Florida)

Mark Schildhauer (Univ. California, Santa Barbara, National Center for Ecological Analysis and Synthesis, NCEAS)

D. Sarah Stamps (Virginia Tech Univ./EarthCube liaison)

Angelicque White (Univ. Hawai‘i, Hawaii Ocean Time series)
Workshop Objectives

To address shipboard ocean time series data cyber-infrastructure challenges and develop strategies toward a FAIR data model

Data access and discoverability

- Data submission
- Data citation

Interoperability

- Interoperability
- Variable user interfaces

Lack of community-adopted standards & BPs for data and metadata
Workshop Participants Provide Broader Insight on Ocean Data Infrastructure

- Multi-platform ocean time series, including ships, floats, moorings, etc.
- Multi-national ocean data platforms, networks, and products
- Cross-disciplinary ocean data sets (biogeochemistry, physics, biology, etc.)
- Multiple data management entities and approaches
Shipboard Ocean Time Series Data

- **Pigments** - Chlorophyll *a* and others
- **In line measurements** – *T*, *S*, $p$CO$_2$, pH, DIC, fluorescence, oxygen, etc.
- **CTD parameters and discrete calibrations** – *T*, *S*, fluorescence, oxygen, beam attenuation
- **Inorganic macro- and micronutrients** – NO$_3$, NO$_2^-$, NH$_4$, PO$_4$, SiO$_4$, Fe
- **Biomass** – Bacteria, viruses, phytoplankton (micro-/nano-/pico-), zooplankton
- **Inorganic carbon parameters** – DIC, TA, pH, discrete $p$CO$_2$
- **Biological rates** – Primary and bacterial production
- **Trap fluxes** – Collection methods, sample processing, data reporting, etc.
- **Organic matter** – C, N, P (dissolved and particulate fractions)
OCB is a network of scientists working across disciplines to understand the ocean's role in the global carbon cycle and how marine ecosystems and biogeochemical cycles are responding to environmental change.
OCB Science Breadth

- Biological pump
- Marine ecosystem function and change
- Ocean observing (ships, autonomous, space)
- Estuarine and coastal carbon fluxes
- Ocean carbon uptake
- Changing ocean chemistry
Community Ocean Time Series Efforts

- **Ocean Time series Committee** to facilitate communication among time series data generators, users, and funders
- Coordinate **workshops**, community activities, Town Hall Meetings, etc. for community building and advancing science
- Develop **publications** to highlight importance of sustained ocean measurements to broader ocean science community
- Help establish best practices
  - International **Time-Series Methods Workshop** to review and compare shipboard biogeochemical time-series sampling and analytical protocols
  - EarthCube Ocean **Time Series Data Workshop**
Timeline of Community Ocean Time Series Efforts

- **2006**: OCB Program est.  
- **2007**: Ocean Time series Committee est.  
- **2010**: Sea Change workshop (HOT, BATS, CARIACO)  
- **2012**: International Time Series Methods Workshop  
- **2013**: International Group for Marine Ecological Time Series (IGMETS)  
- **2016**: OSM Town Hall Meeting  
- **2017**: Eos feature article  
- **2019**: OceanObs19 CWP Data workshop