

Project Instructions: EX2303, Seascope Alaska 2: Aleutians Deepwater Mapping (Mapping)

Date Submitted: April 14, 2023
Platform: NOAA Ship *Okeanos Explorer*
Project Number: EX2303
Project Title: Seascope Alaska: Aleutians Exploration 2 (Mapping)
Project Dates: June 2-20, 2023

Prepared by: _____ **Dated:** _____
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NOAA Ocean Exploration

Approved by: _____ **Dated:** _____
CAPT Amanda Goeller
Commanding Officer
NOAA Marine Operations Center — Atlantic

I. Overview

A. Brief Summary and Project Period

This document contains project instructions specific to EX2303. For the annual cross-expedition details, see the [“NOAA Ship *Okeanos Explorer* FY23 Field Season Instructions.”](#) This expedition will commence on June 2, 2023, in Dutch Harbor, Alaska, and conclude on June 20, 2023 in Kodiak, Alaska. Operations will be conducted 24 hours a day, and consist of mapping operations and full shore-based participation via telepresence.

Operations will include the use of the ship’s deepwater mapping systems (Kongsberg EM 304 multibeam, EK60/EK80 split-beam sonars, Knudsen 3260 Chirp sub-bottom profiler, and Teledyne acoustic Doppler current profilers), expendable bathythermograph (XBTs) in support of multibeam sonar mapping operations, conductivity, temperature, depth profiler (CTD) casts, and a high-bandwidth satellite connection for continuous ship-to-shore communications. Operations will focus on exploring deep waters greater than 200 m in U.S. waters off of Alaska.

B. Days at Sea

Of the 19 days at sea (DAS) scheduled for this expedition, all 19 days are program funded days.

While mapping operations are planned 24 hours a day, this expedition will require 12 hours a day of support from the ship’s deck and engineering department.

C. Operating Area

EX2303 will focus operations on U.S. waters off the coast of Alaska, south of the Aleutians. Mapping and CTD operations will be conducted at depths between 200-6000m. **Figure 1** shows the general operating area for the expedition. The waypoints for the general working area and proposed expedition track are in **Appendix A**.

As this expedition is operating in remote locations and/or far from a suitable port to treat medical emergencies, a medical officer is requested to be aboard for the entirety of the expedition.

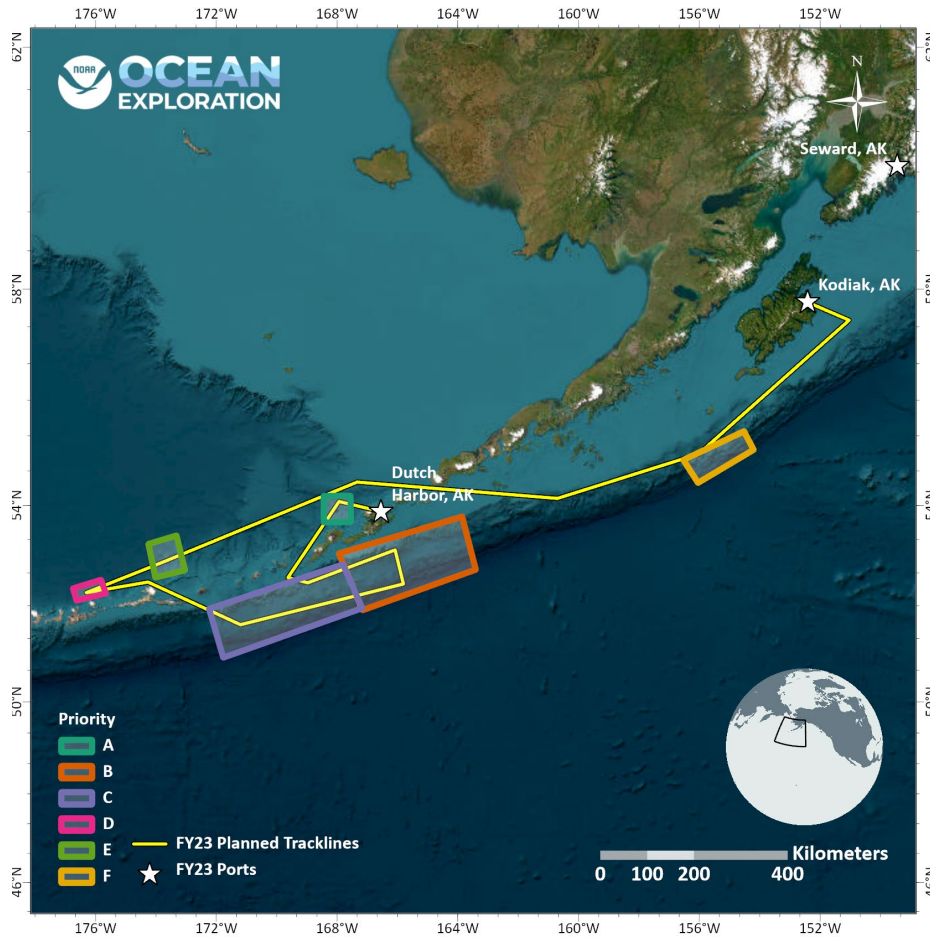


Figure 1. Map showing the general operating area for EX2303 and priority mapping regions A-F. The expedition track is subject to change based on survey results, field conditions, and the discretion of the commanding officer.

D. Summary of Objectives

EX2303 operations will involve a transit southwest from Dutch Harbor, Alaska followed by focused ocean mapping in U.S. waters off the coast of Alaska, primarily in deep water (>200 m). This expedition will collect critical baseline information to support priority NOAA science and management needs.

Mission objectives for EX2303 include a variety of objectives focused on science, mapping, education, outreach, and data management. Overarching objectives that span the entire Fiscal Year 2023 (FY23) field season are covered in the [“NOAA Ship *Okeanos Explorer* FY23 Field](#)

[Season Instructions.](#)” See **Appendix B** for the expedition data management plan. Additional objectives specific to EX2303 follow:

1. Science Objectives

- a. Identify, map, and explore the diversity and distribution of benthic habitats, including potential deep-sea coral and sponge communities, fish habitats, and chemosynthetic communities.
- b. Map geologic features to better understand the geological context of the region and improve knowledge of past and potential geohazards.
- c. Acquire acoustic and oceanographic data as a foundation to better understand the characteristics of the water column and the pelagic fauna that inhabit it.
- d. Engage a broad spectrum of the scientific and management community, as well as the public, in telepresence-based exploration.
- e. Create and provide input into standard science products to provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities.
- f. Conduct stationary CTD casts as required to support high-priority requests from the science community (e.g., to help identify potential hydrothermal vents).
- g. Use the onboard laboratory to preserve and catalog all samples and ready them for shipping to their respective public archives.
- h. Collect water samples using the CTD-mounted Niskin bottles and filter samples in the onboard laboratory to obtain eDNA samples for shoreside processing.
- i. Collect sun photometer measurements as part of surveys of opportunity in partnership with NASA.

2. Acoustic Mapping Objectives

- a. Collect transit data that addresses bathymetric gaps or prioritizes areas with poor bathymetric or seabed backscatter data quality. Requested transit speeds will be the best possible speed up to 10 kn.
- b. Conduct 24-hour mapping operations for the entirety of the expedition. Mapping operations will consist of concurrent data acquisition from the EM 304 multibeam echosounder, EK60/80 split-beam echosounder suite, and Knudsen 3260 sub-bottom profiler.
- c. Collect high-resolution bathymetry in areas with no (or low quality) sonar data.
- d. Collect high-resolution mapping data in priority areas, as shown in **Figure 1**.
- e. Execute mapping line plans as defined by onboard personnel, with real-time adjustments made to obtain complete seabed coverage as necessary. An average survey speed of 8-9 kn will be used during mapping operations.
- f. Conduct XBT casts as data quality requires, but not more than six hours apart.

- g. Maintain CTD capabilities as a backup sound velocity profiling method for mapping data requirements.

3. Video Engineering Objectives

- a. Provide onboard support for 24-hour exploration operations.
- b. Verify Global Foundation for Ocean Exploration (GFOE) managed telepresence systems perform as expected.

4. Network/Onboard Data Objectives

- a. Ensure integrity of all data processing pipelines and automated transfer to shore for all raw sonar data and daily bathymetry and bottom backscatter mosaic products.
- b. Ensure Global Foundation for Ocean Exploration (GFOE) managed VSAT, network, and computing infrastructure operate as required to meet mission objectives.
- c. Ensure shipboard instruments/teams are producing expected data products at the expected rates according to established conventions.
- d. Ensure data management processes organize, backup, and transmit data to shore as expected.
- e. Support shore-based personnel with remote access to shipboard resources to better meet mission objectives.
- f. Cross-train network, system administration, and data management personnel.
- g. Improve system documentation.

5. Outreach and Education Objectives

- a. Train the next generation of ocean explorers by hosting up to three explorers-in-training on the ship. Training will include standing eight-hour watches of sonar data acquisition, processing, and documentation according to standard NOAA Ocean Exploration procedures. Ancillary projects may be assigned as necessary.
- b. Host interactions with audiences on shore (exact schedule TBD).
- c. Host limited scheduled ship tours while in port (exact schedule TBD)
- d. Engage the general public in ocean exploration through social media and live video and timely content (web features, highlight videos, video clips, still imagery, and mapping products) on the NOAA Ocean Exploration website.

6. Remote Science and Exploration Command Center Objectives

- a. Conduct operations in conjunction with shore-based exploration command centers and remote science team participants.

7. Ship Objectives

- a. Conduct stationary CTD operations as requested and able.

E. Participating Institutions

See “[NOAA Ship *Okeanos Explorer* FY23 Field Season Instructions](#)” for institutions that consistently participate throughout the field season.

F. Personnel (Mission Party)

Mission personnel (see **Table 1**) will arrive in Dutch Harbor, Alaska starting on May 31, 2023. Mission personnel will then be aboard for the duration of the expedition (June 2-20, 2023). Some personnel will depart on June 22, 2023, and others will stay aboard for the expedition that follows (EX2304). The expedition will also be supported by shoreside personnel (see **Table 2**).

Mission personnel sailing aboard NOAA Ship *Okeanos Explorer* must fill out a [Sailing Contact Form](#) that collects emergency contact information for each person. This information is available to the operations officer to fulfill safety requirements to sail.

Table 1. Seagoing mission personnel: This list is tentative until travel is booked. Any deviations will be communicated to the operations officer.

#	Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
1	Morrow, Thomas	Expedition Coordinator	06/01	06/23	M	NOAA Ocean Exploration	USA
2	Meyer, Jason	Watch Lead	06/01	06/22	M	UCAR	USA
3	Heffron, Erin	Watch Lead	06/01	06/22	F	UCAR	USA
4	Rebecca Ruiz	Explorer-in-Training	06/01	06/22	F	UCAR	USA
5	Ranna Zahabi	Explorer-in-Training	06/01	06/22	F	UCAR	USA
6	Rose Leeger	Explorer-in-Training	06/01	06/22	F	UCAR	USA
7	O’Brien, Andrew	Data Manager	06/01	06/22	M	GFOE	USA
9	Wright, Chris	Data Manager	06/01	06/22	M	GFOE	USA
10	Brian, Roland	Videographer	06/01	06/22	M	GFOE	USA
11	Doros, Brian	Video Engineer	06/01	06/22	M	GFOE	USA
12	Durbin, Mark*	Data Manager	06/01	06/22	M	GFOE	USA

* Not confirmed.

1. Foreign National Guests (FNGs) Access to OMAO Facilities and Platforms

Foreign national access to *Okeanos Explorer* or other federal facilities will not be required for this expedition.

G. Administrative

1. Points of Contact

Table 3. Points of contact.

Operations	Name, Title	Office	Address	Phone	Email
Marine Operations Center, Atlantic	CPT Amanda Goeller, Commanding Officer	Marine Operations Center, Atlantic	439 West York Street Norfolk, VA 23510-1145	(757) 441-6778	co.moc.atlantic@noaa.gov
Marine Operations Center, Atlantic	CDR Steven Barry, Chief of Operations	Marine Operations Center, Atlantic	439 West York Street Norfolk, VA 23510-1145	(757) 441-6842	Chiefops.MOA@noaa.gov
NOAA Ship Okeanos Explorer (primary)	CPT Colin Little, Commanding Officer	NOAA Ship Okeanos Explorer	NOAA Ship Okeanos Explorer 47 Chandler Street Newport, RI 02841	(401) 439-7848	CO.Explorer@noaa.gov
NOAA Ship Okeanos Explorer (primary)	LT Hunter Brendel, NOAA Operations Officer	NOAA Ship Okeanos Explorer	NOAA Ship Okeanos Explorer 47 Chandler Street Newport, RI 02841	(808) 659-9179 x221	ops.explorer@noaa.gov
Mission (primary)	Thomas Morrow, Expedition Coordinator	NOAA Ocean Exploration	1315 East-West Highway, Silver Spring, MD 20910	(202) 650-7319	thomas.morrow@noaa.gov
Mission (other)	Kasey Cantwell, Operations Chief	NOAA Ocean Exploration	1315 East-West Highway, Silver Spring, MD 20910	(301) 717-7776	kasey.cantwell@noaa.gov
Mission (other)	CDR Sam Greenaway, Chief (acting), Expeditions and Exploration Division	NOAA Ocean Exploration	1315 East-West Highway, Silver Spring, MD 20910	(240) 621-2112	samuel.greenaway@noaa.gov
Mission (other)	Jeremy Weirich, Director	NOAA Ocean Exploration	1315 East-West Highway, Silver Spring, MD 20910	(301) 452-7366	jeremy.weirich@noaa.gov

2. Diplomatic Clearances

None required.

3. Licenses and Permits

The expedition coordinator is responsible for obtaining and listing all permits as well as any identification numbers they contain. See **Appendix D** for the applicable documents. Final documents will be archived with the associated expedition report.

4. Shipments

The *Okeanos Explorer* operations officer should be notified of any shipments to the ship. Send an email describing the shipment (including size and number of items) to

OPS.Explorer@noaa.gov.

For shipments to arrive while in port in Dutch Harbor, Alaska, at the start of the expedition, **shipments should arrive no later than May 15, 2023**, and be shipped to the following address:

NOAA Ship *Okeanos Explorer*
Attn: Name/Dept
47 Chandler Street
Newport, RI 02841

For shipments to arrive while in port in Kodiak, Alaska, after the expedition from June 20-28 2023, **shipments should arrive no later than June 8, 2023**, and should be shipped to the following address:

NOAA Ship *Okeanos Explorer*
Attn: Name/Dept
47 Chandler Street
Newport, RI 02841

5. COVID-19 Contingency Plan for Scientific Party

In accordance with the “OMAO Marine Operations COVID-19 Protocols” effective June 24, 2022, shelter-in-place is not required for sailing. All mission personnel shall follow the guidelines written within the documentation, subject to change, pending the release of new guidance. All sailing personnel are required to be fully vaccinated, which means they must have completed the initial vaccination series and all applicable boosters.

If any mission personnel develop COVID-19-like symptoms while underway, OMAO protocols will be strictly followed. The expedition coordinator (or designee if they are unable to fulfill this role) will remain the primary point of contact for all mission personnel. Additional support with onshore logistics for impacted mission personnel will be provided by:

Abby Letts
Technical Operations Team Lead, Expeditions and Exploration Division
NOAA Ocean Exploration
Joint Hydrographic Center
24 Colovos Road
Durham, NH 03824

II. Operations

The expedition coordinator is responsible for ensuring mission personnel are trained in planned operations and are knowledgeable about expedition objectives and priorities. The commanding officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. Expedition Itinerary

Table 4 summarizes the expedition itinerary. All times and dates are subject to conditions and the discretion of the commanding officer. Locations are approximate. Additional items may be added to the itinerary as expedition plans are further developed.

Table 4. Expedition itinerary: This is an approximate itinerary and is subject to change based on objective completion, weather, and logistical needs.

Date	Activities
5/31	Mission personnel begin to arrive on ship. Underway preparations and training. Mobilization. Mission personnel will need laptop computers added to the wireless network.
6/1	Mission personnel arrive on ship. Underway preparations and training. Mobilization. Mission personnel will need laptop computers added to the wireless network. Ship familiarization tour and orientation for new mission personnel.
6/2	Departure, targeted mapping and potential CTD operations.
6/3	Targeted mapping and potential CTD operations.
6/4	Targeted mapping and potential CTD operations.
6/5	Targeted mapping and potential CTD operations.

Date	Activities
6/6	Targeted mapping and potential CTD operations.
6/7	Targeted mapping and potential CTD operations.
6/8	Targeted mapping and potential CTD operations.
6/9	Targeted mapping and potential CTD operations.
6/10	Targeted mapping and potential CTD operations.
6/11	Targeted mapping and potential CTD operations.
6/12	Targeted mapping and potential CTD operations.
6/13	Targeted mapping and potential CTD operations.
6/14	Targeted mapping and potential CTD operations.
6/15	Targeted mapping and potential CTD operations.
6/16	Targeted mapping and potential CTD operations.
6/17	Targeted mapping and potential CTD operations.
6/18	Targeted mapping and potential CTD operations.
6/19	Targeted mapping and potential CTD operations.
6/20	Arrive in Kodiak, Alaska
6/21	Demobilization, mission team departs vessel
6/22	Demobilization, mission team departs vessel

B. Staging and Destaging

Minimal staging and destaging are anticipated for this mapping expedition.

C. Operations to Be Conducted

1. CTD Casts

CTD casts will be requested when scientifically beneficial during operations and will be scoped with the operations officer and senior survey technician in advance.

2. Extended Operations

There are no planned extended operations for this expedition at this time.

3. Telepresence/Outreach Events

- a. Three live video feeds will be used throughout the expedition to provide situational awareness for onshore personnel.
- b. Live interactions are planned for this expedition with exact numbers and timing TBD.

4. In-Port Events

- a. No in port public events are planned for this expedition.

5. Special/Unusual Operations or Requests

There are no special or unusual operations or requests for this expedition.

D. SCUBA Dive Plan

All SCUBA dives are to be conducted in accordance with the requirements and regulations of the [NOAA Diving Program](#) and require the approval of the ship's commanding officer. No SCUBA science dives are planned during EX2303, but the ship may plan training, safety drills, or maintenance dives.

E. Applicable Restrictions

Not applicable.

III. Equipment

A detailed list of equipment provided by the ship and NOAA Ocean Exploration can be found in the "[NOAA Ship *Okeanos Explorer* FY23 Field Season Instructions.](#)" There are no specific changes relative to this expedition.

IV. Hazardous Materials

A. Policy and Compliance

See the "[NOAA Ship *Okeanos Explorer* FY23 Field Season Instructions.](#)"

B. Inventory

Table 5. Inventory of hazardous materials that will be aboard for EX2303.

Item	Use	Approximate Locations
95% UPS denatured ethanol (120 gal)	Sample preservation	02 Deck, port side ethanol storage container
Formaldehyde (2 gal) to be buffered into 10% buffered formalin	Sample preservation	Wet lab, under the chemical hood
Bleach (1 qt)	Sterilization and sample preservation	Wet lab cabinet under sink
Magnesium chloride (500 g)	Sample preservation	Wet lab under hood
Sodium phosphate (1 kg)	Sample preservation	Wet lab under hood
AquaShield	Underwater lubricant	ROV workshop fire cabinet, pit
Dow Corning 4	Electrical insulating compound	ROV workshop fire cabinet, pit
Fluid film spray	Silicone lubricant	ROV workshop fire cabinet
Isopropanol alcohol (2 gal)	Solvent	ROV workshop fire cabinet
Scotchkote	Electrical insulating compound	ROV workshop fire cabinet
3M silicone spray	Silicone lubricant	ROV workshop fire cabinet
Synthetic AW hydraulic oil, ISO-22	Amsoil (AWG-05)	Hanger, pit, vehicles
Tap Magic cutting fluid	Cutting/machining lubricant	ROV workshop fire cabinet
Tap Magic heavyweight cutting fluid	Cutting/machining lubricant	ROV workshop fire cabinet
Tuff Coat M	Marine lubricant	Winch room
Dow Corning Molykote 111	Valve lubricant and sealant	ROV workshop Fire cabinet, pit
WD40	Lubricant	ROV workshop fire cabinet
Loktite	Bolt adhesive	ROV workshop fire cabinet
Shell Diala S2	Vitrea	Hanger, vehicles
Por-15	Paint kit	ROV workshop fire cabinet
Aeroshell 41	Hydraulic fluid	Hanger, ROV Deep Discoverer

Item	Use	Approximate Locations
Ultratane	Butane fuel	ROV workshop fire cabinet
Rust-oleum	Protective enamel	ROV workshop fire cabinet
Flux-Off	Soldering flux remover	ROV workshop fire cabinet
Propane	Torch fuel	ROV workshop fire cabinet
Adhesive Pliobond 25	General adhesive	Tool room
AP 120 Metal Prep	Degreaser/cleaner for metal surfaces	Pit
Butane fuel	Torch refill	Tool room
PVC cement	Adhesive for PFV plastic piping	Tool room
Phosphoric acid	Ferrous metal rust removal	Tool room
Pipetite paste	Plumbing sealant	Tool room/pit
Spindle oil 10, ROS PT	Lubricant/compensation oil	Tool room
DC557	Silicon grease	Tool room/pit
Tether potting catalyst	Two part epoxy catalyst	Pit
Tether potting compound	Two part epoxy ingredient	Pit
ThermaPlex bearing grease	Lubricant	Pit
Tritech Seaking	Compensator oil for sonar head	Pit

Appendix A. Waypoints

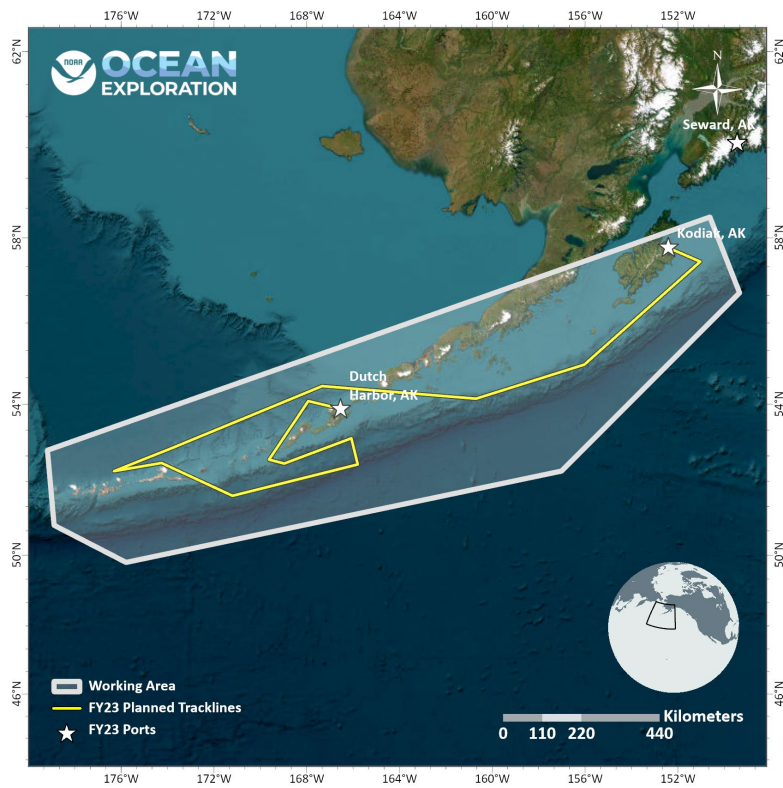


Figure A1. Map showing the general operating area for EX2303 (for reference).

Table A1. Waypoints for the general working area (white polygon).

Latitude (D DM)	Longitude (D DM)
58° 28.192' N	150° 37.239' W
56° 43.338' N	149° 20.490' W
52° 16.236' N	157° 00.986' W
49° 47.869' N	175° 47.283' W
50° 49.137' N	178° 53.400' W
52° 48.909' N	179° 10.669' W

Table A2. Waypoints for proposed expedition track (yellow line).

Latitude (D DM)	Longitude (D DM)
166° 34.352'	53° 53.136'
167° 55.934'	54° 04.585'
169° 37.581'	52° 34.321'
168° 58.221'	52° 28.081'
166° 04.599'	53° 07.545'
165° 48.094'	52° 26.668'
171° 11.891'	51° 36.865'
174° 15.609'	52° 28.963'
176° 18.397'	52° 16.108'
173° 44.358'	52° 53.358'
167° 20.046'	54° 27.189'
160° 42.075'	54° 08.239'
156° 01.932'	54° 59.276'
151° 02.183'	57° 27.124'
152° 25.103'	57° 46.320'

Appendix B. Data Management Plan

Okeanos Explorer Mission EX2303 Data Management Plan

Report Date: 2023-04-25

1. General Description of Data to be Managed

1.1 Name and Purpose of the Data Collection Project:

EX-23-03, Seascape Alaska: Aleutians Exploration 2 (Mapping)

This expedition will commence on June 2, 2023, in Dutch Harbor, Alaska, and conclude on June 20, 2023 in Kodiak, Alaska. Operations will be conducted 24 hours a day, and consist of mapping operations and full shore-based participation via telepresence.

1.2 Summary Description of the data to be collected:

Operations will include the use of the ship's deepwater mapping systems (Kongsberg EM 304 multibeam, EK60/EK80 split-beam sonars, Knudsen 3260 Chirp sub-bottom profiler, and Teledyne acoustic Doppler current profilers), expendable bathythermograph (XBTs) in support of multibeam sonar mapping operations, conductivity, temperature, depth profiler (CTD) casts, and a high-bandwidth satellite connection for continuous ship-to-shore communications. Operations will focus on exploring deep waters greater than 200 m in U.S. waters off of Alaska.

1.3 Keywords or phrases that could be used to discover the data:

Theme Keywords:

bathymetric gaps, benthic habitats, CTD, EM304, habitat areas of particular concern, HAPC, mapping survey, marine education, multibeam, multibeam backscatter, multibeam sonar, multi-beam sonar, sun photometer, Seabed 2030, single beam sonar, singlebeam sonar, single-beam sonar, site characterization, sonar anomalies, split beam sonar, sub-bottom profile, systematic exploration, water column backscatter, EXPRESS, EXpanding Pacific Research and Exploration of Submerged Systems

Place Keywords:

Alaska, Aleutian Islands, Kodiak, Dutch Harbor, Gulf of Alaska

1.4 If this mission is part of a series of missions, what is the series name?

Okeanos Mapping Cruises

1.5 Planned or Actual Temporal Coverage of the data:

Start Date: 2023-06-02 and End Date: 2023-06-20

1.6 Actual or Planned Geographic Coverage of the data:

Northernmost Boundary: 59 and Southernmost Boundary: 50

Westernmost Boundary: -179 and Easternmost Boundary: -146

1.7 What data types will be created or captured and submitted for archive?

Bottom Backscatter, Cruise Plan, Cruise Summary, CTD (processed), CTD (product), CTD (raw), EK60 Split Beam Data, EK80 Split Beam Data, Multibeam (image), Multibeam (processed), Multibeam (product), Multibeam (raw), Navigational Data, SCS Output (compressed), SCS Output (native), Seafloor Imagery, Sound Velocity Profile, Sub-Bottom Profile data, Temperature data, Water Column Backscatter, XBT (raw), SCS Output (compressed), SCS Output (native)

1.8 What platforms will be employed?

NOAA Ship Okeanos Explorer

2 Points of Contact for this Data Producing Project

Overall POC: Thomas Morrow, thomas.morrow@noaa.gov

Title: Expedition Coordinator

Affiliation: NOAA Office of Ocean Exploration and Research

Phone: (202) 650-7319 (Thomas Morrow)

3 Points of Contact for Managing the Data

Data POC: Caitlin Ruby

Data POC Title: Stewardship Data Management

Data POC Email: caitlin.ruby@noaa.gov

4 Resources

4.1 Have resources for management of these data been identified?

Yes

4.2 Approximate percentage of the budget devoted to data management. (specify % or unknown)

Unknown

5 Data Lineage and Quality

5.1 What is the processing workflow from collection to public release?

SCS data shall be delivered in its native format to NCEI-MD (oceanographic archive); the data are then converted to an archive-ready, documented, and compressed NetCDF3 format which is made available for download through the Ocean Exploration Digital Atlas; water column profile data and navigation data will be delivered in ASCII format to NCEI-MD; EM304 and EK60/80 output data and metadata along with water column profiles used for calibration will be delivered to NCEI-CO (geophysical archive). AUV seafloor imagery, water column profile data and navigation data will be delivered in ASCII format to NCEI-MD on a separate drive.

5.2 What quality control procedures will be employed?

Quality control procedures for the data from the Kongsberg EM304 is handled at UNH CCOM/JHC. Raw (level-0) bathymetry files are cleaned/edited into new data files (level-1) and converted to a variety of products (level-2). Data from sensors monitored through the SCS are archived in their native format and are not quality controlled. Data from CTD casts and XBT firings are archived in their native format.

6 Data Documentation

6.1 Does the metadata comply with the Data Documentation Directive?

Yes

6.1.1 If metadata are non-existent or non-compliant, please explain:

Not Applicable

6.2 Where will the metadata be hosted?

Organization: An ISO format collection-level metadata record will be generated during pre-cruise planning and published in the NOAA OneStop catalog and an OER Web Accessible Folder (WAF) hosted for public discovery and access at:

URL: <https://data.noaa.gov/waf/NOAA/NESDIS/ncei/oer/iso/>

Metadata Standard: ISO 19115-2 Geographic Information with Extensions for Imagery and Gridded Data will be the metadata standard employed.

6.3 Process for producing and maintaining metadata:

Metadata will be generated via xml editors or metadata generation tools.

7 Data Access

7.1 Do the data comply with the Data Access Directive?

Yes

7.1.1 If the data will not be available to the public, or with limitations, provide a valid reason.

Not Applicable

7.1.2 If there are limitations, describe how data are protected from unauthorized access.

Account access to mission systems are maintained and controlled by the Program. Data access prior to public accessibility is documented through the use of Data Request forms and standard operating procedures.

7.2 Name and URL of organization or facility providing data access.

Organization: NOAA National Centers for Environmental Information (NCEI)

URL: <https://www.ncei.noaa.gov>

7.3 Approximate delay between data collection and dissemination. By what authority?

Hold time: Data are considered immediately publicly accessible as soon as possible after the mission, unless there are documented restrictions.

Hold authority: not applicable

7.4 Prepare a Data Access Statement

No data access constraints, unless data are protected under Section 304 of the National Historic Preservation Act of 1966. Data collected and derivative data products produced by the *Okeanos Explorer* will be archived in a location where it can be withheld from public disclosure.

8 Data Preservation and Protection

8.1 Actual or planned long-term data archive location:

Data from this mission will be preserved and stewarded through the NOAA National Centers for Environmental Information. Refer to the Okeanos Explorer Data Management Plan at NOAA Central Library Institutional Repository for detailed descriptions of the processes, procedures, and partners involved in this collaborative effort.

8.2 If no archive planned, why?

Not Applicable

8.3 If any delay between data collection and submission to an archive facility, please explain.

The EM304 output data is a new format not currently read by NCEI archive systems. The new file format is being added to the system capability. There will be an unknown delay for the archive of these .kml files. All other data will be archived within 60-90 days of receipt.

8.4 How will data be protected from accidental or malicious modification or deletion?

Data management standard operating procedures minimizing accidental or malicious modification or deletion are in place aboard the Okeanos Explorer and will be enforced.

8.5 Prepare a Data Use Statement

Data use shall be credited to NOAA Office of Ocean Exploration and Research.

Appendix C. Licenses, Permits, and Environmental Compliance

Pursuant to the National Environmental Policy Act (NEPA), NOAA Ocean Exploration is required to include in its planning and decision-making processes appropriate and careful consideration of the potential environmental consequences of actions it proposes to fund, authorize, and/or conduct. The companion manual for NOAA Administrative Order 216-6A describes the agency's specific procedures for NEPA compliance.

An environmental review memorandum was completed for NOAA Ocean Exploration expeditions on NOAA Ship *Okeanos Explorer* in 2023 in accordance with Section 4 of the companion manual in the form of a categorical exclusion worksheet. Based on this review, a categorical exclusion was determined to be the appropriate level of NEPA analysis necessary, as no extraordinary circumstances exist that require the preparation of an environmental assessment or environmental impact statement. This document is on file with NOAA Ocean Exploration and can be provided upon request.

See the "[NOAA Ship *Okeanos Explorer* FY23 Field Season Instructions](#)" for additional information regarding environmental compliance that applies to the entire field season (e.g., Endangered Species Act Section 7 consultation and potential impacts to essential fish habitat).

Final licenses, permits, or compliance documents will be appended to the associated expedition report.