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British Oceanographic Data Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL

Guide to writing individual cruise report sections

Introduction

Cruise reports (including individual report sections) are published, so they should be of publication standard. Individual report sections are used to describe each scientific discipline that occurred on a cruise. They are technical reports and should describe what was done on the cruise, assess how well it went and detail what is planned after the cruise. They are intended to help interpret data after a cruise and are used as a guide for other participants. Each individual report will be integrated into one final report that is usually compiled by the cruise Principal Scientific Officer (PSO). The final report will detail all aspects of the cruise (including event logs, cruise diaries and NMF technical reports) before it is finally published. The following is a guide to sections included in an individual cruise report section.

Table of Contents

1 Title

This should be a title that describes the scientific discipline. Try and use one report per discipline. Scientific disciplines are usually groups of complimentary measurements (eg. inorganic nutrients or CTD sensor processing).

2 Background and objectives

This section usually consists of a short literature review and a paragraph detailing the objectives for the cruise. This is usually no more than a page in length (typically half a page). Objectives may not necessarily be research-orientated. For example, salinity bottle samples are usually collected to calibrate the CTD and thermosalinograph conductivity sensors.

3 Sampling strategy

This is the plan you devised for sampling on the cruise. It describes what, where and how often you sampled. It also describes the reasons why. For example, you could have only sampled from CTD bottles between 0-200 m because you were only interested in measurements associated to the primary productivity. It is also useful to include a table of sampling events here. Examples of tables are shown in Appendix 1.

4 Instrument description (optional)

This section describes the setup of the instruments used to collect the data or samples. For example, a particular type of net sampler, sediment sampler or CTD package etc. Include makes/models and serial numbers of instruments. Include details of any manufacturer calibrations and their dates. An example is shown in Appendix 2.

5 Methods

This section is a description of the methods used to obtain your data or samples. It is usually written to publication standard. For example, this may describe the processing applied to in-situ sensors (such as CTD or ship-fitted sensors) or may describe analytical methods (for discrete samples, incubations etc.). Remember to include instrument descriptions (if not described above). For example, it is sometimes easier to describe bench analysers or incubation setups in this section. Remember to include details of any laboratory or field calibrations undertaken. You must also detail your intentions post-cruise.

5.1 Laboratory calibrations

Include a description of the calibration methods and laboratory standards used or report if calibrations against laboratory standards will be carried out post-cruise.

5.2 Field calibrations

Sensors are sometimes calibrated against independent (in-situ) samples. This section describes how the calibrations were derived or reports if calibrations will be derived post-cruise. Either way, remember to include details of how the independent samples were collected and analysed (or refer to another cruise report section which describes this). Include the field calibration equations if they were derived at the time of writing this report.

6 Comments on data quality

This section describes how the deployments, analysis or experiments generally performed during the cruise. Describe problems and how they were resolved. You can also include things such as detection limits, accuracy/precision of analysis, percent efficiency etc. You can also include graphs and figures if you wish.

7 Preliminary results (optional)

This section only needs to be preliminary and does not need to be conclusive (which would be expected for a scientific publication). Therefore, this section might include comments on a typical profile, typical concentrations or interesting observations such as crossing fronts, comparing sections or water masses etc. Alternatively you can include results or observations which you think might be interesting to your fellow scientists. You can include graphs and figures if you wish.

8 References

A list of all literature citations used in the report.

9 Author list

List of cruise participants involved in the data collection. The first author should be the person who wrote the report and is usually the principle investigator. Indicate (with an asterisk and footnote) if the PI was different. Indicate (with a symbol and footnote) if an author was not on the ship (eg. a PhD supervisor, line manager). These might be relevant in cases where samples were collected on behalf of a colleague who was not present on the cruise or where a student is listing a PhD supervisor.

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*Principle investigator
†Not present on cruise

10 Appendix 1 (sampling strategy tables)

10.1 CTD samples

Station	Cast	Date (UTC)	Lat (+ve N)	Lon (+ve E)	CTD bottle positon	Approx. Depth (m)	Chl a	DIC	Total Alkalinity	SEM
16275	3	23/06/12 16:00	48.3267	-2.7290	1	2500	X	X	X	X
16275	3	23/06/12 16:00	48.3267	-2.7290	5	1000	X			X
16275	3	23/06/12 16:00	48.3267	-2.7290	16	500	X			X
16275	3	23/06/12 16:00	48.3267	-2.7290	20	100	X	X	X	X
16275	3	23/06/12 16:00	48.3267	-2.7290	24	5	X			X
16283	1	28/06/12 04:23	40.1234	-1.3639	1	3750	X			X
16283	1	28/06/12 04:23	40.1234	-1.3639	5	2300	X	X	X	X
16283	1	28/06/12 04:23	40.1234	-1.3639	10	1000	X	X	X	X
16283	1	28/06/12 04:23	40.1234	-1.3639	12	500	X			X
16283	1	28/06/12 04:23	40.1234	-1.3639	16	100	X			X
16283	1	28/06/12 04:23	40.1234	-1.3639	20	45				X
16283	1	28/06/12 04:23	40.1234	-1.3639	23	10	X	X	X	X
16283	1	28/06/12 04:23	40.1234	-1.3639	24	5	X	X	X	X

10.2 CTD unit deployments

Station	Cast	Date (UTC)	Time (UTC)			Lat (+ve N)	Lon (+ve E)	Water depth (uncorrected) (m)	Site	Comments
			In water	At bottom	On deck					
16275	1	23/06/12	15:08	16:00	17:13	48.3267	-2.7290	2654		
16275	2	23/06/12	20:31	21:39	22:20	48.3268	-2.7289	2659		Aborted
16275	3	23/06/12	22:55	23:51	00:45 (+1d)	48.3265	-2.7291	2642		repeat cast 2
16276	1	24/06/12	12:16	14:31	16:42	49.5578	-2.5379	3815		
16277	1	25/06/12	12:01	13:15	14:22	51.7302	-1.3529	1600	M1	
16278	1	26/06/12	00:21	01:05	01:46	50.4562	-2.0023	786	M2	
16278	2	26/06/12	02:16	02:55	03:24	50.4561	-2.0123	767	M2	

10.3 Underway samples

Date (UTC)	Chl a		Total alkalinity		DIC	
	Sample ID	Time (UTC)	Sample ID	Time (UTC)	Sample ID	Time (UTC)
26/06/12	1	10:21	1	10:33	1	10:37
26/06/12	2	14:01	2	14:05	2	14:15
27/06/12	3	00:08	3	00:12	3	00:24

10.4 Towed transects

Tow ID	Instrument ID	Date deployed (UTC)	Start Position		Date recovered (UTC)	End Position		Comments
			Lat (+ve N)	Lon (+ve E)		Lat (+ve N)	Lon (+ve E)	
1	SeaSoar 1	21/06/12 14:01	48.3729	-3.4638	21/06/12 14:37	49.3640	-2.4528	Aborted
2	SeaSoar 2	21/06/12 18:19	51.7302	-1.3529	22/06/12 05:26	48.3265	-2.7291	Repeat tow 1, station M1
3	SeaSoar 2	27/06/12 22:16	40.1234	-1.3639	28/06/12 07:53	48.3267	-2.7290	
4	SeaSoar 2	29/06/12 10:45	50.4561	-2.0123	29/06/12 15:15	48.3267	-2.7290	

10.5 Sensors plumbed into the non-toxic supply

Date (UTC)	Time (UTC)	Comment
24/06/12	19:27	Switch on
28/06/12	16:47	Maintenance
30/06/12	12:01	Switched off (ship in ice)

11 Appendix 2 (Instrument description example)

CTD Unit and Auxiliary Sensors

One CTD package was used during RRS James Cook cruise 999 (JC999). The package comprised a Sea-Bird 911plus CTD system, auxiliary sensors and Sea-Bird SBE 32, 24-way carousel fitted to a stainless steel frame with fin. A full description of the package is as follows:

Instrument/Sensor	Serial number	Manufacturer's calibration date	Comments
Sea-Bird SBE 9plus underwater unit (aluminium)	09P-24680-0636		
Sea-Bird SBE 11plus deck unit	11P-34173-0676		
Sea-Bird SBE 3P temperature sensor (aluminium)	03P-4301	4-Apr-08	primary (frame-mounted)
Sea-Bird SBE 4C conductivity sensor (titanium)	04C-3153(T)	22-Apr-08	primary (frame-mounted)
Sea-Bird SBE 3P temperature sensor (aluminium)	03P-4490	4-Apr-08	secondary (fin-mounted)
Sea-Bird SBE 4C conductivity sensor (titanium)	04C-3153(T)	22-Apr-08	secondary (fin-mounted)
Digiquartz temperature compensated pressure sensor	83008	10-Sep-08	
Sea-Bird SBE 32 24-way carousel	32-45661-0621		
20L OTE external spring water samplers			rosette positions 1-24
Sea-Bird SBE 43 dissolved oxygen sensor (titanium)	43-1196	3-Oct-08	
Chelsea MKIII Aquatracka fluorometer (titanium)	88108	9-Jan-08	configured for chl-a
Chelsea MKII Alphatracka transmissometer (titanium)	161045	8-Sep-05	660nm, 25cm path
Wetlabs BBRTD backscatter sensor (titanium)	115R	13-May-08	660nm
PML 2-pi PAR sensor (upwelling)	9	21-Jun-08	only fitted on casts <600m in daylight hours
PML 2-pi PAR sensor (downwelling)	10	14-Apr-08	only fitted on casts <600m in daylight hours
RDI Workhorse Monitor 300kHz ADCP (titanium)	10629		downward-looking master configuration
Benthos PSA-916T 200kHz altimeter (titanium)	1040	Mar-03	
NMF 10kHz pinger	B5		
Sea-Bird SBE 5T submersible pump (titanium)	05T-4166		primary
Sea-Bird SBE 5T submersible pump (titanium)	05T-2793		secondary (fin-mounted)

12 Appendix 3 (Methods example)

Sulphur analyses

Samples for sulphur species were collected from all CTD stations. Seawater was transferred from the outlet tap of each CTD niskin bottle via silicon tubing into a 1 litre polycarbonate bottle that was slowly filled from the base and allowed to overflow before the bottle was capped. The bottles were then stored in the dark at seawater temperature prior to analysis. The polycarbonate bottles were used to sample for dimethyl sulphide (DMS), dimethylsulphoniopropionate (DMSP) and dimethylsulphoxide (DMSO), which were analysed by gas chromatography using a Varian 3300 gas chromatograph (GC) with a flame photometric detector, Supelco Chromosil 330 packed column and Hewlett-Packard 3390A reporting integrator (see Hatton et al. 1994). For DMS, 20 – 160 ml volumes of seawater were gently filtered (Millipore AP25 depth filter) and prepared for immediate GC analysis using the purge and cryo-trap method described in Turner et al. (1990). A 20 – 160 ml sub-sample was then mixed with a DMSO reductase reducing solution following the method of Hatton et al. (1994) for the immediate analysis of dissolved DMSO (DMSOd). Samples for particulate DMSP (DMSPp) (20 ml) and dissolved DMSP (DMSPd) (50 ml) were prepared, stored and analysed as described by Turner et al. (1990) after gentle filtration through AP25 filters. The analysis of DMSPp and DMSPd will be carried out post-cruise.

Laboratory calibration of the gas chromatogaph using hydrolysed DMSP

In 1959, Challenger showed that DMSP is cleaved by the action of strong alkali at room temperature to produce DMS and acrylic acid in a 1:1 ratio. This reaction was used as a basis to produce a DMS standard curve. Standards for DMSP were prepared as follows: 58.6 µmol of DMSP (University of Groningen, NL) was diluted in 50 ml of distilled water to give a primary stock solution containing 0.220 mmol l^{-1} DMSP. A secondary stock solution was prepared by diluting 2 ml of the primary stock in 100 ml distilled water giving a final concentration of 4.41 µmol l^{-1} DMSP. The secondary stock was filter sterilised and stored in 1 ml aliquots at – 20 °C for several months before use. Frozen stocks were thawed and diluted to 17.6 nmol l^{-1} DMSP to produce a working standard. The calibration was initiated by injecting a range of volumes, (corresponding to 1 – 10 ml and 0.018 – 0.176 nmol DMSP of the working standard), into a purge chamber containing 2 ml 10 mol l^{-1} NaOH. Standards were then analysed as DMS.