CAMPAIGN REPORT BMM-Measuring service Ostend 2004/11

13-14.05.2004 & 17-19.05.2004

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Program identification	ENDIS RISK – SISCO

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13.05.2004 till 19.05.2004

1. Scienctist team

ENDIS-RISKS team:

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G. Desmet
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SISCO team:

L. Chou
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2. Student team

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Marneffe Anne
Serhrouchni Ahmed
Thomas Laurent
Zerrouk Youssef

2. Objectives of the campaign

2.1 ENDIS-RISKS – Roose

The goal of the project is to get better insight into the distribution and the possible effects of hormone disrupting substances in the Scheldt Estuary. The components to be analysed are mentioned on the OSPAR list of priority substances or are mentioned as hormone disrupting components on the OSPAR list of candidate substances. Also the short and long term effects of these components will be evaluated in the laboratory and in the field. For the priority substances the fysico-chemical distribution (speciation between the different compartments: sediment, water, suspended particulate matter), their concentrations in biota (mysids and gobies) and geographical spreading will be measured. Possible toxicological effects will also be investigated on an ecological important group of endemic organisms (mysids). For this purpose acute as well as chronical effects are studied on individual and population level and compared to historical data.

2.2 SISCO – Chou

The general goal of the project “SISCO” is to get better insights into the bio-chemical cycle of Si and its antropogenic disturbance in the Scheldt Estuary. The bio-chemical cycle of dissolved Si in aquatic ecosystems is important to structure biological societies. The excess of N and P relative to Si, carried from rivers to the coastal zone, has a dramatic effect on the food webs in the coastal seas.

The origin and sinks of Si in the Scheldt estuary will be defined. Important processes controlling the bio-chemical behaviour of Si in the water column will be measured. The early diagenesis of Si will be evaluated in order to determine the flux of Si (retained) in the sediment as well as the internal recycling of Si in the sediments. At last the Si flux of the Scheldt to the southern bay of the North Sea will be quantified by using a coupled hydro-dynamic bio-geochemical model in which the input of the most important supplying rivers, the fraction retained in the estuary, as well as the fraction reaching the coastal zone are determined. This will permit the evaluation of the impact of Si on eutrophication of the coastal zone via the alteration in the composition of the species of phyto-plankton.

2.3 EDUCATION STUDENTS – Chou

The purpose of this application is to organise a one-day session of practical training for the course "GEOL 035 Chemical Oceanography" This is a course given at the University of Brussels in the framework of DES (Diplôme d'étude spécialisé) in Hydrology (Inter-universities ULB-ULg-UCL-GBx) as well as in other sections of ULB (geology, physical geography, chemistry, agronomy).

3. Operations

Thursday 13 May

10h30 : Zeebrugge – departure
20h30 : Antwerp – touch & go

Friday 14 May

07h30 : Station 330
10h30 : Station 710
11h15 : Station 780
12h30 : Station 130
13h15 : Station 230
14h00 : Zeebrugge – arrival

Monday 17 May

10h00 : Zeebrugge – departure

Station S01 Vlissingen
11h20 : Start centrifuge
12h21 : CTD scan
12h21 : Water sampling (Nisking / Go Flo)
12h37 : Sediment sampling (Boxcorer)
12h41 : Sediment sampling (Van Veen)
13h30 : Fish tracks (Hyperbentic sledge)
14h34 : Fish tracks (Beam thrawl)
14h56 : CTD scan
15h44 : Stop centrifuge

Station S07 Hansweert
16h53 : Start centrifuge
16h59 : CTD scan
17h06 : Fish tracks (Beam thrawl)
17h31 : Fish tracks (Hyperbentic sledge)
18h22 : CTD scan
18h23 : Water sampling (Nisking / Go Flo)
18h35 : Sediment sampling (Van Veen)
18h40 : Sediment sampling (Reineck)
18h57 : Stop centrifuge

Station S04 Vlissingen
19h35 : CTD scan Start centrifuge
19h38 : Sediment sampling (Reineck)
19h48 : Sediment sampling (Van Veen)
19h49 : Start centrifuge
19h59 : Fish tracks (Hyperbentic sledge)
20h41 : Fish tracks (Beam thrawl)
21h00 : CTD scan
21h00 : Water sampling (Nisking / Go Flo)
21h20 : Stop centrifuge

Tuesday 18 May

Station S22 Antwerp
07h47 : Start centrifuge
08h00 : Passive sampling (Little hyperbentic sledge)
08h04 : CTD scan
08h04 : Water sampling (Niskin / Go Flo)
08h46 : Passive sampling (Little hyperbentic sledge)
09h37 : CTD scan
09h41 : Sediment sampling (Van Veen)
09h49 : Stop centrifuge

10h27 : Sediment sampling (Reineck) – Station S18

Station S12 Bath
11h14 : Start centrifuge
11h29 : CTD scan
11h29 : Water sampling (Nisking / Go Flo)
11h47 : Sediment sampling (Van Veen)
11h56 : Fish tracks (Beam thrawl)
12h23 : Fish tracks (Hyperbentic sledge)
13h17 : CTD scan
13h34 : Stop centrifuge

Station S09 Saeftinge
14h06 : Start centrifuge
14h15 : CTD scan
14h15 : Water sampling (Nisking / Go Flo)
14h25 : Sediment sampling (Van Veen)
14h35 : Sediment sampling (Reineck)
14h48 : Fish tracks (Hyperbentic sledge)
15h44 : Fish tracks (Beam thrawl)
16h05 : CTD scan
16h07 : Stop centrifuge

18h51 : Sediment sampling (Boxcorer) – Station S15

Wednesday 19 May

10h00 : Arrival Zeebrugge

4. Remarks regarding measurement instruments and the campaign in general

The campaign was separated in 2 parts and it was agreed that Lei Chou would be assigned as chief scientist in the first part of the campaign and Els Monteyne in the 2nd part.

In general the campaign went very smoothly in viewpoint of scientific sampling. Mostly we were ahead of the schedule and no major problems e.g. fish net breakage, were encountered. However, a problem with the generator on Wednesday 19th forced the Commander of the Belgica to return immediately to Zeebrugee for technical and safety reasons and to cancel the sampling on S15.

Due to circumstances following changes were implemented in the sampling programme:
- Monday 17th : Hansweert was sampled before Terneuzen.
- Tuesday 18th : Sediment sampling in Antwerp was done at different co-ordinates to avoid rocks in the Van Veen. Also sampling with the boxcorer was cancelled for the above stated reason. Damage to the boxcorer is very much likely when sampling in this kind of underground and it was decided not to take the risk. This item will be discussed on the logistic meeting for the next campaign. Instead sampling with the Reineck on S18 and boxcorer on S15 was executed that day.

It is noted that the Commander of the Belgica has asked to avoid changes in the sampling programme on late notice, whenever possible. A daily meeting on the evening before the next sampling day is recommended in order to discuss changes on beforehand and in order to fine-tune the foreseen programme. Above comment will be taken into consideration for next campaigns.

5. Executed sampling programme ENDIS-RISKS and SISCO

Scheldt River

STATION	POSITIE		ODAS	SCTD	Water sampling	Sediment	Suspended particulate matter (SPM)	Fish tracks
	N.B.	O.L.						
S01	51 25.00	3 34.20	X	X	X	X	X	X
S04	51 20.70	3 49.50	X	X	X	X	X	X
S07	51 26.20	4 00.00	X	X	X	X	X	X
S09	51 22.20	4 04.70	X	X	X	X	X	X
S12	51 21.90	4 13.50	X	X	X	X	X	X
S15	51 18.80	4 16.40	X	X	X	X	X	X
S22	51 13.13	4 23.50	X	X	X	X	X	X

ODAS = automatic registration of :
navigation parameters en bathymetry
meteo parameters (inclusive solar radiation)
salinity en temperature (thermosalinographe Seabird SBE21)
fluorescence (Turner Design fluorimeter model 10AU)
temperature (Rosemount temperatuurssensor)

CTD = Conductiviteit (Saliniteit), Temperatuur, Diepte gekoppeld met Densiteit, Turbiditeit met OBS-sensor, LiCor Quantameter (PAR).

Belgian Continental Shelf

STATION	POSITIE		ODAS	CTD	Water sampling	Sediment	Suspended particulate matter (SPM)	Fish tracks
	N.B.	O.L.						
710	51 26.45	3 08.32	X	X		X		
780	51 28.27	3 03.48	X	X		X		
130	51 16.25	2 54.30	X	X		X		
230	51 18.50	2 51.00	X	X		X		
330	51 26.00	2 48.50	X	X	X	X		

ODAS = automatische registratie van :
navigatie parameters en bathymetrie
meteoparameters (inclusief solarradiation)
saliniteit en temperatuur (thermosalinograaf Seabird SBE21)
fluorescentie (Turner Design fluorimeter model 10AU)
temperatuur (Rosemount temperatuurssensor)

CTD = Conductiviteit (Saliniteit), Temperatuur, Diepte gekoppeld met Densiteit, Turbiditeit met OBS-sensor, LiCor Quantameter (PAR).

6. Detailed overview sampling programme ENDIS-RISKS and SISCO

Scheldt River

STATION	WATER SAMPLING				SEDIMENT		SPM	FISH TRACKS	
	WATER NISKIN (5 l)		WATER GO FLO (10 l)	WATER NISKIN (10 l)	Van Veen	Boxcorer / Reineck	Centrifuge	Beam trawl	Hyperbentic sledge
	SPM	DOC POC	Endocrine Disruptors	Radiotracer Incubation					
S01	X	X	X	X	X	X	X	X	X
S04	X	X	X	X	X	X	X	X	X
S07	X	X	X	X	X	X	X	X	X
S09	X	X	X	X	X	X	X	X	X
S12	X	X	X	X	X	X	X	X	X
S15									
S22	X	X	X	X	X	X	X	X	

Belgian Continental Shelf

STATION	WATER SAMPLING				SEDIMENT		SPM	FISH TRACKS	
	WATER NISKIN (5 l)		WATER GO FLO (10 l)	WATER NISKIN (10 l)	Van Veen	Boxcorer	Centrifuge	Beam trawl	Hyperbentic sledge
	SPM	DOC POC	Endocrine Disruptors	Radiotracer Incubation					
710				X		X			
780				X		X			
130				X		X			
230				X		X			
330				X		X			

7. METEO PARAMETERS - ODAS

Tabel : Wind Speed, Wind direction, Air temperature, Water depth, Barometric Pressure and salinity at the different sampling stations.
(B : No data, S : Suspected data)

Station	Date	Time (local)	Wind sp. (m/s)	Wind dir. (dg)	Air temp. (°C)	Water depth (m)	Water temp. (°C)	Salinity (PSU)
S01								
CTD start	17.05.04	12h21	1.4	272.1	21.8	-21.12	13.3	29.9
Water sampling	17.05.04	12h25	1.0	77.6	21.7	-16.41	13.3	29.9
Sediment	17.05.04	12h41	1.2	64.0	21.4	-21.58	13.3	30.1
Sledge start	17.05.04	13h31	1.5	298.2	21.8	-25.23	13.3	30.8
Sledge stop	17.05.04	13h37	0.8	337.5	22.0	-26.19	13.3	30.7
Sledge start 2	17.05.04	13h52	1.4	321.0	21.5	-23.93	13.4	30.9
Sledge stop 2	17.05.04	14h02	0.5	338.5	21.3	-25.14	13.4	30.9
Beam trawl start	17.05.04	14h34	3.4	310.1	21.3	-26.60	13.4	31.2
Beam trawl stop	17.05.04	14h44	3.2	305.7	21.2	-26.08	13.4	30.9
Centrifuge stop	17.05.04	15h51	4.9	280.0	23.0	-30.30	14.1	25.1
S07								
Centrifuge start	17.05.04	16h53	0.6	203.5	23.8	-12.94	14.4	22.6
CTD start	17.05.04	16h59	2.0	344.0	23.5	-12.73	14.5	22.3
Beam trawl start	17.05.04	17h06	1.4	20.7	23.8	-12.53	14.4	22.4
Beam trawl stop	17.05.04	17h16	1.6	47.4	24.1	-09.94	14.4	22.7
Sledge start	17.05.04	17h31	1.9	35.0	23.5	-11.84	14.3	22.5
Sledge stop	17.05.04	17h39	1.7	24.1	24.0	-09.20	14.4	22.7
Sledge stop 2	17.05.04	18h06	1.3	39.1	23.8	-08.75	14.4	22.4
CTD stop	17.05.04	18h22	2.0	342.6	23.2	-11.64	14.4	21.6
Go Flo	17.05.04	18h23	2.0	346.3	23.1	-11.45	14.4	21.6
Sediment	17.05.04	18h39	2.2	340.4	22.7	-10.71	14.5	21.5
Centrifuge stop	17.05.04	18h57	6.4	9.2	22.3	-17.27	14.3	22.3
S04								
CTD start	17.05.04	19h35	0.9	351.4	22.3	-17.1	14.2	24.1
VanVeen	17.05.04	19h44	1.5	341.9	21.7	-16.97	14.3	24.0
Centrifuge start	17.05.04	19h50	2.8	309.9	22.1	-15.55	14.3	24.0
Sledge start	17.05.04	19h58	2.0	29.7	22.0	-16.55	14.3	23.9
Sledge stop	17.05.04	20h05	1.0	74.7	21.9	-30.06	14.3	24.0
Sledge stop 2	17.05.04	20h31	1.1	46.1	22.7	-24.80	14.3	23.7
Beam trawl start	17.05.04	20h41	1.2	34.5	21.5	-14.37	14.3	23.5
Beam trawl stop	17.05.04	20h52	0.8	36.0	22.0	-33.72	14.3	23.6
CTD stop	17.05.04	20h58	1.3	343.9	22.6	-33.79	14.3	23.7
Go Flo	17.05.04	21h05	2.2	267.9	22.8	-36.01	14.3	23.6
Centrifuge stop	17.05.04	21h05	3.8	257.8	20.8	-28.20	14.3	23.1

Tabel (continued): Wind Speed, Wind direction, Air temperature, Water depth, Barometric Pressure and salinity at the different sampling stations.
(B : No data, S : Suspected data)

Station	Date	Time (local)	Wind sp. (m/s)	Wind dir. (dg)	Air temp. (°C)	Water depth (m)	Water temp. (°C)	Salinity (PSU)
S22								
Centrifuge start	18.05.04	7h46	0.6	222.1	18.5	-14.23	15.6	3.6
CTD start	18.05.04	8h00	0.0	15.0	18.7	-14.22	15.6	3.2
Go Flo	18.05.04	8h07	1.4	213.0	18.7	-14.05	15.6	3.1
Sledge stop	18.05.04	8h27	1.2	208.4	28.9	-13.70	15.5	2.5
Sledge start 2	18.05.04	8h45	1.3	185.8	19.6	-13.44	15.5	2.2
Sledge stop 2	18.05.04	9h12	0.7	189.4	20.6	-13.41	15.5	1.7
CTD stop	18.05.04	9h37	1.7	239.5	21.6	-12.23	15.6	1.5
Centrifuge stop	18.05.04	9h50	3.8	107.0	21.4	-15.10	15.6	1.8
S12								
Centrifuge start	18.05.04	11h13	3.4	111.0	21.3	-13.94	16.0	8.9
CTD start	18.05.04	11h30	1.5	312.6	21.3	-8.43	15.9	9.7
Go Flo	18.05.04	11h35	1.2	326.2	21.4	-8.02	16.0	9.6
Niskin (ER)	18.05.04	11h42	0.2	314.8	22.0	-8.51	16.0	10.0
Van Veen	18.05.04	11h47	0.6	292.8	21.6	-10.08	16.0	10.2
Beam trawl start	18.05.04	11h56	2.6	308.9	22.1	-10.79	16.0	10.7
Beam trawl stop	18.05.04	12h06	3.8	300.8	22.5	-8.96	16.0	10.7
Sledge start	18.05.04	12h23	3.2	274.0	22.8	-8.23	16.0	12.0
Sledge stop	18.05.04	12h35	2.2	289.9	23.4	-10.35	16.0	11.4
Sledge start 2	18.05.04	12h57	2.7	301.8	23.0	-11.65	15.7	11.4
Sledge stop 2	18.05.04	13h07	2.9	322.1	23.7	-11.72	16.0	10.8
CTD stop	18.05.04	13h17	0.9	308.1	23.3	-10.85	16.0	11.0
Centrifuge stop	18.05.04	13h35	3.4	137.0	23.5	-19.40	15.7	13.0
S09								
Centrifuge start	18.05.04	14h06	2.4	78.0	23.8	-17.00	15.1	17.5
CTD start	18.05.04	14h14	1.2	325.0	24.1	-14.25	15.1	17.6
Go Flo	18.05.04	14h17	2.0	304.8	24.1	-13.91	15.1	17.7
Van Veen	18.05.04	14h27	1.1	306.9	24.2	-17.93	15.0	17.9
Sledge start	18.05.04	14h48	3.6	306.0	23.6	-14.08	15.0	19.0
Sledge stop	18.05.04	14h56	2.9	311.8	23.3	-16.51	15.0	19.0
Sledge 2 start	18.05.04	15h14	2.7	305.4	22.9	-15.63	14.9	19.8
Sledge 2 stop	18.05.04	15h24	2.5	304.5	22.8	-16.70	14.9	19.6
Beam trawl start	18.05.04	15h44	3.4	327.3	22.4	-14.68	14.8	20.8
Beam trawl stop	18.05.04	15h53	2.8	312.4	22.2	-16.15	15.1	20.0
Centrifuge stop	18.05.04	16h07	5.0	323.6	23.0	-19.46	15.0	19.9

8. SCTD-PARAMETERS SEABIRD SBE 19 (Seacat)

Tabel : Sampling Depth, Sea Temperature, Salinity, Turbidity, Oxygen and Density are measured In situ with the Seabird SCTD-model SBE19 (Seacat) (B: no data)

Sample depth

Station	Depth (m)	Temperature (°C)	Salinity (ppt)	Oxygen (ml/L)	OxygenSat (ml/L)	Turbidity (FTU)
S01 Start	3.933	13.27	30.08	7.51	6.07	4.02
S01 Stop	3.462	13.34	30.83	7.24	6.04	9.61
S04 Start	4.245	14.26	24.46	7.97	6.17	10.76
S04 Stop	3.981	14.26	23.71	8.83	6.19	8.07
S07 Start	3.461	14.41	22.61	8.05	6.21	7.37
S07 Stop	4.040	14.41	21.74	7.94	6.24	13.74
S09 Start	4.030	15.02	17.79	7.39	6.31	19.33
S09 Stop	4.115	14.95	20.13	7.93	6.23	9.56
S12 Start	4.335	15.92	9.80	4.99	6.51	17.94
S12 Stop	4.131	15.98	11.17	5.75	6.44	13.07
S15 Start	B	B	B	B	B	B
S15 Stop	B	B	B	B	B	B
S22 Start	4.092	15.57	3.19	1.69	6.82	44.06
S22 Stop	4.247	15.57	1.54	1.07	6.89	55.92

Bottom

Station	Depth (m)	Temperature (°C)	Salinity (ppt)	Oxygen (ml/L)	OxygenSat (ml/L)	Turbidity (FTU)
S01 Start	18.051	13.21	30.81	7.45	6.05	21.70
S01 Stop	23.115	13.39	31.00	7.03	6.02	16.03
S04 Start	14.562	14.25	24.26	7.71	6.17	18.31
S04 Stop	30.302	14.35	23.94	8.28	6.17	19.59
S07 Start	12.727	14.15	24.05	7.93	6.19	39.09
S07 Stop	11.522	14.34	22.08	7.77	6.24	31.08
S09 Start	13.012	14.95	18.27	7.25	6.31	39.37
S09 Stop	15.139	14.89	20.55	7.68	6.23	14.78
S12 Start	7.253	15.82	10.57	5.10	6.49	56.06
S12 Stop	8.668	15.79	11.68	5.44	6.45	22.43
S15 Start	B	B	B	B	B	B
S15 Stop	B	B	B	B	B	B
S22 Start	11.54	15.58	3.35	2.06	6.82	54.63
S22 Stop	11.887	15.79	1.77	1.89	6.85	68.36

9. ROSCOP-DATA

ENDIS-RISKS

No.	Data Type	Description
6 stations	H09 H10 P01 P02 P03 P04 P05 P90	
6 stations	G04 P02 P03 P04 P05 P90	
6 stations	B18 B14 P13	

ANNEX A: Instrumentation and Data-acquisition

A.1. Used instrumentation.

A.1.1. Navigational instrumentation.

During this cruise, the data from the following navigational instruments connected to the ship born computer system were logged by the Oceanographic Data Acquisition System "ODASII":

- THALES NAVIGATION AQUARIUS-02 LRK DGPS positioning system with an accuracy of 2 to 10 cm using IALA beacons for the differential correction.
- MAGNAVOX 200MX DGPS positioning system with an accuracy of ca. 5 m using IALA beacons for the differential correction.
- ANSHUTZ STD20 Gyro Compass.
- RAYTHEON DSN450 Doppler speed log and bathymetric depth.
- ATLAS DESO 22 Scientific Echosounder.
  The Atlas Deso 22 is equipped with 2 transducers (33 kHz and 210 kHz).
- TSS 320B Heave Compensator.
  The data of the Atlas Deso 22 echosounder are corrected for the heave by the TSS 320B.
- FURUNO Echosounder FCV381.
  The Furuno is also equipped with 2 transducers (28 kHz and 88 kHz).

A.1.2. Oceanografical instrumentation.

The sea surface temperature was measured continuously with the remote temperature sensor of the Sea-Bird SBE21 thermosalinograph as well as with a Sea-Bird SBE38 temperature sensor, both installed at the inlet of the non-toxic seawater circuit situated at the bow of the vessel.

The Sea-Bird SBE21 thermosalinograph, installed in the wet lab, is also connected to the non-toxic seawater circuit. The salinity was measured continuously using a personal computer with a dedicated software package from Sea-Bird. The processed data were continuously (every 6 sec.) transmitted to the HP1000/A400 data acquisition computer. The specifications of this thermosalinograph are found in table 1.

Parameter	Units	Range	Accuracy
Temperature	°C	-5 - +35	0.01 °C /6 months
Conductivity	S/m	0 – 7	0.001 S/m/month

Tabel 1. Sea-Bird SBE21 thermosalinograph specifications.

Salinity and density are calculated from conductivity, temperature and depth, in accordance to the 1978 Practical Salinity Scale from the IEEE Journal of Oceanic Engineering, January 1980.

A Turner Designs 10-AU-005 fluorimeter, also connected to the non toxic seawater circuit, was used to measure chlorophyll concentrations during the full campaign. The data were also transmitted to the HP1000/A400 data acquisition computer.

A Sea-Bird SBE19 'SeaCat' CTD profiler measures different parameters where under depth, temperature, conductivity, turbidity, oxygen content and lightintensity. The CTD-system is connected to the hydrologic winch and hydrologic CTD-measurements coincide with the water sampling. The specifications of the sensors of the SeaCat are found in tabel 2.

Parameter	Units	Range	Accuracy
Depth	m	0 - 600	
Temperature	°C	-5 - +35	0,02 °C/ 6 maand
Conductivity	S/m	0 – 7	0,001 S/m/maand
Backscatterance (OBS)	FTU	0 – 2000	
Dissolved Oxygen	ml/L	0 – 15	0,02 ml/L
Irradiance	µEinstein s^{-1} m^{-2}	0,02 - 2000	

Tabel 2. Sea-Bird SBE19 'SeaCat' specifications.

A.1.3. Meteorological instrumentation.

Following parameters were measured by the Friedrichs meteorological station:

- wind speed
- wind direction
- air temperature
- air pressure
- solar radiation

Table 3 gives a summary of the specifications of the meteo sensors.

Parameter	Units	Range	Accuracy
Wind speed	m/s	0 – 41	0.2
Wind direction	degrees	0 – 360	2
Air pressure	mbar	950 – 1050	0.3
Air temperature	°C	-35 - +45	0.2
Solar radiation	watt/m^2	0 – 1000	10

Tabel 3. Specifications of the meteo sensors.

The meteo sensors are calibrated at least once a year.

A.2. Data Acquisition System.

A.2.1. ODASII data acquisition and processing system.

A Hewlett Packard HP1000 Model A400 real-time minicomputer system with 26 RS-232 interfaces and a Hewlett Packard HP3852A data acquisition system (for analogous signals) were used to acquire meteorological, hydrological and navigational data at a 10 seconds interval.

The HP1000/A400 minicomputer is implemented as a black box. All input devices are connected through RS232 type interfaces to this real-time computer. The data acquisition software collects the sensor data and delivers this raw data to the data processing software implemented on a HP9000/748i-100 UNIX workstation. This on-line data processing software converts the raw data from the different input devices into physical units and stores the data in an Informix relational database.

The data presentation software is based on a Client Server model. The oceanographic data in the Informix database on the UNIX workstation are obtained on personal computer through a local area network (thin Ethernet LAN). These personal computer presentation units are installed in the labs, in the computer room and on the bridge and are accessible by all scientists on board for the production of real-time listings, graphs and track plots.

A.5.2. Sea-Bird CTD system.

The acquisition of the data from the Sea-Bird CTD systems (SBE09, SBE19 en SBE21) is allowed by using PCs using the Sea-Bird software. The software allows the necessary configuration and data acquisition. The sea-bird CTD software allows you to make real-time data-plots and to make markings when water bottle samples are taken so that the CTD and related parameters are known at the exact sampling depth.

ANNEX B: Detailed time-schedule 17 – 18 may 2004

Campaign 2004-11

Date	Sampling	Remarks
17/05/2004		
Vlissingen		
11h20	Centrifuge start	
12h21	CTD + Niskin	
12h25	10 L Niskin	
12h26	Go Flo 1	
12h29	Go Flo 2	
12h30	Go Flo 3	
12h37	Boxcorer	
12h41	VanVeen	
13h30	Bentic sledge Start	
13h37	Bentic sledge Stop	
13h53	Bentic sledge Start 2	
14h02	Bentic sledge Stop 2	
14h34	Beam throawl Start	
14h44	Beam throawl Stop	
14h56	CTD	
15h44	Centrifuge stop	6350 L: veel bloei
Hansweert		
16h53	Centrifuge start	
16h59	CTD	
17h06	Boomkor start	
17h16	Boomkor stop	
17h31	Bentic sledge Start	
17h39	Bentic sledge Stop	
17h57	Bentic sledge Start 2	
18h06	Bentic sledge Stop 2	
18h22	CTD 2 + Niskin 5L	
18h23	Go Flo 1	
18h25	Niskin 10L	
18h26	Go Flo 2	
18h28	Go Flo 3	
18h35	Van Veen	
18h40	Reineck	
18h57	Centrifuge stop	3200L: veel bloei

Date	Sampling	Remarks
Terneuzen		
19h35	CTD + Niskin 10L	
19h38	Reineck	
19h48	Van Veen	
19h49	Centrifuge start	
19h59	Bentic sledge Start	
20h05	Bentic sledge Stop	
20h22	Bentic sledge Start 2	
20h31	Bentic sledge Stop 2	
20h41	Boomkor start	
20h52	Boomkor stop	
21h00	CTD 2 + Go Flo 1	
21h02	Niskin 5L	
21h04	Go Flo 2	
21h06	Go Flo 3	niet vol: 405100008 niet gevuld
21h20	Centrifuge stop	2308L: veel bloei

18/05/2004

Antwerpen		
7h47	Centrifuge start	
8h00	Bentic sledge start	Passive sampling
8h04	CTD + 5L Niskin	
8h06	Niskin 10L	
8h07	Go Flo 1	
8h09	Go Flo 2	
8h11	Go Flo 3	
8h15	VanVeen 1	Enkel stenen
8h17	VanVeen 2	Enkel stenen
8h27	Bentic sledge stop	Slechte vangst, mogelijks lag sorbeslee niet recht op de grond --> kabels verhangen
8h46	Bentic sledge start	Passive sampling
9h12	Bentic sledge stop	
9h37	CTD2	CTD en VanVeen wat verder genomen
9h41	VanVeen	aan ponton
9h49	Centrifuge stop	3477L

De boxcorer kon niet genomen worden. Op de volgende vergadering kan besproken worden of we niet beter wat verder naar de rupelmonde op bemonsteren.

S18	
10h27	Reineck (SISCO)

Date	Sampling	Remarks
Bath		
11h14	Centrifuge start	
11h29	CTD + Niskin 5 L	
11h31	Niskin 10 L	
11h34	Go Flo 1	
11h35	Go Flo 2	
11h37	Go Flo 3	Niet diep genoeg, sluit niet, niskin nemen
11h42	Niskin 10 L	
11h47	Van Veen	Zanderig
11h56	Beam thrawl start	
12h06	Beam thrawl stop	
12h23	Bentic sledge start	
12h35	Bentic sledge stop	
12h57	Bentic sledge 2 start	
13h06	Bentic sledge 2 stop	
13h17	CTD stop	
13h34	Centrifuge stop	3755L
Saeftinge		
14h06	Centrifuge start	
14h15	CTD + Niskin 5 L	
14h17	Go Flo 1	
14h20	Go Flo 2	
14h22	Go Flo 3	
14h24	Niskin 10 L (SISCO)	
14h25	Van Veen	niet vol
14h29	Van Veen 2	
14h35	Reineck (SISCO)	
14h48	Bentic sledge start	
14h56	Bentic sledge stop	
15h13	Bentic sledge 2 start	
15h23	Bentic sledge 2 stop	
15h44	Beam thrawl start	
15h53	Beam thrawl stop	
16h05	CTD stop	
16h07	Centrifuge stop	3260L
S15		
18h51	Boxcorer (SISCO)	saliniteit 11