CRUISE REPORT

RV Simon Stevin Cruise 17-280 (8/05 – 12/05/2017)

Status: Final
Datum: 13/10/2017
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CONTENT

1. HISTORY OF DOCUMENT

Version	Name	Date	Info
V1	Jonas Mortelmans	12 June 2017	Final draft
V2	Jonas Mortelmans	13 October 2017	Final version

2. GENERAL FORM RV SIMON STEVIN

Cruise number: 17-280 (http://www.vliz.be/vmdcdata/midas/report.php?cruise=1750)
Datum/Time: ETD 8/05/2017 12:00
ETA 12/05/2017 12:00
Chief scientist: Jonas Mortelmans
Participating institutes: CNRS-LOG (*Centre national de la recherche scientifique – Laboratoire d'Océanologie et de Géosciences)*
NIOZ (*Koninklijk Nederlands Instituut voor Onderzoek der Zee)*
VLIZ (*Vlaams Instituut voor de Zee*),
RWS *(Rijkswaterstaat)*
Geographical regions: Thames estuary (http://marineregions.org/mrgid/3241)
Southern bight of the north sea (http://marineregions.org/mrgid/2399)
Eastern English Channel (http://marineregions.org/mrgid/2389)
DIPCLEAR: Dutch waters (approved 16/3/2017)
English waters (approved 20/4/2017)
French waters (approved 27/4/2017)

3. LIST OF PARTICIPANTS

Name	Institute	Gender	Email	8/05 ->12/05/2017
Arnaud Louchart	CNRS-LOG	M	arnaud.louchart@etu.univ-littoral.fr	x
Fabrice Lizon	CNRS-LOG	M	fabrice.lizon@univ-lille1.fr	x
Jonas Mortelmans	VLIZ	M	jonas.mortelmans@vliz.be	x
Jolien Goossens	VLIZ	F	jolien.goossens@vliz.be	x
Machteld Rijkeboer	RWS	F	machteld.rijkeboer@rws.nl	x
Hedy Maria Aardema	RWS	F	hedy.aardema@rws.nl	x
Jacco Kromkamp	NIOZ	M	jacco.kromkamp@nioz.nl	x
			Total number of participants:	7

Assignment of the cabins by the Chief-Scientist at the start of the campaign.

4. SCIENTIFIC OBJECTIVES

Name	Institute	Instruments	Scientific goal
Arnaud Louchart + Fabrice Lizon	CNRS-LOG	CytoSense + Fluoroprobe (continuous recording + profiling) + PhytoPAM (discrete measurements at surface and bottom waters) + FRRF (profiling, surface, bottom)	The spatial distribution of phytoplankton functional groups during the Phaeocystis/Diatom bloom from the E. Channel towards the North Sea. Spectral photosynthetic acclimation
Machteld Rijkeboer	RWS	CytoSense Flowcytometer	How Is the phytoplankton composition distributed in space, biodiversity difference, relation of FCM-parameters to other (bulk) sensor parameters, microscopic data, pigment analyses etc, How stable and robust is the outcome of FCM data over the years (I have data now from 2015 and 2016 with same configuration)
Hedy Maria Aardema	RWS	Fast Repetition Rate Fluorometer (FRRF)	What is the primary productivity of the Belgian North Sea? How can data from the FRRF and Flowcytometer be coupled?

Jacco Kromkamp	NIOZ	FRRF, 13C-incubator and possible a set Ramses hyperspectral sensor to measure hyperspectral reflectance data (If so, I would like to fix this on a railing high up on the ship so that I have an unblocked view of the sea surface	investigate primary production and variability (and regulation) of photosynthetic efficiencies and the relationship between photosynthetic electron transport, C-fixation and the role of phytoplankton composition and abiotic variables. It is also intented to compare the FRRF data from the flow-through with discrete samples.
Jonas Mortelmans, Jolien Goossens	VLIZ	WP2 net, CTD, water filtration (pigments, nutrients)	Zooplankton biodiversity, phytoplankton parameters

5. RESEARCH AREA – SAMPLING STATIONS

5.1. List of scheduled stations for sampling

Point	Country	Toponymal	y	x	CTD	WP2	FRRF profiler
1	BE	130	51.27055	2.90535	1	1	1
2	BE	120	51.186083	2.702483	1	1	1
3	FR	Duinkerke	51.076456	2.246111	1	1	1
4	FR	pas	51.221734	2.171513	1	1	1
5	FR	Calais	51.013102	1.905619	1	1	1
6	FR	Cap griz nez	50.837958	1.493727	1	1	1
7	FR	Berck	50.466262	1.517103	1	1	1
8	FR	het kanaal midden	50.67611	1.188053	1	1	1
9	UK	Dungeness	50.88168	0.893258	1	1	1
10	UK	het kanaal midden	50.703388	0.880901	1	1	1
11	FR	het kanaal midden	50.575654	1.065448	1	1	1
12	FR	het kanaal midden	50.406069	1.269058	1	1	1
13	FR	Montreuil	50.616698	1.48141	1	1	1
14	FR	Kanaal	50.775645	1.277647	1	1	1
15	UK	Dungeness oost	50.940147	1.066657	1	1	1
16	UK	Folkestone	51.052358	1.182629	1	1	1
17	FR	Kanaal	50.92332	1.374825	1	1	1
18	FR	Cap griz nez	50.837958	1.493727	1	1	1

19	FR	Verder op pas	50.981967	1.647451	1	1	1
20	UK	Kanaal	51.06332	1.557271	1	1	1
21	UK	Dover	51.132973	1.425686	1	1	1
22	UK	Ramsgate	51.405979	1.541156	1	1	1
23	UK	pas	51.289577	1.711539	1	1	1
24	UK	pas	51.205246	1.862647	1	1	1
25	UK	pas	51.371401	1.918477	1	1	1
26	UK	pas	51.501372	1.657067	1	1	1
27	UK	pas	51.649559	1.452362	1	1	1
28	UK	thames	51.558032	1.15422	1	1	1
29	UK	Clacton	51.775275	1.26678	1	1	1
30	UK	Felixstowe	51.882268	1.60015	1	1	1
31	UK	pas	51.750644	1.875259	1	1	1
32	BE	LW01	51.568667	2.256	1	1	1
33	BE	LW02	51.8	2.556	1	1	1
34	BE	tripode bij belwind	51.70301667	2.8133333	1	1	1
35	NL	cross	51.916468	3.016057	1	1	1
36	NL	pas	52.050802	3.354215	1	1	1
37	NL	pas	52.008069	3.65494	1	1	1
38	NL	Visserschoek	51.819575	3.785206	1	1	1
39	NL	pas	51.881984	3.422982	1	1	1
40	NL	pas	51.761651	3.149667	1	1	1
41	NL	Kamperland	51.599092	3.401245	1	1	1
42	NL	pas	51.509858	3.289622	1	1	1
43	BE	780	51.471367	3.057283	1	1	1
44	BE	330	51.434117	2.809083	1	1	1

5.2. Map of scheduled stations

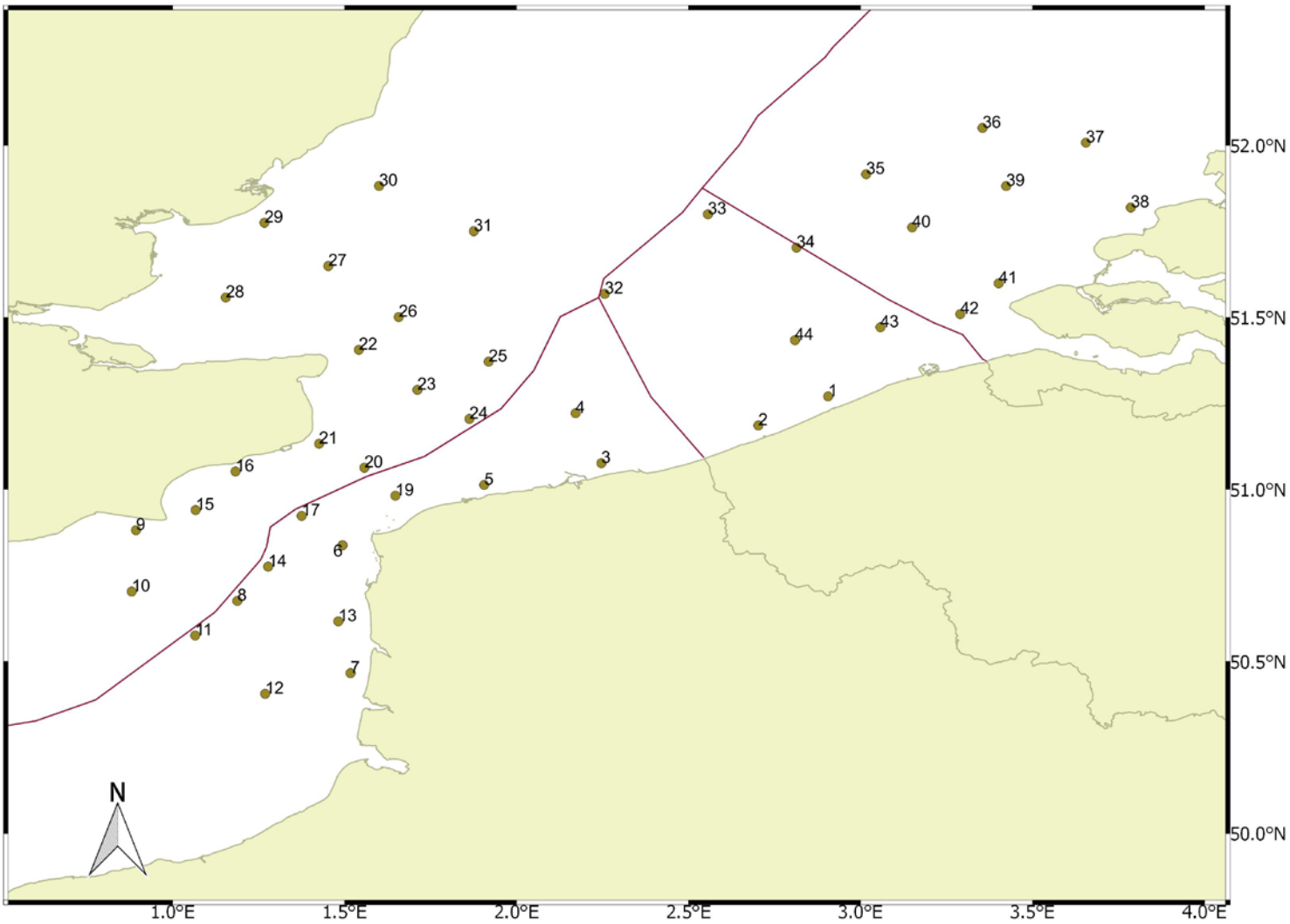

Fig 1: map of the working area (Eastern English Channel, Southern Bight of the North Sea, Thames estuary) with scheduled sampling stations marked from 1 to 44.

6. SAMPLING – ON BOARD ANALYSIS

6.1. List of discrete measurements and actions

Niskin bottles	43 samples
Pigment HPLC (Niskin)	43 samples
Nutrients (Niskin):	43 samples
Samples for NGS (Niskin)	43 samples
Microscopy samples (Niskin)	5 samples (5replicates)
FCM samples	5 samples (5replicates)
CTD profiles	43 profiles
Zooplankton (WP2)	43 samples
Turbidity (Secchi)	23 measurements
Phytoplankton (Apstein)	43 samples

For a complete overview of actions taken aboard the RV Simon Stevin, see appendix 1

6.2. Map of discrete measurements

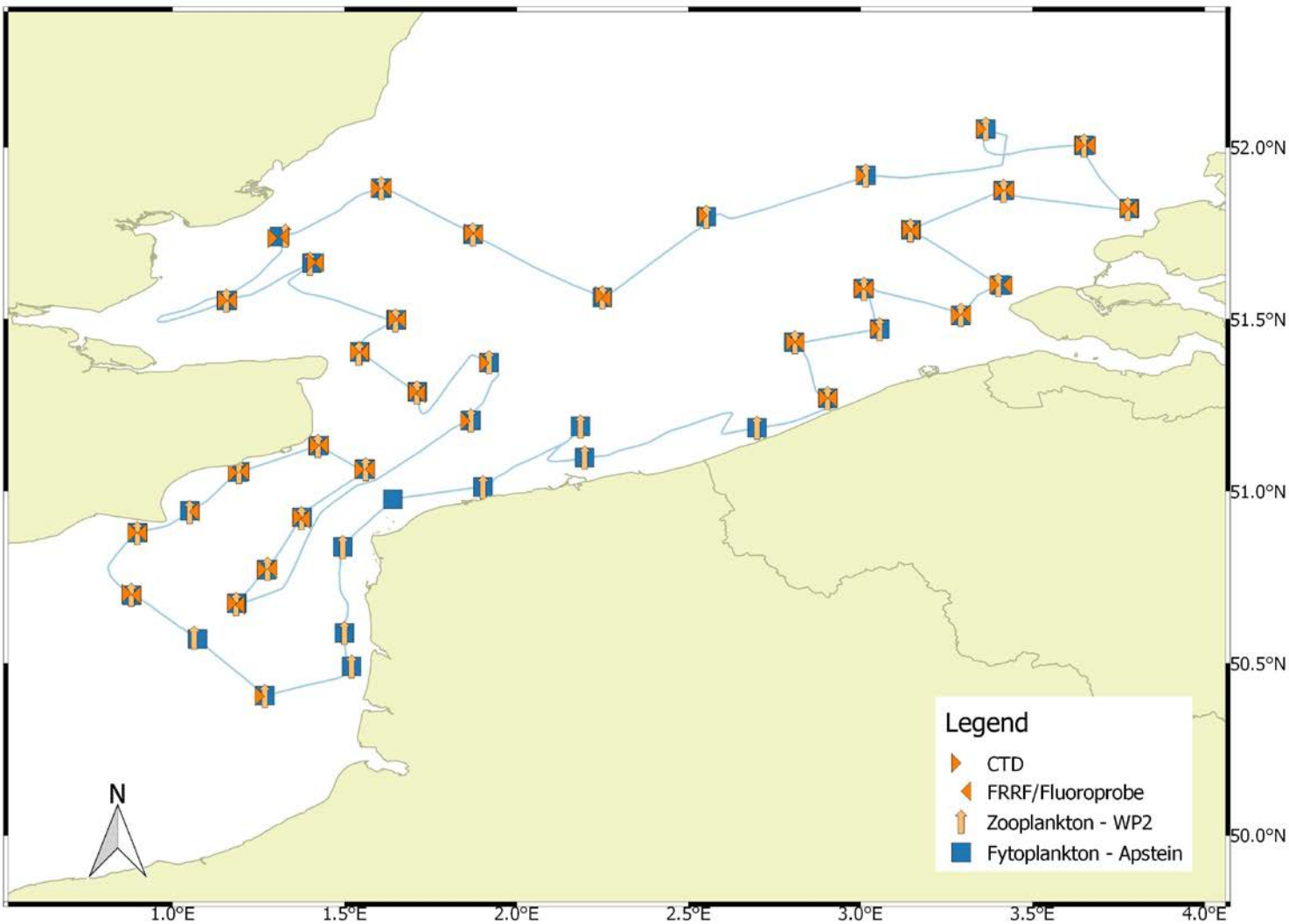

Fig 2: map with discrete measurements plotted (Eastern English Channel, Southern Bight of the North Sea, Thames estuary). Discrete measurements (CTD casts, FRRF/Fluoroprobe, WP2 or Apstein actions).

6.3. List of underway measurements

Instrument	Parameter	Data acquisition rate 5 sec	20 min
Flow Cytometer (VLIZ)	Phytoplankton densities		x
Flow Cytometer (RWS)	Phytoplankton densities		x
Flow Cytometer (CNRS-LOG)	Phytoplankton densities		x
RTK GPS	Current time, latitude, longitude, depth 200khz, course over ground, speed over ground	x	
?	Octans heading, odom depth 33khz, gpsfix, nav depth 50kzh, speedlog	x	
SBE21	water temperature, salinity, Chlorophyll A, sound velocity	x	
?	Time stamp, FLRTchla,	x	
AWS	Temperature, Relative Humidity, True wind direction, True wind speed, Air pressure, draught	x	
SBE38	Temperature	x	
Flowmeter	Water flow	x	

6.4. Map of underway measurements

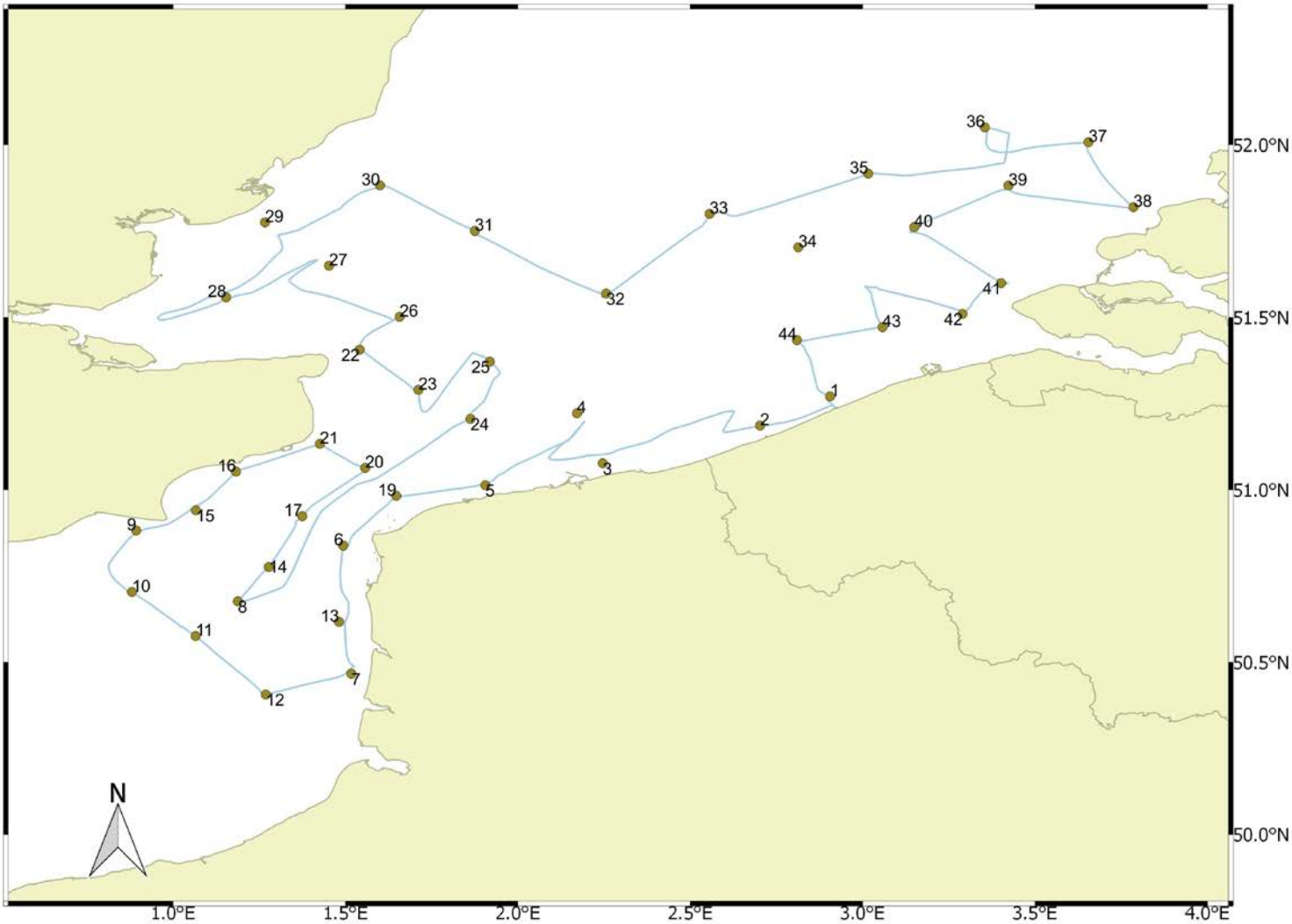

Fig 2: map with the trajectory of the RV Simon Stevin plotted, on this trajectory, underway data was collected (Eastern English Channel, Southern Bight of the North Sea, Thames estuary).

7. CHEMICALS

Several types of chemicals were used, listed in appendix 2: protocol section.

8. ISSUES/TROUBLES/REMARKS

7.1 General issues

- the start of the cruise was postponed due to bad weather.
- the first day during bad weather, no CTD casts were taken on stations 2, 3, 4, 5, 19, 6, 13, 7 and 11. If not possible to take casts, no actions were registered in MIDAS.
- On these stations, we had to collect pigment, FlowCam and nutrient samples from the underway system (donkey on deck). If not possible to take niskin bottles, these actions were registered in MIDAS as 'underway system'.
- One station (nr 18) was skipped for the long detour
- Station 35 is noted as station 34. Station 34 is noted as W07bis!!!

7.2 CTD

no issues (besides the above mentioned).

7.3 WP2

- One WP2 net was not taken for the net has ruptured on station 19.
- The following stations (6, 13, 7, 12, 11, 10 and 9) were taken with a demo net (which has some holes). After that, the rest was taken with a brand new net. All mesh was 200µm, although the demo net has some holes. I do not expect much difference here.
- We have 5 wp2 samples without flow. We have to interpret this by depth.

7.4 FRRF-VLIZ

- Before departure, the FRRF broke down and we were unable to sample with the FRRF

7.5 FlowCam

- sample on station 9 is only half the sample.
- Other half is taken by Hedy Aardema, otherwise no issues.

7.6 FCM

- the VLIZ Flow cytometer was mainly handled by Machteld Rijkeboer
- regularly flushed, beads inserted
- In general, the scheduler was active. When arriving to a certain station, manual activation of the three protocols.
- At some point, the devices became overheated. This was solved by the crew of the RV Simon Stevin: additional ventilators

7.7 Physical samples for FCM

- collected in liquid nitrogen and now in the -86 freezer in PAE.

APPENDIX 1: list of discrete measurements taken during the JericoNext 2017 cruise

ID	ActionType	Station	StartLat	StartLong	StartDate	EndDate
105592	Planktonnet WP2	2	51.184953	2.698952	2017 05 08 T14:37:41	2017 05 08 T14:37:51
2000105592	Underway system	2	51.184953	2.698952	2017 05 08 T14:37:41	2017 05 08 T14:37:51
105593	Planktonnet Apstein	2	51.184919	2.698904	2017 05 08 T14:37:46	2017 05 08 T14:37:51
105594	Planktonnet Apstein	3	51.098164	2.197709	2017 05 08 T17:25:36	2017 05 08 T17:29:26
105595	Planktonnet WP2	3	51.098164	2.197709	2017 05 08 T17:25:36	2017 05 08 T17:29:31
2000105595	Underway system	3	51.098164	2.197709	2017 05 08 T17:25:36	2017 05 08 T17:29:31
2000105596	Underway system	4	51.188529	2.185551	2017 05 08 T19:24:16	2017 05 08 T19:24:16
105596	Planktonnet Apstein	4	51.188529	2.185551	2017 05 08 T19:24:16	2017 05 08 T19:24:16
105597	Planktonnet WP2	5	51.012029	1.902171	2017 05 08 T20:50:41	2017 05 08 T20:50:51
105598	Planktonnet Apstein	5	51.012029	1.902171	2017 05 08 T20:50:41	2017 05 08 T20:50:51
2000105597	Underway system	5	51.012029	1.902171	2017 05 08 T20:50:41	2017 05 08 T20:50:51
2000105599	Underway system	19	50.976975	1.640399	2017 05 08 T22:15:06	2017 05 08 T22:26:51
105599	Planktonnet WP2	19	50.976975	1.640399	2017 05 08 T22:15:06	2017 05 08 T22:26:51
105600	Planktonnet Apstein	19	50.976975	1.640399	2017 05 08 T22:15:06	2017 05 08 T22:26:51
105601	Planktonnet Apstein	6	50.838142	1.494427	2017 05 08 T23:50:11	2017 05 08 T23:51:16
105602	Planktonnet WP2	6	50.838058	1.494346	2017 05 08 T23:50:16	2017 05 08 T23:51:16
2000105602	Underway system	6	50.838058	1.494346	2017 05 08 T23:50:16	2017 05 08 T23:51:16
105606	Planktonnet Apstein	13	50.588467	1.499026	2017 05 09 T01:25:41	2017 05 09 T01:36:40
105605	Planktonnet WP2	13	50.588467	1.499026	2017 05 09 T01:34:36	2017 05 09 T01:34:36
2000105605	Underway system	13	50.588467	1.499026	2017 05 09 T01:34:36	2017 05 09 T01:34:36
2000105607	Underway system	7	50.49087	1.520134	2017 05 09 T02:05:00	2017 05 09 T02:06:00
105607	Planktonnet WP2	7	50.49087	1.520134	2017 05 09 T02:05:00	2017 05 09 T02:06:00
105608	Planktonnet Apstein	7	50.49087	1.520134	2017 05 09 T02:05:00	2017 05 09 T02:06:00
105609	Planktonnet WP2	12	50.405058	1.267651	2017 05 09 T03:14:56	2017 05 09 T03:18:30
105610	Planktonnet Apstein	12	50.405676	1.268224	2017 05 09 T03:21:30	2017 05 09 T03:22:30

105612	CTD	12	50.403888	1.266799	2017 05 09 T03:29:00	2017 05 09 T03:33:00
2000105612	Niskin Bottle	12	50.403888	1.266799	2017 05 09 T03:29:00	2017 05 09 T03:33:00
105614	Planktonnet Apstein	11	50.570259	1.072631	2017 05 09 T05:00:00	2017 05 09 T05:00:00
105613	Planktonnet WP2	11	50.574843	1.062474	2017 05 09 T05:06:16	2017 05 09 T05:08:11
2000105613	Underway system	11	50.574843	1.062474	2017 05 09 T05:06:16	2017 05 09 T05:08:11
105615	CTD	10	50.702759	0.880067	2017 05 09 T06:37:16	2017 05 09 T06:41:31
105616	Niskin Bottle	10	50.701738	0.879839	2017 05 09 T06:41:26	2017 05 09 T06:41:26
105617	Planktonnet WP2	10	50.699648	0.879951	2017 05 09 T06:50:16	2017 05 09 T06:54:51
105621	FRRF / Fluoroprobe	10	50.697786	0.880579	2017 05 09 T06:58:51	2017 05 09 T07:13:56
105619	Secchi disc	10	50.697773	0.880586	2017 05 09 T06:58:56	2017 05 09 T06:58:56
105618	Planktonnet Apstein	10	50.697759	0.880594	2017 05 09 T06:59:01	2017 05 09 T06:59:06
105622	FRRF / Fluoroprobe	10	50.695339	0.882349	2017 05 09 T07:14:06	2017 05 09 T07:17:01
105623	CTD	9	50.880028	0.89736	2017 05 09 T08:29:16	2017 05 09 T08:34:51
105624	Niskin Bottle	9	50.87942	0.897916	2017 05 09 T08:34:46	2017 05 09 T08:34:46
105629	Planktonnet Apstein	9	50.879147	0.897688	2017 05 09 T08:41:16	2017 05 09 T08:41:21
105626	Secchi disc	9	50.879148	0.897686	2017 05 09 T08:41:21	2017 05 09 T08:41:21
105628	FRRF / Fluoroprobe	9	50.879051	0.897649	2017 05 09 T08:42:51	2017 05 09 T08:50:41
105627	FRRF / Fluoroprobe	9	50.878456	0.897395	2017 05 09 T08:57:31	2017 05 09 T08:57:31
105625	Planktonnet WP2	9	50.878454	0.897394	2017 05 09 T08:57:36	2017 05 09 T09:00:01
105630	CTD	15	50.94132	1.048905	2017 05 09 T09:48:36	2017 05 09 T09:51:26
105631	Niskin Bottle	15	50.941859	1.048708	2017 05 09 T09:51:21	2017 05 09 T09:51:21
105632	Niskin Bottle	15	50.941873	1.048698	2017 05 09 T09:51:26	2017 05 09 T09:51:26
105633	Planktonnet WP2	15	50.939837	1.049376	2017 05 09 T09:56:11	2017 05 09 T09:57:41
105635	FRRF / Fluoroprobe	15	50.940595	1.049301	2017 05 09 T10:00:56	2017 05 09 T10:17:46
105636	Planktonnet Apstein	15	50.942941	1.049807	2017 05 09 T10:17:56	2017 05 09 T10:17:56
105637	Secchi disc	15	50.942941	1.049807	2017 05 09 T10:17:56	2017 05 09 T10:17:56
105634	FRRF / Fluoroprobe	15	50.94222	1.052008	2017 05 09 T10:20:31	2017 05 09 T10:21:46

105639	CTD	16	51.054284	1.189288	2017 05 09 T11:22:31	2017 05 09 T11:24:31
105638	Secchi disc	16	51.054293	1.189325	2017 05 09 T11:22:36	2017 05 09 T11:22:36
105640	Niskin Bottle	16	51.054444	1.189904	2017 05 09 T11:23:51	2017 05 09 T11:23:51
105641	Niskin Bottle	16	51.054466	1.189986	2017 05 09 T11:24:01	2017 05 09 T11:24:01
105643	Planktonnet Apstein	16	51.055546	1.191583	2017 05 09 T11:27:36	2017 05 09 T11:27:46
105642	Planktonnet WP2	16	51.056434	1.192877	2017 05 09 T11:30:21	2017 05 09 T11:30:36
105644	FRRF / Fluoroprobe	16	51.054785	1.187628	2017 05 09 T11:38:31	2017 05 09 T11:49:11
105645	FRRF / Fluoroprobe	16	51.057488	1.194362	2017 05 09 T11:53:01	2017 05 09 T12:01:41
105646	CTD	21	51.132546	1.425001	2017 05 09 T12:46:06	2017 05 09 T12:54:16
105648	Niskin Bottle	21	51.132565	1.42507	2017 05 09 T12:46:11	2017 05 09 T12:54:16
105649	Planktonnet Apstein	21	51.13208	1.422338	2017 05 09 T13:05:46	2017 05 09 T13:05:46
105647	Planktonnet WP2	21	51.13208	1.422338	2017 05 09 T13:05:46	2017 05 09 T13:05:51
105652	Secchi disc	21	51.132814	1.423763	2017 05 09 T13:09:21	2017 05 09 T13:09:31
105650	FRRF / Fluoroprobe	21	51.134114	1.425651	2017 05 09 T13:15:36	2017 05 09 T13:15:41
105651	FRRF / Fluoroprobe	21	51.132595	1.422109	2017 05 09 T13:31:56	2017 05 09 T13:31:56
105654	CTD	20	51.062744	1.557427	2017 05 09 T14:10:11	2017 05 09 T14:18:41
105655	Niskin Bottle	20	51.062762	1.557433	2017 05 09 T14:10:16	2017 05 09 T14:18:41
105660	FRRF / Fluoroprobe	20	51.063852	1.559089	2017 05 09 T14:21:01	2017 05 09 T14:26:21
105657	Planktonnet Apstein	20	51.063852	1.559091	2017 05 09 T14:21:06	2017 05 09 T14:23:46
105658	Secchi disc	20	51.063852	1.559091	2017 05 09 T14:21:06	2017 05 09 T14:23:46
105659	FRRF / Fluoroprobe	20	51.064186	1.559652	2017 05 09 T14:26:26	2017 05 09 T14:44:31
105656	Planktonnet WP2	20	51.064474	1.561077	2017 05 09 T14:45:01	2017 05 09 T14:45:01
105661	CTD	17	50.924343	1.376707	2017 05 09 T15:53:31	2017 05 09 T15:55:26
105665	Planktonnet Apstein	17	50.924298	1.37667	2017 05 09 T15:53:36	2017 05 09 T15:53:36
105662	Niskin Bottle	17	50.923905	1.376347	2017 05 09 T15:54:21	2017 05 09 T15:54:26
105666	Secchi disc	17	50.923679	1.37616	2017 05 09 T15:54:46	2017 05 09 T15:54:46
105663	Niskin Bottle	17	50.923371	1.375907	2017 05 09 T15:55:21	2017 05 09 T15:55:26

105664	Planktonnet WP2	17	50.921814	1.374585	2017 05 09 T15:58:16	2017 05 09 T16:02:06
105667	FRRF / Fluoroprobe	17	50.918427	1.371648	2017 05 09 T16:04:16	2017 05 09 T16:49:11
105668	FRRF / Fluoroprobe	17	50.829675	1.314262	2017 05 09 T16:49:11	2017 05 09 T16:49:16
105669	CTD	14	50.771928	1.273306	2017 05 09 T17:10:06	2017 05 09 T17:14:26
105670	Niskin Bottle	14	50.771928	1.273306	2017 05 09 T17:10:06	2017 05 09 T17:14:26
105673	Secchi disc	14	50.771886	1.273271	2017 05 09 T17:10:11	2017 05 09 T17:14:26
105672	Planktonnet Apstein	14	50.771837	1.273233	2017 05 09 T17:10:16	2017 05 09 T17:14:26
105671	Planktonnet WP2	14	50.774423	1.276012	2017 05 09 T17:22:51	2017 05 09 T17:27:21
105674	FRRF / Fluoroprobe	14	50.774341	1.275881	2017 05 09 T17:23:01	2017 05 09 T17:25:56
105676	CTD	8	50.674784	1.186672	2017 05 09 T18:17:06	2017 05 09 T18:18:41
105677	Niskin Bottle	8	50.674428	1.186327	2017 05 09 T18:17:51	2017 05 09 T18:17:51
105681	Niskin Bottle	8	50.674193	1.1861	2017 05 09 T18:18:21	2017 05 09 T18:18:21
105679	Planktonnet Apstein	8	50.674155	1.186064	2017 05 09 T18:18:26	2017 05 09 T18:18:26
105678	Planktonnet WP2	8	50.672318	1.184521	2017 05 09 T18:22:06	2017 05 09 T18:25:36
105680	FRRF / Fluoroprobe	8	50.669733	1.182192	2017 05 09 T18:28:06	2017 05 09 T18:34:56
105682	Niskin Bottle	24	51.204555	1.864933	2017 05 10 T02:04:01	2017 05 10 T02:09:31
105683	CTD	24	51.204555	1.864933	2017 05 10 T02:04:01	2017 05 10 T02:09:31
105684	Planktonnet WP2	24	51.20605	1.866945	2017 05 10 T02:10:00	2017 05 10 T02:12:00
105685	Planktonnet Apstein	24	51.20605	1.866945	2017 05 10 T02:10:00	2017 05 10 T02:12:00
105686	CTD	25	51.373101	1.920534	2017 05 10 T03:24:01	2017 05 10 T03:31:31
105687	Niskin Bottle	25	51.373101	1.920534	2017 05 10 T03:24:01	2017 05 10 T03:31:31
105689	Planktonnet Apstein	25	51.374215	1.919479	2017 05 10 T03:27:06	2017 05 10 T03:31:41
105688	Planktonnet WP2	25	51.375582	1.919764	2017 05 10 T03:33:11	2017 05 10 T03:35:26
105690	CTD	23	51.288785	1.713281	2017 05 10 T05:18:46	2017 05 10 T05:26:01
105691	Niskin Bottle	23	51.288785	1.713281	2017 05 10 T05:18:46	2017 05 10 T05:26:01
105693	Planktonnet Apstein	23	51.288504	1.711856	2017 05 10 T05:22:31	2017 05 10 T05:24:16
105695	Secchi disc	23	51.288378	1.711718	2017 05 10 T05:23:01	2017 05 10 T05:23:01

105692	Planktonnet WP2	23	51.286986	1.710036	2017 05 10 T05:28:16	2017 05 10 T05:32:51
105694	FRRF / Fluoroprobe	23	51.284401	1.706828	2017 05 10 T05:37:36	2017 05 10 T05:38:11
105699	Secchi disc	22	51.405226	1.543719	2017 05 10 T06:41:32	2017 05 10 T06:41:37
105700	Planktonnet Apstein	22	51.405183	1.543708	2017 05 10 T06:41:37	2017 05 10 T06:41:42
105696	CTD	22	51.404856	1.543616	2017 05 10 T06:42:17	2017 05 10 T06:42:47
105697	Niskin Bottle	22	51.404814	1.543609	2017 05 10 T06:42:22	2017 05 10 T06:42:22
105698	Niskin Bottle	22	51.404691	1.543574	2017 05 10 T06:42:37	2017 05 10 T06:42:37
105702	FRRF / Fluoroprobe	22	51.403186	1.543112	2017 05 10 T06:45:37	2017 05 10 T06:48:47
105703	FRRF / Fluoroprobe	22	51.406764	1.543449	2017 05 10 T06:54:42	2017 05 10 T07:06:47
105704	Planktonnet WP2	22	51.399926	1.541102	2017 05 10 T07:09:02	2017 05 10 T07:11:17
105706	CTD	26	51.50097	1.653618	2017 05 10 T08:02:42	2017 05 10 T08:09:22
105707	Niskin Bottle	26	51.498761	1.650509	2017 05 10 T08:08:07	2017 05 10 T08:08:12
105708	Niskin Bottle	26	51.498502	1.650142	2017 05 10 T08:08:42	2017 05 10 T08:08:47
105710	Secchi disc	26	51.498462	1.650091	2017 05 10 T08:08:47	2017 05 10 T08:08:52
105709	Planktonnet Apstein	26	51.498244	1.649778	2017 05 10 T08:09:17	2017 05 10 T08:09:22
105705	Planktonnet WP2	26	51.496763	1.647699	2017 05 10 T08:12:42	2017 05 10 T08:13:52
105711	FRRF / Fluoroprobe	26	51.500303	1.65299	2017 05 10 T08:22:57	2017 05 10 T08:27:02
105712	FRRF / Fluoroprobe	26	51.498591	1.650404	2017 05 10 T08:27:12	2017 05 10 T08:27:37
105714	CTD	27	51.665566	1.418075	2017 05 10 T10:18:37	2017 05 10 T10:27:17
105717	Secchi disc	27	51.665352	1.416909	2017 05 10 T10:21:12	2017 05 10 T10:21:12
105715	Niskin Bottle	27	51.665175	1.415963	2017 05 10 T10:22:52	2017 05 10 T10:27:17
105716	Niskin Bottle	27	51.665086	1.415476	2017 05 10 T10:23:42	2017 05 10 T10:23:42
105720	FRRF / Fluoroprobe	27	51.664392	1.410888	2017 05 10 T10:31:47	2017 05 10 T10:44:17
105718	Planktonnet Apstein	27	51.663322	1.405424	2017 05 10 T10:41:07	2017 05 10 T10:41:07
105721	FRRF / Fluoroprobe	27	51.662719	1.403282	2017 05 10 T10:44:52	2017 05 10 T10:53:12
105719	Planktonnet WP2	27	51.661636	1.398857	2017 05 10 T10:53:12	2017 05 10 T10:53:12
105722	CTD	28	51.554325	1.158812	2017 05 10 T11:53:17	2017 05 10 T11:57:47

105723	Niskin Bottle	28	51.554325	1.158812	2017 05 10 T11:53:17	2017 05 10 T11:57:47
105725	Planktonnet Apstein	28	51.554572	1.156376	2017 05 10 T11:59:17	2017 05 10 T11:59:32
105728	Secchi disc	28	51.554574	1.156344	2017 05 10 T11:59:22	2017 05 10 T11:59:32
105724	Planktonnet WP2	28	51.554583	1.156213	2017 05 10 T11:59:42	2017 05 10 T12:01:57
105726	FRRF / Fluoroprobe	28	51.554306	1.158887	2017 05 10 T12:10:57	2017 05 10 T12:10:57
105727	FRRF / Fluoroprobe	28	51.554316	1.158863	2017 05 10 T12:11:07	2017 05 10 T12:21:07
105729	CTD	29	51.73493	1.305007	2017 05 10 T14:52:12	2017 05 10 T14:59:27
105730	Niskin Bottle	29	51.73493	1.305007	2017 05 10 T14:52:12	2017 05 10 T14:59:27
105735	FRRF / Fluoroprobe	29	51.74017	1.310192	2017 05 10 T15:01:27	2017 05 10 T15:20:23
105732	Planktonnet Apstein	29	51.740093	1.310247	2017 05 10 T15:01:33	2017 05 10 T15:07:18
105733	Secchi disc	29	51.740093	1.310247	2017 05 10 T15:01:33	2017 05 10 T15:07:13
105734	FRRF / Fluoroprobe	29	51.742597	1.324458	2017 05 10 T15:20:38	2017 05 10 T15:24:43
105731	Planktonnet WP2	29	51.743128	1.327733	2017 05 10 T15:25:18	2017 05 10 T15:28:18
105736	CTD	30	51.879775	1.60443	2017 05 10 T16:35:44	2017 05 10 T16:38:29
105737	Niskin Bottle	30	51.880052	1.604971	2017 05 10 T16:37:19	2017 05 10 T16:37:24
105738	Niskin Bottle	30	51.880125	1.605123	2017 05 10 T16:37:49	2017 05 10 T16:37:54
105743	Planktonnet WP2	30	51.880807	1.60636	2017 05 10 T16:42:24	2017 05 10 T16:42:39
105739	Planktonnet Apstein	30	51.880818	1.606375	2017 05 10 T16:42:29	2017 05 10 T16:42:34
105740	Secchi disc	30	51.880818	1.606375	2017 05 10 T16:42:29	2017 05 10 T16:42:29
105742	FRRF / Fluoroprobe	30	51.881143	1.606985	2017 05 10 T16:45:04	2017 05 10 T16:53:54
105741	FRRF / Fluoroprobe	30	51.881897	1.608833	2017 05 10 T16:53:54	2017 05 10 T16:57:09
105745	CTD	31	51.750323	1.875642	2017 05 10 T18:18:04	2017 05 10 T18:22:14
105746	Niskin Bottle	31	51.749321	1.874727	2017 05 10 T18:22:04	2017 05 10 T18:22:04
105747	Niskin Bottle	31	51.749299	1.874709	2017 05 10 T18:22:09	2017 05 10 T18:22:14
105749	FRRF / Fluoroprobe	31	51.748596	1.874164	2017 05 10 T18:24:39	2017 05 10 T18:24:39
105748	Planktonnet Apstein	31	51.746801	1.872688	2017 05 10 T18:30:49	2017 05 10 T18:30:54
105744	Planktonnet WP2	31	51.746749	1.872635	2017 05 10 T18:30:59	2017 05 10 T18:31:44

105750	Secchi disc	31	51.746749	1.872635	2017 05 10 T18:30:59	2017 05 10 T18:31:04
105751	CTD	32	51.568024	2.255616	2017 05 10 T20:26:29	2017 05 10 T20:33:39
105752	Niskin Bottle	32	51.568024	2.255616	2017 05 10 T20:26:29	2017 05 10 T20:33:39
105753	Planktonnet WP2	32	51.563582	2.249333	2017 05 10 T20:37:14	2017 05 10 T20:41:54
105754	Planktonnet Apstein	32	51.563582	2.249333	2017 05 10 T20:37:14	2017 05 10 T20:41:54
105755	FRRF / Fluoroprobe	32	51.560456	2.246405	2017 05 10 T20:42:09	2017 05 10 T20:45:54
105756	CTD	33	51.801128	2.555508	2017 05 10 T22:46:19	2017 05 10 T22:52:59
105757	Niskin Bottle	33	51.801128	2.555472	2017 05 10 T22:46:24	2017 05 10 T22:52:59
105758	Planktonnet WP2	33	51.797742	2.551458	2017 05 10 T23:00:39	2017 05 10 T23:02:39
105759	Planktonnet Apstein	33	51.797742	2.551458	2017 05 10 T23:00:39	2017 05 10 T23:01:34
105760	CTD	35	51.916892	3.014437	2017 05 11 T00:52:04	2017 05 11 T00:54:24
105761	Niskin Bottle	35	51.916892	3.014437	2017 05 11 T00:52:04	2017 05 11 T00:54:19
105762	Planktonnet WP2	35	51.917805	3.015112	2017 05 11 T00:56:49	2017 05 11 T01:07:34
105763	Planktonnet Apstein	35	51.917805	3.015112	2017 05 11 T00:56:49	2017 05 11 T01:07:29
105764	CTD	36	52.052696	3.363839	2017 05 11 T04:06:29	2017 05 11 T04:07:14
105768	Niskin Bottle	36	52.052754	3.363832	2017 05 11 T04:06:39	2017 05 11 T04:06:39
105766	Planktonnet Apstein	36	52.052836	3.363819	2017 05 11 T04:06:54	2017 05 11 T04:06:59
105765	Niskin Bottle	36	52.052891	3.363806	2017 05 11 T04:07:04	2017 05 11 T04:07:09
105767	Planktonnet WP2	36	52.053612	3.363397	2017 05 11 T04:09:34	2017 05 11 T04:15:54
105769	CTD	37	52.005254	3.650864	2017 05 11 T05:42:34	2017 05 11 T05:44:04
105771	Niskin Bottle	37	52.005222	3.650631	2017 05 11 T05:43:29	2017 05 11 T05:43:29
105770	Niskin Bottle	37	52.005196	3.650509	2017 05 11 T05:43:59	2017 05 11 T05:44:04
105774	Planktonnet WP2	37	52.004983	3.649362	2017 05 11 T05:48:24	2017 05 11 T05:48:29
105772	Secchi disc	37	52.004983	3.649362	2017 05 11 T05:48:24	2017 05 11 T05:48:29
105773	Planktonnet Apstein	37	52.004981	3.649341	2017 05 11 T05:48:29	2017 05 11 T05:48:29
105775	FRRF / Fluoroprobe	37	52.005436	3.654422	2017 05 11 T05:59:34	2017 05 11 T05:59:39
105781	Secchi disc	38	51.821381	3.78173	2017 05 11 T07:11:54	2017 05 11 T07:11:54

105780	Planktonnet Apstein	38	51.821366	3.781603	2017 05 11 T07:12:04	2017 05 11 T07:12:04
105776	CTD	38	51.821366	3.781603	2017 05 11 T07:12:04	2017 05 11 T07:14:29
105777	Niskin Bottle	38	51.821112	3.780061	2017 05 11 T07:14:14	2017 05 11 T07:14:14
105778	Niskin Bottle	38	51.821101	3.780005	2017 05 11 T07:14:19	2017 05 11 T07:14:19
105782	FRRF / Fluoroprobe	38	51.820673	3.778392	2017 05 11 T07:16:39	2017 05 11 T07:19:49
105779	Planktonnet WP2	38	51.820017	3.776379	2017 05 11 T07:19:54	2017 05 11 T07:23:09
105783	FRRF / Fluoroprobe	38	51.820196	3.779754	2017 05 11 T07:29:59	2017 05 11 T07:41:04
105784	CTD	39	51.874147	3.415839	2017 05 11 T08:55:14	2017 05 11 T08:56:34
105785	Niskin Bottle	39	51.873955	3.415449	2017 05 11 T08:55:44	2017 05 11 T08:55:44
105786	Niskin Bottle	39	51.873735	3.414985	2017 05 11 T08:56:19	2017 05 11 T08:56:19
105787	Planktonnet Apstein	39	51.87358	3.414667	2017 05 11 T08:56:44	2017 05 11 T08:56:44
105789	Secchi disc	39	51.873454	3.414415	2017 05 11 T08:57:04	2017 05 11 T08:57:04
105791	FRRF / Fluoroprobe	39	51.876195	3.421629	2017 05 11 T09:02:29	2017 05 11 T09:17:54
105792	FRRF / Fluoroprobe	39	51.875233	3.418298	2017 05 11 T09:27:19	2017 05 11 T09:28:04
105788	Planktonnet WP2	39	51.873471	3.414977	2017 05 11 T09:31:59	2017 05 11 T09:36:19
105793	CTD	40	51.761244	3.148146	2017 05 11 T10:33:34	2017 05 11 T10:38:59
105794	Niskin Bottle	40	51.761244	3.148146	2017 05 11 T10:33:34	2017 05 11 T10:38:54
105795	Planktonnet Apstein	40	51.75987	3.14626	2017 05 11 T10:38:34	2017 05 11 T10:39:04
105798	Secchi disc	40	51.75818	3.144786	2017 05 11 T10:43:04	2017 05 11 T10:47:39
105799	Planktonnet WP2	40	51.75818	3.144786	2017 05 11 T10:43:04	2017 05 11 T10:47:39
105797	FRRF / Fluoroprobe	40	51.75656	3.143512	2017 05 11 T10:47:39	2017 05 11 T11:01:59
105796	FRRF / Fluoroprobe	40	51.749089	3.138492	2017 05 11 T11:10:14	2017 05 11 T11:12:49
105801	CTD	41	51.59976	3.402696	2017 05 11 T12:25:49	2017 05 11 T12:31:14
105802	Niskin Bottle	41	51.59976	3.402696	2017 05 11 T12:25:49	2017 05 11 T12:31:14
105804	Secchi disc	41	51.599635	3.404172	2017 05 11 T12:28:04	2017 05 11 T12:28:04
105805	FRRF / Fluoroprobe	41	51.599376	3.407473	2017 05 11 T12:33:04	2017 05 11 T12:37:19
105803	Planktonnet Apstein	41	51.599376	3.407473	2017 05 11 T12:33:04	2017 05 11 T12:37:14

105806	FRRF / Fluoroprobe	41	51.599182	3.412821	2017 05 11 T12:40:54	2017 05 11 T12:52:44
105807	Planktonnet WP2	41	51.599633	3.400158	2017 05 11 T12:59:39	2017 05 11 T13:05:14
105808	CTD	42	51.511227	3.290775	2017 05 11 T13:53:49	2017 05 11 T13:57:44
105809	Niskin Bottle	42	51.511227	3.290775	2017 05 11 T13:53:49	2017 05 11 T13:57:44
105811	Planktonnet Apstein	42	51.511263	3.290798	2017 05 11 T13:53:54	2017 05 11 T13:58:19
105812	Secchi disc	42	51.511263	3.290798	2017 05 11 T13:53:54	2017 05 11 T13:58:14
105810	Planktonnet WP2	42	51.513223	3.291441	2017 05 11 T14:00:34	2017 05 11 T14:02:04
105814	FRRF / Fluoroprobe	42	51.513934	3.291923	2017 05 11 T14:05:14	2017 05 11 T14:38:19
105813	FRRF / Fluoroprobe	42	51.528353	3.253771	2017 05 11 T14:38:19	2017 05 11 T14:38:24
105815	CTD	34	51.588421	3.00842	2017 05 11 T16:31:04	2017 05 11 T16:37:04
105816	Niskin Bottle	34	51.588432	3.008418	2017 05 11 T16:31:09	2017 05 11 T16:36:59
105818	Planktonnet Apstein	34	51.588842	3.008246	2017 05 11 T16:36:04	2017 05 11 T16:36:59
105819	Secchi disc	34	51.588842	3.008246	2017 05 11 T16:36:04	2017 05 11 T16:36:59
105821	FRRF / Fluoroprobe	34	51.589094	3.008196	2017 05 11 T16:38:44	2017 05 11 T16:43:24
105820	FRRF / Fluoroprobe	34	51.588369	3.00939	2017 05 11 T16:49:44	2017 05 11 T17:07:14
105817	Planktonnet WP2	34	51.588324	3.009343	2017 05 11 T16:50:59	2017 05 11 T16:50:59
105824	CTD	43	51.471403	3.05608	2017 05 11 T18:05:24	2017 05 11 T18:06:14
105825	Niskin Bottle	43	51.471399	3.05606	2017 05 11 T18:05:29	2017 05 11 T18:05:29
105827	Secchi disc	43	51.471384	3.055999	2017 05 11 T18:05:44	2017 05 11 T18:05:44
105826	Niskin Bottle	43	51.471367	3.055924	2017 05 11 T18:06:04	2017 05 11 T18:06:04
105822	Planktonnet Apstein	43	51.471355	3.05588	2017 05 11 T18:06:14	2017 05 11 T18:06:19
105823	Planktonnet WP2	43	51.471211	3.055091	2017 05 11 T18:08:54	2017 05 11 T18:10:14
105828	CTD	44	51.434035	2.810448	2017 05 11 T20:00:44	2017 05 11 T20:05:39
105829	Niskin Bottle	44	51.433355	2.807196	2017 05 11 T20:05:04	2017 05 11 T20:05:09
105830	Niskin Bottle	44	51.433219	2.806731	2017 05 11 T20:05:39	2017 05 11 T20:05:44
105832	Planktonnet Apstein	44	51.432819	2.805295	2017 05 11 T20:07:39	2017 05 11 T20:07:44
105834	FRRF / Fluoroprobe	44	51.433546	2.807674	2017 05 11 T20:12:49	2017 05 11 T20:17:14

105831	Planktonnet WP2	44	51.433502	2.808872	2017 05 11 T20:19:04	2017 05 11 T20:21:04
105835	CTD	1	51.270728	2.905021	2017 05 11 T21:33:24	2017 05 11 T21:37:09
105839	Planktonnet Apstein	1	51.270694	2.90469	2017 05 11 T21:33:59	2017 05 11 T21:37:29
105836	Niskin Bottle	1	51.270188	2.902802	2017 05 11 T21:37:04	2017 05 11 T21:37:04
105837	Niskin Bottle	1	51.270188	2.902802	2017 05 11 T21:37:04	2017 05 11 T21:37:04
105838	Planktonnet WP2	1	51.27097	2.903863	2017 05 11 T21:46:39	2017 05 11 T21:46:44
105840	FRRF / Fluoroprobe	1	51.270944	2.903717	2017 05 11 T21:46:54	2017 05 11 T22:03:04

APPENDIX 2: list of used protocols and chemicals on board

FCM classical

Tools

- liquid nitrogen
- pipettes (1mL; 100µL)
- aluminiumfoil
- 15 * 10mL cryovial

Protocol

- Niskin fles nemen
- 10 mL zeewater uit niskin pipeteren in cryovial
- 0.1 ml van een 25% concentraat glutaraldehyde (-> 0.25% op totaalvolume)
- 0.1 ml pluronic (0.01% op totaalvolume)
- Licht schudden
- 20 min incuberen
- Aluminiumfolie errond (staat niet in protocol, maar lijkt me bevorderlijk).
- In stikstof
-

GLUTARALDEHYDE

	concentratieE	concentratieB
ZEEWATER	0.0025	0.25
1	0.0025	0.0101
2	0.0025	0.0202
3	0.0025	0.0303
4	0.0025	0.0404
5	0.0025	0.0505
10	0.0025	0.1010
20	0.0025	0.2020
30	0.0025	0.3030
40	0.0025	0.4040
50	0.0025	0.5051
	concentratieE	concentratieB
ZEEWATER	0.0001	0.1
1	0.0001	0.0010
2	0.0001	0.0020
3	0.0001	0.0030
4	0.0001	0.0040
5	0.0001	0.0050
10	0.0001	0.0100
20	0.0001	0.0200
30	0.0001	0.0300
40	0.0001	0.0400
50	0.0001	0.0501

Microscopy

Tools

- 5 * 250 mL flask

- Lugol

Protocol

- Niskin fles nemen
- 250 mL zeewater uit niskin in 250ml recipient gieten
- Bewaren op 2% lugol (dus 5mL lugol erbij)
- in frigo (4°)

To do

- lugol: prepareer 5 tubes met 5mL lugol op voorhand.

Dilutions

ongefilterd zeewater	250 mL
lugol	5 ml

Next generation sequencing

Tools

- Vacuum filtration unit
- 50 * 0.2 µm polycarbonate filters
- Niskinbottles
- Tweezers
- Milli-Q-water
- cleaning solutions to remove all DNA (bleach or a DNAse product)
- 50 * 1.5 ml Eppendorf epjes
- Eppendorf stickers and cryogen pen
- tape
- Liquid nitrogen

To do

- bleach kopen

Protocol

- Clean all used materials before filtration thoroughly with Milli-Q-water
- Rinse syringe and filtercap by pressing a full syringe with Milli-Q-water three times over the filterholder
- To remove all DNA, before sampling, the filtration unit or syringe can be cleaned with bleach or DNAse. Make sure you clean it afterwards with Milli-Q-water to remove all cleaning product
- Place a 0.2 µm polycarbonate filter (25 mm) in de filter holder (vacuum system or syringe) and filtrate as much as possible
- Note the filtrated volume, sampling data and sampling location
- Put the filter with a cleaned (Milli-Q-water, bleach, DNAse or Ethanol) tweezers in a 1.5 ml Eppendorf epje
- Put a sticker with all the relevant information on the Eppendorf epje and wrap scotch tape around the sticker and the lid. Don't forget this, because the sticker will not stick anymore when you put it in liquid nitrogen!!!
- Store the Eppendorf epjes with filters in the liquid nitrogen container until they can be stored -80 °C freezer

HPLC Pigments

Tools

- vacuum pomp and tubing
- 50 * GFF filter
- 50 * 2ml tubes
- roll of paper to dry
- tape

- cryopen
- cryolabels

To do
- done

Protocol
1) Connect vacuum pump to filter unit
2) Place filter and cup on filter unit
3) Fill cup with known amount of collected sample water (eg 500 mL)
4) Open t-valve and turn on vacuum pump to start filtering
5) Refill cup as much as possible, as long the filter is not clogged (for coastal stations, generally around 500mL in total, for deeper water, generally around 2000mL or more)
6) Note total volume of filtered water in excel report
7) Once the filter runs dry, flush sides of cup clean with distilled water and remove cup
8) Remove filter, fold and dry filter on paper tissue (filter has to be very dry!)
9) Store the filter in the specifically designed storage unit.
10) Label storage unit with the cryopen: VLIZ Date Station Chla "Volume filtered" ml (eg VLIZ 20141218_130_500ml_ChlA)
11) Wrap tape around the label to ensure it stays attached in liquid nitrogen.
12) Store in liquid nitrogen.

Clean all used equipment properly by rinsing 3 times with Milli-Q water

Nutrients

Tools

- 50 * 50 mL jars and caps
- 50 * cellulose acetate filters 0.2µm

Protocol
- Connect vacuum pump to Erlenmeyer
- Place cellulose acetate filter and cup on filter unit
- Fill cup (depends on sea state, generally around 300mL)
- Open t-valve and turn on vacuum to start filtering
- When the filter runs dry, pour the filtered water into a nutrient-recipient
- 150ml for official lab nutrient analysis (label with VLIZ, station, date, Nutrients…)
- Clean the Erlenmeyer and all other equipment properly, rinse 3 times with Milli-Q water.
- put in -24

Flowcam

Tools
- 1 * 10 µm net
- 1 * 50µm net
- 1 * 50L barrel
- 50 * 1L recipient (or alternatively: the typical falcons).
- 1 * bucket and rope
- 1 * lugol

To do

- attach strong rope to big bucket.

Protocol
- Filter 50 liters water, from a bucket sample, on 50 µm net
- but contents of the 50µm net into a falcon (or larger recipient).
- Preserve with lugol 2% final concentration
- store in 4°, attach aluminium foil

Dilutions

Volume	Sea Water	Volume	Lugol
1000	mL zeewater	5	mL lugol
500	mL zeewater	2.5	mL lugol
250	mL zeewater	1.25	mL lugol
125	mL zeewater	0.625	mL lugol
62.5	mL zeewater	0.3125	mL lugol
31.25	mL zeewater	0.15625	mL lugol
15.625	mL zeewater	0.078125	mL lugol
7.8125	mL zeewater	0.039063	mL lugol
3.90625	mL zeewater	0.019531	mL lugol
1.953125	mL zeewater	0.009766	mL lugol

Zooplankton

Tools
- WP2 net (200 µm)
- Flowmeter
- gas-water
- formalin

Protocol
- Tell the crew to haul the WP2 net. Ask them to install the flowmeter in order to know the volume of water that passed the net. Note this flow on the excel report file
- Register in MIDAS when the WP2 net is hauled up.
- Once the WP2 net is up, make sure to rinse the outside of the net so all material is certainly in the red flask on the bottom.
- take the red flask on the bottom and try to lose as many water as possible. Pour this material in a 1L flask.
- Rinse the flask very thoroughly with soda water and add it to the recipient
- Dependant on the volume of zooplankton, add 20ml 35% formol, or more! Do this shortly after collecting since zooplankton will predate each other within the recipient.
- In the lab, after fixation, formol will be replaced by 70% ethanol.

Dilutions

Volume Plankton	add formol to obtain 4% concentration (in mL)
100	11.11
200	22.22
300	33.33

400	44.44
500	55.56
600	66.67
700	77.78
800	88.89
900	100.00
1000	111.11

APPENDIX 3: ETA on stations and details on actions on those stations

Day	Date	station	CTD	Niskin	WP2	pigment	nutrient	dna	Flowcam
8	16:55	2	n	n	10	750	y	200	y
8	19:30	3	n	n	21	500	y	100	y
8	21:30	4	n	n	n	500	y	100	y
8	22:50	5	n	n	21	500	y	75	y
9	00:30	19	n	n	n	500	y	75	y
9	02:00	6	n	n	24	1000	y	150	y
9	03:20	13	n	n	20	650	y	125	y
9	04:05	7	n	n	7	500	y	100	y
9	05:14	12	y	y	10	750	y	125	y
9	07:08	11	n	n	26	750	y	100	y
9	09:00	10	y	y	27	2000	y	300	y
9	10:25	9	y	y	13	1500	y	200	y
9	11:54	15	y	y	21	2000	y	300	y
9	13:18	16	y	y	21	1000	y	200	y
9	14:46	21	y	y	24	1500	y	250	y
9	16:10	20	y	y	51	2000	y	300	y
9	17:55	17	y	y	32	2500	y	400	y
9	19:08	14	y	y	20	2000	y	300	y
9	21:00	8	y	y	25	1000	y	200	
10	04:04	24	y	y	24	1000	y	200	y
10	05:24	25	y	y	0	1000	y	200	y
10	07:15	23	y	y	33	2000	y	300	y
10	09:00	22	y	y	11	750	y	200	y
10	11:00	26	y	y		1000	y	200	y
10	12:30	27	y	y	14	1000	y	200	y
10	13:53	28	y	y	12	1500	y	200	y
10	16:55	29	y	y	11	1000	y	150	y
10	18:30	30	y	y	18	500	y	200	y
10	20:30	31	y	y			y	400	y
10	22:25	32	y	y	?	500	y	100	y
11	00:45	33	y	y	20	750	y	200	y
11	02:50	35	y	y	15	500	y	100	y
11	06:00	36	y	y	14	500	y	200	y
11	07:40	37	y	y	11	500	y	100	y
11	09:30	38	y	y	5	250	y	50	y
11	10:48	39	y	y	14	500	y	200	y
11	12:30	40	y	y	20	750	y	100	y
11	14:30	41	y	y	4	1000	y	100	y
11	15:50	42	y	y	4		y		y
11	18:30	34	y	y	24	1500	y	200	y

11	20:00	43	y	y	40	1500	y	200	y
11	22:00	44	y	y	25	1000	y	200	y
11	23:30	1	y	y	7	1000	y	200	y