

BODC Guide to Cruise Report Compilation

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Intended audience: BODC staff

Introduction

The purpose of this guide is to provide an aid to cruise PSOs for the compilation of cruise reports. For those already experienced in the production of cruise reports there are some additional elements included relating to the management of datasets generated.

BODC's fundamental role in support of the scientific community is the assembly of all the data from a cruise into an accessible, integrated data set. One of the main problems encountered when attempting this is the lack of information. It is difficult to assemble a complete data set when one isn't totally sure of what data were collected, where, how and by whom.

In the absence of a dedicated on board data manager, the main point of reference for BODC staff will be the cruise report. The document should contain the detailed information required by cruise participants, interested members of the scientific community and data managers alike.

Access to comprehensive, accurate metadata (dataset related information) is essential in processing cruise related datasets. If the information is not to hand this inevitably means time consuming (for all concerned) interaction with the originators, inefficient production of the integrated data set and a potentially reduced value of the final product (a definitive, fully document, calibrated and quality controlled dataset).

The following section breaks the cruise report down into structural elements and provides a brief description of the required content. The final section further details the type of information required by BODC data managers for activities common on oceanographic cruises.

Structure

1. Data document sheet: Equivalent to a scientific abstract including: authors, title, publication date, reference, abstract, keywords, issuing organisation, and a source for subsequent copies
2. Cruise personnel: List of the ships crew and scientific personnel indicating roles, organisation and participation in particular cruise legs, where relevant.
3. Scientific objectives: The background rationale for the research project and cruise specific objectives
4. Cruise overview: A brief description of the cruise plan including stations and transect details.
5. Diary cruise narrative: general description of weather conditions daily activities crew changes and problems encountered.
6. Station/activities log: details of all sampling deployments including tests/shakedown. Useful fields are: Date, time (including time zone), latitude, longitude, event description, start time, bottom time (where applicable), end time, station name (where applicable), activity identifier, and comments

7. Operations: A section for each and every data collection activity undertaken. This includes key sampling events, sub sampling (bottle, grab sample analysis) and data processing of specific channels from multi instrument platforms (CTD, SEASOAR etc).

Each section is completed by the personnel undertaking the activity. All applicable information should be included. The activity documents should be produced during the cruise and submitted to the PSO prior disembarkation.

Each section should contain the following:

- Title
 - Details of personnel involved- roles and responsibilities, institution and contact information.
 - A brief rationale: the purpose of the data collection activity.
 - Specific aims and objectives
 - Sampling methodology- instruments used, deployment method and a log of when, where and how many samples. If the data activity involves processing sub samples or data
 - Instrumentation details- sampling and analysis instrumentation makes, model serial numbers and date of last calibration. This section should also include details of hardware and software setup.
 - Calibration information- An indication of whether calibration is intended and what form it will take. If relevant, the section should include details of any samples collected and calibration methods employed.
 - Processing methodology- this section should include details of all data processing employed, software used, transformations applied and files produced (format, extensions). **Note:** It is important that the methodology documented was that actually employed. Cut and paste from another source, while superficially convenient, can be inaccurate and generates confusion if problems with the data are subsequently identified.
 - Indication of any post cruise data processing i.e. details of any shore based analysis of samples collected, calibration or transformation. This should include methodology and an indication of data types generated.
 - Problems encountered: equipment failure, lost/damaged samples, computer problems, and timing differences/errors.
 - Preliminary results: If there has been an opportunity to undertake some preliminary data analysis, comments on the data quality and noteworthy features would be advantageous.
 - Estimate of total data returns: quantity, quality and expected date for completion. This is important for data tracking purposes. The expected date for the finalised dataset needs only to be a rough, but realistic indication. It is envisaged that most data sets will be finalised within the life of the associated projects and prior to any publications.
 - References: if used in the text. Full citation may be unrealistic in the field environment but as much information as possible should be included.
8. Cruise track charts: these are not essential but provide a useful quick visual reference.
 9. Appendix: Research program policy documents e.g. project data policy.

Useful operational information

The following is a list of generic sampling operations and instruments highlighting information that is required by BODC in order to process associated datasets efficiently. The list is by no means comprehensive but can serve as a guide for instruments not listed.

CTD

- Type, make, model and serial number of each sensor deployed on the frame.
- Details self logging instrumentation- as above plus responsibility and processing
- Data logging and on-board data processing system description- Seabird, RVS ABC, P-exec ...
- Sensor calibration information- which instruments, how and by whom.
- Type, number and capacity of water bottles.
- Geometry of any water sampling system:
 - Distance between the pressure head and the bottle base.
 - Distance between the pressure head and the bottle top.
 - Distance between the pressure head and the Reversing Thermometer mount.
- A record of the depths at which each water bottle was fired, noting any bottle misfires, suspected bottle leaks, or subsequent updates to the bottle firing depths following comparison of the CTD data with sample data.
- Ensure that any instrumental problems are noted. It is especially important to know when any of the sensors on the frame were replaced and the serial numbers of the replacements. It is also helpful to know of any CTD casts where data failed to log.

Transmissometers

- Make, model and serial number
- Wavelength and path length
- Air reading- both manufactures and cruise readings, with least one cruise reading per instrument per cruise.

Fluorometers

- Make, model and serial number
- Mode of operation:
 - Response (linear, Log)
 - Range
 - Auto scaling (Y/N)
- Output (volts, nominal chlorophyll)

Irradiance meters

- Type- cosine, 2Pi
- Make model and serial number
- Service and calibration information

Discrete Water samples

Ensure that for each water sample that we know the following:

- Date/time- Time zone and consistency with master clock
- Sample's name: For CTD the sample name can be the cast number and the depth e.g. CTD016_0150a (CTD), or cruise plus sample number for samples from the non toxic supply e.g. JCR76N033. In the case of hydrographic wire bottle stations, ensure that the station has an identifier, that date and time are known and that all depths sampled are recorded. Station number: should be cruise and/or project specific.
- Depth (not applicable to non-toxic).

Underway sensors

- **Sensor inventory:** everything that is being logged on the system.
 - Where are the sensors located?

- What kind of sensors are they?
 - What are their serial numbers?
 - Service and calibration information.
- **Operational considerations**
 - Channel names and units.
 - Timing checks: check the PC internal clock against the master clock at regular intervals and note discrepancies.
 - Ensure problems with the hardware observed during the cruise are documented.
 - Document any servicing during the cruise, particularly thermosalinograph cleaning and be sure to have a record of the time.
- **Data processing**
 - Document all on board processing.
 - Detail all post cruise processing- which channels and by whom.
 - Detail outstanding processing.

SeaSoar

- List of all the SeaSoar channels which are being logged.
- Calibration details for the various instruments.
- Cruise processing: document what processing has been done on board on each channel.
- Post cruise processing: detail subsequent data processing: which data, how and by whom.
- How are data mapped to physical files.

Nets

- Type of net.
- Dates/times of the net hauls.
- Type of haul (vertical, oblique, trawl etc.).
- Mesh size.
- Sufficient data to allow calculation of the volume sampled.
- Ascertain what data are to be obtained from the samples and from whom these data are to be obtained.

Moorings

- Details of the mooring configuration.
- For deployment we need to have times when deployment started and when the rig hit the bottom.
- For recoveries we need to know when the release was fired and when the rig hit the surface.
- For all data loggers we need to know:
 - the time of switch on
 - the time of the first cycle logged
 - the time of the last cycle logged and
 - the time of switch off.
- A report on the condition of instruments upon recovery is useful, particularly if a malfunction has been noted.

Cores

- Type of corer.
- When it was used.
- A rough description of the quantity and quality of the sample obtained.
- On-board core processing protocols.
- What data are to be obtained from the sample and who is responsible?