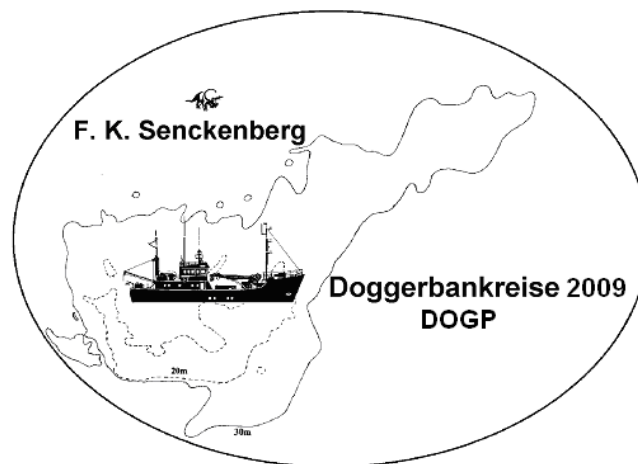




## Report on the 2009 Dogger Bank cruise with R. V. Senckenberg

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## 1. Aims and setting

The interannual variability of the epibenthic fauna of the Dogger Bank is a long term project of the Senckenberg-Institute since 1990. This project aims at gathering basic data which may form background information for understanding presumed environmental changes. Therefore the study refers to 37 stations (see map in section 4) that are, whenever possible, sampled on a yearly basis in the same season with the same gear. To gather information about the temperature influence on the epibenthos of the Dogger Bank, three winter cruises are scheduled, of which this was the first attempt. The fauna was recorded quantitatively from each sample in order to allow studies on relative abundance.

The present cruise forms the 16<sup>th</sup> of the series and gets the suffix DOG-P. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1991. The first in 1990 was called DOG without any suffix.

## 2. Narrative

RV Senckenberg left her home port Wilhelmshaven on January 26, 2009, 12:45 CET (UTC+1). At 13:27, the “Senckenberg” arrived at the first Station north of the island of Wangerooge. Here, plankton was gathered with a Bongo net and the seafloor was sampled with a VanVeen grab. Then, another sample was taken with the ring-dredge, followed by a beam trawl sample. After that, course was set to the island of Helgoland, at which the “Senckenberg” arrived at 18:50. On January 27, 2009, the vessel left Helgoland port at 08:25 to take a beam trawl sample at the Helgoland trench. At 12:03, the ship re-entered Helgoland port for refuelling. At 14:15, the ship left Helgoland port heading towards the first scheduled station on the Doggerbank.

Station 40 on the Doggerbank was reached on January 28, 2009 at 09.53. Here and at the following stations conductivity, salinity and water temperature were measured through the whole water column to a maximum depth of 29 m with a CTD-probe (ME SM-24). Furthermore, the flow speed and –direction were measured with a RCM-9-probe. Subsequently one sample with a 2m-beam-trawl was taken. Until the end of the day this sampling series was repeated three times. Work had to be stopped with the upcoming evening because of strong winds. At the following day (January 29, 2009) three stations (39, 38, 37) could be sampled. At 13:15 (January 29, 2009), we had to stop our work and headed back to Helgoland because of a weather warning concerning dramatically increasing wind. On January 30, 2009, 12:08 the vessel arrived at Helgoland. On January 31, 2009, 08:03 11 ring dredge samples were taken east of Helgoland at Loreley Bank at five different stations in order to collect endobenthic animals and to determine their community structures. After that RV Senckenberg returned to Helgoland port. On February 1 and 2, 2009 RV Senckenberg had to stay at Helgoland port due to stormy weather conditions. On February 3, 2009, it was decided not to return to the Dogger Bank because of time shortage. So at 08:40 RV Senckenberg headed towards Loreley bank again in order to gather the remaining four ring-dredge samples. Then, it was decided to return to the home port of Wilhelmshaven.

On the way back, sampling of foreshore fauna was undertaken off the Island of Wangerooge with one trawl sample. The vessel reached Wilhelmshaven on the same day at 16:55.

## 3. Methods:

For measuring environmental parameters a CTD probe was used. The Probe was lowered to a maximum depth of 29 m. Then it was hauled to the sea surface. During the haul of the probe, conductivity, salinity and temperature were recorded throughout the water column.

For the measurement of the flow speed and –direction another probe (RCM-9) was used. The probe was lowered to the ground after its activation and remained there for two minutes (two measuring intervals). The same measurement was repeated at the middle of the water column as well as directly under the water surface.

Epibenthos was collected with a 2m beam trawl with a tickler chain and a chain in the bottom rope. The minimum mesh size in the cod-end was 1 cm, so that animals above that size were collected quantitatively. The trawl was towed for 1 nautical mile at a speed of 2,5 knots. The sample was secured quantitatively (as far as possible) and washed through a set of sieves with 1 cm maximum and 1 mm minimum mesh size, respectively. The 1 cm-fraction was identified and counted on board the vessel, organisms not readily identifiable were preserved and taken back to the home laboratory. The smaller fractions were also preserved and taken back for qualitative analysis.

Work in the German Bight was performed with a ring-dredge equipped with a net of 1 cm mesh-size. The sand-sample was washed to separate endobenthos from the sediment. Besides this, the beam trawl was used in the Helgoland Trench.

#### 4. Station list

Abbreviations: Bo = Bongo-net, BMT = Beam Trawl, HTR = Helgoland trench, LB = Loreley-Bank, RCM-9 = Current measurement probe, RD = Ring-Dredge. – All depths in metres.

Station	Gear	Position start	Position end	Depth from	Depth to	Time (CEST)	Date
LR090126	Bo	53°49,106'N 07°53,594'E	53°49,248'N 07°52,925'E	11,40	16,60	12:27- 13:33	26.01.2009
LR090126	VV	53°49,104'N 07°53,557'E			11,40	14:42	26.01.2009
LR090126	RD	53°49,106'N 07°53,567'E			11,30	14:50	26.01.2009
LR090126	BMT	53°49,113'N 07°53,479'E	53°49,479'N 07°51,954'E	11,40	13,90	15:01- 15:19	26.01.2009
HTR090127	BMT	54°08,763'N 07°53,091'E	54°08,781'N 07°51,393'E	51,80	55,40	07:47- 08:10	27.01.2009
DOGP 40-1	RCM-9	55°27,566'N 04°08,631'E			28,80	08:53	28.01.2009
DOGP 40-1	CTD	55°27,408'N 04°08,590'E			28,90	09:04	28.01.2009
DOGP 40-1	BMT	55°27,532'N 04°08,533'E	55°26,688'N 04°07,521'E	28,30	28,90	09:21- 09:43	28.01.2009
DOGP 40-2	RCM-9	55°27,587'N 04°08,626'E			28,40	12:03	28.01.2009
DOGP 40-2	CTD	55°27,599'N 04°08,584'E			28,50	12:11	28.01.2009
DOGP 40-2	BMT	55°27,510'N 04°08,488'E	55°26,725'N 04°07,557'E	28,50	28,60	12:20- 12:46	28.01.2009
DOGP 40-3	E	55°27,568'N 04°08,651'E			28,70	14:52	28.01.2009
DOGP 40-3	CTD	55°27,571'N 04°08,562'E			28,60	15:01	28.01.2009
DOGP 40-3	BMT	55°27,596'N 04°08,342'E	55°26,756'N 04°07,546'E	28,30	28,60	15:20- 15:46	28.01.2009
DOGP 39-1	RCM-9	55°28,937'N 03°58,370'E			30,50	08:01	29.01.2009
DOGP 39-1	CTD	55°28,072'N 03°58,454'E			30,60	08:08	29.01.2009
DOGP 39-1	BMT	55°28,818'N	55°27,830'N	29,90	30,50	08:19-	29.01.2009

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Station	Gear	Position start	Position end	Depth from	Depth to	Time (CEST)	Date
		03°58,310'E	03°57,743'E			08:54	
DOGP 38-1	RCM-9	55°22,489'N 03°48,202'E			28,10	10:07	30.01.2009
DOGP 38-1	CTD	55°22,499'N 03°48,216'E			27,80	10:17	30.01.2009
DOGP 38-1	BMT	55°22,435'N 03°48,175'E	55°21,443'N 03°48,215'E	27,40	28,30	10:31- 11:04	30.01.2009
DOGP 37-1	RCM-9	55°23,118'N 03°34,002'E			29,10	12:16	30.01.2009
DOGP 37-1	CTD	55°23,105'N 03°33,991'E			29,50	12:27	30.01.2009
DOGP 37-1	BMT	55°22,987'N 03°33,977'E	55°22,018'N 03°34,394'E	28,20	29,00	12:43- 13:03	30.01.2009
HTR090131	BMT	54°08,780'N 07°51,473'E	54°08,766'N 07°53,199'E	51,40	55,80	08:40- 09:03	31.01.2009
LB 01-1	RD	54°12,040'N 08°00,710'E			9,10	10:30	31.01.2009
LB 01-2	RD	54°12,850'N 08°00,450'E			8,90	10:34	31.01.2009
LB 07-1	RD	54°11,985'N 08°00,983'E			8,40	11:00	31.01.2009
LB 07-2	RD	54°12,017'N 08°01,102'E			8,90	11:07	31.01.2009
LB 07-3	RD	54°12,005'N 08°01,100'E			8,90	11:19	31.01.2009
LB 04-1	RD	54°12,067'N 08°03,029'E			15,70	11:57	31.01.2009
LB 04-2	RD	54°12,035'N 08°03,019'E			16,00	12:06	31.01.2009
LB 05-1	RD	54°13,029'N 08°02,025'E			12,00	12:27	31.01.2009
LB 05-2	RD	54°13,041'N 08°02,119'E			12,40	12:43	31.01.2009
LB 08-1	RD	54°13,050'N 08°00,996'E			12,30	13:01	31.01.2009
LB 08-2	RD	54°13,064'N 08°00,963'E			12,50	13:08	31.01.2009
LB090131	BMT	54°12,963'N 08°00,907'E	54°11,633'N 07°58,547'E	12,80	17,40	13:22- 14:09	31.01.2009
LB 10-1	RD	54°14,506'N 07°55,909'E			18,40	09:40	03.02.2009
LB 06-1	RD	54°13,997'N 08°01,028'E			12,90	10:24	03.02.2009
LB 09-1	RD	54°13,103'N 07°58,051'E			12,10	10:48	03.02.2009
LB 09-2	RD	54°13,086'N 07°53,024'E			11,50	10:57	03.02.2009
LR090203	BMT	53°49,488'N 07°52,106'E	53°40,096'N 07°53,650'E	11,30	14,00	13:51- 14:11	03.02.2009
LR090203	VV	53°49,106'N 07°53,545'E			11,70	14:21	03.02.2009
D68	BMT	53°29,133'N 08°11,434'E	53°28,449'N 08°12,529'E	5,80	9,70	08:19- 08:43	04.02.2009

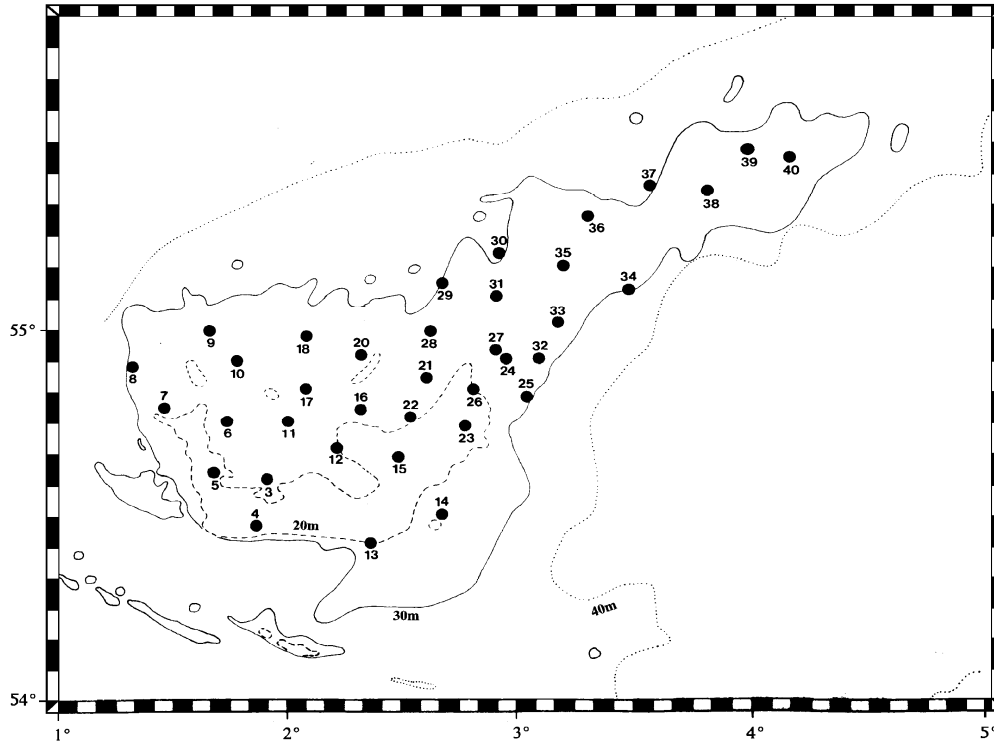
## 4. Temperature and salinity measurements (CTD probe)

Station	Pressure [bar]	Temperature [°C]	Conductivity [mS/cm]	Salinity [ppt]
DOGP-37	19.7	5.47	31.54	32.327
DOGP-37	19.4	5.47	31.56	32.349
DOGP-37	19.5	5.47	31.54	32.327
DOGP-37	19.6	5.47	31.54	32.327
DOGP-37	19.3	5.47	31.54	32.327
DOGP-37	17.9	5.47	31.54	32.328
DOGP-37	17.0	5.47	31.54	32.328
DOGP-37	17.0	5.47	31.54	32.328
DOGP-37	15.7	5.47	31.54	32.329
DOGP-37	14.0	5.47	31.56	32.352
DOGP-37	13.7	5.47	31.56	32.352
DOGP-37	12.7	5.47	31.56	32.353
DOGP-37	10.7	5.47	31.58	32.376
DOGP-37	10.2	5.47	31.58	32.376
DOGP-37	10.0	5.47	31.60	32.398
DOGP-37	7.9	5.47	31.60	32.399
DOGP-37	6.5	5.47	31.64	32.444
DOGP-37	6.3	5.47	31.68	32.489
DOGP-37	5.4	5.47	31.68	32.489
DOGP-37	3.5	5.47	31.66	32.468
DOGP-37	2.4	5.47	31.66	32.469
DOGP-37	1.9	5.47	31.68	32.491
DOGP-37	0.5	5.47	31.68	32.492
DOGP-38	18.4	5.18	31.21	32.226
DOGP-38	18.4	5.18	31.21	32.226
DOGP-38	18.3	5.18	31.21	32.226
DOGP-38	18.3	5.18	31.19	32.204
DOGP-38	17.8	5.18	31.19	32.204
DOGP-38	17.2	5.18	31.19	32.205
DOGP-38	16.4	5.18	31.19	32.205
DOGP-38	15.8	5.17	31.19	32.217
DOGP-38	15.0	5.18	31.21	32.228
DOGP-38	13.9	5.17	31.21	32.240
DOGP-38	13.4	5.17	31.21	32.240
DOGP-38	12.5	5.17	31.23	32.263
DOGP-38	11.2	5.17	31.23	32.264
DOGP-38	10.5	5.17	31.23	32.264
DOGP-38	9.9	5.17	31.25	32.287
DOGP-38	8.6	5.17	31.27	32.310
DOGP-38	7.8	5.17	31.29	32.332
DOGP-38	7.3	5.17	31.29	32.333
DOGP-38	5.9	5.17	31.27	32.311
DOGP-38	4.7	5.17	31.29	32.334
DOGP-38	4.3	5.17	31.31	32.357
DOGP-38	3.5	5.17	31.31	32.357
DOGP-38	2.4	5.17	31.31	32.357
DOGP-38	1.6	5.17	31.33	32.380
DOGP-38	1.1	5.17	31.35	32.403
DOGP-38	0.5	5.17	31.35	32.403

Station	Pressure [bar]	Temperature [°C]	Conductivity [mS/cm]	Salinity [ppt]
DOGP-39	17.7	5.19	31.53	32.572
DOGP-39	17.8	5.19	31.51	32.550
DOGP-39	17.7	5.19	31.51	32.550
DOGP-39	18.0	5.19	31.51	32.550
DOGP-39	17.1	5.19	31.51	32.550
DOGP-39	16.4	5.19	31.51	32.551
DOGP-39	15.9	5.19	31.51	32.551
DOGP-39	15.0	5.19	31.51	32.551
DOGP-39	14.7	5.19	31.51	32.552
DOGP-39	13.5	5.19	31.53	32.574
DOGP-39	12.6	5.19	31.54	32.597
DOGP-39	12.4	5.19	31.56	32.620
DOGP-39	11.5	5.19	31.56	32.620
DOGP-39	10.2	5.19	31.56	32.621
DOGP-39	10.0	5.19	31.58	32.643
DOGP-39	9.1	5.19	31.58	32.644
DOGP-39	7.7	5.19	31.54	32.600
DOGP-39	7.4	5.19	31.54	32.600
DOGP-39	6.9	5.19	31.54	32.600
DOGP-39	5.4	5.19	31.54	32.601
DOGP-39	4.5	5.19	31.53	32.579
DOGP-39	4.1	5.19	31.53	32.579
DOGP-39	3.7	5.19	31.53	32.579
DOGP-39	2.3	5.19	31.53	32.580
DOGP-39	1.3	5.19	31.53	32.581
DOGP-39	1.0	5.19	31.53	32.581
DOGP-40-1	16.9	5.21	31.15	32.126
DOGP-40-1	16.2	5.21	31.17	32.148
DOGP-40-1	15.7	5.21	31.17	32.149
DOGP-40-1	15.2	5.21	31.17	32.149
DOGP-40-1	14.6	5.21	31.17	32.149
DOGP-40-1	13.2	5.21	31.13	32.105
DOGP-40-1	12.7	5.21	31.17	32.150
DOGP-40-1	12.4	5.21	31.15	32.128
DOGP-40-1	11.1	5.21	31.13	32.106
DOGP-40-1	10.2	5.21	31.15	32.129
DOGP-40-1	9.6	5.21	31.13	32.107
DOGP-40-1	9.0	5.21	31.17	32.152
DOGP-40-1	8.4	5.21	31.15	32.130
DOGP-40-1	6.7	5.21	31.21	32.198
DOGP-40-1	5.7	5.21	31.23	32.220
DOGP-40-1	5.2	5.21	31.25	32.243
DOGP-40-1	4.6	5.21	31.29	32.288
DOGP-40-1	3.4	5.21	31.29	32.288
DOGP-40-1	2.7	5.21	31.31	32.311
DOGP-40-1	2.4	5.21	31.41	32.423
DOGP-40-1	2.1	5.21	31.39	32.401
DOGP-40-1	1.3	5.21	31.27	32.267
DOGP-40-1	0.4	5.21	31.29	32.290
DOGP-40-1	0.4	5.21	31.27	32.268
DOGP-40-2	17.6	5.27	31.23	32.157
DOGP-40-2	17.5	5.27	31.21	32.135

Station	Pressure [bar]	Temperature [°C]	Conductivity [mS/cm]	Salinity [ppt]
DOGP-40-2	17.6	5.27	31.21	32.135
DOGP-40-2	17.6	5.27	31.23	32.157
DOGP-40-2	17.3	5.27	31.25	32.179
DOGP-40-2	16.9	5.27	31.21	32.135
DOGP-40-2	16.5	5.27	31.21	32.135
DOGP-40-2	15.9	5.27	31.21	32.135
DOGP-40-2	14.6	5.27	31.23	32.158
DOGP-40-2	13.0	5.27	31.21	32.137
DOGP-40-2	11.9	5.27	31.23	32.160
DOGP-40-2	11.4	5.27	31.21	32.138
DOGP-40-2	11.3	5.27	31.21	32.138
DOGP-40-2	7.6	5.27	31.25	32.184
DOGP-40-2	6.4	5.27	31.25	32.185
DOGP-40-2	4.7	5.27	31.25	32.186
DOGP-40-2	4.2	5.27	31.27	32.208
DOGP-40-2	3.0	5.27	31.29	32.231
DOGP-40-2	2.0	5.27	31.33	32.276
DOGP-40-2	0.9	5.27	31.33	32.276
DOGP-40-3	20.7	5.26	31.19	32.122
DOGP-40-3	21.4	5.26	31.19	32.122
DOGP-40-3	20.8	5.26	31.19	32.122
DOGP-40-3	20.6	5.26	31.19	32.122
DOGP-40-3	21.1	5.26	31.19	32.122
DOGP-40-3	21.2	5.26	31.19	32.122
DOGP-40-3	20.5	5.26	31.19	32.122
DOGP-40-3	20.3	5.26	31.19	32.123
DOGP-40-3	20.4	5.26	31.19	32.122
DOGP-40-3	19.5	5.26	31.19	32.123
DOGP-40-3	18.1	5.26	31.19	32.124
DOGP-40-3	17.5	5.26	31.19	32.124
DOGP-40-3	17.4	5.26	31.19	32.124
DOGP-40-3	17.2	5.26	31.19	32.124
DOGP-40-3	16.3	5.26	31.19	32.125
DOGP-40-3	14.9	5.26	31.19	32.125
DOGP-40-3	13.6	5.26	31.21	32.148
DOGP-40-3	13.4	5.27	31.23	32.159
DOGP-40-3	14.1	5.27	31.25	32.181
DOGP-40-3	13.1	5.26	31.21	32.148
DOGP-40-3	10.3	5.26	31.23	32.172
DOGP-40-3	9.6	5.26	31.23	32.172
DOGP-40-3	10.3	5.26	31.23	32.172
DOGP-40-3	10.3	5.26	31.23	32.172
DOGP-40-3	8.8	5.26	31.23	32.173
DOGP-40-3	7.1	5.26	31.23	32.174
DOGP-40-3	6.1	5.26	31.29	32.241
DOGP-40-3	6.1	5.26	31.29	32.241
DOGP-40-3	6.6	5.26	31.29	32.241
DOGP-40-3	5.7	5.26	31.29	32.241
DOGP-40-3	3.3	5.26	31.27	32.220
DOGP-40-3	2.3	5.27	31.29	32.231
DOGP-40-3	3.4	5.27	31.31	32.253
DOGP-40-3	3.6	5.27	31.31	32.253

Station	Pressure [bar]	Temperature [°C]	Conductivity [mS/cm]	Salinity [ppt]
DOGP-40-3	1.2	5.27	31.31	32.254
DOGP-40-3	0.4	5.27	31.31	32.254



Station map of the Doggerbank.

5. RCM9 data

Date & Time	Current Speed [cm/s]	Current Direction [°M]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
28.01.2009 09:13	29,04	66,80	10,57	34,49	100,67	21,54
28.01.2009 09:22	110,57	6,33	9,91	34,49	100,67	0,34
28.01.2009 09:31	96,50	37,27	9,56	34,49	100,67	0,95
28.01.2009 09:39	74,79	74,19	9,25	34,49	100,67	1,35
28.01.2009 09:48	154,86	119,19	9,09	34,49	100,67	15,55
28.01.2009 09:57	122,60	135,01	9,32	34,49	100,67	21,51
28.01.2009 10:06	123,77	135,72	9,20	34,49	100,67	0,64
28.01.2009 10:14	53,97	139,94	8,90	34,49	100,67	0,44
28.01.2009 10:23	60,42	160,33	8,90	34,49	100,67	7,07
28.01.2009 10:32	85,64	226,08	8,74	34,49	100,67	6,61
28.01.2009 10:41	117,61	222,56	8,71	34,49	100,67	0,14
28.01.2009 10:49	45,17	205,33	5,89	67,35	238,51	21,49
28.01.2009 10:58	49,27	59,77	5,48	67,35	323,16	0,54
28.01.2009 11:07	41,94	36,21	5,38	67,35	401,35	0,59
28.01.2009 11:16	26,40	22,85	5,34	67,35	390,08	0,70
28.01.2009 11:24	54,26	35,16	5,29	67,35	392,90	0,59
28.01.2009 11:33	61,89	37,27	5,27	67,35	402,75	0,70
28.01.2009 11:42	36,08	48,17	5,27	67,35	331,62	0,70
28.01.2009 11:50	44,29	52,04	5,24	67,35	256,16	0,54
28.01.2009 11:59	53,67	38,32	5,22	67,35	244,16	0,54



R. V. *SENCKENBERG*, Cruise-Report Doggerbank-Cruise February 2009

Date & Time	Current Speed [cm/s]	Current Direction [°M]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
28.01.2009 12:08	62,47	35,86	5,22	67,35	253,33	0,59
28.01.2009 12:17	60,42	49,58	5,22	67,35	249,80	0,54
28.01.2009 12:25	44,00	73,84	5,22	67,35	150,90	0,59
28.01.2009 12:34	27,57	98,45	5,20	67,35	104,92	0,57
28.01.2009 12:43	47,81	71,37	5,20	67,35	104,92	0,59
28.01.2009 12:52	66,87	84,38	5,20	67,35	109,87	0,59
28.01.2009 13:00	80,66	81,92	5,20	67,35	105,63	0,59
28.01.2009 13:09	49,86	88,25	5,08	34,49	99,97	0,85
28.01.2009 13:18	92,39	26,02	4,82	34,49	99,97	1,73
28.01.2009 13:27	78,02	13,71	5,06	34,49	99,97	2,31
28.01.2009 13:35	61,59	3,52	5,38	34,49	99,97	21,46
28.01.2009 13:44	130,81	358,98	5,57	34,49	99,97	21,46
28.01.2009 13:53	86,23	348,44	5,73	34,49	99,97	21,46
28.01.2009 14:01	92,39	340,70	5,80	34,49	99,97	21,46
28.01.2009 14:10	129,05	344,57	5,82	34,49	99,97	21,46
28.01.2009 14:19	78,02	342,11	5,85	34,49	99,97	21,46
28.01.2009 14:28	79,78	349,49	5,89	34,49	99,97	21,46
28.01.2009 14:36	121,43	338,94	5,96	34,49	99,97	21,46
28.01.2009 14:45	112,04	354,06	6,03	34,49	99,97	21,46
28.01.2009 14:54	38,42	358,28	6,06	34,49	99,97	5,75
28.01.2009 15:11	2,64	0,35	-2,09	35,58	-13,39	-1,50
28.01.2009 15:11	0,00	0,00	8,29	34,49	100,67	8,42
28.01.2009 15:20	22,29	320,31	7,64	34,49	100,67	21,49
28.01.2009 15:29	74,20	50,63	7,38	34,49	100,67	21,49
28.01.2009 15:38	103,24	23,56	7,06	34,49	100,67	21,49
28.01.2009 15:46	102,66	81,57	6,89	34,49	100,67	4,84
28.01.2009 15:55	83,30	62,23	6,82	34,49	100,67	5,34
28.01.2009 16:04	127,59	19,69	6,66	34,49	99,97	21,46
28.01.2009 16:12	80,36	30,24	6,62	34,49	99,97	13,07
28.01.2009 16:21	62,18	34,46	6,59	34,49	100,67	21,46
28.01.2009 16:30	51,91	75,24	6,59	34,49	99,97	19,35
28.01.2009 16:39	99,14	186,00	6,55	34,49	99,97	21,46
28.01.2009 16:47	94,74	196,54	6,45	34,49	99,97	21,46
28.01.2009 16:56	83,00	192,68	6,22	34,49	99,97	21,46
28.01.2009 17:05	56,61	172,99	6,01	34,49	99,97	21,46
28.01.2009 17:14	94,15	208,85	5,96	34,49	99,97	21,46
28.01.2009 17:22	95,62	187,75	5,96	34,49	99,97	0,64
28.01.2009 17:31	102,66	189,51	5,99	34,49	99,97	0,85
28.01.2009 17:40	112,33	184,94	5,96	34,49	99,97	0,59
28.01.2009 17:49	104,12	209,91	5,89	34,49	99,97	0,75
28.01.2009 17:57	136,09	202,87	5,80	34,49	99,97	0,75
28.01.2009 18:06	127,29	198,65	5,73	34,49	99,97	0,80
28.01.2009 18:15	178,03	197,95	5,64	34,49	99,97	0,44
28.01.2009 18:23	48,69	353,71	5,50	34,49	99,97	0,29
28.01.2009 18:32	111,16	38,32	5,66	34,49	99,97	9,85
28.01.2009 18:41	110,87	42,19	5,64	34,49	99,97	8,49
28.01.2009 18:50	75,67	52,04	5,66	34,49	99,97	7,58
28.01.2009 18:58	173,05	42,19	5,64	34,49	99,97	7,81
28.01.2009 19:07	76,26	35,86	5,59	34,49	99,97	14,71
28.01.2009 19:16	101,48	39,73	5,66	34,49	99,97	6,97
28.01.2009 19:25	132,87	35,16	5,66	34,49	99,97	7,17
28.01.2009 19:33	82,12	5,63	5,61	34,49	99,97	0,34

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Date & Time	Current Speed [cm/s]	Current Direction [°M]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
28.01.2009 19:42	75,67	298,86	5,54	34,49	99,97	1,10
28.01.2009 19:51	124,95	307,65	5,50	34,49	99,97	1,30
28.01.2009 20:00	158,68	317,50	5,50	34,49	99,97	1,40
28.01.2009 20:08	112,92	311,52	5,45	34,49	99,97	1,55
28.01.2009 20:17	77,72	314,68	5,41	34,49	99,97	1,05
28.01.2009 20:26	127,59	304,13	5,43	34,49	99,97	1,60
28.01.2009 20:34	69,51	321,36	5,38	34,49	99,97	0,95
28.01.2009 20:43	107,64	314,33	5,38	34,49	99,97	1,10
28.01.2009 20:52	102,95	316,09	5,38	34,49	99,97	1,10
28.01.2009 21:01	100,60	314,33	5,38	34,49	99,97	0,44
28.01.2009 21:09	92,39	309,76	5,36	34,49	99,97	0,44
28.01.2009 21:18	30,21	243,66	5,27	67,43	291,43	0,70
28.01.2009 21:36	2,64	0,35	-2,09	36,02	-13,39	-1,50
28.01.2009 21:36	14,96	148,73	5,27	67,35	399,94	1,30
28.01.2009 21:44	18,18	117,08	5,24	67,35	397,83	0,70
28.01.2009 21:53	44,29	99,50	5,24	67,35	398,53	0,70
28.01.2009 22:02	32,85	65,40	5,24	67,35	243,45	0,70
28.01.2009 22:11	39,89	47,82	5,24	67,35	247,69	0,70
28.01.2009 22:19	7,63	111,81	5,24	67,43	246,27	0,70
28.01.2009 22:28	21,12	169,12	5,24	67,43	254,74	0,70
28.01.2009 22:37	39,01	163,14	5,24	67,43	179,18	0,70
28.01.2009 22:45	53,97	149,43	5,24	67,35	106,34	0,64
28.01.2009 22:54	57,49	98,45	5,24	67,43	107,75	0,59
28.01.2009 23:03	36,37	95,99	5,24	67,35	110,58	0,70
28.01.2009 23:12	22,00	86,14	5,24	67,35	104,92	0,67
28.01.2009 23:20	26,10	82,98	5,06	34,49	99,97	0,70
28.01.2009 23:29	75,38	144,16	4,80	34,49	99,97	0,80
28.01.2009 23:38	56,90	289,72	5,03	34,49	99,97	12,73
28.01.2009 23:47	117,03	265,11	5,31	34,49	99,97	21,43
29.01.2009 00:04	2,64	0,35	-2,07	34,49	-13,39	-1,50
29.01.2009 00:04	0,00	0,00	5,59	34,49	100,67	21,46
29.01.2009 00:13	31,97	308,00	5,50	34,49	100,67	1,45
29.01.2009 00:22	105,88	317,85	5,52	34,49	100,67	21,46
29.01.2009 00:30	123,19	327,34	5,45	34,49	100,67	1,78
29.01.2009 00:39	102,66	324,88	5,41	34,49	100,67	2,54
29.01.2009 00:48	105,59	332,61	5,38	34,49	100,67	0,29
29.01.2009 00:56	66,29	14,42	5,13	34,49	100,67	21,46
29.01.2009 01:05	4,99	203,23	5,15	34,49	100,67	6,10
29.01.2009 01:14	65,99	181,07	5,15	34,49	100,67	6,61
29.01.2009 01:23	87,99	194,79	5,15	34,49	99,97	7,40
29.01.2009 01:31	77,43	201,47	5,08	34,49	100,67	6,41
29.01.2009 01:40	91,51	183,54	4,96	34,49	99,97	12,50
29.01.2009 01:49	18,77	159,63	4,87	34,49	99,97	21,46
29.01.2009 01:58	78,02	151,89	4,80	34,49	99,97	12,78
29.01.2009 02:06	54,85	177,56	4,75	34,49	99,97	21,43
29.01.2009 02:15	66,29	192,68	4,75	34,49	99,97	6,36
29.01.2009 02:24	83,00	211,66	4,80	67,35	144,54	4,23
29.01.2009 02:33	9,68	116,38	5,24	67,35	399,94	0,59
29.01.2009 02:41	9,09	173,34	5,24	67,35	402,75	21,43
29.01.2009 02:50	3,23	80,52	5,24	67,35	403,46	21,43
29.01.2009 02:59	3,23	27,78	5,24	67,35	402,75	21,43
29.01.2009 03:07	11,44	93,88	5,24	67,35	403,46	21,43

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Date & Time	Current Speed [cm/s]	Current Direction [°M]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
29.01.2009 03:16	6,45	98,45	5,24	67,43	309,06	21,46
29.01.2009 03:25	59,83	243,31	5,24	67,43	291,43	0,59
29.01.2009 03:34	18,48	212,02	5,24	67,43	297,78	0,59
29.01.2009 03:42	31,68	168,77	5,24	67,43	303,42	0,57
29.01.2009 03:51	30,80	102,32	5,24	67,43	294,96	0,59
29.01.2009 04:00	35,49	42,19	5,24	67,43	156,56	0,59
29.01.2009 04:09	43,41	36,92	5,22	67,43	121,19	0,59
29.01.2009 04:17	38,72	90,36	5,24	67,43	114,12	0,59
29.01.2009 04:26	22,58	85,79	5,22	67,43	118,36	0,70
29.01.2009 04:35	13,49	100,91	5,22	67,43	121,90	0,59
29.01.2009 04:44	17,60	206,74	5,15	34,49	100,67	0,59
29.01.2009 04:52	53,67	253,86	4,75	34,49	99,97	4,23
29.01.2009 05:01	71,27	256,67	5,17	34,49	100,67	2,06
29.01.2009 05:10	61,30	180,72	5,31	34,49	99,97	1,93
29.01.2009 05:18	2,05	3,16	-2,74	36,60	-7,72	-1,20
29.01.2009 05:27	0,00	0,00	10,75	34,49	101,38	4,79
29.01.2009 05:36	79,19	85,44	9,88	34,49	101,38	1,20
29.01.2009 05:45	180,97	82,98	9,51	34,49	101,38	1,55
29.01.2009 05:53	154,28	70,67	8,97	34,49	101,38	1,45
29.01.2009 06:02	183,02	74,54	8,50	34,49	101,38	1,50
29.01.2009 06:11	255,76	83,33	8,27	34,49	101,38	1,60
29.01.2009 06:20	229,65	83,68	8,13	34,49	100,67	3,17
29.01.2009 06:28	278,93	78,06	8,08	34,49	100,67	2,61
29.01.2009 06:37	292,71	77,00	7,97	34,49	100,67	1,40
29.01.2009 06:46	298,58	75,59	7,57	34,49	100,67	0,92
29.01.2009 06:55	300,05	72,08	7,48	34,49	100,67	1,00
29.01.2009 07:03	264,56	78,76	7,43	34,49	100,67	1,17
29.01.2009 07:12	217,63	72,78	7,24	34,49	100,67	1,40
29.01.2009 07:21	114,97	66,45	5,57	67,35	266,04	8,54
29.01.2009 07:29	63,65	175,80	5,38	65,39	421,75	1,00
29.01.2009 07:38	29,04	189,86	5,31	67,28	416,12	1,00
29.01.2009 07:47	63,94	196,54	5,27	67,28	423,16	1,00
29.01.2009 07:56	56,02	191,62	5,24	67,28	423,16	1,91
29.01.2009 08:04	51,62	176,15	5,22	67,28	387,27	0,95
29.01.2009 08:13	65,41	174,04	5,20	67,28	252,63	0,92
29.01.2009 08:22	53,09	159,98	5,20	67,28	258,27	0,95
29.01.2009 08:31	40,48	156,81	5,20	67,28	252,63	0,92
29.01.2009 08:39	41,65	156,81	5,20	67,28	263,92	0,92
29.01.2009 08:48	45,46	155,76	5,17	67,28	137,46	1,00
29.01.2009 08:57	56,31	142,75	5,17	67,28	119,78	1,05
29.01.2009 09:06	1,17	246,47	5,17	67,28	119,07	0,95
29.01.2009 09:14	2,05	305,54	5,17	67,28	112,00	0,92
29.01.2009 09:23	12,03	234,52	5,17	67,28	119,07	0,92
29.01.2009 09:32	7,63	89,66	5,08	34,49	100,67	0,92
29.01.2009 09:40	11,73	230,65	4,75	34,49	100,67	21,46
29.01.2009 09:49	33,73	51,69	5,17	34,49	100,67	17,43
29.01.2009 09:58	94,74	0,35	5,71	34,49	100,67	21,43
29.01.2009 10:07	72,15	104,43	5,80	34,49	100,67	21,46
29.01.2009 10:15	75,38	102,67	6,08	34,49	100,67	21,46
29.01.2009 10:25	2,64	0,35	-2,07	35,22	-13,39	-1,50
29.01.2009 10:25	0,00	0,00	7,87	34,49	101,38	4,20
29.01.2009 10:33	29,62	321,71	7,13	34,49	101,38	21,49

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Date & Time	Current Speed [cm/s]	Current Direction [°M]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
29.01.2009 10:42	83,59	319,96	5,61	67,28	268,15	21,49
29.01.2009 10:51	44,00	28,13	5,31	67,28	395,71	21,49
29.01.2009 10:59	24,64	48,52	5,29	67,28	397,12	2,41
29.01.2009 11:08	20,24	17,23	5,24	67,28	397,12	21,49
29.01.2009 11:17	23,17	3,16	5,22	67,28	397,12	21,49
29.01.2009 11:26	17,60	15,82	5,20	67,28	396,42	21,46
29.01.2009 11:34	22,00	27,42	5,20	67,28	397,83	21,46
29.01.2009 11:43	24,05	4,92	5,17	67,21	395,71	1,10
29.01.2009 11:52	39,60	356,87	5,17	67,28	280,85	21,46
29.01.2009 12:01	89,16	21,10	5,15	67,28	235,69	1,00
29.01.2009 12:09	47,51	48,87	5,15	67,28	238,51	1,10
29.01.2009 12:18	42,82	49,22	5,15	67,28	240,63	1,00
29.01.2009 12:27	45,17	50,63	5,15	67,28	238,51	1,00
29.01.2009 12:36	46,93	46,06	5,13	67,28	110,58	0,97
29.01.2009 12:44	42,24	78,76	5,13	67,28	111,29	1,00
29.01.2009 12:53	43,12	84,38	5,13	67,28	108,46	0,92
29.01.2009 13:02	48,10	88,95	5,13	67,28	109,87	1,15
29.01.2009 13:10	39,60	87,55	5,13	34,49	100,67	0,95
29.01.2009 13:19	38,42	85,44	4,66	34,49	100,67	1,10
29.01.2009 13:28	50,45	99,50	4,92	34,49	100,67	21,46
29.01.2009 13:37	85,64	291,13	5,34	34,49	100,67	21,46
29.01.2009 13:45	58,37	329,80	5,48	34,49	100,67	11,98
29.01.2009 14:03	2,64	0,35	-2,07	35,51	-13,39	-1,50
29.01.2009 14:03	0,00	0,00	7,94	34,49	101,38	21,51
29.01.2009 14:12	5,57	353,71	7,20	34,49	101,38	21,51
29.01.2009 14:20	71,27	286,91	6,75	34,49	101,38	0,19
29.01.2009 14:29	64,82	295,70	6,43	34,49	101,38	0,19
29.01.2009 14:38	84,47	312,92	6,24	34,49	100,67	0,19
29.01.2009 14:47	85,35	329,10	5,68	67,57	273,09	0,95
29.01.2009 14:55	22,58	149,78	5,57	67,57	411,20	0,80
29.01.2009 15:04	20,53	63,99	5,54	67,50	412,61	0,85
29.01.2009 15:13	15,25	84,03	5,50	67,57	406,98	0,80
29.01.2009 15:21	75,08	90,36	5,48	67,57	412,61	0,85
29.01.2009 15:30	38,72	61,53	5,48	67,57	393,60	0,80
29.01.2009 15:39	46,34	63,99	5,45	67,50	327,39	0,77
29.01.2009 15:48	48,69	117,08	5,45	67,50	325,98	0,75
29.01.2009 15:56	48,39	88,95	5,45	67,50	330,91	0,80
29.01.2009 16:05	44,58	84,74	5,45	67,50	331,62	0,80
29.01.2009 16:14	41,94	125,87	5,45	67,57	162,21	0,70
29.01.2009 16:23	51,33	129,39	5,43	67,50	113,41	0,80
29.01.2009 16:31	31,97	226,78	5,43	67,57	107,75	0,75
29.01.2009 16:40	17,60	199,36	5,43	67,57	114,12	0,70
29.01.2009 16:49	11,44	155,41	5,43	67,50	110,58	0,75
29.01.2009 16:58	15,84	104,43	5,01	34,49	100,67	0,39
29.01.2009 17:06	33,73	3,87	4,71	34,49	100,67	21,46
29.01.2009 17:15	7,33	151,19	5,29	34,49	100,67	2,82
29.01.2009 17:24	76,84	10,20	5,50	34,49	100,67	21,46
29.01.2009 17:32	75,96	23,21	5,71	34,49	100,67	4,33
29.01.2009 17:41	67,46	47,82	5,80	34,49	100,67	6,15
29.01.2009 17:50	80,95	72,78	5,82	34,49	100,67	5,44
01.02.2009 08:16	2,64	0,70	-2,74	35,07	-13,39	-1,50
04.02.2009 10:16	2,64	0,70	-2,67	35,22	-13,39	-1,50

