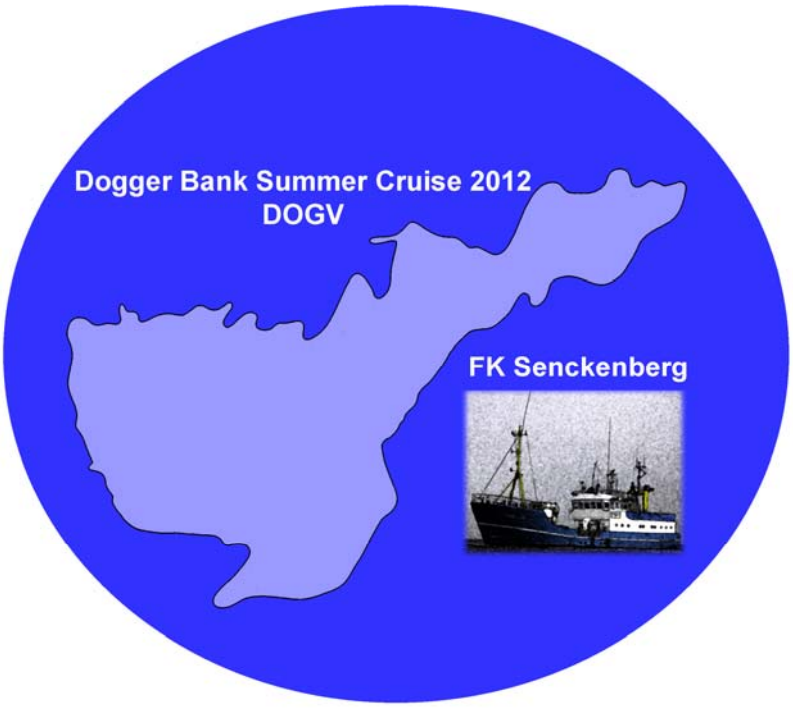
SENCKENBERG

Report on the 2012 Dogger Bank cruise with FK Senckenberg

23. 07. – 02. 08. 2012



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Frankfurt a. M., August 2012

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.

Additionally, station 40 was sampled every three hours in a 48 hours timeframe in order to get an insight into diurnal patterns of epibenthic animals.

The present cruise forms the 22nd of the series and gets the suffix DOG-V. 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

The cruise started on Monday, 2012-07-23. On 14.14 CEST (UTC+1), the vessel left the shipyard and headed towards the main working area, the Doggerbank.

Station 14 (see station map) at british waters was reached on July 24, 2012 at 13.37 CEST. At this and the following stations, the following technique was used: First, a standardized endobenthic sampling with the Ring Dredge was performed. Then, a CTD probe was used to measure the temperature and salinity of the water column. Afterwards, current strength and direction were measured with a probe (RCM9) at the seafloor. Subsequently, one sample with a 2 m 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), except station 40. Here, sampling was performed every three hours in a 48 hours timeframe. The first sampling at station 40 was performed like above, subsequent samplings were performed without recurring CTD and ring dredge deployment.

Sampling at the Dogger Bank was finished on July 31, 2012 at 05.36 CEST. FK Senckenberg then headed towards the island of Helgoland, which was reached on August 01, 2012 at 05.40 CEST. Sampling restarted the same day at 08.14 on a routine station at Helgoland Deep Trench (HTR). Here, a CTD record as well as a beam trawl sample were performed. After work was finished at Helgoland Deep Trench, FK Senckenberg headed towards Loreley-Bank at the east of Helgoland, where a series of ring dredge samples was performed on a set of routine stations. FK Senckenberg was moored at Helgoland port at 16:30 CEST. On August 02, 2012, FK Senckenberg left Helgoland port again at 8.36 CEST to continue work on several remaining stations at Loreley-Bank. Finally, at 11:53, one station in the south of Helgoland was sampled with the ring dredge for two times. At 12.05 CEST, sampling was finished and FK Senckenberg headed back to Wilhelmshaven. The vessel was moored at Wilhelmshaven port on August 02, 2012 at 16.50 CEST.

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

3. Methods:

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.
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. Unfortunately, the recorded data cannot be provided due to a probe failure. Currently, it is attempted to reconstruct the corrupted data.

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.

The CTD data is attatched to a separate file called CTD DogV.xls.

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 cm², 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.

4. Station map

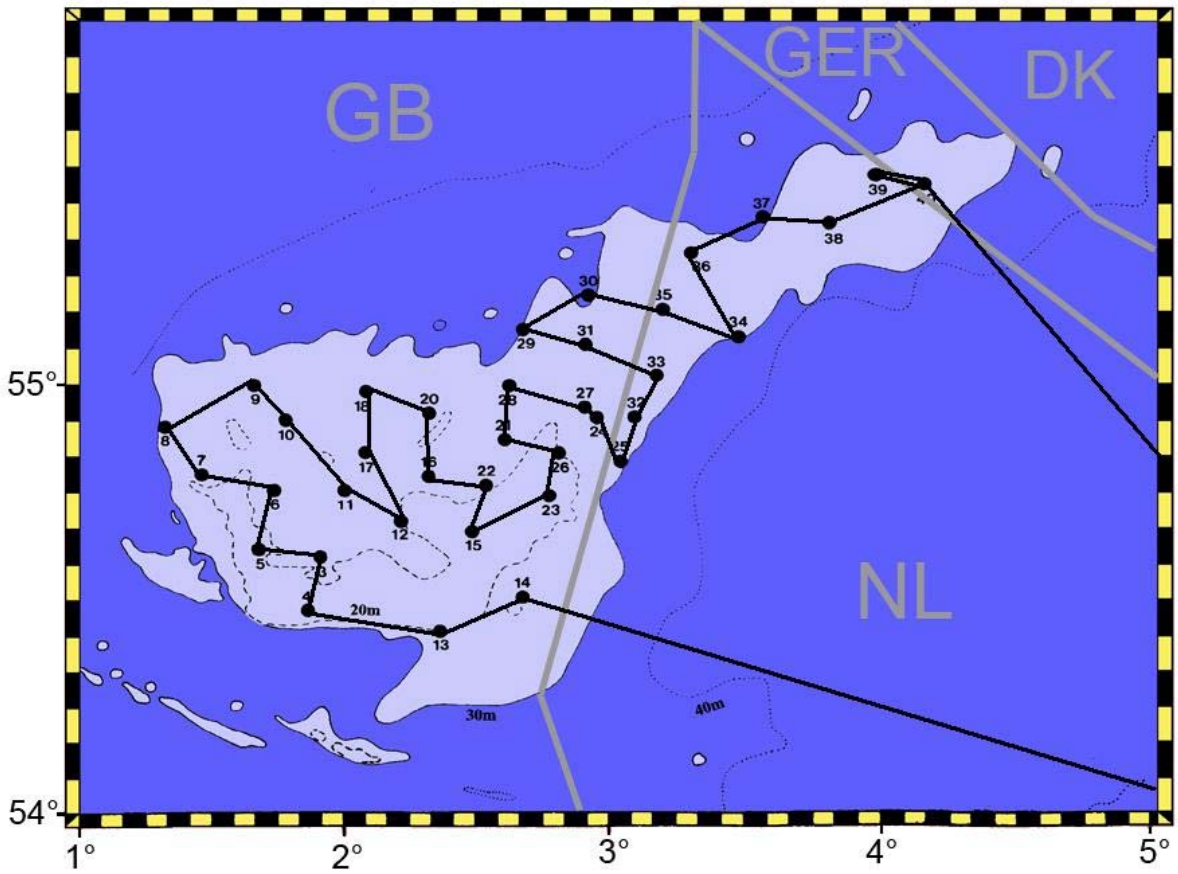

Fig. 1 Station map. Black dots: stations. Black line: ship course. The exclusive economic zones of the neighbouring countrys are shown in grey.

Annex 1: Stations of Dogger Bank Summer Cruise, July 2012 (DOGV) with R.V. SENCKENBERG. All times UTC+1.

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	3	CTD	24.07.2012	19:48	54°36,313 N	1°55,178 E				25	
DOGV	3	RCM9	24.07.2012	19:50	54°36,326 N	1°55,147 E	19:52	54°36,326 N	1°55,116 E		
DOGV	3	RD	24.07.2012	19:40	54°36,277 N	1°55,140 E				25	
DOGV	3	KU	24.07.2012	20:00	54°36,371 N	1°54,619 E	20:30	54°36,478 N	1°52,545 E	26	27
DOGV	4	CTD	24.07.2012	18:10	54°28,857 N	1°51,693 E				20	
DOGV	4	RCM9	24.07.2012	18:12	54°28,908 N	1°51,665 E	18:15	54°28,923 N	1°51,676 E		
DOGV	4	RD	24.07.2012	18:00	54°28,737 N	1°51,667 E				20	
DOGV	4	KU	24.07.2012	18:22	54°29,254 N	1°51,637 E	18:53	54°30,192 N	1°51,607 E	20,1	20,3
DOGV	5	CTD	25.07.2012	08:08	54°36,852 N	1°41,518 E				24,3	
DOGV	5	RCM9	25.07.2012	08:11	54°36,845 N	1°41,509 E	08:13	54°36,808 N	1°41,543 E		
DOGV	5	RD	25.07.2012	08:00	54°36,930 N	1°41,653 E				25	
DOGV	5	KU	25.07.2012	08:20	54°37,081 N	1°41,589 E	08:45	54°37,950 N	1°42,027 E	26	23,3
DOGV	6	CTD	25.07.2012	09:47	54°45,497 N	1°44,020 E				30	
DOGV	6	RCM9	25.07.2012	09:49	54°45,452 N	1°44,027 E	09:51	54°45,442 N	1°44,013 E		
DOGV	6	RD	25.07.2012	09:37	54°45,501 N	1°43,971 E				30	
DOGV	6	KU	25.07.2012	09:58	54°45,457 N	1°43,830 E	10:30	54°45,694 N	1°41,786 E	30	30,4
DOGV	7	CTD	25.07.2012	11:45	54°47,794 N	1°26,754 E				31	
DOGV	7	RCM9	25.07.2012	11:47	54°47,758 N	1°26,730 E	11:51	54°47,698 N	1°26,677 E		
DOGV	7	RD	25.07.2012	11:33	54°47,870 N	1°26,803 E				30	
DOGV	7	KU	25.07.2012	11:58	54°47,860 N	1°26,357 E	12:19	54°48,560 N	1°25,446 E	30	28,4
DOGV	8	CTD	25.07.2012	12:16	54°53,991 N	1°18,820 E				31,8	
DOGV	8	RCM9	25.07.2012	13:19	54°53,987 N	1°18,803 E	13:21	54°53,986 N	1°18,782 E		
DOGV	8	RD	25.07.2012	13:05	54°54,023 N	1°18,963 E				31,5	
DOGV	8	KU	25.07.2012	13:28	54°54,096 N	1°18,885 E	13:50	54°54,389 N	1°20,187 E	30,6	28
DOGV	9	CTD	25.07.2012	15:25	54°59,752 N	1°39,310 E				29	
DOGV	9	RCM9	25.07.2012	15:32	54°59,768 N	1°39,331 E	15:35	54°59,752 N	1°39,334 E		
DOGV	9	RD	25.07.2012	15:32	54°59,730 N	1°39,438 E				29,3	
DOGV	9	KU	25.07.2012	15:10	54°59,232 N	1°37,638 E	15:32	54°59,491 N	1°38,637 E	30,2	29

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	10	CTD	25.07.2012	16:42	54°55,232 N	1°46,578 E				25	
DOGV	10	RCM9	25.07.2012	16:44	54°55,245 N	1°46,548 E	16:46	54°55,260 N	1°46,505 E		
DOGV	10	RD	25.07.2012	16:30	54°55,251 N	1°46,801 E				25	
DOGV	10	KU	25.07.2012	16:55	54°55,222 N	1°46,660 E	17:23	54°54,451 N	1°47,768 E	26	27,2
DOGV	11	CTD	25.07.2012	18:57	54°45,308 N	2°0,229 E				32	
DOGV	11	RCM9	25.07.2012	18:59	54°45,310 N	2°0,183 E	19:01	54°45,306 N	2°0,137 E		
DOGV	11	RD	25.07.2012	18:45	54°45,384 N	2°0,405 E				33	
DOGV	11	KU	25.07.2012	19:10	54°45,249 N	2°0,266 E	19:40	54°44,859 N	2°2,030 E	34	30,4
DOGV	12	CTD	26.07.2012	08:06	54°41,592 N	2°12,678 E				24,8	
DOGV	12	RCM9	26.07.2012	08:09	54°41,575 N	2°12,573 E	08:11	54°41,548 N	2°12,534 E		
DOGV	12	RD	26.07.2012	07:58	54°41,577 N	2°12,869 E				25	
DOGV	12	KU	26.07.2012	08:18	54°41,726 N	2°12,261 E	08:50	54°42,695 N	2°11,333 E	25,7	23,9
DOGV	13	CTD	24.07.2012	16:03	54°27,025 N	2°16,358 E				17	
DOGV	13	RCM9	24.07.2012	16:05	54°27,045 N	2°16,361 E	16:07	54°27,045 N	2°16,367 E		
DOGV	13	RD	24.07.2012	15:53	54°27,023 N	2°16,190 E				17	
DOGV	13	KU	24.07.2012	16:16	54°27,046 N	2°15,838 E	16:42	54°28,760 N	2°13,911 E	16,9	16,8
DOGV	14	CTD	24.07.2012	13:49	54°30,922 N	2°40,477 E				24	
DOGV	14	RCM9	24.07.2012	13:52	54°30,944 N	2°40,516 E	13:54	54°30,949 N	2°40,514 E		
DOGV	14	RD	24.07.2012	13:37	54°30,907 N	2°40,475 E				24,3	
DOGV	14	KU	24.07.2012	14:02	54°30,923 N	2°40,363 E	14:26	54°30,644 N	2°38,597 E	24,3	23
DOGV	15	CTD	26.07.2012	17:32	54°39,721 N	2°28,755 E				20,3	
DOGV	15	RCM9	26.07.2012	17:34	54°39,727 N	2°28,722 E	17:36	54°39,753 N	2°28,663 E		
DOGV	15	RD	26.07.2012	17:25	54°39,740 N	2°29,015 E				19,8	
DOGV	15	KU	26.07.2012	17:42	54°39,865 N	2°28,966 E	18:07	54°40,564 N	2°30,160 E	20,5	20,4
DOGV	16	CTD	26.07.2012	14:45	54°47,558 N	2°18,997 E				23,4	
DOGV	16	RCM9	26.07.2012	14:47	54°47,578 N	2°19,0 E	14:49	54°47,577 N	2°19,014 E		
DOGV	16	RD	26.07.2012	14:36	54°47,453 N	2°19,256 E				23	
DOGV	16	KU	26.07.2012	14:56	54°47,539 N	2°19,350 E	15:17	54°47,317 N	2°20,970 E	23	22,8
DOGV	17	CTD	26.07.2012	09:56	54°50,791 N	2°5,026 E				25	
DOGV	17	RCM9	26.07.2012	09:58	54°50,786 N	2°4,979 E	10:00	54°50,779 N	2°4,940 E		
DOGV	17	RD	26.07.2012	09:47	54°50,791 N	2°5,148 E				25	
DOGV	17	KU	26.07.2012	10:07	54°50,971 N	2°4,917 E	10:33	54°52,0 N	2°5,056 E	23	24,6

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	18	CTD	26.07.2012	11:33	54°59,393 N	2°5,380 E				29,5	
DOGV	18	RCM9	26.07.2012	11:35	54°59,393 N	2°5,368 E	11:37	54°59,388 N	2°5,363 E		
DOGV	18	RD	26.07.2012	11:25	54°59,374 N	2°5,511 E				29,5	
DOGV	18	KU	26.07.2012	11:44	54°59,336 N	2°5,621 E	12:08	54°59,973 N	2°7,330 E	29,5	28,6
DOGV	20	CTD	26.07.2012	13:08	54°56,346 N	2°19,801 E				29,4	
DOGV	20	RCM9	26.07.2012	13:10	54°56,360 N	2°19,811 E	13:13	54°56,366 N	2°19,807 E		
DOGV	20	RD	26.07.2012	13:00	54°56,239 N	2°19,786 E				29,6	
DOGV	20	KU	26.07.2012	13:18	54°56,209 N	2°19,787 E	13:40	54°55,213 N	2°19,682 E	29	27,5
DOGV	21	CTD	27.07.2012	09:32	54°52,345 N	2°36,264 E				24,6	
DOGV	21	RCM9	27.07.2012	09:34	54°52,370 N	2°36,240 E	09:36	54°52,347 N	2°36,218 E		
DOGV	21_2	RCM9	27.07.2012	10:21	54°53,734 N	2°36,180 E	10:23	54°53,760 N	2°36,167 E		
DOGV	21	RD	27.07.2012	09:23	54°52,318 N	2°36,081 E				25	
DOGV	21	KU	27.07.2012	09:40	54°52,599 N	2°36,155 E	10:15	54°53,512 N	2°36,172 E	25	25,0
DOGV	22	CTD	26.07.2012	16:12	54°46,369 N	2°32,598 E				23,5	
DOGV	22	RCM9	26.07.2012	16:14	54°46,376 N	2°32,587 E	16:16	54°46,385 N	2°32,568 E		
DOGV	22	RD	26.07.2012	16:03	54°46,158 N	2°32,515 E				23,5	
DOGV	22	KU	26.07.2012	16:22	54°46,227 N	2°32,488 E	16:43	54°45,319 N	2°32,029 E	23,6	23,5
DOGV	23	CTD	26.07.2012	19:29	54°44,580 N	2°46,162 E				20	
DOGV	23	RCM9	26.07.2012	19:30	54°44,605 N	2°46,090 E	19:32	54°44,631 N	2°46,010 E		
DOGV	23	RD	26.07.2012	19:18	54°44,455 N	2°46,418 E				20	
DOGV	23	KU	26.07.2012	19:40	54°45,009 N	2°45,777 E	20:05	54°45,873 N	2°45,478 E	19,5	19,7
DOGV	24	CTD	27.07.2012	13:51	54°55,611 N	2°56,967 E				24,4	
DOGV	24	RCM9	27.07.2012	13:52	54°55,623 N	2°56,997 E	13:54	54°55,629 N	2°57,013 E		
DOGV	24	RD	27.07.2012	13:44	54°55,574 N	2°56,992 E				24	
DOGV	24	KU	27.07.2012	14:00	54°55,502 N	2°57,222 E	14:22	54°54,614 N	2°57,982 E	24,3	23,5
DOGV	25	CTD	27.07.2012	15:12	54°49,058 N	3°3,331 E				31,2	
DOGV	25	RCM9	27.07.2012	15:14	54°49,060 N	3°3,364 E	15:16	54°40,076 N	3°3,385 E		
DOGV	25	RD	27.07.2012	15:30	54°49,266 N	3°3,166 E				30,6	
DOGV	25	KU	27.07.2012	15:22	54°49,255 N	3°3,528 E	15:45	54°50,232 N	3°3,833 E	31	29,3
DOGV	26	CTD	27.07.2012	08:05	54°50,610 N	2°48,278 E				21,4	
DOGV	26	RCM9	27.07.2012	08:07	54°50,626 N	2°48,222 E	08:09	54°50,161 N	2°48,158 E		
DOGV	26	RD	27.07.2012	07:56	54°50,623 N	2°48,518 E				22	

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	26	KU	27.07.2012	08:15	54°50,705 N	2°47,803 E	08:45	54°51,041 N	2°46,213 E	21,3	21,3
DOGV	27	CTD	27.07.2012	12:55	54°57,056 N	2°53,722 E				25,6	
DOGV	27	CTD2	27.07.2012	13:00	54°57,125 N	2°53,773 E				25,6	
DOGV	27	RCM9	27.07.2012	12:57	54°57,082 N	2°53,723 E	12:59	54°57,113 N	2°53,755 E		
DOGV	27	RD	27.07.2012	12:48	54°56,986 N	2°53,855 E				25,7	
DOGV	27	KU	27.07.2012	13:07	54°57,006 N	2°54,027 E	13:29	54°56,369 N	2°55,244 E	25,7	25,2
DOGV	28	CTD	27.07.2012	11:13	55°0,190 N	2°37,396 E				30	
DOGV	28	RCM9	27.07.2012	11:15	55°0,199 N	2°37,383 E	11:17	55°0,205 N	2°37,366 E		
DOGV	28	RD	27.07.2012	11:05	55°0,211 N	2°37,582 E				30	
DOGV	28	KU	27.07.2012	11:21	55°0,198 N	2°37,566 E	11:47	54°59,924 N	2°39,227 E	29,3	28,2
DOGV	29	CTD	28.07.2012	07:56	55°7,696 N	2°40,205 E				29	
DOGV	29	RCM9	28.07.2012	07:29	55°7,693 N	2°40,221 E	08:01	55°7,705 N	2°40,255 E		
DOGV	29	RD	28.07.2012	07:45	55°7,680 N	2°40,261 E				30	
DOGV	29	KU	28.07.2012	08:05	55°7,797 N	2°40,444 E	08:32	55°8,342 N	2°41,963 E	29,5	27
DOGV	30	CTD	28.07.2012	09:43	55°12,386 N	2°55,423 E				35	
DOGV	30	RCM9	28.07.2012	09:44	55°12,388 N	2°55,443 E	09:46	55°12,372 N	2°55,458 E		
DOGV	30	RD	28.07.2012	09:33	55°12,392 N	2°55,540 E				35	
DOGV	30	KU	28.07.2012	09:54	55°12,310 N	2°55,905 E	10:23	55°12,037 N	3°11,695 E	35	33,7
DOGV	31	CTD	27.07.2012	19:48	55°5,545 N	2°54,205 E				29	
DOGV	31	RCM9	27.07.2012	19:52	55°5,540 N	2°54,177 E	19:54	55°5,529 N	2°54,148 E		
DOGV	31	RD	27.07.2012	19:40	55°5,609 N	2°54,227 E				29	
DOGV	31	KU	27.07.2012	20:09	55°5,660 N	2°53,592 E	20:28	55°6,007 N	2°52,545 E	28,6	27
DOGV	32	CTD	27.07.2012	16:31	54°55,322 N	3°6,157 E				25,7	
DOGV	32	RCM9	27.07.2012	16:33	54°55,320 N	3°6,173 E	16:34	54°55,327 N	3°6,167 E		
DOGV	32	RD	27.07.2012	16:24	54°55,397 N	3°6,110 E				25	
DOGV	32	KU	27.07.2012	16:41	54°55,529 N	3°6,169 E	17:03	54°56,436 N	3°6,718 E	25,2	23,6
DOGV	33	CTD	27.07.2012	18:04	55°1,315 N	3°10,175 E				25	
DOGV	33	CTD2	27.07.2012	18:10	55°1,273 N	3°10,208 E				25	
DOGV	33	CTD3	27.07.2012	18:12	55°1,258 N	3°10,213 E				25	
DOGV	33	RCM9	27.07.2012	18:07	55°1,295 N	3°10,187 E	18:09	55°1,281 N	3°10,202 E		
DOGV	33	RD	27.07.2012	17:57	55°1,392 N	3°10,152 E				25	
DOGV	33	KU	27.07.2012	18:19	55°1,316 N	3°9,928 E	18:43	55°1,687 N	3°8,353 E	25	24,5

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	34	CTD	28.07.2012	13:10	55°6,445 N	3°25,694 E				29,4	
DOGV	34	RCM9	28.07.2012	13:13	55°6,463 N	3°28,740 E	13:15	55°6,457 N	3°28,886 E		
DOGV	34	RD	28.07.2012	13:02	55°6,483 N	3°21,481 E				29,4	
DOGV	34	KU	28.07.2012	13:23	55°6,706 N	3°28,593 E	13:47	55°7,579 N	3°27,699 E	29,1	28,6
DOGV	35	CTD	28.07.2012	11:26	55°10,385 N	3°11,630 E				30	
DOGV	35	RCM9	28.07.2012	11:28	55°10,384 N	3°11,670 E	11:30	55°10,371 N	3°11,644 E		
DOGV	35	RD	28.07.2012	11:18	55°10,490 N	3°11,695 E				30	
DOGV	35	KU	28.07.2012	11:37	55°10,271 N	3°12,131 E	12:01	55°9,859 N	3°13,754 E	30	30,6
DOGV	36	CTD	28.07.2012	15:23	55°18,593 N	3°18,722 E				29	
DOGV	36	RCM9	28.07.2012	15:25	55°18,603 N	3°18,782 E	15:27	55°18,622 N	3°18,862 E		
DOGV	36	RD	28.07.2012	15:14	55°18,441 N	3°18,806 E				29,8	
DOGV	36	KU	28.07.2012	15:35	55°18,784 N	3°19,229 E	16:00	55°19,093 N	3°20,896 E	29,2	k.A.
DOGV	37	CTD	28.07.2012	17:04	55°23,216 N	3°33,678 E				32,3	
DOGV	37	RCM9	28.07.2012	17:06	55°23,228 N	3°33,741 E	17:09	55°23,243 N	3°33,812 E		
DOGV	37	RD	28.07.2012	16:56	55°23,145 N	3°33,929 E				31,8	
DOGV	37	KU	28.07.2012	17:16	55°23,235 N	3°34,281 E	17:40	55°23,127 N	3°36,098 E	31,6	30,7
DOGV	38	CTD	28.07.2012	18:48	55°22,691 N	3°46,834 E				30	
DOGV	38	RCM9	28.07.2012	18:50	55°22,644 N	3°46,901 E	18:52	55°22,715 N	3°46,953 E		
DOGV	38	RD	28.07.2012	18:40	55°22,681 N	3°46,366 E				30	
DOGV	38	KU	28.07.2012	18:58	55°22,716 N	3°47,160 E	19:25	55°22,680 N	3°48,873 E	30	29,5
DOGV	39	CTD	29.07.2012	09:50	55°28,743 N	3°57,909 E				32	
DOGV	39	RCM9	29.07.2012	09:52	56°28,782 N	3°57,943 E	09:54	56°28,815 N	3°57,985 E		
DOGV	39	RD	29.07.2012	09:42	55°28,771 N	3°58,338 E				32	
DOGV	39	KU	29.07.2012	10:04	55°28,950 N	3°58,376 E	10:30	55°29,309 N	3°59,350 E	32	
DOGV	40-1	CTD	29.07.2012	08:05	55°26,687 N	4°7,199 E				30	
DOGV	40-1	RCM9	29.07.2012	08:03	55°26,717 N	4°7,230 E	08:05	55°26,756 N	4°7,243 E		
DOGV	40-1	RD	29.07.2012	07:57	55°26,490 N	4°6,926 E				30	
DOGV	40-1	KU	29.07.2012	08:18	55°26,967 N	4°7,530 E	08:47	55°27,874 N	4°8,700 E	30	30
DOGV	40-2	RCM9	29.07.2012	11:47	55°27,661 N	4°8,894 E	11:49	55°27,674 N	4°8,917 E		
DOGV	40-2	KU	29.07.2012	11:12	55°26,785 N	4°7,520 E	11:40	55°27,584 N	4°8,664 E	32	32
DOGV	40-3	RCM9	29.07.2012	14:34	55°27,765 N	4°9,062 E	14:36	55°27,786 N	4°9,120 E		
DOGV	40-3	KU	29.07.2012	14:03	55°26,798 N	4°7,493 E	14:27	55°27,559 N	4°8,630 E	30,9	30,7

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
DOGV	40-4	RCM9	29.07.2012	17:30	55°27,753 N	4°9,118 E	17:32	55°27,765 N	4°9,167 E		
DOGV	40-4	KU	29.07.2012	17:01	55°26,751 N	4°7,502 E	17:24	55°27,560 N	4°8,654 E	30,7	30,8
DOGV	40-5	RCM9	29.07.2012	20:34	55°26,673 N	4°7,355 E	20:36	55°26,692 N	4°7,373 E		
DOGV	40-5	KU	29.07.2012	20:05	55°27,560 N	4°8,522 E	20:30	55°26,788 N	4°7,521 E	30	30
DOGV	40-6	RCM9	29.07.2012	23:35	55°26,720 N	4°7,348 E	23:37	55°26,745 N	4°7,370 E		
DOGV	40-6	KU	29.07.2012	23:00	55°27,792 N	4°8,754 E	23:30	55°26,797 N	4°7,447 E	30	30
DOGV	40-7	RCM9	30.07.2012	02:31	55°26,629 N	4°7,247 E	02:34	55°26,646 N	4°7,289 E		
DOGV	40-7	KU	30.07.2012	02:00	55°27,571 N	4°8,636 E	02:25	55°26,807 N	4°7,514 E	30,5	30,5
DOGV	40-8	RCM9	30.07.2012	05:32	55°26,663 N	4°7,335 E	05:34	50°26,665 N	4°7,386 E		
DOGV	40-8	KU	30.07.2012	04:02	55°27,564 N	4°8,620 E	05:26	55°26,803 N	4°7,501 E	31,1	30,5
DOGV	40-9	RCM9	30.07.2012	08:34	55°26,687 N	4°7,494 E	08:36	55°26,694 N	4°7,545 E		
DOGV	40-9	KU	30.07.2012	08:00	55°27,537 N	4°8,710 E	08:29	55°26,816 N	4°7,589 E	30	30
DOGV	40-10	RCM9	30.07.2012	11:34	55°26,708 N	4°7,339 E	11:36	55°26,688 N	4°7,339 E		
DOGV	40-10	KU	30.07.2012	11:00	55°27,534 N	4°8,613 E	11:30	55°26,778 N	4°7,433 E	30	30
DOGV	40-11	RCM9	30.07.2012	14:30	55°26,751 N	4°7,473 E	14:32	55°26,751 N	9°7,509 E		
DOGV	40-11	KU	30.07.2012	14:59	55°27,704 N	4°8,789 E	15:23	55°26,925 N	4°7,684 E	30,5	30,4
DOGV	40-12	RCM9	30.07.2012	17:30	55°26,616 N	4°7,262 E	17:32	55°26,614 N	4°7,311 E		
DOGV	40-12	KU	30.07.2012	16:59	55°27,539 N	4°8,581 E	17:24	55°26,764 N	4°7,460 E	31	30,1
DOGV	40-13	RCM9	30.07.2012	20:33	55°26,568 N	4°7,319 E	20:35	55°26,566 N	4°7,401 E		
DOGV	40-13	KU	30.07.2012	20:00	55°27,481 N	4°8,466 E	20:30	55°26,740 N	4°7,470 E	30	31
DOGV	40-14	RCM9	30.07.2012	23:34	55°27,690 N	4°8,853 E	23:36	55°27,683 N	4°8,884 E		
DOGV	40-14	KU	30.07.2012	22:58	55°26,756 N	4°7,362 E	23:28	55°27,560 N	4°8,626 E	30	30
DOGV	40-15	RCM9	31.07.2012	02:32	55°26,608 N	4°7,173 E	02:35	55°26,605 N	4°7,229 E		
DOGV	40-15	KU	31.07.2012	02:02	55°27,486 N	4°8,530 E	02:27	55°26,747 N	4°7,404 E	30,6	29,8
DOGV	40-16	RCM9	31.07.2012	05:34	55°26,610 N	4°7,746 E	05:36	55°26,597 N	4°7,287 E		
DOGV	40-16	KU	31.07.2012	05:05	55°27,531 N	4°8,566 E	05:28	55°26,766 N	4°7,462 E	30,9	31,4
HTR120801		CTD	01.08.2012	08:18	54°7,534 N	7°54,659 E				56,9	
HTR120801		Ku	01.08.2012	08:51	54°8,347 N	7°53,946 E	09:23	54°9,013 N	7°52,339 E	55	48
HTR120802	just CTD	CTD	02.08.2012	11:35	54°8,270 N	7°54,150 E				60	
LB120801	10	RD	01.08.2012	12:40	54°14,483 N	7°55,951 E				22	
LB120801	6	RD	01.08.2012	13:07	54°14,030 N	8°0,984 E				18,1	
LB120801	9/1	RD	01.08.2012	13:29	54°13,118 N	7°57,937 E				16,1	

Cruise	Station	Gear	Date from	Time start	Start [°N]	Start [°E]	Time end	End [°N]	End [°E]	Depth from [m]	Depth to [m]
LB120801	9/2	RD	01.08.2012	13:41	54°13,251 N	7°57,851 E				16,4	
LB120801	1	RD	01.08.2012	14:04	54°12,003 N	7°59,839 E				14,4	
LB120802	5	RD	02.08.2012	08:36	54°13,0 N	8°2,049 E				13,9	
LB120802	8	RD	02.08.2012	09:13	54°12,969 N	8°1,219 E				15	
LB120802	4/1	RD	02.08.2012	09:50	54°12,063 N	8°3,217 E				20	
LB120802	4/2	RD	02.08.2012	10:00	54°12,068 N	8°3,498 E				20	
LB120802	7/1	RD	02.08.2012	10:25	54°11,942 N	8°0,974 E				13	
LB120802	7/2	RD	02.08.2012	10:30	54°12,035 N	8°1,204 E				13	
SHELG120802	5/1	RD	02.08.2012	11:53	54°7,406 N	7°50,825 E				42,6	
SHELG120802	5/2	RD	02.08.2012	12:01	54°7,365 N	7°51,123 E				43	

CRUISE SUMMARY REPORT

FOR COLLATIMG CENTRE USE

Centre:

Is data exchange restricted ☐ Yes ☐ In part ☒ No

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 **(set sail)** **23/07/2012** **day/ month/ year** to **02/08/2012** **day/ month/ year** end **(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 coodinating 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.

Dr. Moritz Sonnewald, 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.
Additionally, station 40 was sampled every three hours in a 48 hours timeframe in order to get an insight into diurnal patterns of epibenthic animals.
The present cruise forms the 22nd of the series and gets the suffix DOG-V. 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.

The cruise started on Monday, 2012-07-23. On 14.14 CEST (UTC+1), the vessel left the shipyard and headed towards the main working area, the Doggerbank.
Station 14 (see station map) at british waters was reached on July 24, 2012 at 13.37 CEST. At this and the following stations, the following technique was used: First, a standardized endobenthic sampling with the Ring Dredge was performed. Then, a CTD probe was used to measure the temperature and salinity of the water column. Afterwards, current strength and direction were measured with a probe (RCM9) at the seafloor. Subsequently, one sample with a 2 m 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), except station 40. Here, sampling was performed every three hours in a 48 hours timeframe. The first sampling at station 40 was performed like above, subsequent samplings were performed without recurring CTD and ring dredge deployment.

Sampling at the Dogger Bank was finished on July 31, 2012 at 05.36 CEST. FK Senckenberg then headed towards the island of Helgoland, which was reached on August 01, 2012 at 05.40 CEST. Sampling restarted the same day at 08.14 on a routine station at Helgoland Deep Trench (HTR). Here, a CTD record as well as a beam trawl sample were performed. After work was finished at Helgoland Deep Trench, FK Senckenberg headed towards Loreley-Bank at the east of Helgoland, where a

series of ring dredge samples was performed on a set of routine stations. FK Senckenberg was moored at Helgoland port at 16:30 CEST. On August 02, 2012, FK Senckenberg left Helgoland port again at 8.36 CEST to continue work on several remaining stations at Loreley-Bank. Finally, at 11:53, one station in the south of Helgoland was sampled with the ring dredge for two times. At 12.05 CEST, sampling was finished and FK Senckenberg headed back to Wilhelmshaven. The vessel was moored at Wilhelmshaven port on August 02, 2012 at 16.50 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 furtherinformation 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. Prof. Dr. Michael Türkay, Senckenberganlage 25, 60325 Frankfurt am Main

B. Dr. Moritz Sonnewald, Senckenberganlage 25, 60325 Frankfurt am Main

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 See top of page.	APPROXIMATE POSITION LATITUDE deg	min	N/S	LONGITUDE deg	min	E/W	DATA TYPE enter code(s) from list on cover page.	DESCRIPTION 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.
								Please continue on separate sheet if necessary

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 see page 2	NO see above	UNITS see above	DATA TYPE Enter code(s) from list on cover page	DESCRIPTION Identify, as appropriate, the nature of the data and of the instrumentation/sampling gear and list the parameters measured. Include any supplementary information that may be appropriate, e. g. vertical or horizontal profiles, depth horizons, continuous recording or discrete samples, etc. For samples taken for later analysis on shore, an indication should be given of the type of analysis planned, i.e. the purpose for which the samples were taken.
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**

			B53	
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

see above