CAMPAIGN REPORT BMM-Measuring service Ostend 2005/08

11.04.2005 till 15.04.2005

Subscriber	Els Monteyne
Institution	MUMM/BMM/UGMM - Management Unit of the North Sea Mathematical Models 100 Gulledelle 1200 Brussels
1st Scientist	Els Monteyne
2nd Scientist	Patrick Roose
Telephone	059 24 20 50
Fax	059 70 49 34
E-mail	E.Monteyne@mumm.ac.be
Program identification	ENDIS RISKS – SISCO

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11.04.2005 till 15.04.2005

1. Scienctist team

ENDIS-RISKS team:

E. Monteyne
M. Neyts
A. Ghekiere
H. Noppe
B. Beuselinck
G. Desmet
D. Peelaers

SISCO team:

L. Chou
M. Tsagaris
V. Carbonnel
L. Rebreanu
C. De Bodt

M. Lionard (UG)

Recuperation tripode:

Michael Fettweis	BMM Brussel
Jean-Pierre De Blauwe	BMM Meetdienst
Joan Backers	BMM Meetdienst
Gregory De Schepper	BMM Meetdienst
Roger Luxmoore	Marlink
Reinhilde Van den Branden	BMM Meetdienst
Marc Roche	MEZ
Jean-Marie Vanaudenhoven	Radio Holland Belgium
Kris Vanparijs	Radio Holland Belgium

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.

3. Operations

Monday 11 april

11h00 : Zeebrugge – departure

Station S01 Vlissingen

12h29 : Start centrifuge
13h03 : CTD scan
13h08 : Water sampling (Nisking / Go Flo)
13h24 : Sediment sampling (Van Veen)
13h55 : Fish tracks (Hyperbentic sledge) 1 start
14h28 : Fish tracks (Hyperbentic sledge) 2 start
14h56 : Fish tracks (Hyperbentic sledge) 3 start
15h38 : Fish tracks (Hyperbentic sledge) 4 start
16h30 : Sediment sampling (Boxcorer)
16h42 : CTD scan
17h05 : Stop centrifuge

Station 130

19h51 : Niskin + CTD
20h01 : Reineck
20h07 : Reineck

Station 230

20h35 : Niskin + CTD
20h41 : Niskin
20h55 : Boxcore

Station 330

21h55 : Niskin
21h59 : Reineck

Station 780

23h10 : Niskin
23h13 : Reineck

Station 710

23h49 : Niskin
23h57 : Reineck

Tuesday 12 april

Station S12 Bath

07h59 : Start centrifuge
08h11 : CTD scan
08h16 : Water sampling (Nisking / Go Flo)
08h35 : Sediment sampling (Reineck)
08h42 : Sediment sampling (Van Veen)
09h06 : Fish tracks (Hyperbentic sledge) 1 start
09h51 : Fish tracks (Hyperbentic sledge) 2 start
10h13 : Fish tracks (Hyperbentic sledge) 3 start
10h41 : Fish tracks (Hyperbentic sledge) 4 start
11h08 : Fish tracks (Hyperbentic sledge) 5 start
11h33 : CTD scan
11h47 : Stop centrifuge

Station S07 Hansweert

12h48 : Start centrifuge
12h54 : CTD scan
12h58 : Sediment sampling (Reineck)
13h13 : Sediment sampling (Van Veen)
13h22 : Fish tracks (Hyperbentic sledge) 1 start
13h51 : Fish tracks (Hyperbentic sledge) 2 start
14h22 : Fish tracks (Hyperbentic sledge) 3 start
14h57 : Fish tracks (Hyperbentic sledge) 4 start
15h28 : Fish tracks (Hyperbentic sledge) 5 start
16h00 : Fish tracks (Hyperbentic sledge) 6 start
16h10 : Fish tracks (Hyperbentic sledge) 7 start
16h46 : Fish tracks (Hyperbentic sledge) 8 start
17h07 : CTD scan
17h09 : Water sampling (Nisking / Go Flo)
17h17 : Stop centrifuge

Station S04 Terneuzen

18h26 : CTD scan + Niskin
18h29 : Sediment (Reineck)
18h37 : Sediment (Van Veen)

T01 (Salinity point)

19h49 : CTD scan + Niskin

T02

21h11 : CTD scan + Niskin

Wednesday 13 April

Station S15 Doel

08h04 : CTD scan
08h08 : Water sampling (Nisking / Go Flo)
08h19 : Sediment sampling (Van Veen)
08h21 : Start centrifuge
08h41 : Fish tracks (Hyperbentic sledge) 1 start
08h58 : Fish tracks (Hyperbentic sledge) 2 start
10h13 : Fish tracks (Hyperbentic sledge) 3 start
10h27 : Fish tracks (Hyperbentic sledge) 4 start
10h58 : Fish tracks (Hyperbentic sledge) 5 start
11h45 : Sediment sampling (Boxcorer)
11h47 : CTD scan
11h54 : Stop centrifuge

Station S18

12h30 : Sediment sampling (Van Veen)

Station S20

13h35 : Sediment sampling (Van Veen)

Station Temse

15h11 : Start centrifuge
15h23 : CTD scan + Niskin
15h46 : Water sampling (Nisking)
15h54 : Fish tracks (Hyperbentic sledge) 1 start
15h56 : Sediment sampling (Van Veen)

Thursday 14 April

Station S22 Antwerpen

08h17 : Start centrifuge
08h27 : CTD scan
08h29 : Water sampling (Nisking / Go Flo)
08h44 : Sediment sampling (Van Veen)
08h45 : Fish tracks (Hyperbentic sledge) 1 start
09h02 : Fish tracks (Hyperbentic sledge) 2 start
09h36 : Fish tracks (Hyperbentic sledge) 3 start
10h35 : Stop centrifuge
10h43 : Sediment sampling (Boxcorer)
10h44 : CTD scan

Station S09 Saefthinge

12h39 : Start centrifuge
12h44 : CTD scan
12h53 : Water sampling (Nisking / Go Flo)
13h01 : Sediment sampling (Van Veen)
13h13 : Sediment sampling (Reineck)
13h49 : Fish tracks (Hyperbentic sledge) 1 start
14h23 : Fish tracks (Hyperbentic sledge) 2 start
14h54 : Fish tracks (Hyperbentic sledge) 3 start
15h15 : Fish tracks (Hyperbentic sledge) 4 start
15h42 : CTD scan
15h43 : Stop centrifuge

Friday 15 April 2005

08h25 Departure from Zeebrugge.
09h10 Start recuperation tripod.
09h25 Tripod on deck.

09h50 ADCP at the water surface.
10h00 ADCP TRBM (trawl resistant bottom mount) on deck.
10h40 Beaconing buoy on board.
11h30 Arrival at Zeebrugge. Disembarkation of scientific equipment.

4. Remarks regarding measurement instruments and the campaign in general

In general the campaign went very smoothly. The co-operation between scientists and the crew was very good.

Regarding CTD-data:
Due to a failure of the sea-cat a part of the CTD-results of salinity are to be considered indicative. Measures have been taken to prevent future problems with the measuring devices of the seacat.

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		
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	X		
780	51 28.27	3 03.48	X	X	X	X		
130	51 16.25	2 54.30	X	X	X	X		
230	51 18.50	2 51.00	X	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
S04					X	X			
S07	X	X	X	X	X	X	X		X
S09	X	X	X	X	X	X	X		X
S12	X	X	X	X	X	X	X		X
S15									
S22	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	Reineck / 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								
Centrifuge start	11.04.05	12h27	3.0	291.5	13.2	-17.6	8.3	27.6
CTD start	11.04.05	13h04	4.1	285.5	15.7	-20.4	8.5	26.4
Water sampling	11.04.05	13h08	4.3	271.9	14.4	-19.7	8.5	26.3
Sediment	11.04.05	13h23	4.8	283.8	14.3	-19.8	8.6	26.5
Sledge start	11.04.05	13h52	5.4	282.2	13.7	-21.4	8.4	26.8
Sledge stop	11.04.05	14h05	5.4	285.5	13.9	-21.5	8.5	26.5
Sledge start 2	11.04.05	14h28	5.0	287.3	14.6	-19.2	8.4	27.4
Sledge stop 2	11.04.05	14h38	4.8	286.8	13.9	-19.8	8.3	27.2
Sledge start 3	11.04.05	14h56	4.1	285.1	14.0	-22.0	8.4	27.8
Sledge stop 3	11.04.05	15h17	4.7	267.3	15.0	-22.1	8.4	27.6
Sledge start 4	11.04.05	15h38	4.4	287.7	14.6	-23.5	8.3	28.2
Sledge stop 4	11.04.05	15h52	4.9	280.6	15.0	-23.4	8.2	28.2
Boxcorer	11.04.05	16h29	5.4	308.4	14.0	-23.5	8.3	28.9
CTD stop	11.04.05	16h42	5.4	317.7	14.1	-23.6	8.3	28.9
Centrifuge stop	11.04.05	17h04	4.6	307.1	14.0	-29.5	8.4	29.3
S12								
Centrifuge start	12.04.05	07h56	1.8	156.1	12.6	-18.7	12.6	11.9
CTD start	12.04.05	08h11	2.0	169.0	13.2	-11.2	11.0	9.8
Water sampling	12.04.05	08h14	2.3	167.5	13.1	-11.4	11.1	9.8
Sediment	12.04.05	08h46	2.3	185.5	14.1	-11.7	11.1	9.8
Sledge start	12.04.05	09h05	1.4	124.9	B	-9.7	11.3	8.6
Sledge stop	12.04.05	09h16	1.6	294.7	14.6	-15.3	11.2	9.1
Sledge start 2	12.04.05	09h49	3.1	171.5	14.9	-16.15	11.3	8.3
Sledge stop 2	12.04.05	09h57	3.4	182.6	15.5	-10.66	11.3	8.5
Sledge start 3	12.04.05	10h11	3.6	197.5	16.0	-14.22	11.5	8.0
Sledge stop 3	12.04.05	10h18	2.1	225.0	16.3	-9.52	11.4	8.1
Sledge start 4	12.04.05	10h39	2.5	228.0	16.8	-13.29	11.5	7.9
Sledge stop 4	12.04.05	10h49	2.5	247.9	16.8	-11.6	11.5	7.9
Sledge start 5	12.04.05	11h08	3.5	211.5	17.1	-12.2	11.7	7.6
Sledge stop 5	12.04.05	11h15	2.3	217.7	17.1	-9.03	11.6	7.8
CTD stop	12.04.05	11h29	2.9	318.6	18.1	-7.7	11.7	7.7
Centrifuge stop	12.04.05	11h40	4.4	265.8	16.5	-19.8	11.3	8.6

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 (gmt)	Wind sp. (m/s)	Wind dir. (dg)	Air temp. (°C)	Water depth (m)	Water temp. (°C)	Salinity (PSU)
S07								
Centrifuge start	12.04.05	12h46	5.4	247.2	16.9	-8.6	9.9	15.2
CTD start	12.04.05	12h51	4.5	246.1	16.9	-8.5	10.1	15.5
Sediment	12.04.05	12h56	3.7	266.0	16.8	-8.6	10.1	15.4
Sledge start	12.04.05	13h20	4.1	262.8	17.7	-11.03	10.0	15.3
Sledge stop	12.04.05	13h34	3.1	268.3	17.7	-7.99	10.0	15.6
Sledge start 2	12.04.05	13h49	3.3	261.5	17.8	-8.90	9.9	15.8
Sledge stop 2	12.04.05	14h04	3.9	263.8	17.6	-13.2	10.1	15.5
Sledge start 3	12.04.05	14h21	6.4	251.7	18.5	-8.5	9.9	16.4
Sledge stop 3	12.04.05	14h39	5.0	272.5	17.9	-17.0	10.0	15.8
Sledge start 4	12.04.05	14h55	5.8	253.8	18.0	-9.23	10.0	16.7
Sledge stop 4	12.04.05	15h09	5.2	274.1	17.9	-17.1	10.0	16.3
Sledge start 5	12.04.05	15h27	3.8	276.1	17.9	-9.64	9.7	17.5
Sledge stop 5	12.04.05	15h40	5.5	261.5	17.9	-16.5	9.8	16.5
Sledge start 6	12.04.05	15h59	5.4	259.2	17.9	-9.9	9.8	17.9
Sledge stop 6	12.04.05	16h14	4.9	286.8	18.1	-16.5	10.0	17.0
Sledge start 7	12.04.05	16h28	6.1	275.2	18.1	-12.3	9.8	17.4
Sledge stop 7	12.04.05	16h36	5.8	277.5	18.1	-10.3	9.7	18.5
Sledge start 8	12.04.05	16h46	4.0	246.4	18.0	-11.7	9.8	18.8
Sledge stop 8	12.04.05	17h58	4.7	264.6	18.1	-18.0	10.6	17.6
CTD stop	12.04.05	17h05	4.9	270.8	17.8	-19.9	10.0	17.2
Water sampling	12.04.05	17h07	5.1	273.5	17.3	-19.8	9.9	17.4
Centrifuge stop	12.04.05	17h16	5.9	269.7	17.5	-20.0	10.0	17.5

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 (gmt)	Wind sp. (m/s)	Wind dir. (dg)	Air temp. (°C)	Water depth (m)	Water temp. (°C)	Salinity (PSU)
S15								
CTD start	13.04.05	08h04	4.7	210.7	14.4	-15.8	11.6	8.8
Water sampling	13.04.05	08h07	5.6	223.1	14.3	-16.1	11.6	8.8
Sediment	13.04.05	08h17	6.7	220.1	14.3	-14.0	11.6	8.8
Centrifuge start	13.04.05	08h19	5.9	226.3	14.3	-13.8	11.6	8.8
Sledge start	13.04.05	08h36	5.7	232.2	14.2	-12.8	11.7	8.6
Sledge stop	13.04.05	08h47	5.9	227.8	14.3	-13.6	11.8	7.9
Sledge start 2	13.04.05	08h55	6.9	226.0	14.4	-14.6	11.9	7.7
Sledge stop 2	13.04.05	09h27	6.5	222.9	14.3	-14.8	11.9	7.9
Sledge start 3	13.04.05	09h35	6.5	214.0	14.4	-13.6	11.9	8.1
Sledge stop 3	13.04.05	10h17	4.5	191.2	15.0	-15.9	12.0	7.6
Sledge start 4	13.04.05	10h26	6.0	215.6	14.9	-15.8	12.0	7.6
Sledge stop 4	13.04.05	10h49	5.3	204.1	14.7	-15.5	12.2	7.2
Sledge start 5	13.04.05	10h56	5.7	220.6	14.4	-15.3	12.2	6.7
Sledge stop 5	13.04.05	11h26	5.7	197.5	15.1	-10.6	12.4	6.6
Centrifuge stop	13.04.05	11h52	6.0	196.1	15.7	-15.1	12.4	6.6
Temse								
Centrifuge start	13.04.05	14h10	5.8	193.0	15.9	-8.5	12.3	0.6
CTD start	13.04.05	15h21	7.4	211.1	16.0	-8.8	12.4	0.6
Water sampling	13.04.05	15h44	7.5	199.9	16.2	-8.4	12.3	0.6
Sediment	13.04.05	15h55	6.2	188.3	26.3	-9.6	12.1	0.6
Sledge start	13.04.05	15h53	6.5	188.2	16.3	-9.5	12.2	0.6
Sledge stop	13.04.05	16h06	6.8	189.0	16.5	-10.5	12.1	0.6
Centrifuge stop	13.04.05	B	B	B	B	B	B	B

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 (gmt)	Wind sp. (m/s)	Wind dir. (dg)	Air temp. (°C)	Water depth (m)	Water temp. (°C)	Salinity (PSU)
S22								
Centrifuge start	14.04.05	08h12	5.4	206.2	15.2	-16.9	12.4	4.5
CTD start	14.04.05	08h32	4.7	180.4	14.9	-16.4	12.4	4.8
Water sampling	14.04.05	08h36	4.7	175.1	14.9	-16.9	12.4	4.7
Sediment	14.04.05	08h19	6.1	186.3	14.9	-13.6	12.4	4.7
Sledge start	14.04.05	08h43	3.9	176.5	14.9	-12.9	12.3	4.7
Sledge stop	14.04.05	08h47	3.5	228.4	14.8	-14.1	12.4	4.7
Sledge start 2	14.04.05	08h52	B	B	B	B	B	B
Sledge stop 2	14.04.05	09h30	4.3	157.3	15.0	-15.4	12.3	4.2
Sledge start 3	14.04.05	09h35	4.0	172.5	15.0	-15.1	12.3	4.1
Sledge stop 3	14.04.05	09h57	5.1	188.6	15.2	-14.1	12.3	3.7
Sledge start 4	14.04.05	10h05	4.6	197.8	15.4	-13.4	12.3	3.6
Sledge stop 4	14.04.05	10h26	3.3	197.1	15.7	-13.0	12.3	3.2
Centrifuge stop	14.04.05	10h33	5.3	191.2	15.9	-15.7	12.3	3.7
CTD stop	14.04.05	10h41	5.4	213.8	16.0	-14.9	12.3	3.5
S09								
Centrifuge start	14.04.05	12h36	6.2	180.0	17.2	-16.5	11.0	12.0
CTD start	14.04.05	12h43	8.4	168.5	17.6	-16.3	11.0	11.9
Water sampling	14.04.05	12h51	4.2	189.0	17.5	-16.7	11.2	11.5
Sediment	14.04.05	12h59	5.7	192.2	17.7	-16.3	11.2	11.4
Sledge start	14.04.05	13h44	8.4	172.3	18.1	-16.5	11.4	10.6
Sledge stop	14.04.05	14h01	9.1	192.5	18.2	-14.9	11.2	11.3
Sledge start 2	14.04.05	14h21	7.0	286.6	18.6	-15.1	11.5	10.2
Sledge stop 2	14.04.05	14h42	7.3	187.8	18.4	-19.6	11.4	10.6
Sledge start 3	14.04.05	14h52	7.1	189.7	18.5	-18.9	11.4	10.7
Sledge stop 3	14.04.05	15h03	6.7	195.5	18.4	-17.7	11.4	10.6
Sledge start 4	14.04.05	15h13	8.1	192.7	18.1	-17.0	11.4	10.7
Sledge stop 4	14.04.05	15h26	6.8	180.2	17.7	-19.7	11.0	11.6
CTD stop	14.04.05	15h39	5.4	181.2	17.7	-20.2	11.2	11.7
Centrifuge stop	14.04.05	15h41	7.0	182.4	17.7	-20.2	11.1	11.6

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) (S: suspected data) (B: no data)

Sample depth

Station	Depth (m)	Temperature (°C)	Salinity (ppt)	Oxygen (ml/L)	Oxygen Sat (ml/L)	Turbidity (FTU)
S01 Start	4.2	8.4	26.9	6.8	6.9	14.4
S01 Stop	4.8	8.3	0.9 (S)	8.6	8.1	4.8
S07 Start	4.6	10.5	8.2 (S)	11.3	7.4	24.6
S07 Stop	4.5	10.7	17.4	9.2	6.9	12.3
S09 Start	3.1	11.0	8.0	9.5	7.3	29.7
S09 Stop	3.8	11.3	7.2	11.1	7.3	20.3
S12 Start	3.2	11.0	5.1 (S)	9.9	7.5	40.4
S12 Stop	3.4	11.6	3.9 (S)	10.4	7.4	114.7
S15 Start	4.6	11.5	9.1	4.8	7.2	38.1
S15 Stop	4.2	12.2	5.4	10.5	7.2	138.9
S22 Start	4.5	12.3	3.0	12.3	7.4	55.4
S22 Stop	2.9	12.3	3.2	9.8	7.3	82.1
Temse start	4.8	12.4	0.44	10.6	7.4	68.7

Bottom

Station	Depth (m)	Temperature (°C)	Salinity (ppt)	Oxygen (ml/L)	Oxygen Sat (ml/L)	Turbidity (FTU)
S01 Start	17.9	8.2	27.7	6.3	6.8	44.8
S01 Stop	17.7	8.2	29.0	6.8	6.8	42.1
S07 Start	7.6	10.1	15.5	12.0	7.1	25.1
S07 Stop	17.9	9.7	18.3	5.9	6.9	12.3
S09 Start	13.2	10.8	13.1	7.0	7.1	43.7
S09 Stop	15.5	11.0	12.4	13.9	7.1	22.0
S12 Start	10.2	10.9	10.3	13.2	7.2	54.0
S12 Stop	7.9	11.6	7.7	11.9	7.2	176.8
S15 Start	13.6	11.5	9.4	4.8	7.2	80.3
S15 Stop	10.4	12.3	6.8	11.9	7.1	402.6
S22 Start	15.0	12.3	4.9	14.3	7.2	152.7
S22 Stop	10.5	12.3	3.5	12.6	7.3	179.8
Temse start	7.6	12.4	0.72	11.0	7.4	72.4

9. ROSCOP-DATA

ENDIS-RISKS

No.	Data Type	Description
8 stations	H09 H10 P01 P02 P03 P04 P05 P90	
8 stations	G04 P02 P03 P04 P05 P90	
8 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 11 – 15 april 2005

Campaign 2005-08

Date/Time	Sampling	Remarks
4/11/05		
Vlissingen S01		
12h29	Centrifuge start	
13h03	CTD + Niskin	
13h08	Go Flo 1	
13h11	Go Flo 2	
13h13	Go Flo 3	
13h15	10 L Niskin	
13h24	VanVeen	BMM zand
13h28	VanVeen	Monit zand
13h55	Bentic sledge Start	schistomisis + gastrosaccus
14h05	Bentic sledge Stop	worden niet gescheiden, wegens te moeilijk
14h28	Bentic sledge Start 2	Vooral schistomysis
14h39	Bentic sledge Stop 2	
14h56	Bentic sledge Start 3	2000m gesleept
15h19	Bentic sledge Stop 3	
15h38	Bentic sledge Start 4	2000m gesleept
15h52	Bentic sledge Stop 4	Totaal: 270g
16h30	Boxcorer	
16h42	CTD + Niskin bottom	
17h05	Centrifuge stop	10987l
BCP SISCO		
130		
19h51	Niskin	(ook water voor Mark)
20h01	Reineck	
20h07	Reineck	
230		
20h35	Niskin	surface
20h41	Niskin	bottom, 10m
20h55	Boxcore	
330		
21h55	Niskin	surface
21H59	Reineck	
780		
23h10	Niskin	surface
23h13	Reineck	
710		
23h49	Niskin	surface
23h57	Reineck	

Bath S12

07h59	Centrifuge start	
08h11	CTD + Niskin	Mogelijks probleem met salinometer
08h16	Go Flo 1	
08h27	Go Flo 2	CTD opnieuw genomen, saliniteit onstabiel
08h30	Go Flo 3	
08h35	Reineck	
08h42	VanVeen 1	BMM zand
08h46	VanVeen 2	Monit zand
08h50	VanVeen 3	Monit zand
08h51	VanVeen 4	Monit zand
09h06	Bentic sledge Start	Vooral neomysis
09h18	Bentic sledge Stop	
09h51	Bentic sledge Start 2	
09h58	Bentic sledge Stop 2	
10h13	Bentic sledge Start 3	
10h20	Bentic sledge Stop 3	
10h41	Bentic sledge Start 4	
10h51	Bentic sledge Stop 4	
11h08	Bentic sledge Start 5	
11h17	Bentic sledge Stop 5	156g
11h33	CTD + Niskin bottom	
11h47	Centrifuge stop	11251L

Hansweert S07

12h48	Centrifuge start	
12h54	CTD + 10L niskin	
12h56	10L Niskin	
12h58	VanVeen 1	BMM zand
13h01	VanVeen 2	Monit zand
13h13	Reineck	
13h22	Bentic sledge Start	Mesopodopsis slaberi
13h36	Bentic sledge Stop	Gastrosaccus en Praunus (?)
13h51	Bentic sledge Start 2	1100 m
14h06	Bentic sledge Stop 2	
14h22	Bentic sledge Start 3	1400 m
14h42	Bentic sledge Stop 3	
14h57	Bentic sledge Start 4	1250 m
15h12	Bentic sledge Stop 4	
15h28	Bentic sledge Start 5	1400 m
15h42	Bentic sledge Stop 5	
16h00	Bentic sledge Start 6	
16h14	Bentic sledge Stop 6	Scheiding:
16h25	Bentic sledge Start 7	Gastrosaccus spinifer: 12g
16h36	Bentic sledge Stop 7	Mesopodopsis slaberi: 17g
16h46	Bentic sledge Start 8	Praunus flexosus: 8g
16h59	Bentic sledge Stop 8	Rest (alle soorten samen): 52 g
17h07	CTD + Go Flo 1	
17h09	Go Flo 2	
17h11	Go Flo 3	
17h14	Niskin	

17h17	Centrifuge stop	

Terneuzen S04

18h26	CTD + 10L niskin	
18h29	Reineck	
18h37	VanVeen 1	Monit zand

T01

19h49	CTD + 10L Niskin	SISCO

T02

21h11	CTD + 10L Niskin	SISCO

13/04/05

Doel S15

08h04	CTD + Niskin	
08h08	Go Flo 1	
08h12	Go Flo 2	
08h14	Go Flo 3	
08h19	VanVeen	Slib
08h21	Centrifuge start	
08h41	Oude slede start 1	Weinig vangst (Nemoysis)
08h51	Oude slede stop 1	(--> slede 30 min buitenhangen)
08h58	Oude Slede start 2	
09h29	Oude Slede stop 2	
09h40	Oude Slede start 3	
10h19	Oude Slede stop 3	
10h27	Oude slede start 4	
10h54	Oude slede stop 4	
10h58	Oude slede start 5	
11h28	Oude slede stop 5	258g Neomysis int.
11h45	Boxcorer	
11h47	CTD stop	
11h54	Centrifuge stop	

S18

12h30	VanVeen	Monit

S20

13h35	VanVeen	Monit: slib

Temse

15h11	Centrifuge start	
15h23	CTD + Niskin	
15h43	Niskin	Bottom
15h43	Boxcore	
15h46	Niskin 1	Te ondiep voor Go Flo
15h49	Niskin 2	
15h53	Niskin 3	
15h54	Oude Slede start	
15h56	VanVeen	beetje slib
15h59	VanVeen 2	beetje slib
16h02	VanVeen 3	grint

16h08	Oude Slede stop	Niets gezien

14/04/05

Antwerpen S22

08h17	Centrifuge start	
08h27	CTD + Niskin 10L	
08h29	Niskin 10L	
08h31	Go Flo1	
08h34	Go Flo2	
08h38	Go Flo3	
08h40	Niskin 10L	
08h44	VanVeen 1	
08h45	Oude Slede start 1	
08h46	VanVeen 2	
08h57	Oude Slede stop 1	
09h02	Oude Slede start 2	
09h32	Oude Slede stop 2	
09h36	Oude Slede start 3	
09h59	Oude Slede stop 3	270 g Neomysis int.
10h35	Centrifuge stop	
10h43	Boxcorer	
10h44	CTD stop	

Saefthinge S09

12h39	Centrifuge start	
12h44	CTD + Niskin	
12h46	10 L Niskin	
12h53	Go Flo 1	
12h56	Go Flo 2	
12h58	Go Flo 3	
13h01	VanVeen 1	
13h05	VanVeen 2	
13h13	Reineck 1	
13h45	Bentic sledge Start	
14h04	Bentic sledge Stop	
14h23	Bentic sledge Start 2	
14h43	Bentic sledge Stop 2	
14h54	Bentic sledge Start 3	
15h05	Bentic sledge Stop 3	17g Mesopodopsis
15h15	Bentic sledge Start 4	24 g Neomysis int.
15h27	Bentic sledge Stop 4	Rest: 217 g
15h42	CTD	
15h43	Centrifuge stop	

ANNEX C: Trackplot Campaign 2005/08