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UND
HYDROGRAPHIE

Modernised CSR Management, with a Link to Data

Friedrich Nast & Anne Che-Bohnenstengel, BSH Germany



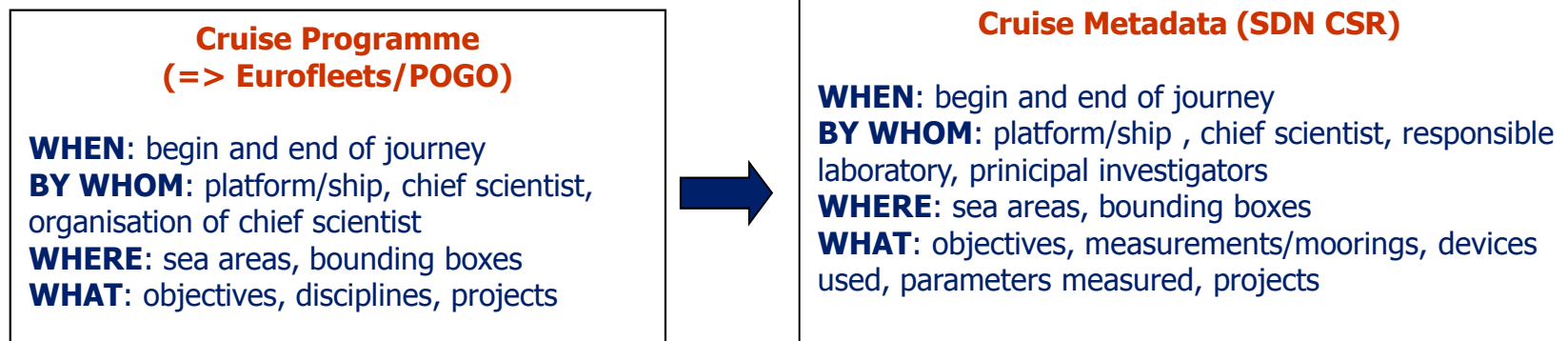
Cruise Summary Reports(CSRs) have a long tradition and are one of the first valuable information over research cruises. BSH has been collaborating with partners of various EU projects since many years and could make use of the experiences gathered to provide even more useful services associated with CSRs for the marine data community.

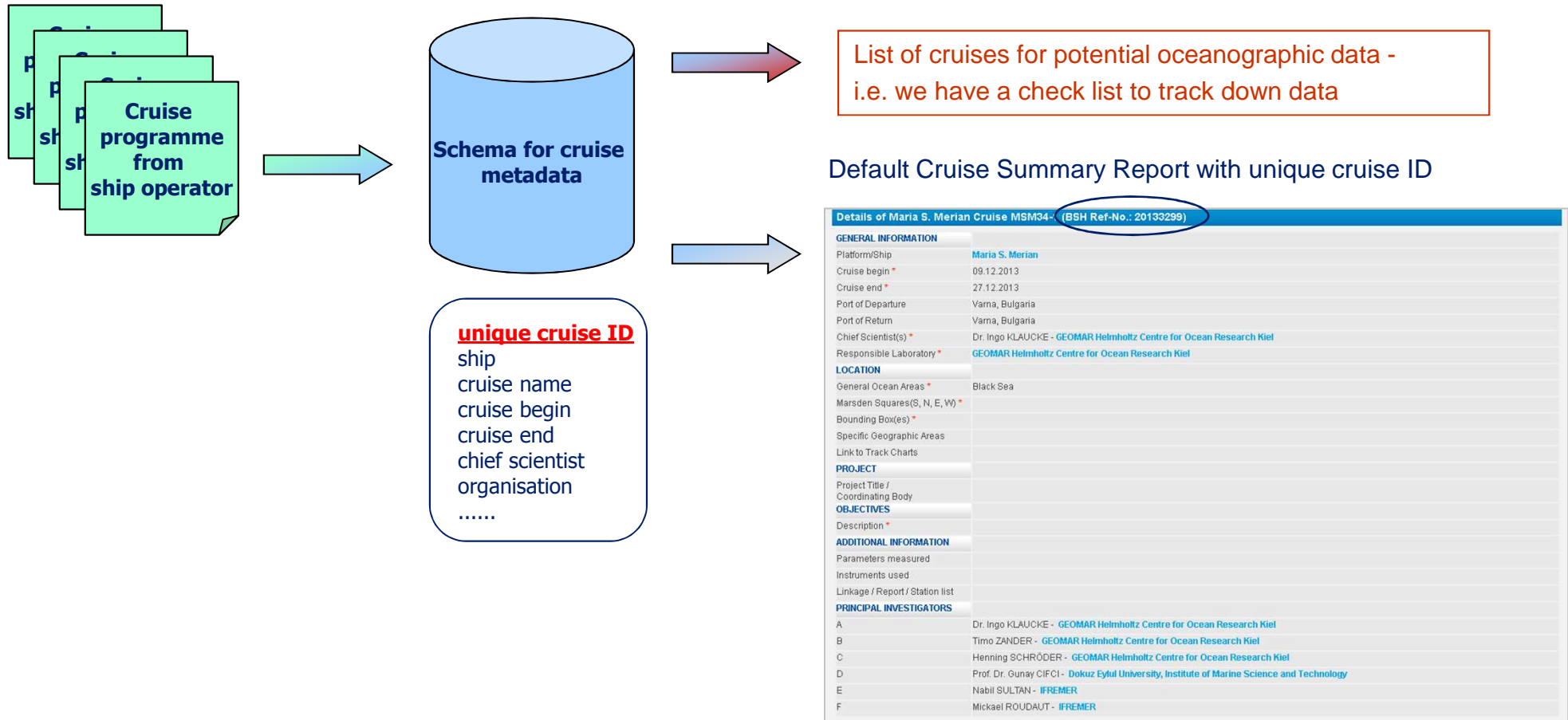
Research cruises are extremely costly therefore it is important:

- for funding agencies to be able to obtain an overview of the results and products
- for scientists to find a way to get or at least to track down all the data collected during the cruises

At BSH we have started to extend our existing cruise metadata schema to include the cruise programmes which can be obtained from the German ship operators. In this way we are able to:

- provide the projects Eurofleets/POGO regularly with the necessary information over planned cruises
- obtain an overview of the interdisciplinary data available from each cruise
- remind the chief scientists of the CSRs to be delivered shortly after the cruises
- and to provide them with a well filled template for their CSR





Details of Meteor Cruise M98 (BSH Ref-No.: 20130063)

GENERAL INFORMATION

Platform/Ship	Meteor
Cruise begin	01.07.2013
Cruise end	28.07.2013
Port of Departure	Fortaleza, Brazil
Port of Return	Walvis Bay, Namibia
Chief Scientist(s)	Prof. Dr. Peter BRANDT - GEOMAR Helmholtz Centre for Ocean Research Kiel
Responsible Laboratory	GEOMAR Helmholtz Centre for Ocean Research Kiel

LOCATION

General Ocean Areas	Atlantic Ocean
Marsden Squares(S, N, E, W)	302 (-10.0, 0.0, -30.0, -20.0) 303 (-10.0, 0.0, -40.0, -30.0) 304 (-10.0, 0.0, -50.0, -40.0) 371 (-20.0, -10.0, 0.0, 10.0) 370 (-20.0, -10.0, 10.0, 20.0) 336 (-20.0, -10.0, -10.0, 0.0) 337 (-20.0, -10.0, -20.0, -10.0) 338 (-20.0, -10.0, -30.0, -20.0) 339 (-20.0, -10.0, -40.0, -30.0) 406 (-30.0, -20.0, 10.0, 20.0)

Bounding Box(es)

Specific Geographic Areas Tropical south atlantic

Link to Track Charts [» Trackchart](#)

PROJECT

Project Title / RACE - Regional Atlantic Circulation and Global Change / GEOMAR Helmholtz Centre for Ocean Research Kiel
Coordination Body SACLIS - Southwest African Coastal Upwelling System and Bannueta Niño's / Leibniz Institute for Baltic Sea Research Warnemünde

OBJECTIVES

Description Physical and chemical oceanography of the tropical South Atlantic, variability of the western and eastern boundary current system of the tropical South Atlantic, air-sea gas exchange.
Data collection: CTD/02, shipboard and lowered ADCP, current meter and other mooring deployment, glider deployment/recovery, water samples for biogeochemical analyses, microstructure measurements, underway measurements upper ocean temperature and salinity, air/sea concentration of different trace gases, eddy covariance measurements of air-sea gas exchange

ADDITIONAL INFORMATION

Parameters measured Carbon monoxide and dioxide concentrations in the atmosphere
Horizontal velocity of the water column (currents)
Salinity of the water column
Temperature of the water column
Vertical velocity of the water column (currents)

Instruments used

CTD
acoustic velocity systems
anemometers
atmospheric gas analysers
current meters
current profilers
inverted echosounders
multi-beam echosounders
salinity sensor
salinometers
water temperature sensor

Linkage / Report / Station list [» Station list \(Bridge\)](#)

PRINCIPAL INVESTIGATORS

A	Prof. Dr. Peter BRANDT - GEOMAR Helmholtz Centre for Ocean Research Kiel
B	Dr. Marcus DENGLER - GEOMAR Helmholtz Centre for Ocean Research Kiel, FB1 Ocean Circulation and Climate Dynamics
C	Dr. Gerd KRAHMANN - GEOMAR Helmholtz Centre for Ocean Research Kiel, FB1 Ocean Circulation and Climate Dynamics
D	Dr. Jürgen FISCHER - GEOMAR Helmholtz Centre for Ocean Research Kiel
E	Prof. Dr. Martin VISBECK - GEOMAR Helmholtz Centre for Ocean Research Kiel
F	Prof. Dr. Christa MARANDINO - GEOMAR Helmholtz Centre for Ocean Research Kiel

Metadata with SeaDataNet controlled vocabularies

Platform: NERC vocabulary C17

Ports: NERC vocabulary C38

Organisation: EDMO

Sea area: NERC vocabulary C19

Project: EDMERP

Parameters: NERC vocabulary P02

Devices: NERC vocabulary L05

Summary of measurements and samples taken				
Chemical Oceanography				
PI Number	Type	Unit	Type of measurement	Description
F 8884	H33	kilometres	Other dissolved gases	Underway chemistry measurements
F 8884	H74	kilometres	Carbon dioxide	Underway chemistry measurements
Geology & Geophysics				
PI Number	Type	Unit	Type of measurement	Description
A 278	O74	kilometres	Multi-beam echosounding	Topography measurements for mooring deployment
Physical Oceanography				
PI Number	Type	Unit	Type of measurement	Description
A 8884	D71	kilometres	Current profiler (e.g. ADCP)	shipboard ADCPs 75 kHz and 38 kHz
B 142	D90	profiles	Other physical oceanographic measurements	Glider, microstructure
B 215	D90	profiles	Other physical oceanographic measurements	microstructure
A 55	H10	stations	CTD-Stations	CTD/O2/LADCP station
A 258	H11	profiles	Sub-surface measurements underway (T, S)	Underway CTD
A 8884	H71	kilometres	Surface measurements underway (T, S)	Thermosalinograph
Moorings, Landers, Buoys				
Physical Oceanography				
PI	Type	Type of measurement	Position	Description
A D01	Current meters		10° 14.15' S 35° 51.8' W	deployed PIES
A D01	Current meters		10° 39.72' S 13° 15.43' E	deployed bottom shield with ADCP
A D01	Current meters		10° 36.5' S 35° 23.6' W	deployed current meter mooring
A D01	Current meters		10° 42.57' S 13° 11.13' E	deployed bottom shield with ADCP
A D01	Current meters		10° 13.68' S 35° 52.5' W	deployed bottom pressure sensor
A D01	Current meters		10° 50' S 13° E	deployed current meter mooring
A D01	Current meters		10° 22.8' S 35° 40.8' W	deployed current meter mooring
A D01	Current meters		10° 42.1' S 13° 11.85' E	deployed hydrographic (T/S/O2) mooring
A D01	Current meters		10° 40.44' S 13° 14.43' E	deployed bottom pressure sensor
A D01	Current meters		10° 56.4' S 34° 58.6' W	deployed current meter mooring
A D01	Current meters		10° 16' S 35° 51.7' W	deployed current meter mooring

Metadata with SeaDataNet controlled vocabularies

ROSCOP types: NERC vocabulary C77

CSR Quantification units: NERC vocabulary L18

This information is particularly important for Data Management since it specifies:

- what kind of measurements have been carried out
- from whom the data can be obtained

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Bounding Box(es)

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Link to Track Charts [Trackchart](#)

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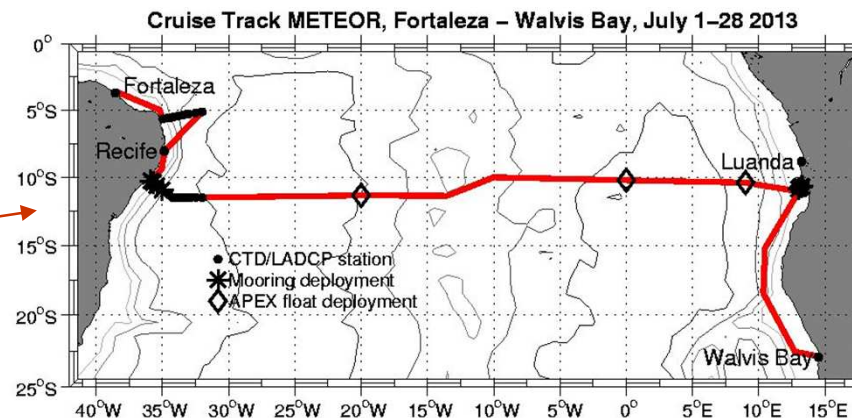
Linkage / Report / Station list [Station list \(Bridge\)](#)

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E	Prof. Dr. Marlin VISBECK - GEOMAR Helmholtz Centre for Ocean Research Kiel
F	Prof. Dr. Christa MARANDINO - GEOMAR Helmholtz Centre for Ocean Research Kiel

Additional information - also available from database

Track chart

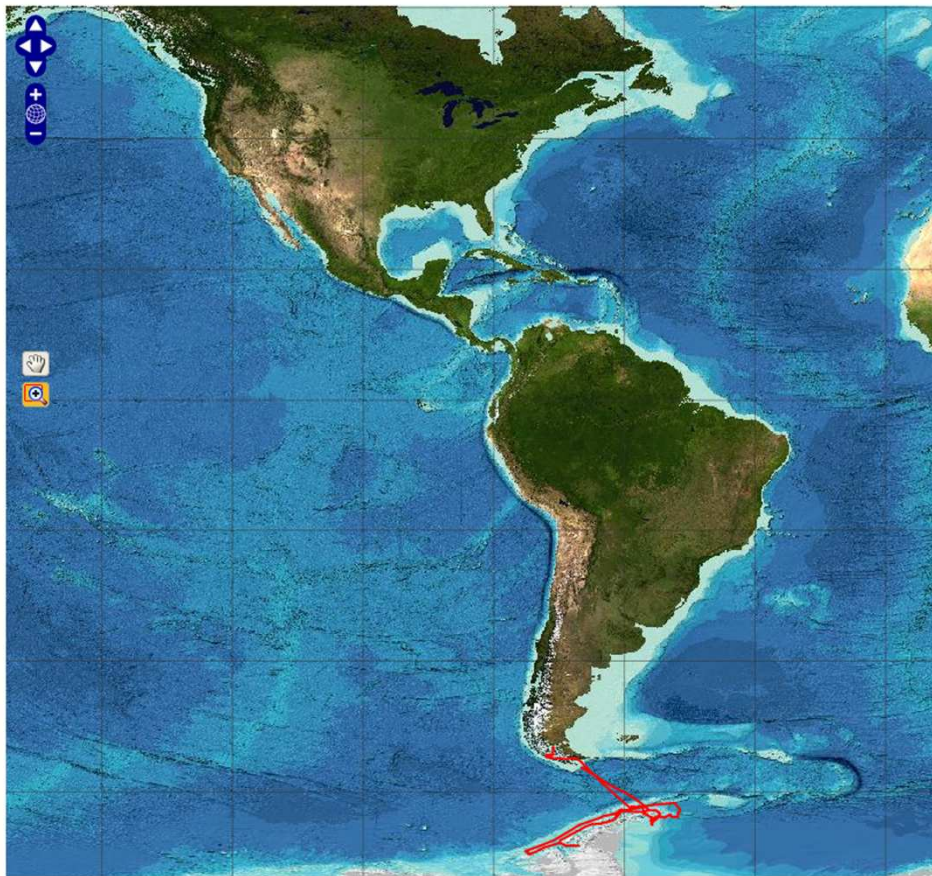


Station list - e.g. from automatic recording during cruise

Station	Date	Time UTC	Position Lat	Position Lon	Depth [m]	Wind strength [m/s]	Course [°]	Speed [kn]	Gear	Gear Abbreviation	Action	
ME098/1362-1	02.07.2013	15:35	05° 38,57' S	034° 57,65' W	253,5	S 9	349,1	0	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1362-1	02.07.2013	15:51	05° 38,58' S	034° 57,65' W	251,4	SSW 9	150,5	0	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 101m
ME098/1362-1	02.07.2013	15:54	05° 38,58' S	034° 57,65' W	251,7	SSW 10	231,0	0,1	CTD/rosette water sampler	CTD/RO	on deck	Stationsabbruch, clean ship
ME098/1363-1	02.07.2013	19:19	05° 38,58' S	034° 57,65' W	282,3	SSE 8	053,2	0	CTD/rosette water sampler	CTD/RO	surface	SLmax = 258m
ME098/1363-1	02.07.2013	19:30	05° 38,58' S	034° 57,65' W	282,0	S 7	248,6	-0,1	CTD/rosette water sampler	CTD/RO	at depth	
ME098/1363-1	02.07.2013	19:39	05° 38,58' S	034° 57,65' W	279,1	S 7	275,9	0	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1364-1	02.07.2013	20:12	05° 38,37' S	034° 56,02' W	769,7	SSE 6	122,4	0,4	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1364-1	02.07.2013	20:29	05° 38,34' S	034° 56,03' W	739,9	SSE 5	292,4	-0,6	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 706m
ME098/1364-1	02.07.2013	20:44	05° 38,20' S	034° 56,08' W	682,0	SSE 5	317,9	-0,7	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1365-1	02.07.2013	21:22	05° 38,01' S	034° 54,00' W	1913,5	SE 4	242,2	0	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1365-1	02.07.2013	22:07	05° 37,56' S	034° 53,94' W	1679,2	SE 2	330,5	-0,2	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 1464m
ME098/1365-1	02.07.2013	22:38	05° 37,15' S	034° 53,98' W	1476,3	ESE 2	269,5	-0,6	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1366-1	03.07.2013	00:00	05° 36,60' S	034° 45,95' W	2816,6	ESE 2	256,4	-0,1	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1366-1	03.07.2013	00:50	05° 36,32' S	034° 45,97' W	4783,2	ESE 2	024,7	-0,5	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 2725 m
ME098/1366-1	03.07.2013	01:57	05° 35,68' S	034° 46,05' W	2836,9	ESE 2	065,3	0,4	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1367-1	03.07.2013	03:09	05° 34,75' S	034° 36,02' W	3373,0	E 1	000,0	0,1	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1367-1	03.07.2013	04:24	05° 34,40' S	034° 36,02' W	3400,8	NNE 4	280,0	0,2	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 3401m
ME098/1367-1	03.07.2013	06:03	05° 33,92' S	034° 36,01' W	3431,2	NE 2	127,6	0,3	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1368-1	03.07.2013	07:24	05° 32,76' S	034° 24,08' W	3754,4	NE 5	080,4	0	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1368-1	03.07.2013	08:34	05° 32,76' S	034° 24,11' W	3756,4	NE 7	247,4	0	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 3771m
ME098/1368-1	03.07.2013	10:09	05° 32,61' S	034° 24,16' W	3757,1	NE 6	307,4	1,3	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1369-1	03.07.2013	11:46	05° 30,29' S	034° 09,98' W	4110,7	E 11	342,1	0	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1369-1	03.07.2013	13:03	05° 30,12' S	034° 09,96' W	4109,0	E 2	091,7	0	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 4121 m
ME098/1369-1	03.07.2013	14:21	05° 30,06' S	034° 09,99' W	4109,7	SE 3	054,7	-0,4	CTD/rosette water sampler	CTD/RO	on deck	
ME098/1370-1	03.07.2013	16:25	05° 26,69' S	033° 50,02' W	4342,1	SE 3	215,0	0	CTD/rosette water sampler	CTD/RO	surface	W3, clean ship
ME098/1370-1	03.07.2013	17:44	05° 26,68' S	033° 50,02' W	4350,0	E 4	170,1	-0,1	CTD/rosette water sampler	CTD/RO	at depth	SLmax = 4325m

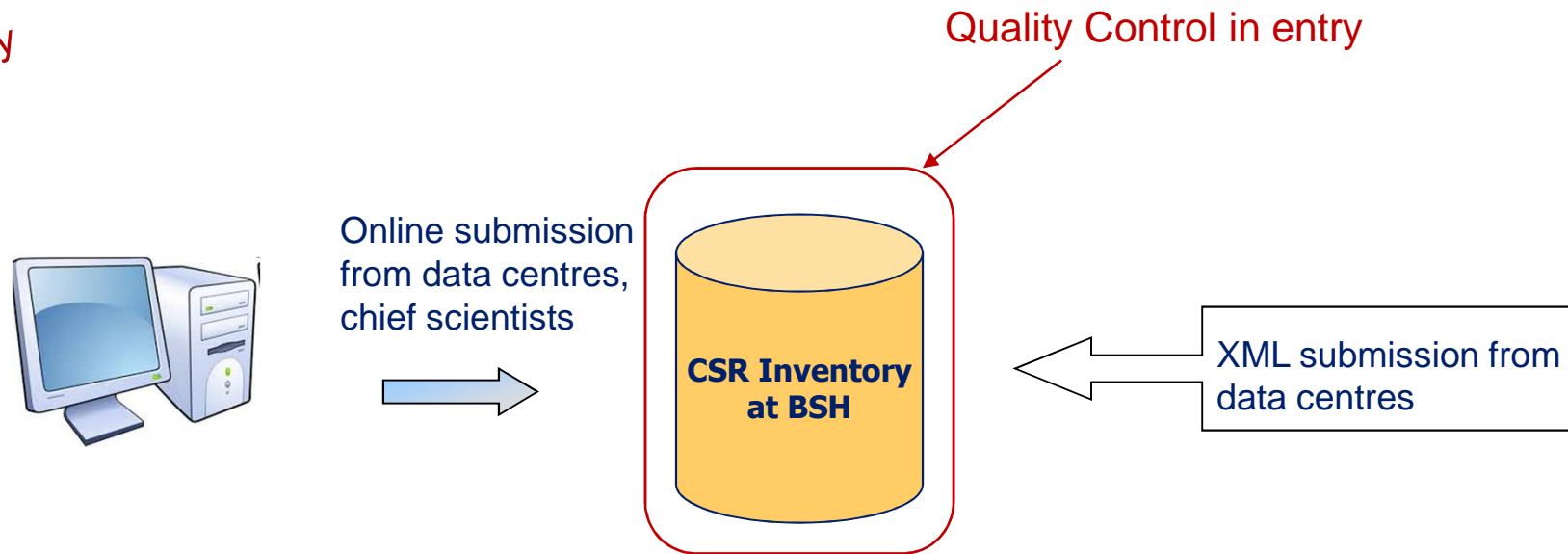
... or the newest service(in test): [Web Map Service of GML track](#)

Example GML file has been delivered by SDN partner involved in SDN & Eurofleets



Cruise Summary Report of Hesperides Cruise ATOS2-2009 (BSH Ref-No.: 20126151)				
GENERAL INFORMATION				
Platform/Ship	Hesperides			
Cruise begin	24.01.2009			
Cruise end	01.03.2009			
Port of Departure				
Port of Return				
Chief Scientist(s)	DUARTE QUESADA, CARLOS - Institute Mediterranean Of Advanced Studies (IMEDEA)			
Responsible Laboratory	Institute Mediterranean Of Advanced Studies (IMEDEA)			
LOCATION				
General Ocean Areas	Southern Ocean			
Marsden Squares(S, N, E, W)				
Bounding Box(es)	WEST	EAST	SOUTH	NORTH
	-75.1488	-51.4528	-69.557	-53.1702
Specific Geographic Areas				
Link to Track Charts	» Trackchart			
PROJECT				
Project Title / Coordinating Body				
OBJECTIVES				
Description	Organic carbon and pollutants to the polar ocean: rates, significance and prospects.			
ADDITIONAL INFORMATION				
Parameters measured	Unspecified Gravity Air temperature Wind speed and direction Atmospheric humidity Solar Radiation Air pressure Horizontal spatial co-ordinates Raw temperature and/or salinity instrument output			
Instruments used	unknown gravimeters meteorological packages Global Navigation Satellite System receivers thermosalinographs radiometers			
Linkage / Report / Station list				

Today



Tomorrow

Upcoming in SDN II:
CS-W harvesting
from data centres



Enroute CSRs
from Eurofleets?



Each cruise has a unique cruise ID. All “deliverables” of a cruise, for example:

- CSR
- Cruise reports
- station lists
- track charts
- data

are assigned to the respective cruise ID.

Knowing the cruise ID of one cruise gives access to all information and data status of that specific cruise in the database.

This provides us with the means to check, which data sets, specified in the sampling description of the CSRs, are “missing”. This functionality will be available in the BSH data management tool in the near future.

Since detailed CSRs are a very good means for searching data BSH has built up a portal to search for and to give access to all data associated with a cruise, as long as the data have been submitted to BSH-DOD.

http://seadata.bsh.de/csr/retrieve/dod_index.html



DOD - Fahrtinventur und Datenrecherche
German Oceanographic Data Centre - Cruise Data Mining

SUCHERGEBNIS / SEARCH RESULTS

| [New Query](#) | Found 5 | Show (1-5) |

Details	Platform Name	Cruise Name	from	to	Data available
➤	Celtic Explorer	CE12011b	30.08.2012	10.09.2012	●
➤	Celtic Explorer	CE12011A	07.08.2012	30.08.2012	●
➤	Celtic Explorer	CE12010	20.07.2012	06.08.2012	●
➤	Celtic Explorer	CE12004	12.03.2012	16.03.2012	●
➤	Celtic Explorer	CE12002	18.01.2012	25.01.2012	●

| [New Query](#) | Found 5 | Show (1-5) |

This idea of linking the metadata to the data is now also implemented in SeaDataNet II - Common Data Index (CDI) with cross reference to the CSR.

The list of CSRs with data centre cruise ID and BSH CSR reference is now available via the CSR ISO list

<http://seadata.bsh.de/isoCodelists/sdnCodelists/csrCodeList.xml>

Date	Time	Station	Gear Abbreviation	Gear	Action	Comment	PositionLat	PositionLon	Depth [m]	Speed [kn]	Course [°]	Wind Direction [°]	Wind Strength [m/s]
03.05.2013	08:14:00	AL414/0275-	PHOCA	ROV PHOCA			58° 16,31' N	9° 41,02' E	570,9	0,4	170	178	7
03.05.2013	11:18:00	AL414/0275-	PHOCA	ROV PHOCA			58° 16,20' N	9° 40,91' E	569	0,2	135	192	10
03.05.2013	11:24:59	AL414/0275-	PHOCA	ROV PHOCA			58° 16,18' N	9° 40,97' E	568,4	0,5	105	190	10
05.05.2013	12:43:00	AL414/0276-	PHOCA	ROV PHOCA			58° 16,36' N	9° 33,28' E	672	0,1	21	219	11
05.05.2013	12:50:00	AL414/0276-	PHOCA	ROV PHOCA			58° 16,35' N	9° 33,26' E	671,6	0,6	142	225	11
05.05.2013	13:13:00	AL414/0276-	PHOCA	ROV PHOCA			58° 16,29' N	9° 33,22' E	670,8	0,1	350	221	10
05.05.2013	16:06:00	AL414/0276-	PHOCA	ROV PHOCA			58° 15,85' N	9° 32,08' E	670,4	0,1	347	214	9
05.05.2013	16:09:59	AL414/0276-	PHOCA	ROV PHOCA			58° 15,84' N	9° 32,06' E	670,2	0,2	251	212	9
06.05.2013	10:09:00	AL414/0277-	PHOCA	ROV PHOCA			58° 15,27' N	9° 31,89' E	670,5	0,2	255	205	6
06.05.2013	10:14:00	AL414/0277-	PHOCA	ROV PHOCA			58° 15,26' N	9° 31,91' E	670,3	0,4	112	205	5
06.05.2013	10:40:00	AL414/0277-	PHOCA	ROV PHOCA			58° 15,26' N	9° 31,92' E	670,8	0,6	246	210	5
06.05.2013	14:51:00	AL414/0277-	PHOCA	ROV PHOCA			58° 14,84' N	9° 30,68' E	669,1	0,4	321	228	6
06.05.2013	14:56:59	AL414/0277-	PHOCA	ROV PHOCA			58° 14,84' N	9° 30,68' E	669,1	0,3	127	242	6
07.05.2013	06:48:00	AL414/0278-	PHOCA	ROV PHOCA			58° 8,26' N	10° 14,64' E	171,1	0,3	220	226	4
07.05.2013	09:58:00	AL414/0278-	PHOCA	ROV PHOCA			58° 8,27' N	10° 14,37' E	172	0,2	197	206	5
07.05.2013	10:03:59	AL414/0278-	PHOCA	ROV PHOCA			58° 8,26' N	10° 14,35' E	172,1	0,2	217	209	5

Automatically generated list of activities for all stations is nowadays available after every cruise.

BSH has access to the station lists within the framework of the project

German Marine Network for Integrated Data Access (MaNIDA)

First available “data” from every cruise are normally the station lists with information on:

- date/time
- position
- water depth
- device used
- wind strength & direction
- sea surface temperature
- etc.

Such information is also ingested into the database under the unique cruise ID given for the cruise.

The BSH-DOD data management tool enables the users to extract not only data but also the complete metadata of

- each cruise
- any specific time interval
- any specific sea area or bounding box
- any specific organisation

The data can be download in

- CSV format together with the all the meta information available in the database
- ODV format with / without SDN metadata heading

The users of the Cruise Summary Report discovery website still know from whom/where they can obtain the data

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Bounding Box(es)	
Specific Geographic Areas	Tropical south atlantic
Link to Track Charts	Trackchart
PROJECT	
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Description	Physical and chemical oceanography of the tropical South Atlantic, variability of the western and eastern boundary current system of the tropical South Atlantic, air-sea gas exchange. Data collection: CTD/O2, shipboard and lowered ADCP, current meter and other mooring deployment, glider deployment/recovery, water samples for biogeochemical analyses, microstructure measurements, underway measurements upper ocean temperature and salinity, air/sea concentration of different trace gases, eddy covariance measurements of air-sea gas exchange
ADDITIONAL INFORMATION	
Parameters measured	Carbon monoxide and dioxide concentrations in the atmosphere Horizontal velocity of the water column (currents) Salinity of the water column Temperature of the water column Vertical velocity of the water column (currents)
Instruments used	CTD acoustic velocity systems anemometers atmospheric gas analysers current meters current profilers inverted echosounders multi-beam echosounders salinity sensor salinometers water temperature sensor
Linkage / Report / Station list	Station list (Bridge)
PRINCIPAL INVESTIGATORS	
A	Prof. Dr. Peter BRANDT - GEOMAR Helmholtz Centre for Ocean Research Kiel
B	Dr. Marcus DENGLER - GEOMAR Helmholtz Centre for Ocean Research Kiel, FB1 Ocean Circulation and Climate Dynamics
C	Dr. Gerd KRAHMANN - GEOMAR Helmholtz Centre for Ocean Research Kiel, FB1 Ocean Circulation and Climate Dynamics
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F	Prof. Dr. Christa MARANDINO - GEOMAR Helmholtz Centre for Ocean Research Kiel

Summary of measurements and samples taken				
Chemical Oceanography				
PI Number	Type	Unit	Type of measurement	Description
F 8884	H33	kilometres	Other dissolved gases	Underway chemistry measurements
F 8884	H74	kilometres	Carbon dioxide	Underway chemistry measurements
Geology & Geophysics				
PI Number	Type	Unit	Type of measurement	Description
A 278	O74	kilometres	Multi-beam echosounding	Topography measurements for mooring deployment
Physical Oceanography				
PI Number	Type	Unit	Type of measurement	Description
A 8884	D71	kilometres	Current profiler (e.g. ADCP)	shipboard ADCPs 75 kHz and 38 kHz
B 142	D90	profiles	Other physical oceanographic measurements	Glider, microstructure
B 215	D90	profiles	Other physical oceanographic measurements	microstructure
A 55	H10	stations	CTD-Stations	CTD/O2LADCP station
A 259	H11	profiles	Sub-surface measurements underway (T, S)	Underway CTD
A 8884	H71	kilometres	Surface measurements underway (T, S)	Thermosalinograph
Moorings, Landers, Buoys				
Physical Oceanography				
PI	Type	Type of measurement	Position	Description
A D01	Current meters		10° 14.15' S 35° 51.9' W	deployed FIES
A D01	Current meters		10° 39.72' S 13° 15.43' E	deployed bottom shield with ADCP
A D01	Current meters		10° 36.5' S 35° 23.6' W	deployed current meter mooring
A D01	Current meters		10° 42.57' S 13° 11.13' E	deployed bottom shield with ADCP
A D01	Current meters		10° 13.68' S 35° 52.5' W	deployed bottom pressure sensor
A D01	Current meters		10° 50' S 13° E	deployed current meter mooring
A D01	Current meters		10° 22.8' S 36° 40.8' W	deployed current meter mooring
A D01	Current meters		10° 42.1' S 13° 11.85' E	deployed hydrographic (T/S/O2) mooring
A D01	Current meters		10° 40.44' S 13° 14.43' E	deployed bottom pressure sensor
A D01	Current meters		10° 56.4' S 34° 59.6' W	deployed current meter mooring
A D01	Current meters		10° 16' S 35° 51.7' W	deployed current meter mooring

That is the reason why a detailed Cruise Summary Report is just as important for the scientific community!

Thank you for your attention.

Any questions?