

# SENCKENBERG

## Report on the 2011 Dogger Bank cruise with FK Senckenberg

19. 07. – 23. 07. 2011



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Senckenberg Research Institute and Natural History Museum

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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 Research Institute since 1991. This project aims at gathering basic data which is used for understanding presumed environmental changes. Therefore the study refers to 37 stations (see map in Annex) that are, whenever possible, sampled on a yearly basis in the same season with the same gear. The fauna is recorded quantitatively from each sample in order to allow studies on relative abundance. Additionally, temperature and current parameters are recorded to correlate with faunal composition and species abundances.

The present cruise forms the 21<sup>st</sup> of the series and gets the suffix DOG-U. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1992. The first in 1991 was called DOG without any suffix.

This cruise was conducted by the Department for Marine Zoology at the Senckenberg Institute in Frankfurt am Main.

## 2. Narrative

Due to stormy weather, the cruise started with a delay of one day on Tuesday, 2011-07-19. On 07.00 CEST (UTC+1), the vessel left the shipyard and headed towards the island of Wangerooge, where a routine station was reached at 09:41 CEST. This station was sampled with our main sampling gear, a 2-m beam trawl. Additionally, a temperature profile was recorded with a CTD probe. Afterwards, FK Senckenberg headed for the the main working area, the Doggerbank.

Station 14 (see station map) at british waters was reached on July 19, 2011 at 07.45 CEST. At this and the following stations, the following technique was used: current strength and direction were measured with a probe (RCM9) at the seafloor. In addition, a CTD probe was used to measure the temperature and salinity of the water column. Then, a standardized endobenthic sampling with the Ring Dredge was performed. Subsequently, one sample with a 2m-beam-trawl was taken, towed for 2 kn of speed on a length of one nautical mile (for more information see methods, chapter 3). These procedures took place on every single station (see station map, chapter 4).

Due to stormy weather (BFT 7-9), sampling had to be stopped ahead of schedule on July 22, 2011. At 06.15 CEST, FK Senckenberg headed back to Wilhelmshaven due to a bad weather forecast. The vessel was moored at Wilhelmshaven port on July 23, 2011 at 10.17 CEST.

The exact sequence of stations sampled can be seen at the station list (annex 1).

## 3. Methods:

For measuring environmental parameters a RCM9 probe was used. The Probe was activated and then lowered to the seafloor, where it was kept recording for two minutes. During this measurement cycle, current speed, current direction, temperature, conductivity, pressure and turbidity were recorded.

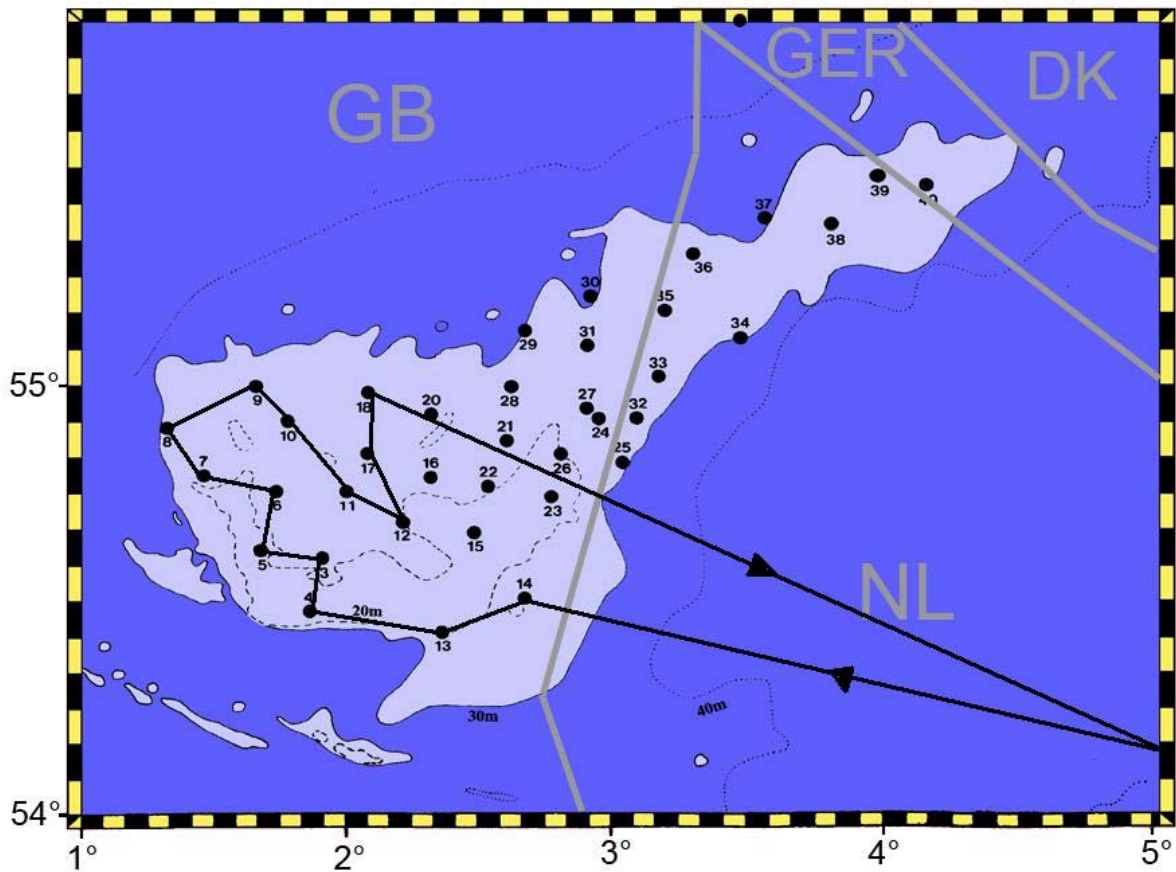
For the measurement of the temperature and salinity of the water body, a CTD probe was lowered to the seafloor. The recording by itself took place while hauling up the probe again.

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<sup>2</sup>, so that animals above that

size were collected quantitatively. The trawl was towed for 1 nautical mile at a speed of 2 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.

Standard endobenthic sampling was performed with the Ring Dredge, being towed over the ground for approximately three minutes per station. The samples were recorded qualitatively on board ship, only few material was preserved for later analysis.

#### 4. Station map



**Fig. 1** Station map. Black dots: stations. Black line: ship course. The exclusive economic zones of the neighbouring countries are shown in grey.



**Annex 1: Stations of Dogger Bank Summer Cruise, July 2011 (DOGU)  
with R.V. SENCKENBERG. All times UTC+1.**

Cruise	Station	Gear	Date	Start [°N]	Start [°E]	Time start	End [°N]	End [°E]	Time end	Depth from [m]	Depth to [m]
DOGU	3	CTD	20.07.2011	54°36,291 N	1°55,105 E	14:20				23,7	
DOGU	3	RCM9	20.07.2011	54°36,306 N	1°55,108 E	14:22	54°36,331 N	1°55,092 E	14:24	23,6	24
DOGU	3	RD	20.07.2011	54°36,379 N	1°55,043 E	14:28				23,9	
DOGU	3	KU	20.07.2011	54°36,704 N	1°54,015 E	14:55	54°36,982 N	1°53,01 E	15:15	23,5	24,1
DOGU	4	CTD	20.07.2011	54°28,756 N	1°51,791 E	12:49				19,6	
DOGU	4	RCM9	20.07.2011	54°28,768 N	1°51,783 E	12:50	54°28,801 N	1°51,736 E	12:52	19,6	19,7
DOGU	4	RD	20.07.2011	54°28,865 N	1°51,718 E	12:57				19,8	
DOGU	4	KU	20.07.2011	54°29,178 N	1°51,638 E	13:12	54°29,864 N	1°51,937 E	13:32	20,1	20,8
DOGU	5	CTD	20.07.2011	54°37,127 N	1°41,861 E	15:59				23,3	
DOGU	5	RCM9	20.07.2011	54°37,153 N	1°41,794 E	16:02	54°37,177 N	1°41,731 E	16:04	23,2	23,3
DOGU	5	RD	20.07.2011	54°37,276 N	1°41,588 E	16:09				24	
DOGU	5	KU	20.07.2011	54°37,749 N	1°41,388 E	16:25	54°38,471 N	1°41,593 E	16:45	20,9	23,6
DOGU	6	CTD	20.07.2011	54°45,406 N	1°43,917 E	18:07				25,4	
DOGU	6	RCM9	20.07.2011	54°45,421 N	1°43,873 E	18:10	54°45,421 N	1°43,834 E	18:12	25,6	25,8
DOGU	6	RD	20.07.2011	54°45,484 N	1°43,790 E	18:18				25,7	
DOGU	6	KU	20.07.2011	54°45,565 N	1°43,007 E	18:33	54°45,873 N	1°41,679 E	18:53	28,5	28,7
DOGU	7	CTD	20.07.2011	54°47,875 N	1°26,450 E	19:58				27,5	
DOGU	7	RCM9	20.07.2011	54°47,868 N	1°26,386 E	20:00	54°47,864 N	1°26,304 E	20:02	27,5	28,5
DOGU	7	RD	20.07.2011	54°47,921 N	1°26,319 E	20:07				29,8	
DOGU	7	KU	20.07.2011	54°48,143 N	1°26,171 E	20:20	54°48,915 N	1°25,347 E	20:40	27,2	30,6
DOGU	8	CTD	21.07.2011	54°53,975 N	1°18,851 E	07:00				32,2	
DOGU	8	RCM9	21.07.2011	54°53,913 N	1°18,806 E	07:02	54°53,902 N	1°18,793 E	07:04	32,3	32,9
DOGU	8	RD	21.07.2011	54°53,833 N	1°18,813 E	07:10				32,5	
DOGU	8	KU	21.07.2011	54°54,044 N	1°18,916 E	07:30	54°54,721 N	1°19,898 E	07:50	29,9	32,7
DOGU	9	CTD	21.07.2011	54°59,619 N	1°39,169 E	09:20				31,2	
DOGU	9	RCM9	21.07.2011	54°59,6 N	1°39,191 E	09:23	54°59,567 N	1°39,238 E	09:25	31,4	31,5
DOGU	9	RD	21.07.2011	54°59,561 N	1°39,229 E	09:30				31,2	
DOGU	9	KU	21.07.2011	54°59,028 N	1°39,446 E	09:47	54°58,355 N	1°40,780 E	10:07	30,7	31,8

Cruise	Station	Gear	Date	Start [°N]	Start [°E]	Time start	End [°N]	End [°E]	Time end	Depth from [m]	Depth to [m]
DOGU	10	CTD	21.07.2011	54°55,195 N	1°46,786 E	10:52				27,3	
DOGU	10	RCM9	21.07.2011	54°55,163 N	1°46,852 E	10:55	54°55,109 N	1°46,868 E	10:57	27	27,8
DOGU	10	RD	21.07.2011	54°54,961 N	1°46,839 E	11:02				27,2	
DOGU	10	KU	21.07.2011	54°54,715 N	1°47,163 E	11:15	54°54,169 N	1°47,791 E	11:39	27,7	29
DOGU	11	CTD	21.07.2011	54°45,471 N	2°0,407 E	12:53				32,8	
DOGU	11	RCM9	21.07.2011	54°45,4 N	2°0,464 E	12:57	54°45,359 N	2°0,468 E	12:59	32,7	33,2
DOGU	11	RD	21.07.2011	54°45,247 N	2°0,511 E	13:04				33,4	
DOGU	11	KU	21.07.2011	54°44,805 N	2°01,017 E	13:22	54°44,377 N	2°01,993 E	13:42	33,6	35
DOGU	12	CTD	21.07.2011	54°41,598 N	2°12,869 E	16:00				23,9	
DOGU	12	RCM9	21.07.2011	54°41,582 N	2°12,811 E	16:04	54°41,582 N	2°12,762 E	16:06	23,6	23,7
DOGU	12	RD	21.07.2011	54°41,595 N	2°12,766 E	16:10				23,6	
DOGU	12	KU	21.07.2011	54°41,749 N	2°12,066 E	16:25	54°42,008 N	2°10,922 E	16:45	26,2	29,6
DOGU	13	CTD	20.07.2011	54°27,016 N	2°16,377 E	10:23				19	
DOGU	13	RCM9	20.07.2011	54°27,0 N	2°16,365 E	10:25	54°26,980 N	2°16,373 E	10:27		
DOGU	13	RD	20.07.2011	54°26,963 N	2°16,352 E	10:30				19,2	
DOGU	13	KU	20.07.2011	54°26,995 N	2°15,513 E	10:52	54°27,010 N	2°14,294 E	11:12	19	19,2
DOGU	14	CTD	20.07.2011	54°30,813 N	2°40,406 E	07:45				24,8	
DOGU	14	RCM9	20.07.2011	54°30,804 N	2°40,444 E	07:51	54°30,808 N	2°40,443 E	07:54		
DOGU	14	RD	20.07.2011	54°30,785 N	2°40,357 E	08:00				24,9	
DOGU	14	KU	20.07.2011	54°30,621 N	2°39,530 E	08:28	54°30,465 N	2°38,047 E	08:48		
DOGU	17	CTD	21.07.2011	54°50,663 N	2°5,074 E	18:17				22,7	
DOGU	17	RCM9	21.07.2011	54°50,664 N	2°5,019 E	18:20	54°50,676 N	2°5,002 E	18:22	23	23,1
DOGU	17	RD	21.07.2011	54°50,707 N	2°4,986 E	18:25				21,4	
DOGU	17	KU	21.07.2011	54°50,870 N	2°5,785 E	18:45	54°51,503 N	2°4,345 E	19:05	22,1	23,1
DOGU	18	CTD	21.07.2011	54°59,395 N	2°5,464 E	20:30				29,1	
DOGU	18	RCM9	21.07.2011	54°59,386 N	2°5,476 E	20:32	54°59,390 N	2°5,472 E	20:34	28,9	28,9
DOGU	18	RD	21.07.2011	54°59,425 N	2°05,552 E	20:40				29,3	
DOGU	18	KU	21.07.2011	54°59,743 N	2°05,218 E	20:53	55°00,553 N	2°04,471 E	21:13	29,6	30,6

**Annex 2: RCM9 current data of Dogger Bank Summer Cruise, July 2011 (DOGU)  
with R.V. SENCKENBERG. All times UTC+1.**

Station	Record	Date	Time	Current speed [cm/s]	Current direction [°]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
DOGU-03	0	20.07.2011	14:22:30	9,68	167,71	15,87	77,17	322,46	0,54
DOGU-03	1	20.07.2011	14:23:00	14,37	171,58	15,87	77,17	319,64	0,44
DOGU-03	2	20.07.2011	14:23:30	15,54	173,69	15,85	77,17	321,05	0,44
DOGU-03	3	20.07.2011	14:24:00	18,48	164,55	15,85	77,17	320,34	0,34
DOGU-04	0	20.07.2011	12:50:30	50,45	10,90	16,29	77,46	294,25	0,39
DOGU-04	1	20.07.2011	12:51:00	37,84	166,31	16,14	77,39	285,79	0,39
DOGU-04	2	20.07.2011	12:51:30	55,73	150,84	16,12	77,39	282,97	0,44
DOGU-04	3	20.07.2011	12:52:00	52,21	147,32	16,09	77,39	288,61	0,49
DOGU-04	4	20.07.2011	12:52:30	50,45	140,29	16,09	77,39	283,67	0,34
DOGU-05	0	20.07.2011	16:01:30	7,33	147,67	15,95	77,17	320,34	0,39
DOGU-05	1	20.07.2011	16:02:00	34,90	133,96	15,90	77,17	314,70	0,29
DOGU-05	2	20.07.2011	16:02:30	34,61	124,47	15,90	77,17	323,87	0,39
DOGU-05	3	20.07.2011	16:03:00	30,80	122,01	15,87	77,17	317,52	0,29
DOGU-06	0	20.07.2011	18:10:30	10,85	53,79	15,92	77,17	334,44	0,54
DOGU-06	1	20.07.2011	18:11:00	11,73	89,31	15,90	77,17	330,91	0,59
DOGU-06	2	20.07.2011	18:11:30	12,03	53,79	15,87	77,17	333,73	0,49
DOGU-06	3	20.07.2011	18:12:00	13,49	54,85	15,87	77,17	333,73	0,52
DOGU-07	0	20.07.2011	20:01:00	31,38	116,03	15,65	76,88	349,23	0,49
DOGU-07	1	20.07.2011	20:01:30	53,67	105,13	15,61	76,81	347,83	0,37
DOGU-07	2	20.07.2011	20:02:00	59,25	106,54	15,61	76,81	347,83	0,49
DOGU-07	3	20.07.2011	20:02:30	59,83	105,83	15,58	76,81	354,87	0,39
DOGU-08	0	21.07.2011	07:02:30	1,17	320,66	14,11	75,21	404,16	0,34
DOGU-08	1	21.07.2011	07:03:00	6,45	338,94	13,99	75,13	401,35	0,39
DOGU-08	2	21.07.2011	07:03:30	7,92	37,62	13,96	75,13	404,16	0,59
DOGU-08	3	21.07.2011	07:04:00	15,25	66,45	13,94	75,21	399,23	0,39
DOGU-08	4	21.07.2011	07:04:30	24,34	82,98	13,94	75,21	401,35	0,39
DOGU-09	0	21.07.2011	09:22:30	12,91	284,09	15,29	76,52	401,35	0,19
DOGU-09	1	21.07.2011	09:23:00	28,16	321,36	15,26	76,52	398,53	0,14
DOGU-09	2	21.07.2011	09:23:30	31,38	323,12	15,26	76,52	395,71	0,17

Station	Record	Date	Time	Current speed [cm/s]	Current direction [°]	Temperature [°C]	Conductivity [mS/cm]	Pressure [kPa]	Turbidity [NTU]
DOGU-09	3	21.07.2011	09:24:00	29,33	305,54	15,26	76,52	401,35	0,17
DOGU-10	0	21.07.2011	10:55:00	37,25	324,18	15,63	76,88	347,83	0,29
DOGU-10	1	21.07.2011	10:55:30	51,62	352,30	15,61	76,88	356,28	0,29
DOGU-10	2	21.07.2011	10:56:00	56,31	3,16	15,61	76,88	352,05	0,19
DOGU-10	3	21.07.2011	10:56:30	51,62	16,17	15,61	76,88	355,57	0,24
DOGU-11	0	21.07.2011	12:56:30	36,66	345,97	16,00	77,17	406,27	0,49
DOGU-11	1	21.07.2011	12:57:00	43,12	15,12	15,95	77,17	410,49	0,67
DOGU-11	2	21.07.2011	12:57:30	59,25	21,45	15,92	77,17	409,79	0,59
DOGU-11	3	21.07.2011	12:58:00	56,02	22,85	15,90	77,17	413,31	0,59
DOGU-12	0	21.07.2011	16:03:30	26,98	46,06	16,09	77,39	321,75	0,54
DOGU-12	1	21.07.2011	16:04:00	46,93	92,82	16,07	77,39	324,57	0,59
DOGU-12	2	21.07.2011	16:04:30	54,85	101,61	16,07	77,39	328,09	0,59
DOGU-12	3	21.07.2011	16:05:00	37,84	94,93	16,04	77,39	328,09	0,80
DOGU-13	0	20.07.2011	10:25:30	50,15	20,74	16,29	77,53	278,03	0,59
DOGU-13	1	20.07.2011	10:26:00	20,53	63,29	16,24	77,53	280,15	0,80
DOGU-13	2	20.07.2011	10:26:30	24,34	12,66	16,22	77,53	280,15	0,80
DOGU-13	3	20.07.2011	10:27:00	25,22	25,32	16,22	77,53	275,21	0,77
DOGU-14	0	20.07.2011	07:53:00	21,41	222,91	16,46	77,75	333,73	0,24
DOGU-14	1	20.07.2011	07:53:30	22,88	244,01	16,44	77,75	335,14	0,24
DOGU-14	2	20.07.2011	07:54:00	16,72	228,89	16,41	77,75	335,14	0,24
DOGU-14	3	20.07.2011	07:54:30	14,37	225,02	16,41	77,75	333,03	0,19
DOGU-17	0	21.07.2011	18:19:00	90,04	150,84	16,00	77,24	302,71	21,57
DOGU-17	1	21.07.2011	18:19:30	6,16	128,33	15,95	77,24	299,89	0,29
DOGU-17	2	21.07.2011	18:20:00	19,65	138,18	15,92	77,24	297,78	0,29
DOGU-17	3	21.07.2011	18:20:30	12,61	144,86	15,92	77,24	300,60	0,24
DOGU-17	4	21.07.2011	18:21:00	9,68	98,10	15,92	77,24	303,42	0,29
DOGU-18	0	21.07.2011	20:33:00	20,24	270,03	15,41	76,44	372,48	0,11
DOGU-18	1	21.07.2011	20:33:30	5,87	205,69	15,14	76,44	380,23	0,19
DOGU-18	2	21.07.2011	20:34:00	14,08	202,87	15,14	76,44	370,37	0,19
DOGU-18	3	21.07.2011	20:34:30	15,25	190,22	15,12	76,44	372,48	0,19
DOGU-18	4	21.07.2011	20:35:00	12,91	201,82	15,12	76,44	376,00	0,19



# CRUISE SUMMARY REPORT

FOR COLLATING CENTRE USE

Centre:

Is data exchange  Yes  In part  No  
restricted

**SHIP** enter the full name and international radio call sign of the ship from which the data were collected, and indicate the type of ship, for example, research ship; ship of opportunity, naval survey vessel; etc.

**Name:** Senckenberg

**Call Sign:** DDAW

**Type of ship:** Research cutter

**CRUISE NO. / NAME** DOGU

enter the unique number, name or acronym assigned to the cruise (or cruise leg, if appropriate).

**CRUISE PERIOD** start 19/07/2011 to 23/07/2011 end  
(set sail) day/ month/ year day/ month/ year (return to port)

**PORT OF DEPARTURE** (enter name and country) Wilhelmshaven, Germany

**PORT OF RETURN** (enter name and country) Wilhelmshaven, Germany

**RESPONSIBLE LABORATORY** enter name and address of the laboratory responsible for coordinating the scientific planning of the cruise

**Name:** Forschungsinstitut Senckenberg

**Address:** Senckenberganlage 25, 60325 Frankfurt a. M.

**Country:** Germany

**CHIEF SCIENTIST(S)** enter name and laboratory of the person(s) in charge of the scientific work (chief of mission) during the cruise.

Prof. Dr. Michael Türkay, Forschungsinstitut Senckenberg

**OBJECTIVES AND BRIEF NARRATIVE OF CRUISE** enter sufficient information about the purpose and nature of the cruise so as to provide the context in which the report data were collected.

The interannual variability of the epibenthic fauna of the Dogger Bank is a long term project of the Senckenberg Research Institute since 1991. This project aims at gathering basic data which is used for understanding presumed environmental changes. Therefore the study refers to 37 stations (see map in Annex) that are, whenever possible, sampled on a yearly basis in the same season with the same gear. The fauna is recorded quantitatively from each sample in order to allow studies on relative abundance. Additionally, temperature and current parameters are recorded to correlate with faunal composition and species abundances.

The present cruise forms the 21st of the series and gets the suffix DOG-U. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1992. The first in 1991 was called DOG without any suffix. This cruise was conducted by the Department for Marine Zoology at the Senckenberg Institute in Frankfurt am Main.

Due to stormy weather, the cruise started with a delay of one day on Tuesday, 2011-07-19. On 07.00 CEST (UTC+1), the vessel left the shipyard and headed towards the island of Wangerooge, where a routine station was reached at 09:41 CEST. This station was sampled with our main sampling gear, a 2-m beam trawl. Additionally, a temperature profile was recorded with a CTD probe. Afterwards, FK Senckenberg headed for the the main working area, the Doggerbank.

Station 14 (see station map) at british waters was reached on July 19, 2011 at 07.45 CEST. At this and the following stations, the following technique was used: current strength and direction were measured with a probe (RCM9) at the seafloor. In addition, a CTD probe was used to measure the temperature and salinity of the water column. Then, a standardized endobenthic sampling with the Ring Dredge was performed. Subsequently one sample with a 2m-beam-trawl was taken, towed for 2 kn of speed on a length of one nautical mile (for more information see methods, chapter 3). These procedures took place on every single station (see station map, chapter 4).

The exact sequence of stations sampled can be seen at the station list (chapter 4). Due to stormy weather (BFT 7-9), sampling had to be stopped ahead of schedule on July 22, 2011. At 06.15 CEST, FK Senckenberg headed back to Wilhelmshaven due to a bad weather forecast.

The vessel was moored at Wilhelmshaven port on July 23, 2011 at 10.17 CEST.

**PROJECT (IF APPLICABLE)** if the cruise is designated as part of a larger scale cooperative project (or expedition), then enter the name of the project, and of organisation responsible for co-ordinating the project.

**Project name:** Dogger Bank epibenthos long term monitoring cruise

**Coordinating body:** Prof. Dr. Michael Türkay

**PRINCIPAL INVESTIGATORS:** Enter the name and address of the Principal Investigators responsible for the data collected on the cruise and who may be contacted for further information about the data. (The letter assigned below against each Principal Investigator is used on pages 2 and 3, under the column heading 'PI', to identify the data sets for which he/she is responsible)

**A. Dr. Michael Türkay, Senckenberganlage 25, 60325 Frankfurt am Main**

**B. ....**

**C. ....**

**D. ....**

**E. ....**

**F. ....**

### MOORINGS, BOTTOM MOUNTED GEAR AND DRIFTING SYSTEMS **None**

This section should be used for reporting moorings, bottom mounted gear and drifting systems (both surface and deep) deployed and/or recovered during the cruise. Separate entries should be made for each location (only deployment positions need be given for drifting systems). This section may also be used to report data collected at fixed locations which are returned to routinely in order to construct 'long time series'.

PI	APPROXIMATE POSITION							DATA TYPE	DESCRIPTION
	LATITUDE			LONGITUDE					
See top of page.	deg	min	N/S	deg	min	E/W	enter code(s) from list on cover page.	Identify, as appropriate, the nature of the instrumentation the parameters (to be) measured, the number of instruments and their depths, whether deployed and/or recovered, dates of deployments and/or recovery, and any identifiers given to the site.	
								<b>Please continue on separate sheet if necessary</b>	

### SUMMARY OF MEASUREMENTS AND SAMPLES TAKEN **See station list in report**

Except for the data already described on page 2 under 'Moorings, Bottom Mounted Gear and Drifting Systems', this section should include a summary of all data collected on the cruise, whether they be measurements (e.g. temperature, salinity values) or samples (e.g. cores, net hauls).

Separate entries should be made for each distinct and coherent set of measurements or samples. Different modes of data collection (e.g. vertical profiles as opposed to underway measurements) should be clearly distinguished, as should measurements/sampling techniques that imply distinctly different accuracy's or spatial/temporal resolutions. Thus, for example, separate entries would be created for i) BT drops, ii) water bottle stations, iii) CTD casts, iv) towed CTD, v) towed undulating CTD profiler, vi) surface water intake measurements, etc.

Each data set entry should start on a new line – it's description may extend over several lines if necessary.

**NO, UNITS :** for each data set, enter the estimated amount of data collected expressed in terms of the number of 'stations'; miles' of track; 'days' of recording; 'cores' taken; net 'hauls'; balloon 'ascents'; or whatever unit is most appropriate to the data. The amount should be entered under 'NO' and the counting unit should be identified in plain text under 'UNITS'.

PI	NO	UNITS	DATA TYPE	DESCRIPTION
see page 2	see above	see above	Enter code(s) from list on cover page	
A	40	14254	H10	CTD Data on temperature and salinity in relation to water depth
A	49	448	D01	Measurements with RCM9 current meter
A	49	49	B18, B53	Sampling of the epibenthos with the beam trawl
A	49	49	G01, B18	Benthos sampling by ring dredge

**TRACK CHART:** You are strongly encouraged to submit, with the completed report, an annotated track chart illustrating the route followed and the points where measurements were taken.

Insert a tick(✓) in this box if a track chart is supplied



**GENERAL OCEAN AREA(S):** Enter the names of the oceans and/or seas in which data were collected during the cruise – please use commonly recognised names (see, for example, International Hydrographic Bureau Special Publication No. 23, 'Limits of Oceans and Seas').

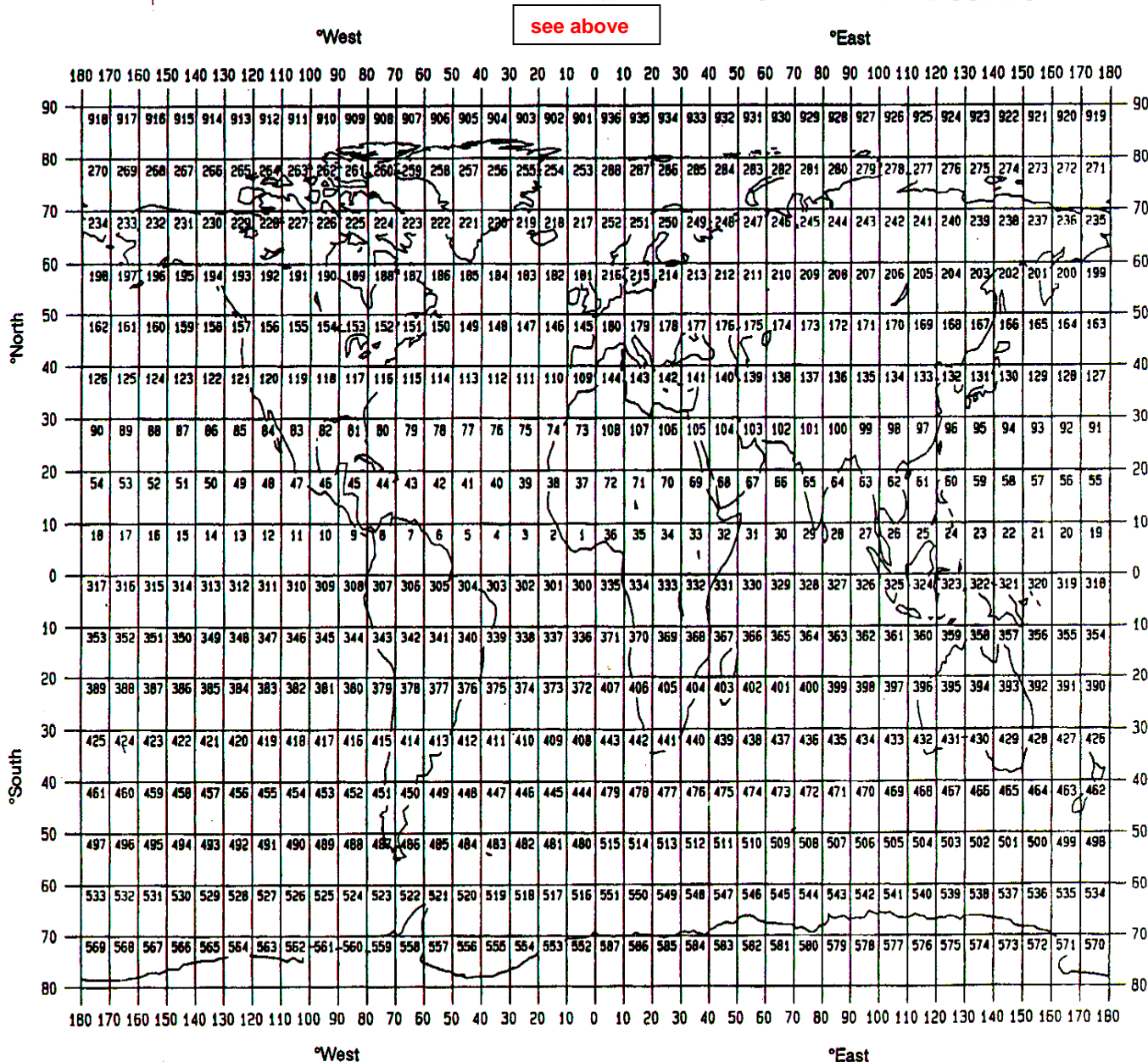
North Sea

**SPECIFIC AREAS:** If the cruise activities were concentrated in a specific area(s) of an ocean or sea, then enter a description of the area(s). Such descriptions may include references to local geographic areas, to sea floor features, or to geographic coordinates.

**Please insert here the number of each square in which data were collected from the below given chart**

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**GEOGRAPHIC COVERAGE - INSERT 'X' IN EACH SQUARE IN WHICH DATA WERE COLLECTED**



**THANK YOU FOR YOUR COOPERATION**

Please send your completed report without delay to the collating centre indicated on the cover page