**Data management**

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***Data collection and archival***

The data collected during the mission is a combination of DFO deployed instruments and shipboard RV Endeavor instrumentation. DFO instruments include profiling CTD and nets, ARGO, moorings, underway system, and readings of salinity, oxygen and chlorophyll from water samples. The DFO underway system uses the SBE 21 SeaCAT with the auxiliary sensors pH, CDOM and chlorophyll fluorometers and a separate pCO2 sensor. Also for the first time a nitrate sensor was added to the CTD rosette. The RV Endeavor shipboard instrumentation includes; Imaging Flow Cytobot, underway system, 75 kHz and a 300 kHz Ocean Surveyor ADCPs, and echo sounder.

In addition to sensor and water sample data digital and paper logs were used to record sample and event metadata. ELOG software was used for event metadata and a comma separated values (csv) files were used for sample metadata. Paper logs included CTD ‘deck’ sheets, ring net, mooring, Argo float, chlorophyll analysis and sampling from the underway system. Chlorophyll readings from water samples is not digital it is recorded by hand and entered manually into a excel spreadsheet.

All digital data collected were backed up at least daily on the network or on an external hard drive. At the end of the mission all data were copied and paper logs were scanned and sent to BIO Data Services for upload and archival into their protected server with the exception of the Flow Cytobot data. For access to these data, please contact DFO.BIODataServices-BIOServicesdeDonnees.MPO@dfo-mpo.gc.ca.

Data issues to note:

* Some surface bottles were fired quite deep the deepest was 7.5 meters due bad weather
* Several bottles misfired throughout the mission.
* Up to station NEC\_10 the CTD was turned on during the soak period and not before
* The underway system pump failed a few times.

***Digital logs***

ELOG, an electronic logbook system for collecting event metadata, was used to log the time, ship’s position, and sounding associated with certain logistical aspects of each gear deployment (e.g., deployed, on bottom, and recovered). This electronic logbook was accessible on the ship’s network and mobile devices. In addition an ELOG observations log was used to record detailed comments and observations on cruise activities and an underway log was used to record the samples collected, time and position. The ELOG configuration, deployment and backup was managed using Git locally, and was pushed to GitHub upon return (<https://github.com/dfo-mar-odis/azmp_elog/tree/EN728>). The recording of metadata in ELOG facilitates the upload of discrete and plankton data to the BioChem national repository.

ELOG was run from a Windows 10 laptop in the main lab near the CTD computer, a second laptop was placed in the wet lab for the net operator. The GPS and sounder feed for ELOG was from the ships network read using Python scripts called from the ELOG Config file. Two Tablets were used to access ELOG on the deck.

Digital filtration logs were used by laboratory staff for logging details associated with the processing of collected water. These filtration logs are generated using the R statistical software, and at the end of the mission a summary of filter volumes is generated for use in lab analysis. a laptop was placed in the main lab for the digital filtration logs.

**DFO At-sea Reporting Template DART** (***DART)***

The in-house DFO At-sea Reporting Template DART was used to compile and reformat all discrete data collected and analyzed at sea (dissolved oxygen, chlorophyll, and salinity) to check the data and facilitate later processing and archiving. This process involved loading the ELOG files, the CTD bottle (.btl) files containing and the discrete bottle measurements. DART was also used to produce reports of the linked bottle and sensor measurements, to facilitate the quality control of both sensor and bottle measurements while at sea.

***Data Submission to Global Telecommunications Systems***

Global Telecommunications Systems (GTS) houses oceanographic data for the primary purpose of weather forecasting. However, the data are also available for modellers to assimilate into their climate forecasting. DFO’s representative in GTS is Environment and Climate Change Canada.

AZMP submits CTD data to GTS via MEDS (Marine Environmental Data Section, Ocean Sciences Division, DFO) at regular intervals throughout each mission to MEDS-SDMM.XNCR@dfo-mpo.gc.ca. The data must be sent within 30 days of collection. The files submitted are a customized .txt file called an IGOS created from inhouse software.