Cruise report RV Pelagia 64PE433
Saba, St Eustatius and Saba Bank
Benthic habitat mapping, and Benthic–Pelagic coupling

26 February - 10 March 2018
St Maarten-St Maarten (*NICO expedition leg 6*)

Scientific party NICO expedition Leg 6
Fleur C. van Duyl and Erik H. Meesters (eds)

The complete team of participants of the NICO expedition Leg 6

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2 Introduction

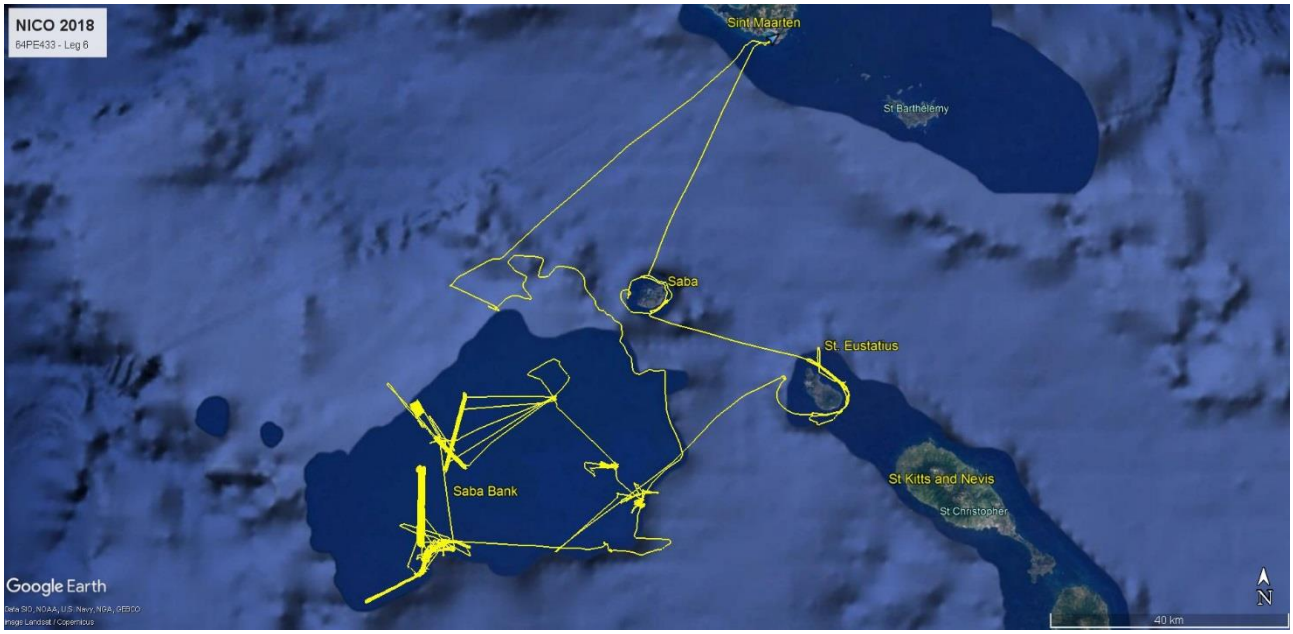

Figure 2.1.1. In yellow the approximate track that was covered by the RV Pelagia, starting at St. Maarten and going to the Saba Bank via Saba and St. Eustatius.

2.1 Aim and Background.

This research expedition in the Caribbean Sea was one of the NICO expeditions (Netherlands Initiative Changing Oceans) funded by NWO and coordinated by NIOZ-NMF in 2018. One of the aims was to accommodate research proposals of Dutch research institutes and Universities to study various aspects in the Caribbean from the RV Pelagia. During our 13-day cruise five different projects were accommodated with the originally submitted titles:

- Net calcification in different benthic habitats on the Saba Bank (NIOZ-MMB, Fleur C. van Duyl)
- Windward reefs of Dutch Caribbean (WUR, Erik H. Meesters)
- Living in the shadow – Biogeochemical functioning and benthic-pelagic coupling across the Saba Bank (NIOZ-EDS, Karline Soetaert)
- On-track sampling while teaching young-career scientists (NIOZ-MMB, Corina Brussaard)
- For PR purposes an ocean music composer was added (Stef Veldhuis)

Scientific proposals were instigated by the fact that still limited information is available of the marine environment surrounding the Dutch Islands of Saba and St Eustatius in the Caribbean, and of the huge subsea carbonate platform close to these islands, the Saba Bank. Since several years research activities coordinated by Dutch scientists (WUR-WMR, NIOZ) are increasing in the region with expeditions to the Saba Bank with the Caribbean Explorer II in 2011, 2013, 2015 (with emphasis on coral reef monitoring and preliminary work on carbonate chemistry in 2015) and a RV Pelagia cruise in 2016 (with emphasis on carbonate chemistry, trophic conditions in the water column and benthic-pelagic coupling).

Scientific aims of this NICO leg 6 expedition were:
1. Exploring and mapping of the windward mesophotic reefs and bathymetry of Saba and St Eustatius, and proceeding with the mapping of benthic habitats (from 10 until 100m depth) of the Saba Bank with the aim to link the benthic habitat descriptions that result from the mapping to benthic metabolism.

2. Investigating benthic-pelagic coupling of different benthic habitats between 15 and 28m depth on the Saba Bank with focus on net calcification, organic matter (bio)deposition/ mineralization and oxygen dynamics in the benthic boundary layer.

Saba, St Eustatius and the Saba Bank are fringed by coral reef communities growing on the volcanic foot of the islands, and on top and along the slopes of the subsea carbonate platform, the Saba Bank. On the Bank 7 stations were visited characterized by different benthic communities, coral reef on the slope at the S-SE side (Coral Garden), a patch reef (Tertre de Fleur), a Sargassum field, a sandy plain, healthy coral reef communities, and a crustose coralline algae (CCA) covered back reef.

St. Eustatius viewed from sea at sunset.

2.2 Scientific party

Fleur C. van Duyl	NIOZ-MMB	Chief Scientist/Exp. Leader Coral reef microbial ecology
Erik H. Meesters	WMR	Co-Chief Scientist, Coral reef ecology
Laurent Devriendt	NIOZ-OCS	Carbonate chemistry
Didier de Bakker	WMR/NIOZ	Carbonate chemistry
Alice Webb	NIOZ-OCS	Carbonate chemistry
Emil de Borger	NIOZ-EDS	Biogeochemistry
Milou Arts	UvA- Master student	Metabolomics, metagenomics
Tom Theirlynk	NICO-student UvA	Oceanography
Lucas Tichy	NICO- student Radboud	Oceanography
Pieter van Rijswijk	NIOZ-EDS	Biological analyst
Bob Koster	NIOZ-OCS	Technician
Sharyn Ossebaar	NIOZ-OCS	Chemical analyst
Jan Dirk de Visser	NIOZ-NMF	Technician
Stef Veldhuis	Volunteer	Ocean music composer

2.3 Acknowledgements

We are grateful for the solid and dedicated support of the crew of the RV Pelagia.

John Ellen	Captain
Bert Puijman	1st Officer
Noortje Loonen	2nd Officer

Bert Hogewerf	Chief Engineer
Inno Meijers	2nd Engineer
Cor Stevens	Bosun
Martin de Vries	Sailor
Norberto dos Santos	Sailor
Peter van Maurik	Sailor
Iwan van Breejen	Cook
Vitalijs Maximovs	Steward

We thank NIOZ National Marine Facilities (NMF) for logistic support from the home base on Texel, i.e. Erica Koning, Henk de Haas, Joep van Haaren and Mildred Jourdan. Without the financial support of NWO this NICO cruise would not have been possible. Erik Meesters was financially supported by the Ministry of Agriculture, Nature and Food Quality, program Caribbean Netherlands (BO-43-021.04).

3 Itinerary and scientific program

3.1 Cruise map

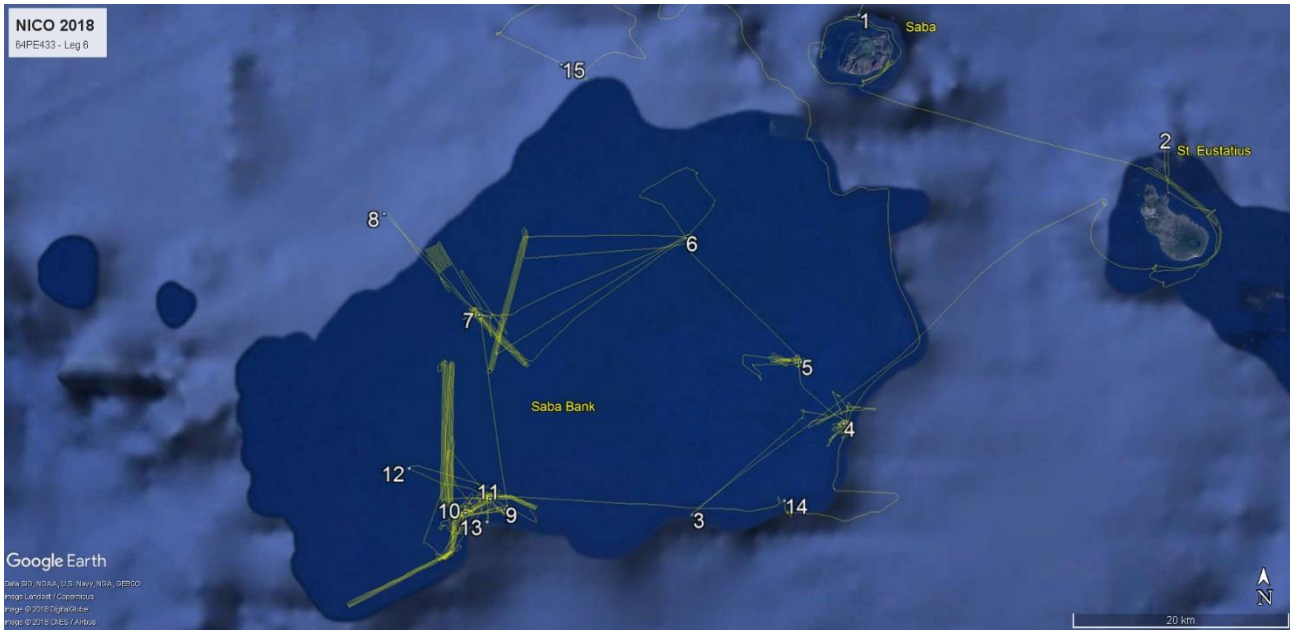

Figure 3.1.1. Station number and approximate location where activities took place during leg 6 of the NICO expedition.

On 26 February the cruise set off from St Maarten to the north side of Saba, where we arrived at 17:30h local time at our first station. Position of stations can be seen in Figure 3.1.1.; position of hopper frame stations are shown in Figure 4.1.1.. After surveys around Saba for bathymetry and underwater benthic habitats by photography (Station 1 and hopper stations 201-203) it went to the windward side of St Eustatius for more of these activities (Station 2, 204-209). From the S-tip of St Eustatius we sailed to the S-side of the Saba Bank (Station 3, NICO station deep). After that, a transect was made from the SE side towards the NW (Stations 4, 5, 6, 7, 8; hopper stations 210-222). From there the cruise proceeded towards the SW corner of the Saba Bank (stations, 9, 10, 11, 12, 13; hopper stations 223-239). Station 14 was at the SE corner and station 15 (hopper station 239) at the NW corner. During the cruise the station numbers 1-15 were assigned to the 15 "geographic" stations (with stations 3-15 positioned on or close by the Saba Bank) with at each station up to 19 separate activities e.g. CTD, landers and/or boxcores were performed. Transects with the Hopper camera frame were numbered 201 to 239 (see appendix for complete list of these activities). Bathymetry transects did not get station numbers. Date, time and position of these tracks were stored in Casino (backed up at NIOZ). On 9 and 10 March moorings (thermistor strings) of Hans van Haren (NIOZ) were recovered in the vicinity of Stn 14 and Stn 15. The cruise ended on 10 March in the

harbor of Philipsburg St Maarten in the late afternoon. For a complete overview of stations and activities see appendix 5.1.

3.2 Equipment

Most important sea survey devices used during this cruise were the

a. **Multibeam** to survey the bathymetry of the deeper reefs and missing parts of the Saba Bank (in cooperation with the Dutch Hydrographic Service)
b. **CTD rosette** to obtain profiles of salinity, temperature, density, oxygen concentrations, fluorescence, underwater light measurements (PAR) and collect water samples with Niskin bottles. Four Niskin bottles (of 24) were removed to attach a Laser In Situ Scattering and Transmissometer (LISST) to the CTD frame for particle measurements (see 4.5).
c. **Hopper** frame equipped with HR video, two Nikon D800 camera's, a GoPro camera, laser and sonar for online recording of benthic communities (see 4.1).
d. **Bottom water gradient sampler**, called **PUMPY**. The PUMPY lander consists of a tripod carrying six 10L bags which are filled with water by six electric pumps connected to a battery pack with timer 45min after deployment of the lander. Water is pumped into the bags for 30 min after it landed on the bottom. Water was taken from 6 different depths above the bottom (10, 20, 40, 80, 160, 300cm ab). The lander carried a Nortek Aquadopp Profiler (2MHz) positioned horizontally on the tail with sensors looking upwards at the far end (ca 40 cm above the bottom). On the opposite side a SB37 Microcat CTD plus dissolved oxygen sensor (optode) was connected. To monitor the light an Odyssey light logger was attached to the frame. On the 3m pole sticking upwards from the middle of the lander a GoPro camera was attached to record the actual benthic community Pumpy has landed in. PUMPY was deployed 3 times per day for up to 2 hrs and 3-4 times per station. It was moored each time with its own 2-step anchoring device and floats (including pick up line).
e. Eddy Covariance lander, called **EDCO**. The EDCO is a tripod lander equipped with two oxygen microelectrodes and a Nortek Acoustic Doppler velocimeter in the middle. The frame also carried a Nortek Aquadopp profiler (2MHz), positioned vertically (ca 1.2 m ab) and looking downwards, and a GoPro camera. The EDCO deployments lasted ca 24 hrs per station. The lander was moored by itself with float on top with pick up line
f. Large **Boxcore** (50cm diam) equipped with as well as without online camera in sandy areas.

RV Pelagia moored in Sint Maarten.

4 Reports of scientific activities

4.1 Benthic habitat mapping (Erik Meesters)

Error! Reference source not found.1.1 shows the approximate locations of the hopper frame stations (average position). On each location the hopper frame was lowered to 0.5-1m above the bottom and a transect was run to photograph and film the bottom. The whole transect was filmed in HD by a downward looking camera and in 720p by a forward looking camera. Additionally, a Gopro camera took one picture every 5 seconds and two Nikon D800 DSLRs could be triggered from the control room to take pictures.

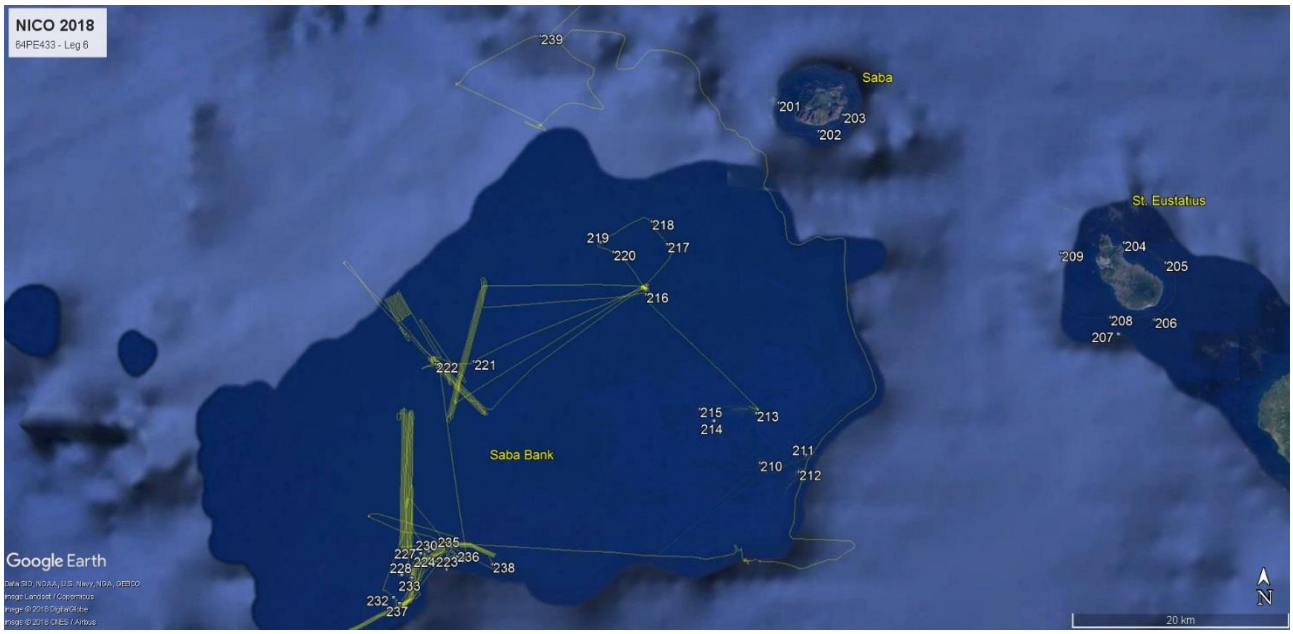

Figure 4.1.1. Hopper station number (201-239) and approximate location.

Total transect length varied between 145 and 1787m (Table 4.1.1) and in total almost 25km of photos and video was recorded.

Table 4.1.1. Approximate hopper frame transect length and average depth calculated from ships gps log.

Station	Length (m)	Depth (m)	Station	Length (m)	Depth (m)
201	536	NA	221	390	31
202	188	53	222	313	34
203	181	62	223	659	34
204	145	29	224	326	22
205	798	62	225	308	27
206	1370	40	226	266	31
207	310	65	227	403	25
208	471	46	228	411	28
209	257	54	229	447	25
210	784	22	230	199	28
211	558	11	231	237	30
212	510	51	232	1787	24
213	562	19	233	999	54
214	1516	21	234	450	30
215	601	21	235	610	24
216	1328	23	236	435	22
217	1293	25	237	829	24
218	654	25	238	968	36
219	511	25	239	989	83
220	923	27	Total	24522	

A relatively large amount of time was spent in the south western corner of the bank with station numbers 224-238 (Figure 4.1.2).

Figure 4.1.2. Close up of hopper station number 224-238.

A short qualitative description of several stations follows.

Station descriptions (Date Time in GMT/UTC)

Station 201 (26 February 22:42-23:21)

This transect ran from south to north over the famous pinnacle on Saba (Figure 4.1.3).

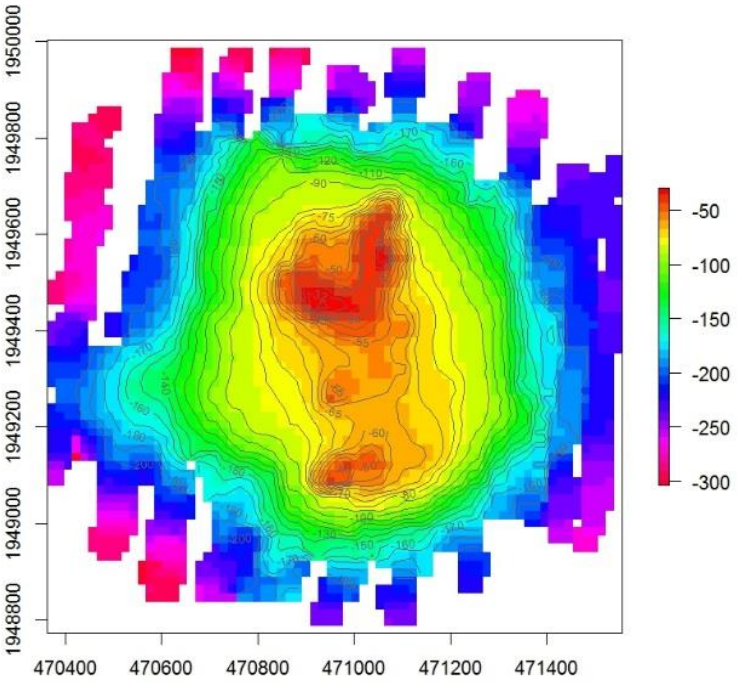

Figure 4.1.3. Saba Pinnacle.

Most of the area is dominated by macroalgae (Lobophora), sponges, and calcareous algae. Because of the depth which is too deep for extensive coral growth the few corals present are mainly platelike corals of the Agariciidae.

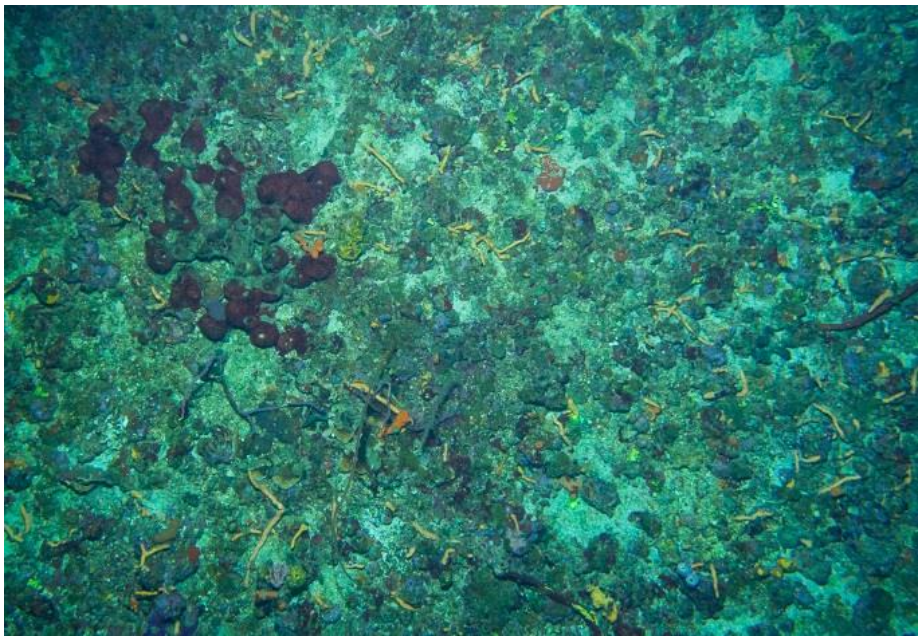

Figure 4.1.4. Picture taken on transect 201.Station 202 (27 February 00:29-00:40)

This station is at the south side of Saba. Coral cover is generally quite high together with soft corals, sponges, and benthic algae.

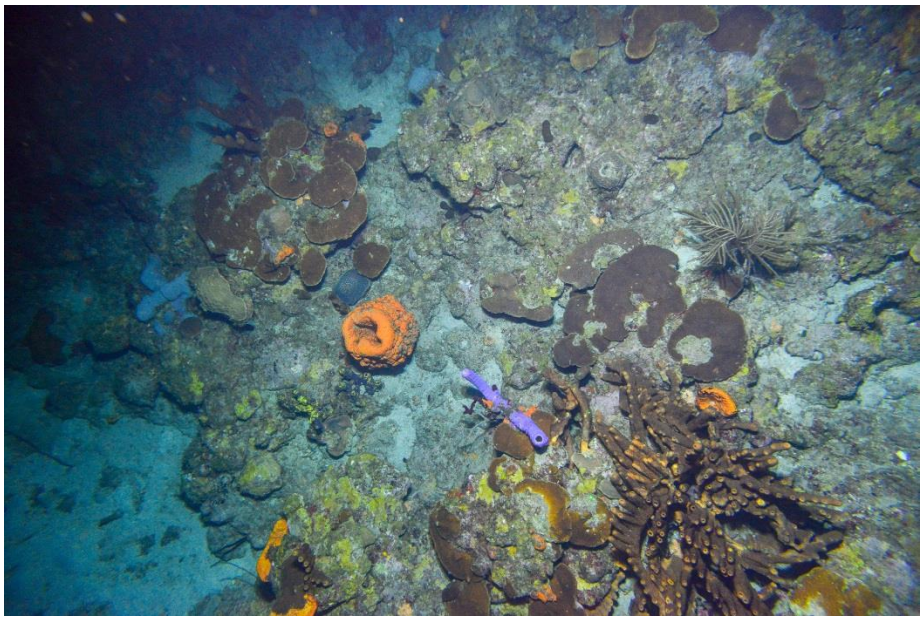

Figure 4.1.5. Picture from transect 202.

Station 203 (27 Feb. 01:06-01:15)

At the east side of Saba this transect was photographed. It's dominated by sand with rubble stones in some places and is rather steep. It appears that there is a lot of sediment transport down the slope.

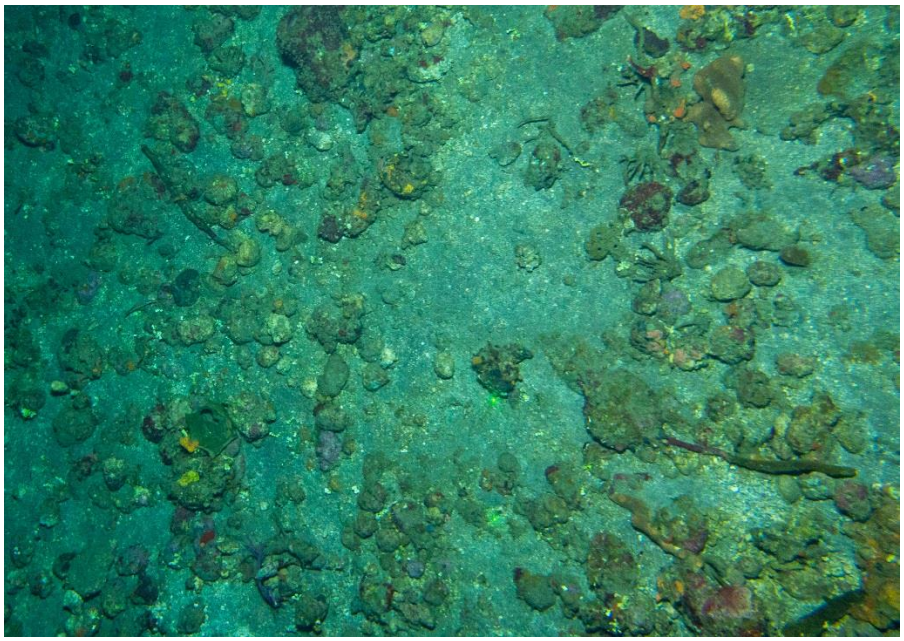

Figure 4.1.6. Picture from transect 203.

Station 204 (27 Feb. 11:59-12:09)

This station lies at the east side of St. Eustatius. It's a sandy (volcanic sand) area with patches of sea grass.

Figure 4.1.7. Sea grass dominated transect east of St. Eustatius.

Station 205 (27 Feb. 12:46-13:20)

This transect runs southwest and lies southeast of White Wall a remarkable part of the island (below).

Figure 4.1.8. White Wall.

The bottom slopes steeply and has occasionally outcrops of large rock material covered by flat coral plates. In places the bottom is dominated by rubble, while in other parts corals and algae dominate.

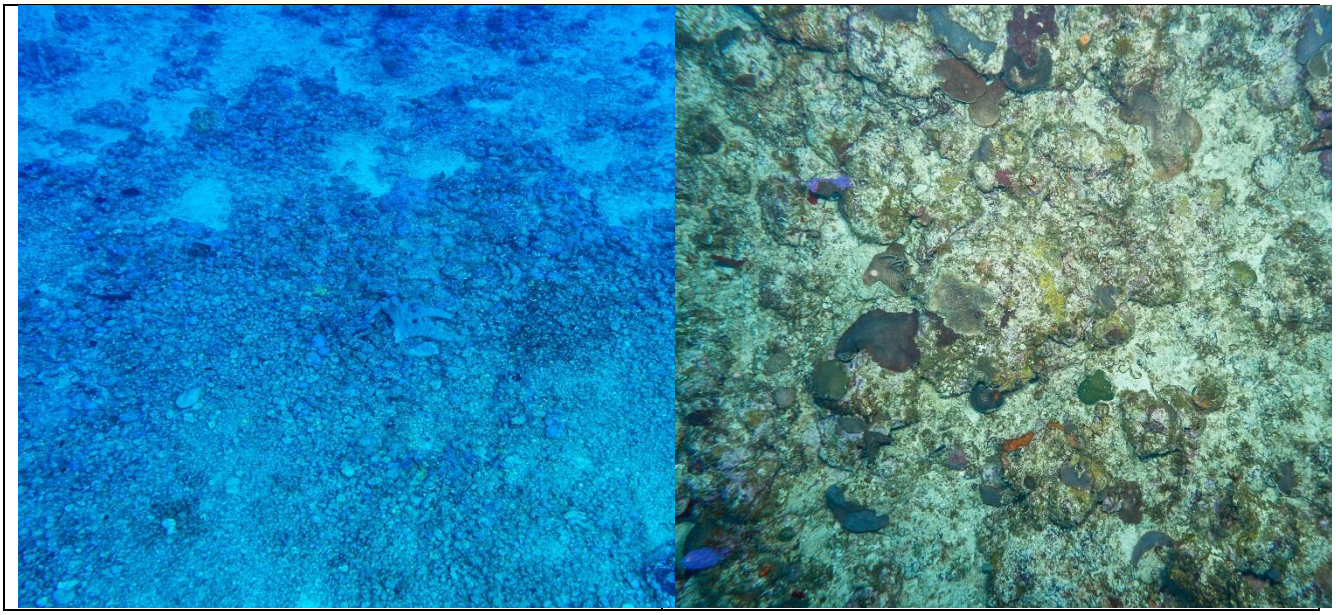

Figure 4.1.9. Bottom pictures of station 205.

Station 206 (27 Feb. 13:53-14:39)

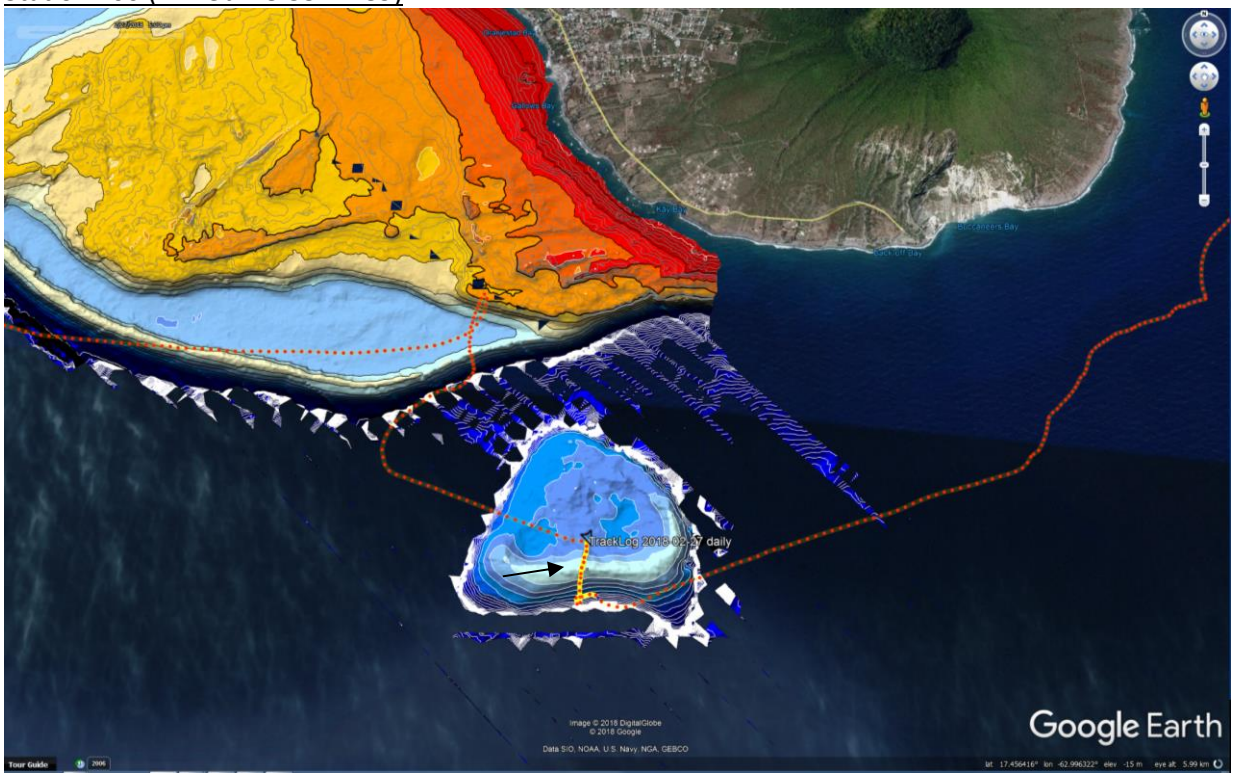

Figure 4.1.10. Pelagia track and hopper frame track of station 206. Maps shows St. Eustatius and Bathymetry.

The track is going straight up the pinnacle on the south side of St Eustatius. The slope area is an area that is very sandy with rounded stones probably formed by corals or calcareous algae. Shallower on top of the pinnacle the bottom is more covered by macroalgae like Lobophora.

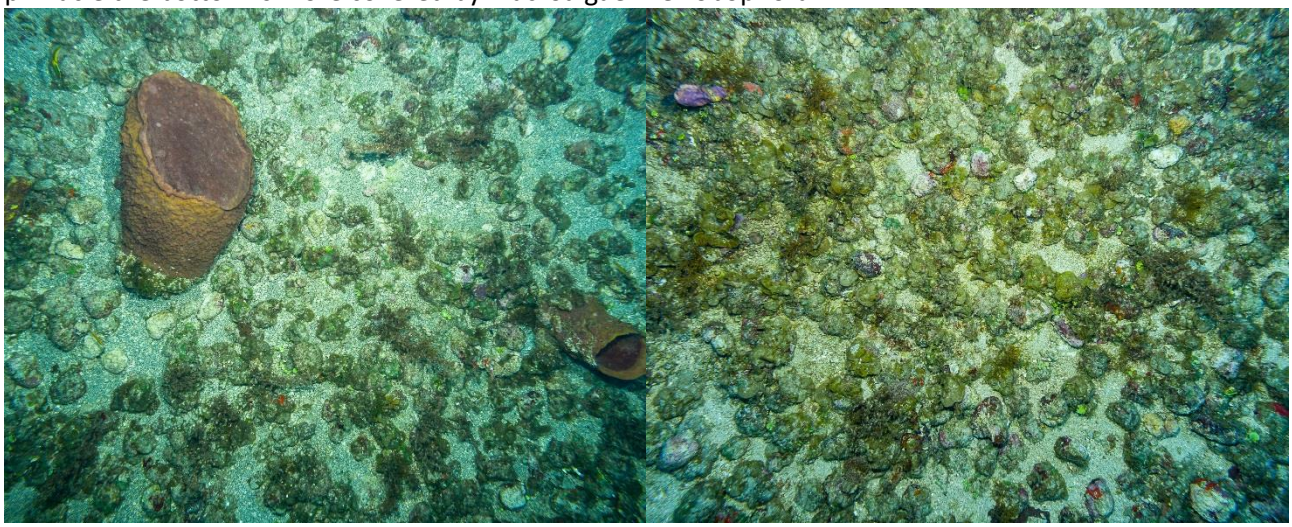

Figure 4.1.11. Pictures of station 206.

Station 207 (27 Feb. 15:08-15:27)

Many sub-sea features are remnants of previous sea level stands where during long-lasting periods of relatively little sea level change reefs have grown and created bottom structures that still can be seen today. So also at station 207 where a bathymetric map shows lava flows and an old reef crest that follows a lagoon.

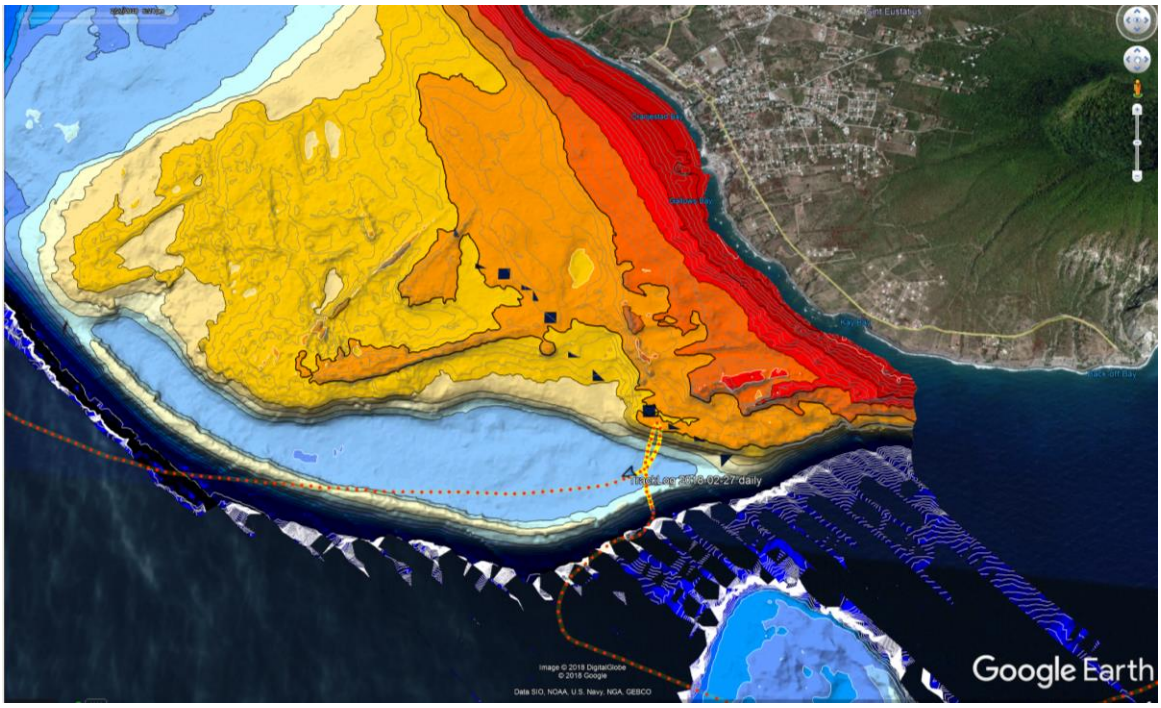

Figure 4.1.12. Pelagia track and hopper frame track of station 207. Maps shows St. Eustatius and Bathymetry.

The track at station 207 crosses the submerged lagoon at approximately 45m depth.

Station 239 (10 Mar. 14:42-15:43)

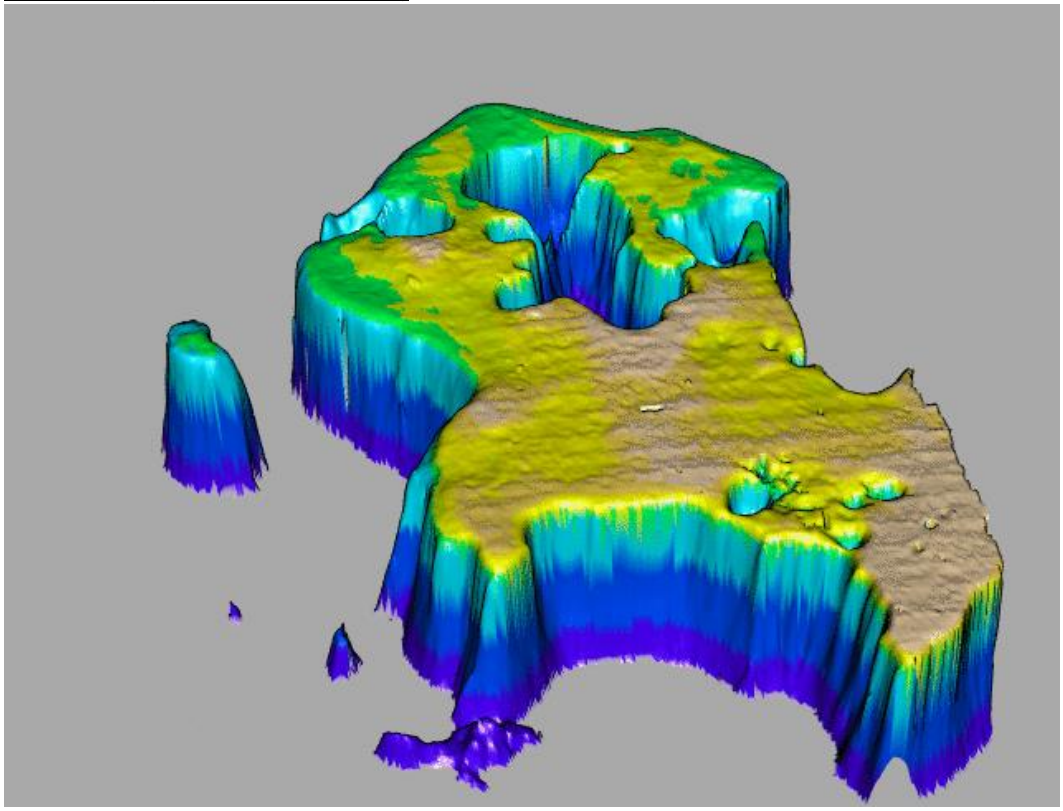

Figure 4.1.13. Three D picture of the Luymes Bank. The top of the bank is around 80m deep.

The northern part of the Saba Bank is called the Luymes Bank. It has several sinkholes, large holes in the carbonate bottom that have been created during periods that the bank was above sea. These holes range from 100m to several kilometres in diameter and are from 100-300m deep. Transect 239 actually went down in two of these sink holes. Starting at 80m depth the hopper frame was lowered in the first sink hole

which was approximately 200m wide. At the bottom of the sink hole a large community of calcareous algae was found that consists of thousands of little pillars (see below figure).

Figure 4.1.14. Calcium carbonate pillars made up from calcareous algae on the bottom (app. 100m) of a sinkhole on the Luymes Bank.

Other hopper frame stations still to be described	
Station 208 (27 Feb. 15:51-16:18)	Station 224 (5 Mar. 23:18-23:42)
Station 209 (27 Feb. 17:23:-17:40)	Station 225 (6 Mar. 00:01-00:19)
Station 210 (27 Feb. 22:39:-23:30)	Station 226 (6 Mar. 13:29-13:48)
Station 211 (28 Feb. 11:36-13:16)	Station 227 (6 Mar. 13:58-14:32)
Station 212 (28 Feb. 13:59-14:33)	Station 228 (6 Mar. 14:48-15:12)
Station 213 (1 Mar. 19:07-20:07)	Station 229 (6 Mar. 18:16-18:55)
Station 214 (2 Mar. 12:35-14:00)	Station 230 (6 Mar. 19:10-19:25)
Station 215 (2 Mar. 14:29-15:06)	Station 231 (6 Mar. 19:51-20:08)
Station 216 (3 Mar. 23:58-00:44)	Station 232 (7 Mar. 23:33-00:36)
Station 217 (3 Mar. 12:34-13:17)	Station 233 (7 Mar. 13:29-14:11)
Station 218 (3 Mar. 13:36-13:58)	Station 234 (7 Mar. 14:32-15:56)
Station 219 (3 Mar. 14:30-14:45)	Station 235 (7 Mar. 20:20-20:57)
Station 220 (3 Mar. 14:59-15:32)	Station 236 (7 Mar. 21:21-21:51)
Station 221 (4 Mar. 13:32-13:48)	Station 237 (8 Mar. 13:36-14:59)
Station 222 (4 Mar. 14:21-14:34)	Station 238 (8 Mar. 23:11-00:14)
Station 223 (5 Mar. 18:42-20:01)	

4.2 Multibeam data (Erik Meesters, Bob Koster, Henk de Haas)

During the expedition the multibeam was used whenever possible. Depending on the bottom depth and the slope of the bottom, the width of one multibeam track covered from several tens to several hundreds of meters. We tried to integrate the multibeam data already on board into coarse maps (Figure 4.2.1-Figure 4.2.6), but they will need to be further cleaned and processed.

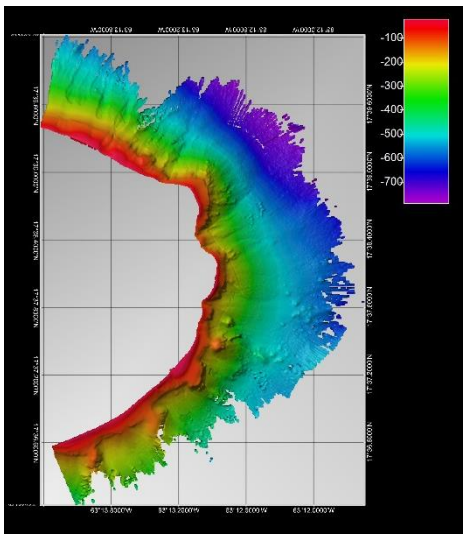

Figure 4.2.1. East side bathymetry of Saba.

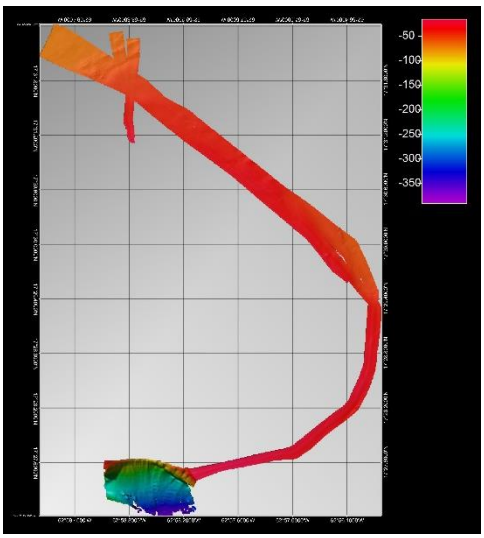

Figure 4.2.2. Bathymetry data collected around St. Eustatius.

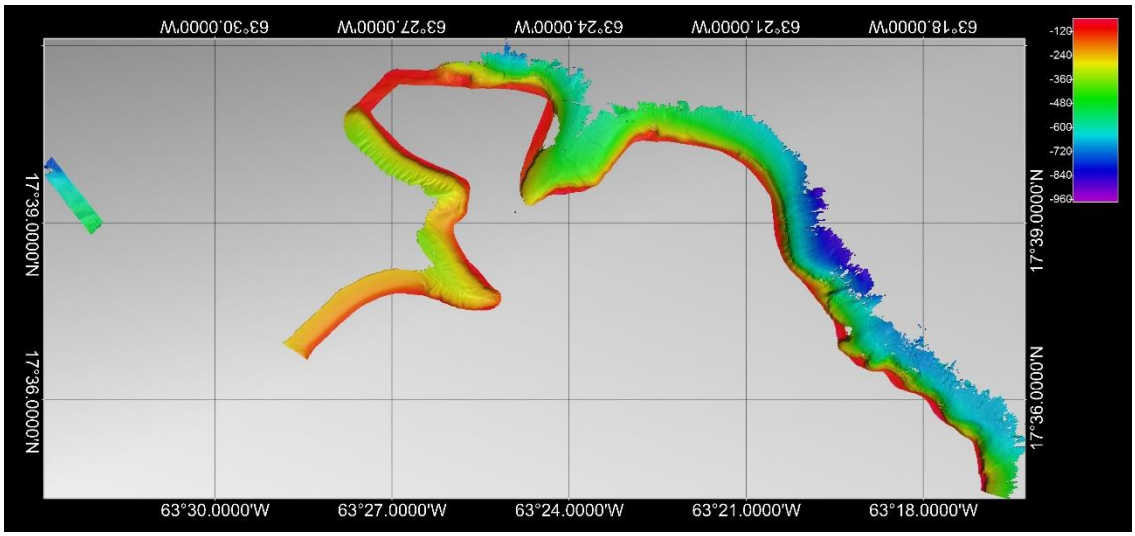

Figure 4.2.3. Bathymetry data collected along the North-eastern edge of the Saba Bank.

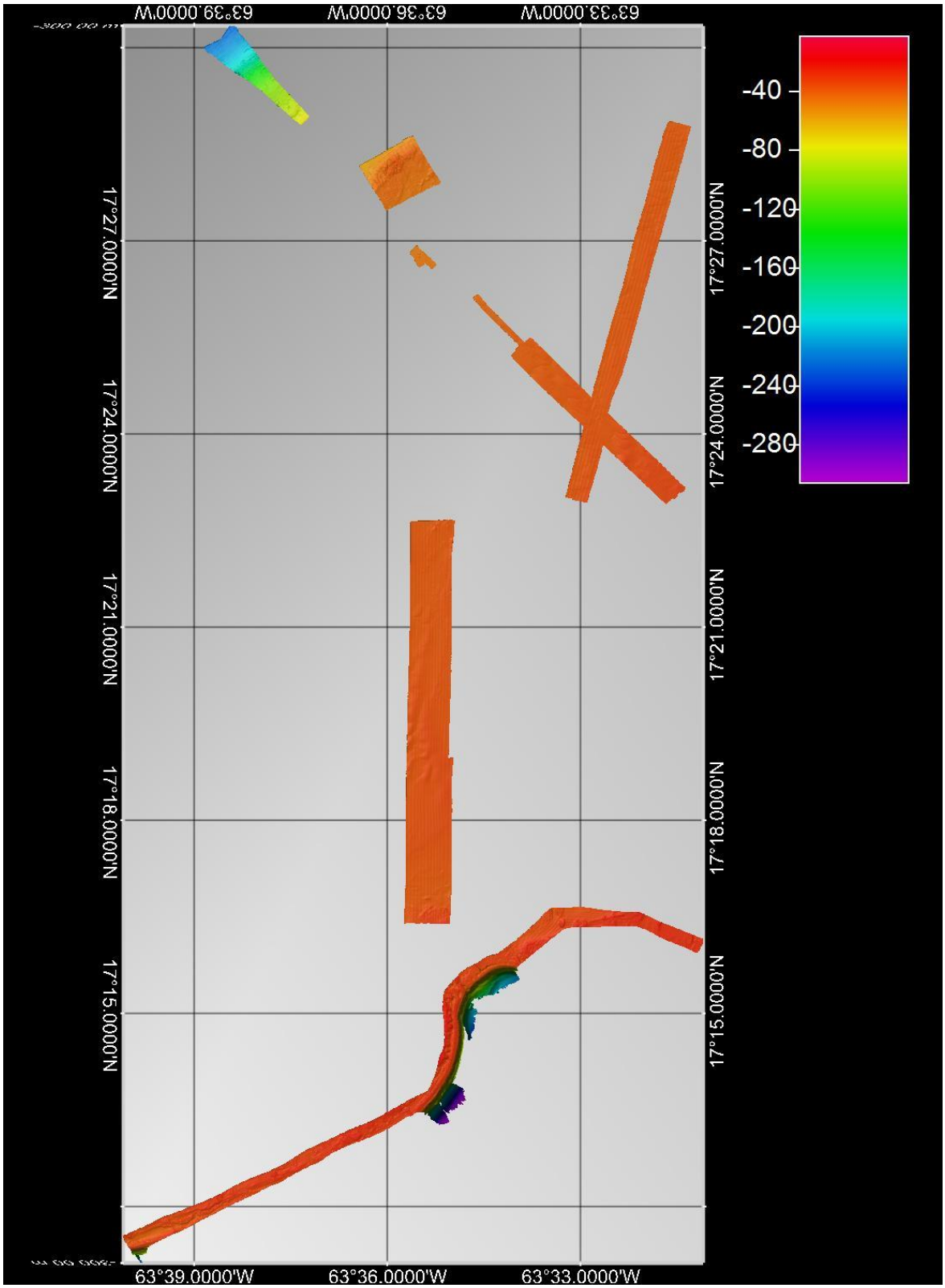

Figure 4.2.4. Bathymetry data collected in the middle and southern part of the Saba Bank.

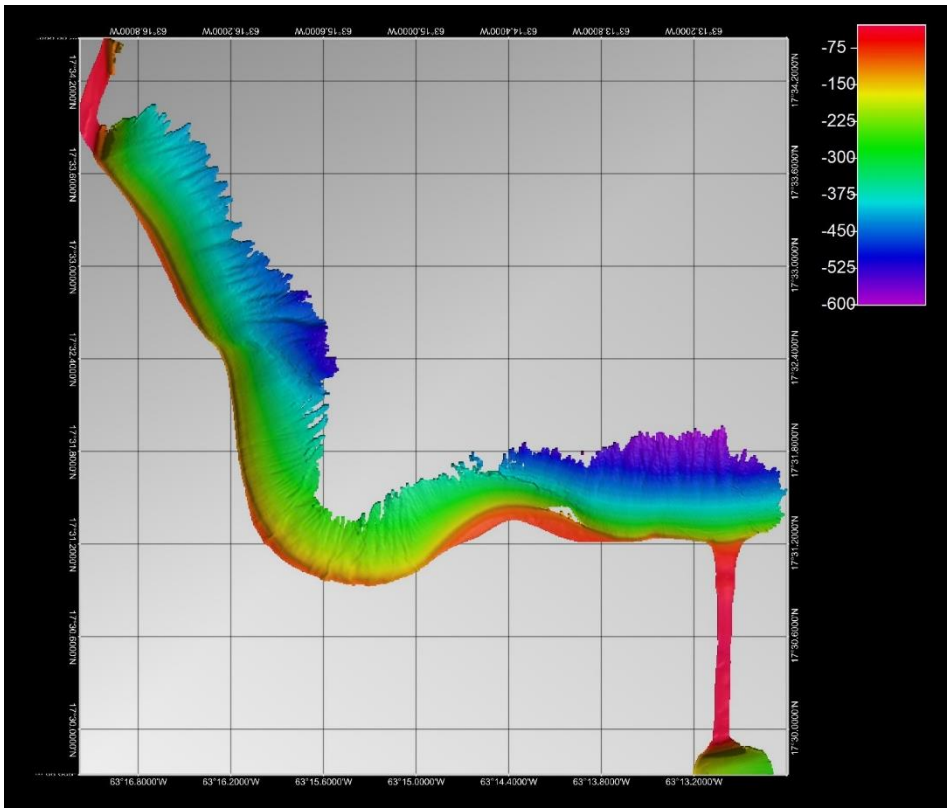

Figure 4.2.5. Bathymetric data connecting to previous figure.

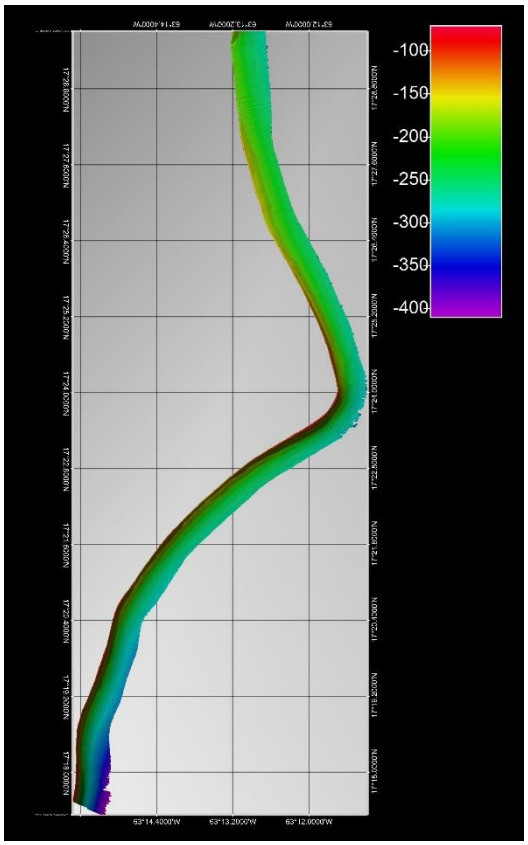

Figure 4.2.6. Bathymetric data of the edge of the Saba Bank connecting to previous figure.

4.3 Characterization of the carbonate chemistry dynamics above the Saba Bank (Alice Webb, Didier de Bakker, Laurent de Vriendt)

To assess coral reef health, it is necessary to validate net community calcification (or dissolution) in the field, for instance by determining alkalinity fluxes from the reef. We investigate the in situ fluxes of alkalinity, DIC, and nutrients over the Saba Bank offshore from the island of Saba, Dutch Caribbean. 340 seawater samples were collected and measured for their alkalinity, DIC and nutrients content to determine if and how biologic and/or inorganic processes occurring on the Saba bank (i.e. calcification/dissolution and photosynthesis/respiration) alter the carbonate chemistry of the overlying water mass.
Seawater was collected above the Saba bank at 6 stations (#4, 5, 6, 7, 9, 10 and 11). At each station, seawater was sampled 3 to 4 times using the CTD units and with the PUMPY device. Sampling time was early morning for the night signal, at midday and late in the afternoon. During CTD sampling, water was taken at ~ 4 m above the sea floor and at 2 to 4 additional water depths from the bottom to the surface depending on the water column depth. During PUMPY sampling, seawater was collected simultaneously at 10, 20, 40, 80,160 and 300 cm from the seafloor. Seawater was also collected off the Saba bank at 4 stations (#4-15, 8-1, 14-1 and 15-1) to characterize the carbonate chemistry of the open ocean near the bank.
Sampling and analysis for alkalinity broadly followed the standard operating procedures outlined by Dickson et al. (2007). Specifically, water samples of 0.5L were transferred from CTD units into borosilicate sample bottles using Tygon tubing. For each profile sampling, two or three duplicate samples were collected, generally at shallow, intermediate and deep parts of the profile. Analysis of the water samples commenced immediately after collection and filtration (0.45 μm). Analysis of an entire profile was always completed within 2 hours after sampling. The analysis was performed on an Automated Spectrophotometric Alkalinity System (ASAS) following the method outlined by Breland and Byrne (1993) and Yao and Byrne (1998). This optical titration procedure has a remarkable high precision (± 0.5 μmol kg^{-1}), making it possible to detect minor alkalinity fluctuations. Certified reference material (CRM, Batch #154) obtained from Dr. Andrew Dickson at Scripps Institute of Oceanography (San Diego, California) was used for quality control. The average precision over two weeks of analysis was 0.5 μmol kg^{-1}.
For nutrients and DIC, the seawater samples were collected in 60ml high-density polyethylene syringes with a three way valve from the Niskin bottles of the CTD rosette and the gradient sampler bags. The syringes with a three way valve were first rinsed three times with a small amount of the sample before being completely filled. After sampling on deck, the samples were processed immediately in the lab container. Samples were filtered over a combined 0.8/0.2μm acrodisc filter and instantly sub-sampled for DIC in a glass vial already containing 15μl saturated $HgCl_2$ (Mercury Chloride) and filled with a round meniscus before being capped and stored upside down in a refrigerator. TA was sub-sample in a high density polyethylene HDPE tube, also known as a pony-vial containing 15μl saturated $HgCl_2$ and stored in the dark at 4°C.

For list of alkalinity measurements conducted on board see appendix 4.4.

4.4 Nutrients (Sharyn Ossebaar)

Nutrients were analysed in a temperature controlled lab container equipped with a QuAAtro Gas Segmented Continuous Flow Analyser, measuring approximately 260 samples during the cruise. Samples were collected from the CTD-Rosette bottles and a Gradient Sampler equipped with 6 sample bags. Measurements were made simultaneously on four channels for Phosphate Ammonium, Nitrite, and Nitrate with Nitrite together. Samples for Silicate, Dissolved Organic Carbon (DIC), Total Alkalinity (TAlk) and Total Phosphorous & Total Nitrogen were also taken and will be stored in a refrigerator or freezer until further analysis back at the NIOZ, The Netherlands. All measurements were calibrated with standards diluted in low nutrient seawater (LNSW) in the salinity range of the stations of the Saba Bank waters at approximately 35 ‰ to ensure that analysis remained within the same ionic strength.
Equipment and Methods

Sample Handling. *The* seawater samples were collected in 60ml high-density polyethylene syringes with a three way valve from the Niskin bottles of the CTD rosette and the gradient sampler bags. The syringes with a three way valve were first rinsed three times with a small amount of the sample before being completely filled. After sampling on deck, the samples were processed immediately in the lab container. Samples were filtered over a combined 0.8/0.2µm acrodisc filter and instantly sub-sampled for DIC in a glass vial already containing 15µl saturated $HgCl_2$ (Mercury Chloride) and filled with a round meniscus before being capped and stored upside down in a refrigerator. Total alkalinity (TAlk) was sub-sample in a high density polyethylene HDPE tube, also known as a pony-vial containing 15µl saturated $HgCl_2$ and stored in the dark at 4°C. Another pony-vial was filled for PO_4, NH_4 and NO_3 plus NO_2 for direct analysis on board. Two more pony-vials were filled for storing Silicate in the refrigerator and the other was stored at -20°C for Total Nitrogen & Total Phosphorous analysis. Both these, DIC and TAlk will be analysed back at the NIOZ. All sampling vials including the caps were pre-rinsed three times with filtered sample before being filled. The PO4, NH4 and NO3 plus NO2 samples were simultaneously measured in the lab container within 8 hours of sub sampling. Only samples taken from the evening CTD and gradient sampler were refrigerated and analysed the following day, usually within 18 hours of sub-sampling. The on board measured samples were stored in a refrigerator at 4^{o}C and prior to analysis, all samples were brought to lab temperature in about one to two hours. To avoid gas exchange and evaporation during the runs with NH4 analysis, all vials including the calibration standards were covered with 'parafilm' under tension before being placed into the auto-sampler, so that the sharpened sample needle easily penetrated through the film leaving only a small hole. The QuAAtro uses an LED instead of a lamp as a light source as it is not affected by the movement of the ship giving a stable reading and a sampler rate of 60 samples per hour was used. Calibration standards were diluted from stock solutions of the different nutrients in 0.2µm filtered LNSW diluted with de-ionised water to obtain approximately the same salinity as the samples and were freshly prepared every day. This diluted LNSW was also used as the baseline water for the analysis and in between the samples. The LNSW is surface seawater depleted of most nutrients. Each run of the system had a correlation coefficient of at least 0.9999 for 10 calibration points, but typical 1.0000 for linear chemistry. The samples were measured from the lowest to the highest concentration in order to keep carry-over effects as small as possible, i.e. from surface to deep waters. Concentrations were recorded in 'µmol per liter' (µM/L) at an average container temperature of 23.5°C. During the cruise, a freshly diluted mixed nutrient standard, containing silicate, phosphate and nitrate (a so-called nutrient cocktail), was measured in every run. The cocktail sample was used as a guide to monitor the performance of the standards.

Analytical Methods. A brief overview of the colorimetric methods used are as follows:
Ortho-Phosphate (PO_4) reacts with ammonium molybdate at pH 1.0 and potassium antimonyltartrate is used as a catalyst. The yellow phosphate-molybdenum complex is reduced by ascorbic acid and forms a blue reduced molybdophosphate-complex which is measured at 880nm (Murphy & Riley, 1962).
Ammonium (NH_4) reacts with phenol and sodiumhypochlorite at pH 10.5 to form an indo-phenolblue complex. Citrate is used as a buffer and complexant for calcium and magnesium at this pH. The blue colour is measured at 630nm (Koroleff, 1969 and optimized by W. Helder and R. de Vries, 1979).
Nitrate plus Nitrite (NO_3+NO_2) is mixed with an imidazol buffer at pH 7.5 and reduced by a copperized cadmium column to Nitrite. The Nitrite is diazotated with sulphanylamide and naphtylethylene-diamine to a pink colored complex and measured at 550nm. Nitrate is calculated by subtracting the Nitrite value measured on the Nitrite channel from the 'NO3+NO2' value. (Grasshoff et al, 1983).
Nitrite (NO_2) is diazotated with sulphanylamide and naphtylethylene-diamine to form a pink colored complex and measured at 550nm. (Grasshoff et al, 1983).
Back at the NIOZ;
Silicate (Si) reacts with ammonium molybdate to a yellow complex and after reduction with ascorbic acid, the obtained blue silica-molybdenum complex is measured at 820nm. Oxalic acid is added to prevent formation of the blue phosphate-molybdenum complex (Strickland & Parsons, 1968).
Dissolved Inorganic Carbon (DIC): Samples are acidified online after being oxidised by H_2O_2 to prevent H_2S being released before entering the silicon dialyser whereby the formed CO_2 is dialysed to a secondary flow. This secondary flow contains a slightly alkaline phenolphthalein solution giving a pink colour. The more CO_2

that is dialysed, the lower the pH and therefore some discolouration of the pink reagent is observed. This decolouring is measured at 520nm and is an inverse chemistry spectrophotometer method described by Stoll, Bakker, Nobbe and Haesse, 2001.

Calibration and Standards. Nutrient primary stock standards were prepared at the NIOZ as follows:
-*Phosphate* (PO_4): by weighing Potassium dihydrogen phosphate in a calibrated volumetric PP flask to make 1mM PO_4 stock solution.
-*Ammonium* (NH_4): by weighing Ammonium Chloride in a calibrated volumetric PP flask to make 1mM NH_4 stock solution.
-*Nitrate* (NO_3): by weighing Potassium nitrate in a calibrated volumetric PP flask set to make a 10mM NO_3 stock solution.
-*Nitrite* (NO_2): by weighing Sodium nitrite in a calibrated volumetric PP flask set to make a 0.5mM NO_2 stock solution.
-*Silicate*: by weighing Na_2SiF_6 in a calibrated volumetric PP flask to 19.84mM Si stock solution.
-*DIC*: by weighing Na_2CO_3 stock in a calibrated volumetric PP flask set to make a 200mM stock solution.
All standards were stored at room temperature in a 100% humidified box. The calibration standards were prepared daily by diluting the separate stock standards, using three electronic pipettes, into four 100ml PP volumetric flasks (calibrated at the NIOZ) filled with diluted LNSW. The blank values of the diluted LNSW were measured onboard and added to the calibration values to get the absolute nutrient values.

Statistics
Quality Control. Our standards are continuously being monitored by participating in inter-calibration exercises organised by external organisations such as ICES and Quasimeme and since 2006, the inter-comparison exercise organised by MRI, Japan.
To gain some accuracy, the NIOZ made a'Cocktail' standard which contains PO4, NO3 and Si has been monitored since 1997. The following values were obtained from the cocktail which was diluted 250 times in a calibrated PP volumetric flask, being measured in triplicate in every run on board.

	Average value	S.D.	N	Dilution Factor
PO4	0.912 µM	0.017	65	250
NO3+NO2	13.813 µM	0.103	65	250

The cocktail measurements showed that there were no trends observed, thus concluding that the calibration standards were stable during the cruise.
Mean Detection Limits. The method detection limit was calculated during the cruise using the standard deviation of ten samples containing 2% of the highest standard used for the calibration curve and multiplied with the student's value for n=10, thus being 2.82. (M.D.L = Std Dev of 10 samples x 2.82)

	µM/l	Used measuring ranges µM/l:
PO4	0.004	1.505
NH4	0.009	5.05
NO3+NO2	0.006	20.505
NO2	0.003	0.500

Control sample close to the M.D.L.As an independent control on near baseline values from in-between analytical runs, LNSW from OSIL batch LNS 21 was measured every day n=11:

OSIL batch LNS21	µM/l	std.dev. µM/l
PO4	0.012	0.006
NH4	0.071	0.014
NO3	0.019	0.018
NO2	0.058	0.045

From the day to day variation no trends over time was observed concluding the baseline water LNSW used was stable during the cruise.

Precision at different concentration levels. Standards of three different concentrations were each measured six times to calculate the precision of a specific concentration level. Concentration level in µM/l with the respective standard deviation of that concentration:

	Conc. µM/l	*std.dev.*	Conc. µM/l	*std.dev.*	Conc. µM/l	*std.dev.*
PO4	0.3	*0.005*	0.6	*0.003*	1.0	*0.007*
NH4	0.4	*0.07*	0.8	*0.006*	1.4	*0.008*
NO3	4.0	*0.018*	8	*0.040*	14	*0.100*
NO2	0.1	*0.001*	0.2	*0.001*	0.35	*0.001*

Obtained CRM values

The average value (n=25) of measurements of **CRM "BY"** are:

	µM/l	converted to µM/kg	assigned *KANSO* in µM/kg:
BY-1000		23°C	
PO4	0.043	0.042	*0.039**
NO3	0.037	0.036	*0.024**
NO2	0.027	0.026	*0.019**

* KANSO : The values for NO3, NO2 and PO4 are below quantifiable detection limit (QDL), thus use these values as a guide

The average value (n=25) of measurements of **CRM "BU"** are:

	µM/l	converted to µM/kg	assigned *KANSO* in µM/kg:
BU-1756		23°C	
PO4	0.355	0.346	*0.345*
NO3	4.042	3.948	*3.937*
NO2	0.088	0.086	*0.072*

The CRM values obtained are in reasonable agreement with the assigned values, therefore no post cruise adjustments are needed.

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4.5 Dissolved oxygen dynamics in the benthic boundary layer and microzooplankton (Emil de Borger, Pieter van Rijswijk)

Our goal was to deploy the eddy correlation lander (EDCO, Figure 4.5.1) at several stations characterizing the variety of habitats found on the Saba bank. Simultaneously we would take boxcores on the same locations to incubate and assess oxygen consumption, to extract porewater from sediment depth profiles, and to measure the sediment permeability. We also attached a LISST (Laser In Situ Scattering and Transmissometer) to the CTD. This device measures particle size and particle volumetric amount in the water column.

Figure 4.5.1. Left: Eddy correlation lander on deck; right: unisense oxygen microsensors bent after being hit by debris during a deployment

EDCO STATIONS

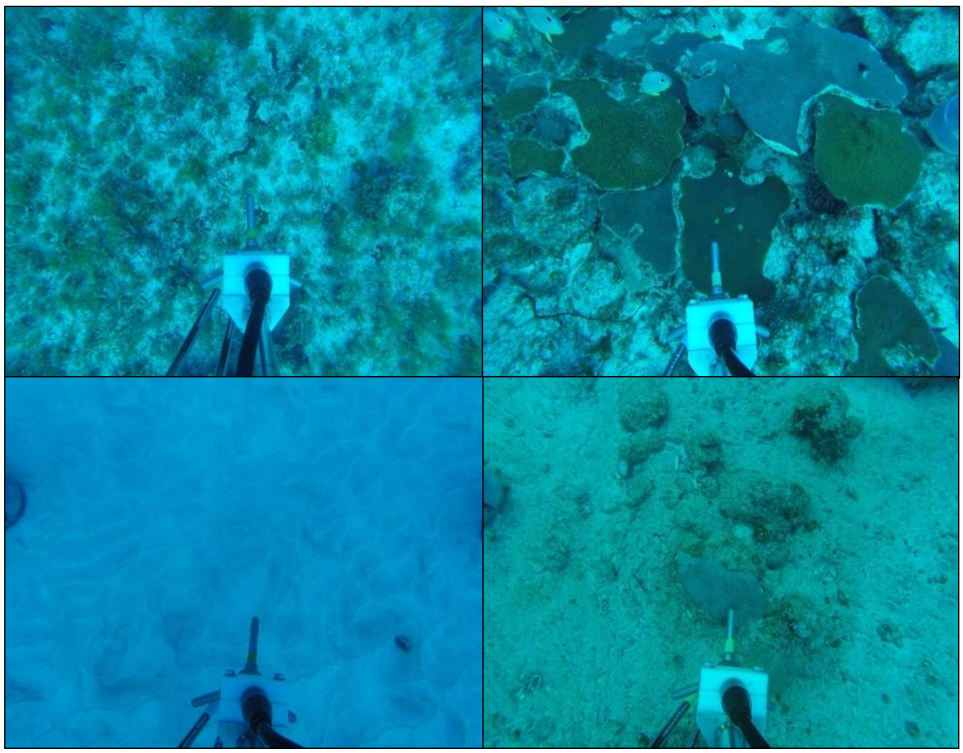

Figure 4.5.2. Variety of locations the EDCO was placed. Upper left; Station 5, Sargassum on calcareous algae; upper right: Station 10, coral reef site surrounded by calcareous algae; lower left: Station 7, sand flat that comprises a considerable part of the Saba Bank: lower right: Station 11, plateau with calcareous algae.

The lander was deployed on stations 4, 5, 6, 7, 10, and 11, with station 8 and 9 skipped due to the heavy swell that could damage sensors during deployment near coral outcrops. These stations offered variable habitats to place the lander (Figure 4.5.2). Placing of the lander was successful in all cases looking at the GoPro images and the pitch-roll-heading data from the ADCP, which remain stable throughout the deployment except for station 7 (during heavy swell) where the lander appears to drift throughout the deployment, and an instantaneous repositioning at station 11. However deploying the EDCO frame in this environment had drawbacks: two sensors were broken during the swell when they were hit by debris (Figure 4.5.1, right), and twice the sensors were covered in mucus, rendering the signal useless.

BOXCORES

There were trials with the boxcore on station 4 and 5 on places where the hopper transects showed sediment, but these were unsuccessful (see Figure 4.5.3 left). On the bank itself we collected successful sediment cores on station 7, and station 12 (where the EDCO lander was not deployed). Besides this we collected boxcores from the side of the bank at 280 m deep. From station 7 we collected three incubation cores, and three porewater nutrient cores. From station 12 we collected two incubation cores and two porewater nutrient cores. From station 13 we collected 1 incubation core, and two porewater nutrient cores.

Figure 4.5.3. Left: a crushed boxcore container after the failed retrieval od Station 4 sediment: mid: sediment in a 10 cm core from Station 7, which is coarse and seems to contain a mixture of calcareous particles and some type of volcanic rock; right: fine sediment from station 13 (280 m).

Visually the sediments form the bank differed strongly from the station 13 sediment (samples for grain size and porosity taken but not yet analysed). The bank station sediments are a coarse mixture of calcareous sand and what appear to be black volcanic rock particles whereas the sediment from station 13 was finer, and uniform in color (Figure , resp. **Error! Reference source not found.** middle and right). Organism-wise we only found one worm in core 7b, no other fauna. Station 7 had a mean permeability $4.85 \times 10^{-11} \pm 1.05 \times 10^{-11}$ and station 12 had a mean permeability of $8.06 \times 10^{-11} \pm 1.11 \times 10^{-11}$, whereas station 13 can be considered non-permeable using our testing methods (in the 10^{-15} range).
Figure 4.5.4 below shows measured oxygen consumptions for the recovered cores given a certain stirring speed (expressed in % of max stirring speed of 104 rpm). We did this for the advective sediments (stations 7 and 12) to simulate the effects of varying currents on the Saba bank. For the cohesive deep sediment (station 13) this is not necessary. Core 7c was a leaking core from which only the 75% stirring measurement was useable, which happens to also be the measurement that was bypassed in the 7a core incubation series.

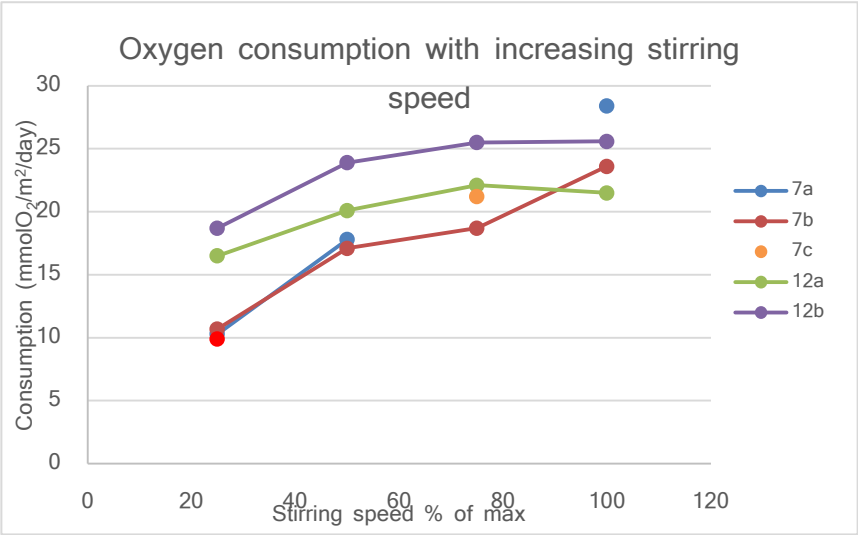

Figure 4.5.4. Oxygen consumption rates from retrieved boxcores on the Saba Bank. X-axis represents the stirring speeds as % of the maximum speed (104 rpm).

LISST

From the LISST measurements we can conclude that the water column was well mixed during the sampling period, and that there were only a limited number of particles in the water. The LISST classified most measurements as "water is too clear", as transmission values often exceeded 0.995. Only during the days of heaviest swell (e.g. station 7) did particle mean diameter (µm) and particle volumetric abundance (ppm) depth profiles deviate from straight lines, as can be seen in Figure 4.5.5. and Figure 4.5.6. which show measurements from station 7. Near the bottom there is an increase in finer particles (figure 4.5.5 middle), but it seems as if the sediment on the bottom is too heavy to get suspended even during the heavy swell experienced, grain size analysis will confirm whether this is true or not.

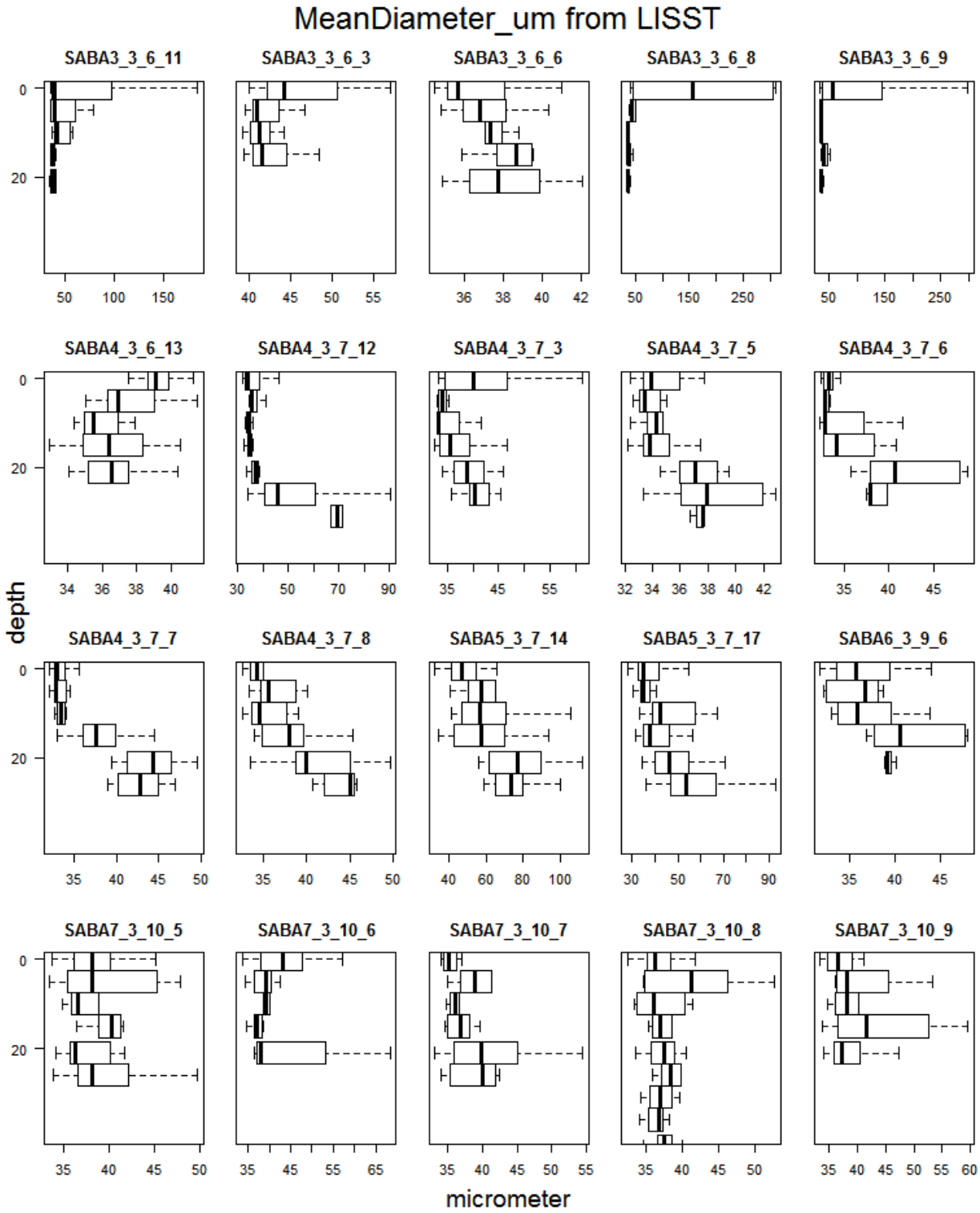

Figure 4.5.5. LISST values for particle diameter (µm) of deployments with > 50 % acceptable data points. Data is binned in 5 m depth intervals.

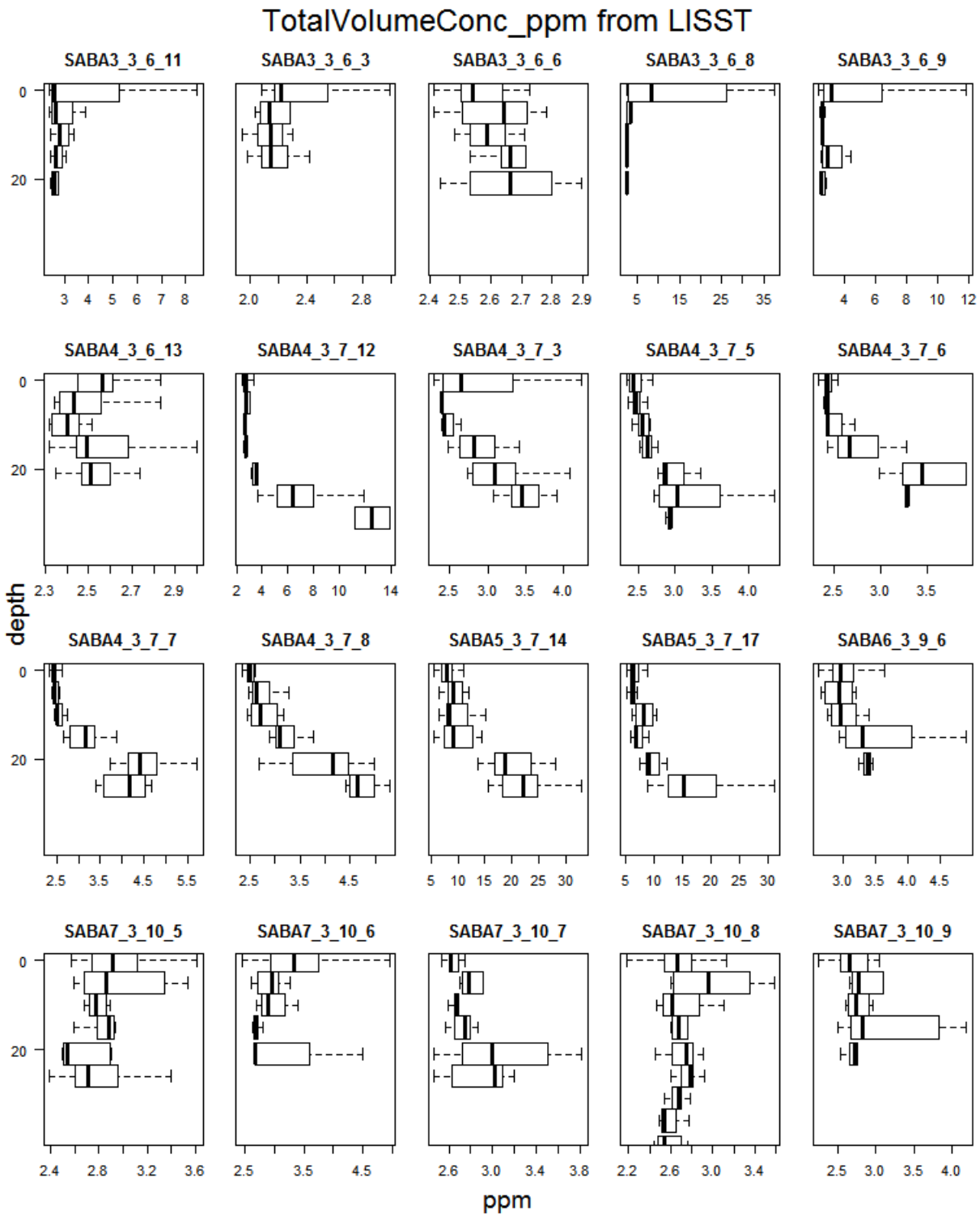

Figure 4.5.6. LISST values for volume concentration (ppm) of deployments with > 50% acceptable data points. Data is binned in 5 m depth intervals.

4.6 Organic matter, pico-, and nanoplankton gradients in reef overlying waters (Fleur van Duyl)

Aim of this study is to get more insight in the fluxes of organic matter and inorganic nutrients in the benthic boundary layer in different benthic habitats on the Saba Bank. Little is known about (bio)deposition of organic matter on the bottom in coral reef environments. Concentrations of organic matter in reef

sediments tend to be low. This suggest that the amount of organic matter reaching the bottom is low, and/or is rapidly incorporated by the benthos (microbes and filter/suspension feeders, detritivores) converted into biomass and subsequently mineralized. With the Caribbean wide eutrophication it is assumed that the supply of organic matter to the benthic compartment increased shifting the benthic communities from corals and CCA to more fleshy algae, cyanobacteria and benthic suspension feeders. This study aims to estimate the amount of OM sequestered by different benthic communities on the Saba Bank. Potential sources of OM sampled from surface to bottom were particulate organic matter retained by GF75 filters. Total organic carbon, total nitrogen and total P besides inorganic nutrient samples (see Chap. 4.4). In addition samples were taken for estimations of the abundance of microbes and phytoplankton.

Approach

The water column was sampled with PUMPY close to the bottom (10-300 cm ab) and above PUMPY with the CTD-rosette. This was done 3 times per day (between approximately 6:00-7:00h, 11:00-13:00h, 17:00-18:00h) at 7 stations (see table 4.6.1.). CTD plus water samples were taken after deployment of PUMPY. At 6 of the 7 stations a replicate PUMPY deployment and CTD profile plus water samples was made of one of the three time slots. There was not always enough water for POM analyses left in the bags of PUMPY to cover all six depths between 10 and 300 cm above the bottom (at least 2 L is required for a measurable signal). PUMPY deployments 7-13, 9-9 and 10-10 had insufficient water for POM samples. The pump system was clogged by resuspended sand due to the high swell. With the CTD, two to three water samples were taken, one at approx. 3 m above the bottom, one inbetween the bottom and the surface and one at the surface (2-5m depth). At shallowest site, Stn 5 (Tertre de Fleur) two water samples were taken.

Table 4.6.1. Benthic stations sampled with PUMPY on the Saba Bank

Station	Casts/PUMPY deployments	Depth PUMPY on bottom (m)	Benthic Habitat	Remarks
4	2, 11, 13, 18	25.3-26.8, 23.9, 24.8, 24.2	Coral reef, Coral Garden site	Aquadopp did not record during 4-2
5	2, 8, 10, 17	15.0, 14.8, 14.6, 14.8	CCA, Sargassum, hard rugose bottom, Tertre de Fleur site	
6	1, 4, 10, 12	23.6, 23.5, 24.4, 24.4	Thin sand layer over hard bottom with Sargassum	
7	1, 11, 13, 16	33.2, 33.3, 33.5, 33.4	Sandy plain, locally gorgonian attached to rubble/hard bottom outcrop	No POM sampled from 7-13
9	1, 3, 9	26.3, 26.6, 26.8	High coral cover reef	No POM sampled from 9-9
10	2, 4, 10, 12	27.8, 28.6, 30.6, 27.3	High coral cover reef	No POM sampled from 10-10
11	1, 8, 10, 12	26.3, 26.5, 26.2, 26.3,	CCA plate, back reef	

Total P (TP, see Chapter 4.4) and microbes (bacteria and phytoplankton) were sampled from all 6 bags of PUMPY. TOC (total organic carbon) and total nitrogen (TOC and TN, see 3.4) were sampled from four of the six bags of PUMPY (10, 20, 80, 300 cm ab) and from 2 depths (surface and near bottom) of the CTD rosette sampler. TP and microbes were sampled from the same depths as the POM samples. For samples taken with the CTD see appendix 5.3.

Preliminary results:

All hard bottom habitats on the Saba Bank between 15 and 30m depth were net sources of NOx (NO_3 + NO_2). NOx concentrations near the bottom were always higher than in surface waters and most of the time increased towards the bottom in the benthic boundary layer. Highest NOx concentrations near the bottom were found in live coral communities (Stn 4, 9 and 10) with NOx conc. of up to 0.4 µM. CCA dominated stns (stn 5 with 0.02-0.05 and stn 11 with 0.09-0.15 µM) and at the CCA covered with sand and Sargassun (Stn 6) NOx conc ranged from 0.012-0.080 µM in the benthic boundary layer. The soft sediment station (Stn 7) was the only station without NOx concentration increase from surface to bottom and with PO4 concentrations exceeding NOx concentrations near the bottom.

4.7 Exo-metabolomes and metagenomes of coral reefs over a depth gradient (Milou Arts)

Introduction

The molecular makeup of marine Dissolved Organic Matter (DOM) remains unknown. Benthic organisms, like coral, sponges and benthic algae which live without or in association with microbes, produce exudates and influence the molecular composition of DOM. The exudates (external metabolic products) serve as food source for marine microbes, which subsequently alter the composition of DOM again. The challenge now is to link metabolomics with the composition of the marine microbe community with metagenomics.

The **aim** of the present study is to gain insight into the composition of DOM and the marine microbe community in the benthic boundary layer water enveloping different benthic communities over the diurnal cycle (night signal versus midday signal) and compare it with surface water on the Saba Bank.

Approach

Per day, six water column samples were taken for metabolomics and metagenomics. Three in the morning, representing the “night” samples, and three samples were taken during midday. One sample was taken with the CTD at three-meter depth, the other two with PUMPY at 10cm and 80cm above the bottom (15-28m depth). Seven stations sampled were (4, 5, 6, 7, 9, 10, 11) characterized by different benthic communities. Samples were first filtered for metagenomic analysis with a sterivex, followed by filtering for metabolomic analysis with a bond elute filter which had been prepared with some washing steps. DOC samples were taken in between the two filtration steps and twice after the last filtration step. Once at the beginning of the filter step (after 100-200 mL) and if possible at the end of the filtration. Metabolomic samples will be analyzed with high-Resolution Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), which allows molecular characterization (molecular fingerprint) of DOM on a large scale. This way the composition of dissolved organic matter in different layers above the benthos and at different times in the daily light cycle will be analyzed.

4.8 Nutrient, phytoplankton and virus measurements along Saba Bank (NICO students Tom Theirlynck & Lucas Tichy)

Aim

The research aim was to measure the nutrient concentrations and abundance of phytoplankton and viruses throughout the water column for different sites along Saba Bank. Two CTD’s were taken per week. First, samples were taken at the fixed depths 3, 15 and 200 meters. The rest of the sampled depths were centered around the Deep Chlorophyll Maximum, or DCM in short. These were summed up in three depths: the upper DCM, the DCM peak and the DCM bottom.

An overview of the sampled stations and depths is displayed in Table 4.8.1. Four stations were sampled in total: two deep stations with a bottom depth ranging from 230 to 330 meters and two shallow station with a bottom depth of 25 meters approximately. For the deep stations samples were taken at all described depths, however in the case of shallow stations the bottom depth only allowed sampling at 3 and 15 meters.

Table 4.8.1: Overview of the sampled stations and depths for NICO Leg 6. The date, station number, cast number and depth are shown. Four stations were sampled in total.

Date	Station	Cast	Depths
27-2-2018	3	1	3m , 15m, 40m (upper DCM), 60m (DCM), 140 m (bottom DCM), 200 m
3-3-2018	6	3	3 m, 15 m
5-3-2018	8	1	3m , 15m, 70m (upper DCM), 80m (DCM), 130 m (bottom DCM), 200 m
7-3-2018	10	11	3 m, 15 m

Overview of the sampled variables.

The type of analysis for each depth is shown in Table 4.8.2. In summary, phytoplankton/virus abundance samples were taken at every different depth. Molecular samples were taken at 15 meters and the DCM peak. Lastly, nutrient, HPLC, POC and DMSP samples were taken at 3 m, 15 m and the DCM peak respectively. Samples for the purpose of PAM measurements were not sampled individually but rather sampled out of the 5 L HPLC sample bottles. In all cases a separate CTD Niskin bottle was reserved for the DMSP, HPLC and POC samples as well as a separate Niskin bottle for molecular, nutrient and abundance samples. All samples were stored in the dark before processing and molecular samples were stored on ice as well.

Table 4.8.2: Type of conducted analyses from CTD samples. The sampling depth is displayed and the presence and volume of each type of variable is indicated per depth category. Variables are listed from left to right in the order of sampling from the CTD bottles.

Depth	DMSP	Molecular	Flowcytometry	Nutrients	HPLC	POC
3 m	2 x 70 mL		50 mL	50mL	2 L	5 L
15 m	2 x 70 mL	5 L	50 mL	50 mL	2 L	5 L
DCM upper			50 mL			
DCM peak	2 x 70 mL	5 L	50 mL	50 mL	2 L	5 L
DCM bottom			50 mL			
200 m			50 mL			

Brief summary sample processing

The methods for processing the taken samples are shortly summarized below. They are listed in order of execution:

First, **DMSP** samples were prepared. Two types of samples were taken: 10 mL of untreated sample and 10 mL of filtrate. The filtrate sample was prepared by pouring roughly 60 mL of water over a 4.5 cm glass-fiber filter and collecting 10 mL after about 15 mL had been filtered. A new filter was used for each depth and the filtration unit was cleaned in between samples. A volume of 50 µL of D3-P standard was added followed by 1 pellet of NaOH and both samples were stored at -20 degrees in the freezer.

Molecular work involved filtration of sampled seawater by two filters: a 0,2 µm filter for phytoplankton and a 0,02 µm filter for filtering for viruses. Around 2 liters of water were filtered for acquiring phytoplankton opposed to around 1,1 liters for viruses. Sterivex (phytoplankton) and Anotop (viruses) filters were snapfrozen and stored in the -80 freezer.

The **abundance sampling for flow cytometry** was performed as follows: fixatives were added to respectively 3.5 mL water sample for fixing phytoplankton and 1 mL water sample for viruses and bacteria. A volume of 100 µL of formaldehyde (18%v/v)/hexamine (10%w/v) solution was added for fixing phytoplankton and 20 µL of glutaraldehyde solution was added for fixing viruses and bacteria. Cryovials were left for fixation at 4 ºC for 15-30 minutes, snap frozen and put in the -80 freezer.

To measure the relative photosynthetic activity, **PAM measurements** were performed using a Walz PAM fluorometer. Sampled water from respective depths was pipetted in a 3 mL vial and left in the dark for 10 minutes. Consecutively, vials were placed in the PAM meter where the PM and Out- gain were adjusted till the Ft-value approached 400-800 approximately. Auto Zero was set as a standard with a reference of filtered sea water. Lastly, samples were put in the dark and measured after one minute. The yield and gain value was noted.

Inorganic nutrients samples were prepared for analysis by filtering sampled seawater with use of a non-sterile acrodisc filter syringe with a 0,2µm pore size. Two 2 ml Ponyvials were filled per depth: one vial for Silica and one vial for Nitrogen and Phosphor. The acrodisc syringe was rinsed in between different samples and vials were rinsed with the filtrate three times. Silica samples were stored at 4 ºC and Nitrogen and Phosphor samples at -20 ºC.

HPLC and POC samples were taken by filtering water over 4.7 cm and 2.5 cm GF/F filters respectively. A vacuum pump was used to maintain an under-pressure of 0.20 bar during filtration. Volumes of 4 liters were filtered for HPLC and 2 liters for POC. Filters were snap frozen, wrapped in Aluminum foil, frozen again in liquid N_2 and stored at -20 in the case of POC and -80 in the case of HPLC.

5 Appendix

5.1 Overview activities

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
02-26-18	21:25:21	17,662445	-63,241554	CTD	Begin	BEGIN	NICO_Leg 6CTD1		1_1	312,5
02-26-18	21:36:35	17,662586	-63,241494	CTD	Bottom	BOT	NICO_Leg 6CTD1		1_1	318,74
02-26-18	21:44:30	17,66266	-63,241312	CTD	End	END	NICO_Leg 6CTD1		1_1	322,64
02-26-18	22:37:14	17,62789	-63,273366	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM1		201	77,35
02-26-18	23:26:18	17,634167	-63,272616	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM1		201	110,36
02-26-18	23:26:21	17,634176	-63,272621	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM1		201	103,3
02-26-18	23:29:37	17,633997	-63,272283	Hopper Camera	End	END	NICO_Leg 6HOPCAM1		201	101,73
02-27-18	0:26:01	17,608475	-63,237697	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM2		202	83,65
02-27-18	0:30:27	17,608792	-63,238754	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM2		202	78,92
02-27-18	0:40:03	17,610483	-63,238926	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM2		202	27,09
02-27-18	0:43:34	17,610462	-63,238881	Hopper Camera	End	END	NICO_Leg 6HOPCAM2		202	28,85
02-27-18	1:04:24	17,62311	-63,216167	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM3		203	112,72
02-27-18	1:06:59	17,623221	-63,216746	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM3		203	87,58
02-27-18	1:16:02	17,623016	-63,218443	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM3		203	37,13
02-27-18	1:19:50	17,622734	-63,219034	Hopper Camera	End	END	NICO_Leg 6HOPCAM3		203	29,95
02-27-18	11:07:25	17,555227	-62,979591	CTD	Begin	BEGIN	NICO_Leg 6CTD2		2_1	289,38
02-27-18	11:16:35	17,555356	-62,979866	CTD	Bottom	BOT	NICO_Leg 6CTD2		2_1	302,53
02-27-18	11:24:54	17,555617	-62,979898	CTD	End	END	NICO_Leg 6CTD2		2_1	318
02-27-18	11:53:52	17,519088	-62,97943	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM4		204	27,66
02-27-18	11:58:54	17,519088	-62,979373	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM4		204	27,6
02-27-18	12:09:48	17,519104	-62,978008	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM4		204	30,03
02-27-18	12:13:47	17,518915	-62,977504	Hopper Camera	End	END	NICO_Leg 6HOPCAM4		204	30,82
02-27-18	12:43:15	17,504886	-62,940315	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM5		205	62,38
02-27-18	12:46:11	17,505249	-62,940012	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM5		205	90,36
02-27-18	13:19:31	17,500665	-62,945822	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM5		205	33,96
02-27-18	13:20:54	17,500558	-62,94609	Hopper Camera	End	END	NICO_Leg 6HOPCAM5		205	33,95
02-27-18	13:53:05	17,460974	-62,94752	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM6		206	34,46
02-27-18	13:53:36	17,460949	-62,947631	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM6		206	33,68
02-27-18	14:38:47	17,452818	-62,957365	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM6		206	45,84
02-27-18	14:41:36	17,452102	-62,957795	Hopper Camera	End	END	NICO_Leg 6HOPCAM6		206	47,82
02-27-18	15:05:40	17,443712	-62,984024	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM7		207	75,77
02-27-18	15:08:11	17,443771	-62,983887	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM7		207	72,62
02-27-18	15:26:46	17,446558	-62,983631	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM7		207	56,85
02-27-18	15:28:44	17,44689	-62,983604	Hopper Camera	End	END	NICO_Leg 6HOPCAM7		207	56,14
02-27-18	15:48:31	17,456823	-62,990375	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM8		208	72,62
02-27-18	15:51:09	17,45706	-62,990371	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM8		208	64,74
02-27-18	16:17:18	17,461314	-62,990105	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM8		208	27,25
02-27-18	16:23:54	17,459543	-62,990385	Hopper Camera	End	END	NICO_Leg 6HOPCAM8		208	49,75
02-27-18	17:20:31	17,509358	-63,032422	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM9		209	57,64
02-27-18	17:23:53	17,509692	-63,032063	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM9		209	58,43
02-27-18	17:39:25	17,512018	-63,032112	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM9		209	48,84
02-27-18	17:44:20	17,512965	-63,032339	Hopper Camera	End	END	NICO_Leg 6HOPCAM9		209	53,7
02-27-18	20:53:58	17,260253	-63,381971	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT1		3_1	331,8
02-27-18	21:03:24	17,260337	-63,382033	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT1		3_1	330,79
02-27-18	21:22:47	17,260361	-63,381766	CTD with samples	End	END	NICO_Leg 6CTDBOT1		3_1	329,44
02-27-18	22:38:05	17,337598	-63,289422	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM10		210	17,24
02-27-18	22:39:47	17,337567	-63,289354	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM10		210	21,95
02-27-18	23:29:07	17,344507	-63,287861	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM10		210	21,25
02-27-18	23:32:13	17,344593	-63,28807	Hopper Camera	End	END	NICO_Leg 6HOPCAM10		210	20,95
02-28-18	11:33:50	17,344799	-63,249673	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM11		211	80,5
02-28-18	11:36:50	17,344939	-63,249775	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM11		211	0
02-28-18	13:15:38	17,349953	-63,25031	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM11		211	22,93
02-28-18	13:18:13	17,350362	-63,250794	Hopper Camera	End	END	NICO_Leg 6HOPCAM11		211	22,83
02-28-18	13:58:14	17,333612	-63,253077	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM12		212	85,22
02-28-18	13:59:45	17,333608	-63,253122	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM12		212	82,86
02-28-18	14:32:47	17,333855	-63,257912	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM12		212	18,2
02-28-18	14:35:40	17,333893	-63,25829	Hopper Camera	End	END	NICO_Leg 6HOPCAM12		212	17,79
02-28-18	15:10:20	17,333775	-63,256195	Mooring	Deployment	DEP	NICO_Leg 6MOOR1	EDCO	4_1	32,4
02-28-18	15:41:45	17,333835	-63,254181	Mooring	Deployment	DEP	NICO_Leg 6MOOR2	Pumpy	4_2	25,29
02-28-18	17:16:41	17,333498	-63,254064	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT2		4_3	32,09
02-28-18	17:19:54	17,333587	-63,254038	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT2		4_3	31,98

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
02-28-18	17:31:11	17,33362	-63,254043	CTD with samples	End	END	NICO_Leg 6CTDBOT2		4_3	31,49
02-28-18	17:54:27	17,333941	-63,254117	Mooring	Recovery	REC	NICO_Leg 6MOOR2	Pumpy	4_2	26,77
02-28-18	18:10:58	17,333727	-63,254278	CTD	Begin	BEGIN	NICO_Leg 6CTD3		4_4	24,48
02-28-18	18:15:10	17,333771	-63,254284	CTD	Bottom	BOT	NICO_Leg 6CTD3		4_4	24,5
02-28-18	18:18:51	17,333774	-63,254362	CTD	End	END	NICO_Leg 6CTD3		4_4	24,2
02-28-18	18:31:25	17,335839	-63,256201	CTD	Begin	BEGIN	NICO_Leg 6CTD4		4_5	35,55
02-28-18	18:35:15	17,335794	-63,256144	CTD	Bottom	BOT	NICO_Leg 6CTD4		4_5	34,76
02-28-18	18:37:17	17,335763	-63,25617	CTD	End	END	NICO_Leg 6CTD4		4_5	34,76
02-28-18	18:52:24	17,332144	-63,256178	CTD	Begin	BEGIN	NICO_Leg 6CTD5		4_6	22,13
02-28-18	18:55:27	17,332157	-63,256136	CTD	Bottom	BOT	NICO_Leg 6CTD5		4_6	22,93
02-28-18	18:57:16	17,332119	-63,256129	CTD	End	END	NICO_Leg 6CTD5		4_6	22,14
02-28-18	19:16:18	17,333819	-63,258179	CTD	Begin	BEGIN	NICO_Leg 6CTD6		4_7	17,58
02-28-18	19:18:57	17,333812	-63,258148	CTD	Bottom	BOT	NICO_Leg 6CTD6		4_7	16,31
02-28-18	19:20:58	17,33379	-63,258155	CTD	End	END	NICO_Leg 6CTD6		4_7	16,42
02-28-18	19:43:11	17,334024	-63,254238	Vertical Net	Begin	BEGIN	NICO_Leg 6WP501		4_8	24,36
02-28-18	19:43:14	17,334021	-63,254238	Vertical Net	Start Heave	HEAV	NICO_Leg 6WP501		4_8	24,95
02-28-18	19:45:44	17,334008	-63,254225	Vertical Net	End	END	NICO_Leg 6WP501		4_8	25,3
02-28-18	19:48:54	17,334005	-63,254238	Vertical Net	Begin	BEGIN	NICO_Leg 6WP502		4_9	24,89
02-28-18	19:52:24	17,333942	-63,254286	Vertical Net	Start Heave	HEAV	NICO_Leg 6WP502		4_9	24,92
02-28-18	19:58:08	17,333911	-63,254302	Vertical Net	End	END	NICO_Leg 6WP502		4_9	26,09
02-28-18	19:58:23	17,333915	-63,254305	Vertical Net	Begin	BEGIN	NICO_Leg 6WP503		4_10	24,5
02-28-18	20:01:02	17,333906	-63,254348	Vertical Net	Start Heave	HEAV	NICO_Leg 6WP503		4_10	25,3
02-28-18	20:06:01	17,333896	-63,254314	Vertical Net	End	END	NICO_Leg 6WP503		4_10	25,3
02-28-18	20:24:40	17,333776	-63,254089	Mooring	Deployment	DEP	NICO_Leg 6MOOR3	Pumpy	4_11	28,94
02-28-18	20:54:08	17,33338	-63,254082	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT3		4_12	32,99
02-28-18	20:57:36	17,33335	-63,254049	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT3		4_12	35,55
02-28-18	21:05:46	17,333415	-63,254043	CTD with samples	End	END	NICO_Leg 6CTDBOT3		4_12	34,41
02-28-18	22:38:22	17,333835	-63,254221	Mooring	Recovery	REC	NICO_Leg 6MOOR3	Pumpy	4_11	24,32
03-01-18	10:03:18	17,333711	-63,254076	Mooring	Deployment	DEP	NICO_Leg 6MOOR4	Pumpy	4_13	29,24
03-01-18	10:30:12	17,333288	-63,253954	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT4		4_14	41,07
03-01-18	10:32:31	17,33331	-63,25405	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT4		4_14	34,67
03-01-18	10:41:00	17,333365	-63,25406	CTD with samples	End	END	NICO_Leg 6CTDBOT4		4_14	33,19
03-01-18	11:05:03	17,333708	-63,249453	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT5		4_15	245,78
03-01-18	11:12:25	17,333742	-63,249466	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT5		4_15	244,77
03-01-18	11:28:36	17,333714	-63,249483	CTD with samples	End	END	NICO_Leg 6CTDBOT5		4_15	244,52
03-01-18	12:04:14	17,333597	-63,254066	Mooring	Recovery	REC	NICO_Leg 6MOOR4	Pumpy	4_13	29,82
03-01-18	14:22:33	17,33506	-63,256109	Boxcore	Bottom	BOT	NICO_Leg 6BOX1251		4_16	33,14
03-01-18	14:55:59	17,332762	-63,255893	Boxcore	Bottom	BOT	NICO_Leg 6BOX1252		4_17	21,35
03-01-18	15:30:47	17,333864	-63,256178	Mooring	Recovery	REC	NICO_Leg 6MOOR4	EDCO	4_1	32,57
03-01-18	15:54:01	17,333798	-63,254069	Mooring	Deployment	DEP	NICO_Leg 6MOOR5	Pumpy	4_18	29,24
03-01-18	17:13:44	17,333167	-63,254158	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT6		4_19	32,02
03-01-18	17:17:21	17,3332	-63,254198	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT6		4_19	30,78
03-01-18	17:25:20	17,333195	-63,254357	CTD with samples	End	END	NICO_Leg 6CTDBOT6		4_19	25,3
03-01-18	17:53:29	17,333839	-63,254145	Mooring	Recovery	REC	NICO_Leg 6MOOR5	Pumpy	4_18	27,34
03-01-18	19:05:27	17,379046	-63,292709	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM13		213	22,55
03-01-18	19:07:03	17,379086	-63,292765	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM13		213	22,93
03-01-18	20:06:32	17,38371	-63,290563	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM13		213	15,55
03-01-18	20:12:42	17,383934	-63,290702	Hopper Camera	End	END	NICO_Leg 6HOPCAM13		213	15,31
03-01-18	20:29:51	17,383091	-63,290447	Mooring	Deployment	DEP	NICO_Leg 6MOOR6	EDCO	5_1	16,62
03-01-18	21:03:17	17,383896	-63,290476	Mooring	Deployment	DEP	NICO_Leg 6MOOR7	Pumpy	5_2	15,6
03-01-18	21:24:59	17,384283	-63,2906	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT7		5_3	16,62
03-01-18	21:26:10	17,38428	-63,290667	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT7		5_3	15,6
03-01-18	21:32:33	17,384162	-63,290652	CTD with samples	End	END	NICO_Leg 6CTDBOT7		5_3	16,62
03-01-18	22:40:34	17,383962	-63,290417	Mooring	Recovery	REC	NICO_Leg 6MOOR7	Pumpy	5_2	11,79
03-01-18	22:54:31	17,385019	-63,290431	CTD	Begin	BEGIN	NICO_Leg 6CTD7		5_4	21,28
03-01-18	22:56:55	17,384962	-63,290403	CTD	Bottom	BOT	NICO_Leg 6CTD7		5_4	21,3
03-01-18	23:02:39	17,383511	-63,288991	CTD	End	END	NICO_Leg 6CTD7		5_4	19,46
03-01-18	23:07:42	17,383038	-63,288547	CTD	Begin	BEGIN	NICO_Leg 6CTD8		5_5	21,33
03-01-18	23:10:14	17,383002	-63,288583	CTD	Bottom	BOT	NICO_Leg 6CTD8		5_5	21,3
03-01-18	23:12:20	17,383094	-63,288676	CTD	End	END	NICO_Leg 6CTD8		5_5	22,14
03-01-18	23:23:20	17,381256	-63,290501	CTD	Begin	BEGIN	NICO_Leg 6CTD9		5_6	16,61
03-01-18	23:26:18	17,381219	-63,290483	CTD	Bottom	BOT	NICO_Leg 6CTD9		5_6	16,61
03-01-18	23:28:04	17,381239	-63,290457	CTD	End	END	NICO_Leg 6CTD9		5_6	16,53
03-01-18	23:37:46	17,383053	-63,29234	CTD	Begin	BEGIN	NICO_Leg 6CTD10		5_7	16,95
03-01-18	23:40:57	17,383101	-63,292406	CTD	Bottom	BOT	NICO_Leg 6CTD10		5_7	16,58
03-01-18	23:42:39	17,383078	-63,292405	CTD	End	END	NICO_Leg 6CTD10		5_7	16,5
03-02-18	10:09:46	17,383883	-63,290417	Mooring	Deployment	DEP	NICO_Leg 6MOOR8	Pumpy	5_8	15,18
03-02-18	10:29:24	17,383683	-63,290941	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT8		5_9	16
03-02-18	10:32:29	17,383689	-63,290869	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT8		5_9	15,98
03-02-18	10:37:53	17,383641	-63,291027	CTD with samples	End	END	NICO_Leg 6CTDBOT8		5_9	16,29
03-02-18	11:37:19	17,383779	-63,290422	Mooring	Recovery	REC	NICO_Leg 6MOOR8	Pumpy	5_8	15,83

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
03-02-18	12:34:40	17,381285	-63,331506	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM14		214	21,73
03-02-18	12:35:11	17,381267	-63,331479	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM14		214	21,55
03-02-18	13:59:37	17,369148	-63,324825	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM14		214	21,32
03-02-18	14:05:58	17,368759	-63,324076	Hopper Camera	End	END	NICO_Leg 6HOPCAM14		214	23,72
03-02-18	14:27:08	17,381864	-63,340018	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM15		215	23,72
03-02-18	14:29:59	17,381933	-63,340013	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM15		215	20,5
03-02-18	15:05:21	17,387343	-63,339475	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM15		215	22,14
03-02-18	15:06:11	17,387482	-63,339479	Hopper Camera	End	END	NICO_Leg 6HOPCAM15		215	22,12
03-02-18	15:51:23	17,38388	-63,29046	Mooring	Deployment	DEP	NICO_Leg 6MOOR9	Pumpy	5_10	15,58
03-02-18	17:15:26	17,383711	-63,289799	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT9		5_11	16,27
03-02-18	17:19:10	17,38378	-63,289864	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT9		5_11	14,99
03-02-18	17:24:24	17,383655	-63,289956	CTD with samples	End	END	NICO_Leg 6CTDBOT9		5_11	15,57
03-02-18	17:52:25	17,384014	-63,290536	Mooring	Recovery	REC	NICO_Leg 6MOOR9	Pumpy	5_10	15,49
03-02-18	18:06:14	17,384895	-63,290409	CTD	Begin	BEGIN	NICO_Leg 6CTD11		5_12	21,81
03-02-18	18:09:23	17,384861	-63,290445	CTD	Bottom	BOT	NICO_Leg 6CTD11		5_12	21,23
03-02-18	18:11:39	17,384809	-63,29045	CTD	End	END	NICO_Leg 6CTD11		5_12	21,33
03-02-18	18:23:54	17,383171	-63,288871	CTD	Begin	BEGIN	NICO_Leg 6CTD12		5_13	20,46
03-02-18	18:27:07	17,383033	-63,288881	CTD	Bottom	BOT	NICO_Leg 6CTD12		5_13	20,45
03-02-18	18:31:43	17,382714	-63,289164	CTD	End	END	NICO_Leg 6CTD12		5_13	17,84
03-02-18	18:44:32	17,381462	-63,290298	CTD	Begin	BEGIN	NICO_Leg 6CTD13		5_14	15,73
03-02-18	18:47:35	17,381428	-63,290254	CTD	Bottom	BOT	NICO_Leg 6CTD13		5_14	16,28
03-02-18	18:50:25	17,381273	-63,290187	CTD	End	END	NICO_Leg 6CTD13		5_14	16,55
03-02-18	19:05:50	17,382952	-63,292514	CTD	Begin	BEGIN	NICO_Leg 6CTD14		5_15	16,49
03-02-18	19:08:38	17,382965	-63,29248	CTD	Bottom	BOT	NICO_Leg 6CTD14		5_15	16,57
03-02-18	19:10:55	17,382936	-63,292424	CTD	End	END	NICO_Leg 6CTD14		5_15	16,57
03-02-18	20:09:31	17,380087	-63,292731	Boxcore	Bottom	BOT	NICO_Leg 6BOX1253		5_16	22,01
03-02-18	20:53:42	17,383831	-63,290468	Mooring	Deployment	DEP	NICO_Leg 6MOOR10	Pumpy	5_17	15,61
03-02-18	21:12:34	17,384215	-63,290746	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT10		5_18	16,23
03-02-18	21:17:50	17,384161	-63,290723	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT10		5_18	15,33
03-02-18	21:25:39	17,384171	-63,290845	CTD with samples	End	END	NICO_Leg 6CTDBOT10		5_18	16,56
03-02-18	22:35:17	17,383914	-63,290424	Mooring	Recovery	REC	NICO_Leg 6MOOR10	Pumpy	5_17	16,48
03-02-18	22:44:53	17,383133	-63,29034	Mooring	Recovery	REC	NICO_Leg 6MOOR10	EDCO	5_1	15,56
03-02-18	23:57:38	17,472031	-63,382584	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM16		216	22,08
03-02-18	23:58:57	17,471994	-63,382514	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM16		216	22,06
03-03-18	0:43:59	17,482659	-63,388256	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM16		216	24,3
03-03-18	0:45:58	17,483084	-63,388562	Hopper Camera	End	END	NICO_Leg 6HOPCAM16		216	24,47
03-03-18	10:09:49	17,48347	-63,388133	Mooring	Deployment	DEP	NICO_Leg 6MOOR11	Pumpy	6_1	23,85
03-03-18	10:38:47	17,48246	-63,388142	Mooring	Deployment	DEP	NICO_Leg 6MOOR12	EDCO	6_2	25,1
03-03-18	10:49:33	17,483318	-63,388548	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT11		6_3	24,2
03-03-18	10:55:15	17,483415	-63,38857	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT11		6_3	23,94
03-03-18	11:04:24	17,483392	-63,388509	CTD with samples	End	END	NICO_Leg 6CTDBOT11		6_3	24,64
03-03-18	12:03:13	17,483573	-63,388088	Mooring	Recovery	REC	NICO_Leg 6MOOR12	Pumpy	6_1	23,7
03-03-18	12:03:16	17,483569	-63,38809	Mooring	Recovery	REC	NICO_Leg 6MOOR12	Pumpy	6_1	24,27
03-03-18	12:33:29	17,513495	-63,363174	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM17		217	25,49
03-03-18	12:34:33	17,513591	-63,363195	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM17		217	25
03-03-18	13:16:20	17,522315	-63,371306	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM17		217	24,29
03-03-18	13:21:15	17,523371	-63,372244	Hopper Camera	End	END	NICO_Leg 6HOPCAM17		217	24,4
03-03-18	13:35:07	17,535129	-63,378001	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM18		218	24,88
03-03-18	13:36:07	17,534925	-63,377845	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM18		218	24,38
03-03-18	13:57:33	17,537798	-63,383225	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM18		218	26,03
03-03-18	13:59:45	17,538061	-63,38379	Hopper Camera	End	END	NICO_Leg 6HOPCAM18		218	25,81
03-03-18	14:28:43	17,521235	-63,423099	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM19		219	25,43
03-03-18	14:30:02	17,521218	-63,423059	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM19		219	24,59
03-03-18	14:44:21	17,518035	-63,42655	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM19		219	25,68
03-03-18	14:46:33	17,517571	-63,42697	Hopper Camera	End	END	NICO_Leg 6HOPCAM19		219	25,48
03-03-18	14:59:04	17,513124	-63,417528	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM20		220	26
03-03-18	14:59:10	17,513113	-63,417515	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM20		220	25,89
03-03-18	15:31:16	17,510432	-63,40928	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM20		220	27,22
03-03-18	15:32:53	17,510276	-63,408898	Hopper Camera	End	END	NICO_Leg 6HOPCAM20		220	27,07
03-03-18	16:02:10	17,483417	-63,388148	Mooring	Deployment	DEP	NICO_Leg 6MOOR13	Pumpy	6_4	23,88
03-03-18	17:07:17	17,483684	-63,387911	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT12		6_5	24,17
03-03-18	17:13:20	17,483699	-63,387934	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT12		6_5	23,4
03-03-18	17:21:56	17,4837	-63,387856	CTD with samples	End	END	NICO_Leg 6CTDBOT12		6_5	24,51
03-03-18	17:49:01	17,483291	-63,388375	Mooring	Recovery	REC	NICO_Leg 6MOOR13	Pumpy	6_4	23,65
03-03-18	18:03:51	17,482403	-63,389862	CTD	Begin	BEGIN	NICO_Leg 6CTD15		6_6	24,31
03-03-18	18:05:29	17,482401	-63,389879	CTD	Bottom	BOT	NICO_Leg 6CTD15		6_6	23,86
03-03-18	18:07:38	17,4824	-63,38988	CTD	End	END	NICO_Leg 6CTD15		6_6	23,73
03-03-18	18:21:58	17,480631	-63,388206	CTD	Begin	BEGIN	NICO_Leg 6CTD16		6_7	25,15
03-03-18	18:24:25	17,480635	-63,388134	CTD	Bottom	BOT	NICO_Leg 6CTD16		6_7	25,47
03-03-18	18:27:15	17,480646	-63,388077	CTD	End	END	NICO_Leg 6CTD16		6_7	25,35
03-03-18	18:37:58	17,482315	-63,386113	CTD	Begin	BEGIN	NICO_Leg 6CTD17		6_8	24,83

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
03-03-18	18:40:22	17,482452	-63,386095	CTD	Bottom	BOT	NICO_Leg 6CTD17		6_8	24,7
03-03-18	18:42:43	17,482481	-63,386	CTD	End	END	NICO_Leg 6CTD17		6_8	25,01
03-03-18	18:56:00	17,484268	-63,387909	CTD	Begin	BEGIN	NICO_Leg 6CTD18		6_9	23,99
03-03-18	18:58:20	17,484363	-63,387959	CTD	Bottom	BOT	NICO_Leg 6CTD18		6_9	24,19
03-03-18	19:01:10	17,484413	-63,387877	CTD	End	END	NICO_Leg 6CTD18		6_9	23,7
03-03-18	20:51:57	17,482396	-63,387052	Mooring	Deployment	DEP	NICO_Leg 6MOOR14	Pumpy	6_10	24,91
03-03-18	21:13:55	17,482919	-63,387148	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT13		6_11	24,83
03-03-18	21:15:18	17,482923	-63,387177	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT13		6_11	24,9
03-03-18	21:24:05	17,482963	-63,387133	CTD with samples	End	END	NICO_Leg 6CTDBOT13		6_11	24,76
03-03-18	22:34:58	17,482455	-63,387121	Mooring	Recovery	REC	NICO_Leg 6MOOR14	Pumpy	6_10	25,1
03-04-18	10:09:02	17,482455	-63,387079	Mooring	Deployment	DEP	NICO_Leg 6MOOR15	Pumpy	6_12	24,87
03-04-18	10:27:58	17,483076	-63,387106	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT14		6_13	25,47
03-04-18	10:30:00	17,483098	-63,387132	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT14		6_13	24,88
03-04-18	10:38:23	17,482961	-63,387141	CTD with samples	End	END	NICO_Leg 6CTDBOT14		6_13	24,93
03-04-18	11:51:02	17,482466	-63,387076	Mooring	Recovery	REC	NICO_Leg 6MOOR15	Pumpy	6_12	25,83
03-04-18	12:01:09	17,482302	-63,388296	Mooring	Recovery	REC	NICO_Leg 6MOOR15	EDCO	6_2	24,93
03-04-18	13:31:31	17,424205	-63,529834	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM21		221	30,82
03-04-18	13:32:01	17,424166	-63,529855	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM21		221	30,82
03-04-18	13:47:22	17,422218	-63,532911	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM21		221	31,35
03-04-18	13:52:08	17,421425	-63,534314	Hopper Camera	End	END	NICO_Leg 6HOPCAM21		221	31,31
03-04-18	14:20:10	17,42069	-63,562609	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM22		222	33,58
03-04-18	14:21:37	17,420745	-63,562711	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM22		222	33,79
03-04-18	14:33:29	17,420871	-63,565658	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM22		222	34,91
03-04-18	14:34:58	17,420946	-63,566032	Hopper Camera	End	END	NICO_Leg 6HOPCAM22		222	34,76
03-04-18	15:39:25	17,420677	-63,562642	Mooring	Deployment	DEP	NICO_Leg 6MOOR16	Pumpy	7_1	33,38
03-04-18	16:01:34	17,421611	-63,562647	Mooring	Deployment	DEP	NICO_Leg 6MOOR17	EDCO	7_2	33,29
03-04-18	17:25:04	17,420769	-63,562403	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT15		7_3	33,75
03-04-18	17:29:42	17,420801	-63,5624	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT15		7_3	33,8
03-04-18	17:44:44	17,420908	-63,562442	CTD with samples	End	END	NICO_Leg 6CTDBOT15		7_3	34,12
03-04-18	17:45:05	17,420902	-63,562414	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT17		7_4	33,97
03-04-18	17:49:48	17,420968	-63,562465	CTD with samples	End	END	NICO_Leg 6CTDBOT16		7_4	33,58
03-04-18	18:19:12	17,420637	-63,562531	Mooring	Recovery	REC	NICO_Leg 6MOOR17	Pumpy	7_1	32,76
03-04-18	18:29:36	17,419689	-63,562473	CTD	Begin	BEGIN	NICO_Leg 6CTD19		7_5	33,37
03-04-18	18:32:29	17,419784	-63,56242	CTD	Bottom	BOT	NICO_Leg 6CTD19		7_5	33,56
03-04-18	18:34:16	17,419748	-63,562375	CTD	End	END	NICO_Leg 6CTD19		7_5	33,67
03-04-18	18:50:15	17,421356	-63,564494	CTD	Begin	BEGIN	NICO_Leg 6CTD20		7_6	33,73
03-04-18	18:52:56	17,421545	-63,564409	CTD	Bottom	BOT	NICO_Leg 6CTD20		7_6	33,52
03-04-18	18:54:51	17,421548	-63,564349	CTD	End	END	NICO_Leg 6CTD20		7_6	34,03
03-04-18	19:05:11	17,423423	-63,562617	CTD	Begin	BEGIN	NICO_Leg 6CTD21		7_7	33,94
03-04-18	19:08:00	17,423445	-63,562608	CTD	Bottom	BOT	NICO_Leg 6CTD21		7_7	33,21
03-04-18	19:09:37	17,423389	-63,562619	CTD	End	END	NICO_Leg 6CTD21		7_7	34,76
03-04-18	19:26:02	17,421529	-63,560661	CTD	Begin	BEGIN	NICO_Leg 6CTD22		7_8	34,05
03-04-18	19:28:58	17,421489	-63,560759	CTD	Bottom	BOT	NICO_Leg 6CTD22		7_8	31,75
03-04-18	19:30:59	17,421502	-63,560719	CTD	End	END	NICO_Leg 6CTD22		7_8	33,38
03-04-18	19:57:28	17,422264	-63,561639	Boxcore	Bottom	BOT	NICO_Leg 6BOX1254		7_9	34,73
03-04-18	20:31:24	17,422319	-63,561784	Boxcore	Bottom	BOT	NICO_Leg 6BOX1255		7_10	32,89
03-04-18	21:26:05	17,420605	-63,562624	Mooring	Deployment	DEP	NICO_Leg 6MOOR18	Pumpy	7_11	32,56
03-04-18	22:34:41	17,420604	-63,561976	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT18		7_12	33,47
03-04-18	22:36:20	17,420592	-63,562016	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT18		7_12	34,35
03-04-18	22:46:29	17,420526	-63,562051	CTD with samples	End	END	NICO_Leg 6CTDBOT18		7_12	33,81
03-04-18	23:08:21	17,420663	-63,562672	Mooring	Recovery	REC	NICO_Leg 6MOOR18	Pumpy	7_11	33,74
03-05-18	10:05:11	17,420645	-63,562662	Mooring	Deployment	DEP	NICO_Leg 6MOOR19	Pumpy	7_13	33,58
03-05-18	10:26:26	17,420642	-63,562147	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT19		7_14	32,57
03-05-18	10:28:29	17,420611	-63,562052	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT19		7_14	33,44
03-05-18	10:37:34	17,420612	-63,562266	CTD with samples	End	END	NICO_Leg 6CTDBOT19		7_14	34,2
03-05-18	11:38:55	17,420586	-63,562671	Mooring	Recovery	REC	NICO_Leg 6MOOR19	Pumpy	7_13	32,82
03-05-18	12:53:34	17,501854	-63,642946	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT20		8_1	230,53
03-05-18	12:58:28	17,502261	-63,642958	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT20		8_1	227,17
03-05-18	13:20:49	17,502635	-63,642678	CTD with samples	End	END	NICO_Leg 6CTDBOT20		8_1	228,01
03-05-18	14:27:53	17,422947	-63,562321	Boxcore	Bottom	BOT	NICO_Leg 6BOX1256		7_15	33,38
03-05-18	15:26:52	17,420465	-63,562656	Mooring	Deployment	DEP	NICO_Leg 6MOOR20	PUMPY	7_16	34,45
03-05-18	15:53:52	17,418886	-63,562556	CTD	Begin	BEGIN	NICO_Leg 6CTD23		7_17	33,51
03-05-18	15:55:19	17,418947	-63,562593	CTD	Bottom	BOT	NICO_Leg 6CTD23		7_17	35,02
03-05-18	16:04:55	17,419022	-63,562607	CTD	End	END	NICO_Leg 6CTD23		7_17	33,83
03-05-18	16:22:35	17,421499	-63,562699	Mooring	Recovery	REC	NICO_Leg 6MOOR21	EDCO	7_2	31,77
03-05-18	17:17:12	17,42047	-63,56279	Mooring	Recovery	REC	NICO_Leg 6MOOR21	Pumpy	7_16	34,86
03-05-18	18:37:34	17,261458	-63,539017	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM23		223	63,36
03-05-18	18:42:18	17,261742	-63,538869	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM23		223	47,78
03-05-18	20:00:27	17,265266	-63,543862	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM23		223	19,93
03-05-18	20:07:42	17,265217	-63,543962	Hopper Camera	End	END	NICO_Leg 6HOPCAM23		223	21,51
03-05-18	20:48:48	17,264241	-63,540409	Mooring	Deployment	DEP	NICO_Leg 6MOOR22	Pumpy	9_1	26,87

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
03-05-18	21:10:03	17,264255	-63,539889	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT21		9_2	27,07
03-05-18	21:14:34	17,264278	-63,53989	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT21		9_2	28,04
03-05-18	21:22:39	17,264212	-63,539838	CTD with samples	End	END	NICO_Leg 6CTDBOT21		9_2	27,01
03-05-18	22:43:30	17,264223	-63,540368	Mooring	Recovery	REC	NICO_Leg 6MOOR22	Pumpy	9_1	25,89
03-05-18	23:17:22	17,261702	-63,560459	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM24		224	24,91
03-05-18	23:18:00	17,261757	-63,560442	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM24		224	23,83
03-05-18	23:41:15	17,264703	-63,560348	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM24		224	19,17
03-05-18	23:44:32	17,264797	-63,560495	Hopper Camera	End	END	NICO_Leg 6HOPCAM24		224	18,52
03-06-18	0:00:44	17,273249	-63,555815	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM25		225	27,6
03-06-18	0:01:20	17,273283	-63,555847	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM25		225	27,83
03-06-18	0:18:37	17,273213	-63,552948	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM25		225	27,07
03-06-18	0:20:45	17,273302	-63,552671	Hopper Camera	End	END	NICO_Leg 6HOPCAM25		225	25,48
03-06-18	10:10:48	17,264193	-63,540343	Mooring	Deployment	DEP	NICO_Leg 6MOOR23	Pumpy	9_3	25,46
03-06-18	10:27:10	17,264029	-63,539783	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT22		9_4	26,68
03-06-18	10:30:22	17,264059	-63,53997	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT22		9_4	25,69
03-06-18	10:38:16	17,264013	-63,539887	CTD with samples	End	END	NICO_Leg 6CTDBOT22		9_4	26,01
not logged						REC		Pumpy	9_3	
03-06-18	13:28:58	17,260789	-63,573626	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM26		226	34,4
03-06-18	13:29:50	17,260757	-63,573654	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM26		226	35,36
03-06-18	13:47:14	17,262891	-63,574801	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM26		226	26,68
03-06-18	13:50:23	17,263026	-63,574946	Hopper Camera	End	END	NICO_Leg 6HOPCAM26		226	27,27
03-06-18	13:58:50	17,267795	-63,575146	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM27		227	26,62
03-06-18	13:58:55	17,267803	-63,575158	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM27		227	25,25
03-06-18	14:31:32	17,267088	-63,578877	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM27		227	25,32
03-06-18	14:32:38	17,267054	-63,578838	Hopper Camera	End	END	NICO_Leg 6HOPCAM27		227	25,3
03-06-18	14:48:34	17,256752	-63,579483	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM28		228	31,21
03-06-18	14:48:38	17,256749	-63,579493	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM28		228	31,36
03-06-18	15:11:08	17,259672	-63,581883	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM28		228	23,82
03-06-18	15:13:22	17,259679	-63,582109	Hopper Camera	End	END	NICO_Leg 6HOPCAM28		228	20,67
03-06-18	15:47:17	17,264275	-63,540445	Mooring	Deployment	DEP	NICO_Leg 6MOOR24	Pumpy	9_9	27
03-06-18	16:08:43	17,265712	-63,540643	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT23		9_10	18,79
03-06-18	16:12:40	17,265725	-63,54062	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT23		9_10	17,96
03-06-18	16:17:37	17,265844	-63,540926	CTD with samples	End	END	NICO_Leg 6CTDBOT23		9_10	18,35
03-06-18	17:10:07	17,264193	-63,539797	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT24		9_11	25,57
03-06-18	17:15:04	17,264159	-63,539841	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT24		9_11	25,89
03-06-18	17:19:02	17,264117	-63,539857	CTD with samples	End	END	NICO_Leg 6CTDBOT24		9_11	26,28
03-06-18	17:43:46	17,26432	-63,540391	Mooring	Recovery	REC	NICO_Leg 6MOOR24	Pumpy	9_9	24,89
03-06-18	18:15:38	17,270487	-63,552479	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM29		229	24,51
03-06-18	18:16:53	17,270615	-63,552481	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM29		229	24,71
03-06-18	18:54:20	17,27333	-63,555597	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM29		229	26,28
03-06-18	18:57:52	17,27332	-63,556065	Hopper Camera	End	END	NICO_Leg 6HOPCAM29		229	27,81
03-06-18	19:08:08	17,276702	-63,55718	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM30		230	31,64
03-06-18	19:10:24	17,276702	-63,557372	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM30		230	29,83
03-06-18	19:24:27	17,276522	-63,559232	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM30		230	26,63
03-06-18	19:32:20	17,276667	-63,561088	Hopper Camera	End	END	NICO_Leg 6HOPCAM30		230	31,01
03-06-18	19:50:08	17,269606	-63,569351	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM31		231	34,76
03-06-18	19:51:38	17,26976	-63,569332	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM31		231	33,19
03-06-18	20:07:38	17,269284	-63,571506	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM31		231	26,87
03-06-18	20:09:01	17,269218	-63,571613	Hopper Camera	End	END	NICO_Leg 6HOPCAM31		231	26,34
03-06-18	20:33:59	17,261829	-63,574074	Mooring	Deployment	DEP	NICO_Leg 6MOOR25	EDCO	10_1	36,14
03-06-18	20:49:49	17,261461	-63,573932	Mooring	Deployment	DEP	NICO_Leg 6MOOR26	Pumpy	10_2	28,65
03-06-18	21:09:32	17,261431	-63,573469	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT25		10_3	28,73
03-06-18	21:12:37	17,26143	-63,573444	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT25		10_3	29,37
03-06-18	21:20:43	17,261418	-63,573482	CTD with samples	End	END	NICO_Leg 6CTDBOT25		10_3	29,04
03-06-18	22:37:15	17,261479	-63,573937	Mooring	Recovery	REC	NICO_Leg 6MOOR26	Pumpy	10_2	29,04
03-06-18	23:32:35	17,226449	-63,593966	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM32		232	24,78
03-06-18	23:33:38	17,226458	-63,593922	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM32		232	23,97
03-07-18	0:35:22	17,237244	-63,606435	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM32		232	23,42
03-07-18	0:36:49	17,237488	-63,606813	Hopper Camera	End	END	NICO_Leg 6HOPCAM32		232	23,69
03-07-18	10:12:22	17,261357	-63,574037	Mooring	Deployment	DEP	NICO_Leg 6MOOR27	Pumpy	10_4	28,33
03-07-18	10:33:47	17,260931	-63,573937	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT26		10_5	31,99
03-07-18	10:37:17	17,260931	-63,573937	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT26		10_5	
03-07-18	10:39:21	17,260933	-63,573884	CTD with samples	End	END	NICO_Leg 6CTDBOT34		10_5	-1
03-07-18	11:41:06	17,261357	-63,574037	Mooring	Recovery	REC	NICO_Leg 6MOOR37	Pumpy	10_4	-1
03-07-18	12:06:21	17,261833	-63,57215	CTD	Begin	BEGIN	NICO_Leg 6CTD35		10_6	-1
03-07-18	12:08:03	17,261833	-63,57215	CTD	Bottom	BOT	NICO_Leg 6CTD36		10_6	-1
03-07-18	12:10:50	17,261833	-63,57215	CTD	Begin	BEGIN	NICO_Leg 6CTD37		10_6	-1
03-07-18	12:26:17	17,261864	-63,572218	CTD	Begin	BEGIN	NICO_Leg 6CTD28		10_7	31,41
03-07-18	12:26:54	17,261887	-63,572228	CTD	Bottom	BOT	NICO_Leg 6CTD28		10_7	31,34
03-07-18	12:28:24	17,261912	-63,572276	CTD	End	END	NICO_Leg 6CTD28		10_7	30,5
03-07-18	12:44:04	17,260119	-63,574016	CTD	Begin	BEGIN	NICO_Leg 6CTD29		10_8	46

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
03-07-18	12:45:09	17,260102	-63,574065	CTD	Bottom	BOT	NICO_Leg 6CTD29		10_8	46,6
03-07-18	12:46:59	17,260078	-63,574268	CTD	End	END	NICO_Leg 6CTD29		10_8	40,29
03-07-18	12:59:57	17,261901	-63,576209	CTD	Begin	BEGIN	NICO_Leg 6CTD30		10_9	26,06
03-07-18	13:00:51	17,261892	-63,576133	CTD	Bottom	BOT	NICO_Leg 6CTD30		10_9	26,85
03-07-18	13:02:12	17,261886	-63,576106	CTD	End	END	NICO_Leg 6CTD30		10_9	26,46
03-07-18	13:28:01	17,245432	-63,580319	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM33		233	95,64
03-07-18	13:29:31	17,245393	-63,580583	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM33		233	84,04
03-07-18	14:10:57	17,249912	-63,588716	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM33		233	24,68
03-07-18	14:14:02	17,250628	-63,588875	Hopper Camera	End	END	NICO_Leg 6HOPCAM33		233	26,65
03-07-18	14:32:31	17,248357	-63,594338	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM34		234	30,1
03-07-18	14:32:38	17,248344	-63,594346	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM34		234	31,08
03-07-18	14:55:06	17,251855	-63,5922	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM34		234	28,61
03-07-18	14:56:47	17,251977	-63,592219	Hopper Camera	End	END	NICO_Leg 6HOPCAM34		234	28,23
03-07-18	15:34:49	17,261579	-63,574205	Mooring	Deployment	DEP	NICO_Leg 6MOOR28	Pumpy	10_10	30,52
03-07-18	15:48:15	17,262668	-63,575688	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT27		10_11	25,95
03-07-18	15:49:16	17,262615	-63,575639	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT27		10_11	26,28
03-07-18	15:56:47	17,262638	-63,575437	CTD with samples	End	END	NICO_Leg 6CTDBOT27		10_11	26,71
03-07-18	17:23:15	17,261628	-63,573949	Mooring	Recovery	REC	NICO_Leg 6MOOR28	Pumpy	10_10	29,01
03-07-18	18:22:53	17,261478	-63,573973	Mooring	Deployment	DEP	NICO_Leg 6MOOR29	Pumpy	10_12	28,03
03-07-18	18:48:22	17,261507	-63,573064	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT28		10_13	30,69
03-07-18	18:52:26	17,261516	-63,573158	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT28		10_13	29,81
03-07-18	19:02:15	17,261382	-63,572865	CTD with samples	End	END	NICO_Leg 6CTDBOT28		10_13	33,72
03-07-18	19:50:01	17,261164	-63,574006	Mooring	Recovery	REC	NICO_Leg 6MOOR29	Pumpy	10_12	28,59
03-07-18	20:19:17	17,272566	-63,548533	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM35		235	21,33
03-07-18	20:20:51	17,272544	-63,548457	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM35		235	21,25
03-07-18	20:56:17	17,273109	-63,554161	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM35		235	25,76
03-07-18	20:58:54	17,273296	-63,554356	Hopper Camera	End	END	NICO_Leg 6HOPCAM35		235	20,59
03-07-18	21:19:18	17,265947	-63,544172	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM36		236	19,93
03-07-18	21:21:06	17,265881	-63,544023	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM36		236	20,92
03-07-18	21:50:48	17,263276	-63,547087	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM36		236	22,85
03-07-18	22:00:06	17,265101	-63,549018	Hopper Camera	End	END	NICO_Leg 6HOPCAM36		236	20,22
03-07-18	22:38:01	17,261748	-63,574186	Mooring	Recovery	REC	NICO_Leg 6MOOR30	EDCO	10_1	33,78
03-08-18	10:09:53	17,272909	-63,552196	Mooring	Deployment	DEP	NICO_Leg 6MOOR31	Pumpy	11_1	27,25
03-08-18	10:29:11	17,272963	-63,553807	Mooring	Deployment	DEP	NICO_Leg 6MOOR32	EDCO	11_2	26,27
03-08-18	10:46:56	17,272524	-63,552221	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT29		11_3	24,75
03-08-18	10:47:54	17,27252	-63,552207	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT29		11_3	25,74
03-08-18	10:54:46	17,272533	-63,552246	CTD with samples	End	END	NICO_Leg 6CTDBOT29		11_3	25,1
03-08-18	11:36:30	17,273025	-63,552146	Mooring	Recovery	REC	NICO_Leg 6MOOR32	Pumpy	11_1	26,58
03-08-18	11:51:35	17,27485	-63,553876	CTD	Begin	BEGIN	NICO_Leg 6CTD31		11_4	29,18
03-08-18	11:54:32	17,274868	-63,553742	CTD	Bottom	BOT	NICO_Leg 6CTD31		11_4	27,66
03-08-18	11:55:46	17,274878	-63,553678	CTD	End	END	NICO_Leg 6CTD31		11_4	27,83
03-08-18	12:07:54	17,272925	-63,551839	CTD	Begin	BEGIN	NICO_Leg 6CTD32		11_5	22,33
03-08-18	12:08:25	17,272913	-63,551826	CTD	Bottom	BOT	NICO_Leg 6CTD32		11_5	22,44
03-08-18	12:09:18	17,272899	-63,551787	CTD	End	END	NICO_Leg 6CTD32		11_5	21,53
03-08-18	12:22:00	17,27125	-63,553943	CTD	Begin	BEGIN	NICO_Leg 6CTD33		11_6	23,05
03-08-18	12:22:23	17,271206	-63,55389	CTD	Bottom	BOT	NICO_Leg 6CTD33		11_6	23,33
03-08-18	12:23:26	17,271176	-63,553703	CTD	End	END	NICO_Leg 6CTD33		11_6	23,92
03-08-18	12:36:49	17,273107	-63,555611	CTD	Begin	BEGIN	NICO_Leg 6CTD34		11_7	27,47
03-08-18	12:37:28	17,273082	-63,555611	CTD	Bottom	BOT	NICO_Leg 6CTD34		11_7	26,33
03-08-18	12:38:40	17,273086	-63,555662	CTD	End	END	NICO_Leg 6CTD34		11_7	26,85
03-08-18	13:36:48	17,225191	-63,591786	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM37		237	23,31
03-08-18	13:36:50	17,225199	-63,591769	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM37		237	23,94
03-08-18	14:58:07	17,228965	-63,598513	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM37		237	23,32
03-08-18	14:58:47	17,229138	-63,598534	Hopper Camera	End	END	NICO_Leg 6HOPCAM37		237	25,21
03-08-18	15:49:42	17,273114	-63,552151	Mooring	Deployment	DEP	NICO_Leg 6MOOR33	Pumpy	11_8	27,07
03-08-18	16:11:48	17,272832	-63,551441	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT30		11_9	20,51
03-08-18	16:15:35	17,272792	-63,55163	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT30		11_9	20,66
03-08-18	16:23:11	17,272695	-63,551717	CTD with samples	End	END	NICO_Leg 6CTDBOT30		11_9	21,94
03-08-18	17:28:01	17,273242	-63,551809	Mooring	Recovery	REC	NICO_Leg 6MOOR33	Pumpy	11_8	25,22
03-08-18	18:39:22	17,297396	-63,621177	Boxcore	Bottom	BOT	NICO_Leg 6BOX1257		12_1	35,14
03-08-18	19:17:08	17,297536	-63,62123	Boxcore	Bottom	BOT	NICO_Leg 6BOX1258		12_2	34,86
03-08-18	21:02:09	17,273028	-63,552151	Mooring	Deployment	DEP	NICO_Leg 6MOOR34	Pumpy	11_10	26,66
03-08-18	21:22:41	17,272659	-63,552124	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT31		11_11	26,44
03-08-18	21:23:50	17,272711	-63,552202	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT31		11_11	25,64
03-08-18	21:30:05	17,27261	-63,552137	CTD with samples	End	END	NICO_Leg 6CTDBOT31		11_11	25,47
03-08-18	22:36:41	17,273067	-63,552086	Mooring	Recovery	REC	NICO_Leg 6MOOR34	Pumpy	11_10	26,48
03-08-18	23:07:34	17,254532	-63,513351	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM38		238	58,04
03-08-18	23:11:01	17,254725	-63,513456	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM38		238	47,78
03-09-18	0:13:10	17,262367	-63,517884	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM38		238	23,32
03-09-18	0:18:25	17,263178	-63,51815	Hopper Camera	End	END	NICO_Leg 6HOPCAM38		238	22,89
03-09-18	10:08:04	17,272992	-63,552087	Mooring	Deployment	DEP	NICO_Leg 6MOOR35	Pumpy	11_12	26,66

Date	Heure	Latitude	Longitude	Device name	Action name	Action code	Operation Id	Observation	Station number	Depth (m)
03-09-18	10:26:49	17,272534	-63,552135	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT32		11_13	25,17
03-09-18	10:29:02	17,272546	-63,552138	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT32		11_13	25,1
03-09-18	10:36:25	17,272519	-63,551996	CTD with samples	End	END	NICO_Leg 6CTDBOT32		11_13	25,05
03-09-18	11:36:01	17,273066	-63,552073	Mooring	Recovery	REC	NICO_Leg 6MOOR35	Pumpy	11_12	26,23
03-09-18	11:48:54	17,273056	-63,553848	Mooring	Recovery	REC	NICO_Leg 6MOOR35	EDCO	11_2	26,91
03-09-18	12:34:06	17,254155	-63,555253	Boxcore	Bottom	BOT	NICO_Leg 6BOX1259		13_1	308,1
03-09-18	13:22:54	17,254737	-63,555639	Boxcore	Bottom	BOT	NICO_Leg 6BOX12510		13_2	301,11
03-09-18	17:15:23	17,271439	-63,304568	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT33		14_1	176,14
03-09-18	17:24:36	17,271597	-63,304604	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT33		14_1	181,2
03-09-18	17:43:22	17,271931	-63,304571	CTD with samples	End	END	NICO_Leg 6CTDBOT33		14_1	154,64
not logged					Recovery	REC			Thermistor SE	
03-10-18	11:07:53	17,613969	-63,475539	CTD with samples	Begin	BEGIN	NICO_Leg 6CTDBOT35		15_1	199,2
03-10-18	11:14:18	17,613852	-63,475472	CTD with samples	Bottom	BOT	NICO_Leg 6CTDBOT35		15_1	197,92
03-10-18	11:30:54	17,613792	-63,475645	CTD with samples	End	END	NICO_Leg 6CTDBOT35		15_1	202,59
03-10-18	13:04:19	17,648184	-63,545503	Mooring	Recovery	REC	NICO_Leg 6MOOR38		Thermistor NW	491,1
03-10-18	14:41:17	17,686616	-63,480281	Hopper Camera	Begin	BEGIN	NICO_Leg 6HOPCAM39		239	88,37
03-10-18	14:42:52	17,68657	-63,480141	Hopper Camera	Start track	START	NICO_Leg 6HOPCAM39		239	89,94
03-10-18	15:42:09	17,686458	-63,470818	Hopper Camera	End track	END TRACK	NICO_Leg 6HOPCAM39		239	76,56
03-10-18	15:45:13	17,686487	-63,470786	Hopper Camera	End	END	NICO_Leg 6HOPCAM39		239	76,72

5.2 Standard PUMPY sampling schedule

Cruise: 64PE433	Date:
Station: PUMPY Deployment:	Start time:
	Bottom depth PUMPY [m]:
GoPRO: Y	Aquadopp: Y MicrocaT: Y
Latitude:	
Longitude:	

NISKIN bottle	Sampling depth [cm ab]]	NUTS	TP	pH	DIC+ Alkalinity	TOC TN	POM	Flow cytometry	Metabolomics Metagenomics	Remarks
1	10	X	X		X	X	X	X	X	
2	20	X	X		X	X	X	X		
3	40	X	X		X		X	X		
4	80	X	X		X	X	X	X	X	
5	160	X	X		X		X	X		
6	300	X	X		X	X	X	X		

Standard variables sampled of PUMPY in case there was sufficient water in all six bags.

5.3 CTD sampling schedules

Cruise: 64PE433	Date: 26 Feb 2018
Station: 01 Cast: 01	Start time (UTC): 21:30
CTD file name*: PE433 _ S01C01	Bottom depth CTD [m]: 325
	Altimeter at bottom [m]: 5
Latitude: 17° 39,761' N	CTD operator: Bob
Longitude: 63° 14,488' W	Sample: Saba

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	Profile for Multibeam										

Cruise: 64PE433	**Date:** 27 Feb 2018
Station: 02 Cast: 01	Start time (UTC): 11:09
CTD file name*: PE433 _ *S02C02*	Bottom depth CTD [m]: 335
	Altimeter at bottom [m]: 5
Latitude: 17° 33,328' N	CTD operator: Bob
Longitude: 62° 58,776' W	**Sample:** St Eustatius

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	Profile for Multibeam										Note that Stn nr (Casina) differs from CTD file name

Cruise: 64PE433	**Date:** 27 Feb 2018
Station: 03 Cast: 01	Start time (UTC): 20:56
CTD file name*: PE433 _ S03C01	Bottom depth CTD [m]: 337
	Altimeter at bottom [m]: 4
Latitude: 17° 15,620' N	CTD operator: Bob
Longitude: 63° 22,913' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	330				X						
2	199							X			
3	140							X			
4	60	X						X		X	
5	60		dmsp				X				
6	40							X			
7	15	X						X		X	
8	15		dmsp				X				
9	3				X						
10	3	X	dmsp				X	X			

Remarks: also used for multibeam correction for Saba Bank (Bob). **This was a NICO-student site.**

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 03	Start time (UTC): 17:18
CTD file name*: PE433 _ S04C03	Bottom depth CTD [m]: 30
	Altimeter at bottom [m]: 4
Latitude: 17° 20,016' N	CTD operator: Bob
Longitude: 63° 15,239' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	23	X		X	X						
2	23					X	X	X	X		
3	16	X		X	X						
4	16						X	X			
5	12	X		X	X						
6	12										
7	3	X		X	X						
8	3					X	X	X	X	X	

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 04	Start time (UTC): 18:13
CTD file name*: PE433 _ S04C04	Bottom depth CTD [m]: 25
	Altimeter at bottom [m]: 3
Latitude: 17° 20,028' N	CTD operator: Bob
Longitude: 63° 15,252' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 05	Start time (UTC): 18:33
CTD file name*: PE433 _ S04C05	Bottom depth CTD [m]: 35
	Altimeter at bottom [m]: 2
Latitude: 17° 20,149' N	CTD operator: Bob
Longitude: 63° 15,361' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 06	Start time (UTC): 18:54
CTD file name*: PE433 _ S04C06	Bottom depth CTD [m]: 23
	Altimeter at bottom [m]: 1
Latitude: 17° 19,931' N	CTD operator: Bob
Longitude: 63° 15,361' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 07	Start time (UTC): 19:19
CTD file name*: PE433 _ S04C07	Bottom depth CTD [m]: 16
	Altimeter at bottom [m]: 2
Latitude: 17° 20,029' N	CTD operator: Bob
Longitude: 63° 15,481' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 28 Feb 2018
Station: 04 Cast: 12	Start time (UTC): 20:56
CTD file name*: PE433 _ S04C12	Bottom depth CTD [m]: 35
	Altimeter at bottom [m]: 4
Latitude: 17° 20,004' N	CTD operator: Bob
Longitude: 63° 15,236' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	26	X	X	X	X						
2	26					X	X	X	X		
3	20	X	X	X	X						
4	20						X	X			
5	12	X	X	X	X						
6	12										Fles 6 niet gesloten
7	3	X	X	X	X						
8	3					X	X	X	X	X	

Cruise: 64PE433	**Date:** 1 March 2018
Station: 04 Cast: 14	Start time (UTC): 10:31
CTD file name*: PE433 _ S04C14	Bottom depth CTD [m]: 38
	Altimeter at bottom [m]: 2
Latitude: 17° 20,004' N	CTD operator: Bob
Longitude: 63° 15,235' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	28	X	X	X	X						
2	28					X	X	X			
3	22	X	X	X	X						
4	22						X	X			
5	12	X	X	X	X						
6	12										
7	3	X	X	X	X						
8	3					X	X	X		X	

Cruise: 64PE433	**Date:** 1 March 2018
Station: 04 Cast: 15	Start time (UTC): 11:07
CTD file name*: PE433 _ S04C15	Bottom depth CTD [m]: 250
	Altimeter at bottom [m]: 4
Latitude: 17° 20,028' N	CTD operator: Bob
Longitude: 63° 14,963' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	199	X		X	X						
2	40	X		X	X						
3	40										
4	27	X		X	X						
5	27										
6	15	X		X	X						
7	15										
8	3	X		X	X						
9	3										

Cruise: 64PE433	**Date:** 1 March 2018
Station: 04 Cast: 19	Start time (UTC): 17:16
CTD file name*: PE433 _ S04C19	Bottom depth CTD [m]: 31
	Altimeter at bottom [m]: 2
Latitude: 17° 19,994' N	CTD operator: Bob
Longitude: 63° 15,245' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	22	X	X	X	X	X					
2	22						X	X			
3	15	X	X	X	X						
4	15						X	X			
5	3	X	X	X	X	X					
6	3						X	X		X	

Cruise: 64PE433	**Date:** 1 March 2018
Station: 05 Cast: 03	Start time (UTC): 21:25
CTD file name*: PE433 _ S05C03	Bottom depth CTD [m]: 16
	Altimeter at bottom [m]: 2
Latitude:	CTD operator: Bob
Longitude:	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	13	X	X	X	X						
2	13					X	X	X			
3	3	X	X	X	X						
4	3					X	X	X			

Cruise: 64PE433	**Date:** 3 March 2018
Station: 05 Cast: 04	Start time (UTC): 22:57
CTD file name*: PE433 _ S05C04	Bottom depth CTD [m]: 21
	Altimeter at bottom [m]: 3
Latitude: 17° 23,099' N	CTD operator: Emil
Longitude: 63° 17,418' W	**Sample:** Saba Bank

Remark: O2 downcast different from O2 upcast….

Cruise: 64PE433	**Date:** 3 March 2018
Station: 05 Cast: 05	Start time (UTC): 23:09
CTD file name*: PE433 _ S05C05	Bottom depth CTD [m]: 21
	Altimeter at bottom [m]: 2
Latitude: 17° 22,984' N	CTD operator: Emil
Longitude: 63° 17,308' W	**Sample:** Saba Bank

Remark: O2 downcast different from O2 upcast….

Cruise: 64PE433	**Date:** 3 March 2018
Station: 05 Cast: 06	Start time (UTC): 23:26
CTD file name*: PE433 _ S05C06	Bottom depth CTD [m]: 17
	Altimeter at bottom [m]: 3.1
Latitude: 17° 22,874' N	CTD operator: Emil
Longitude: 63° 17,424' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 3 March 2018
Station: 05 Cast: 07	Start time (UTC): 23:39
CTD file name*: PE433 _ S05C07	Bottom depth CTD [m]: 17
	Altimeter at bottom [m]: 2.5
Latitude: 17° 22,991' N	CTD operator: Emil
Longitude: 63° 17,534' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 2 March 2018
Station: 05 Cast: 09	Start time (UTC): 10:31
CTD file name*: PE433 _ S05C09	Bottom depth CTD [m]: 16
	Altimeter at bottom [m]:
Latitude: 17° 23,024' N	CTD operator: Bob
Longitude: 63° 17,446' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	15	X	X	X	X						
2	15					X	X	X			
3	3	X	X	X	X						
4	3					X	X	X		X	

Cruise: 64PE433	**Date:** 2 March 2018
Station: 05 Cast: 11	Start time (UTC):
CTD file name*: PE433 _ S05C11	Bottom depth CTD [m]: 16
	Altimeter at bottom [m]:
Latitude:	CTD operator: Bob
Longitude:	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	15	X	X	X	X						
2	15					X	X	X	X		
3	3	X	X	X	X						
4	3					X	X	X	X	X	

Cruise: 64PE433	**Date:** 2 March 2018
Station: 05 Cast: 18	Start time (UTC): 21:15
CTD file name*: PE433 _ S05C18	Bottom depth CTD [m]:
	Altimeter at bottom [m]: 1
Latitude: 17° 23,050' N	CTD operator: Alice
Longitude: 63° 17,436' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	14	X	X	X	X						
2	14					X	X	X			
3	3	X	X	X	X						
4	3					X	X	X			

Cruise: 64PE433	**Date:** 3 March 2018
Station: 06 Cast: 03	Start time (UTC): 10:51
CTD file name*: PE433 _ S06C03	Bottom depth CTD [m]: 24
	Altimeter at bottom [m]: 3
Latitude: 17° 29,003' N	CTD operator: Bob
Longitude: 63° 23,306' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	23	X	X	X	X						
2	23					X	X	X			
3	18	X	X	X	X			X			
4	18						X	X			
5	15	X						X			
6	15	X						X		X	
7	3	X	X	X	X						
8	3					X	X	X		X	
9	3	X						X			

Remarks: This was a NICO-student site (blue samples) and also sampled by others

Cruise: 64PE433	**Date:** 3 March 2018
Station: 06 Cast: 05	Start time (UTC): 17:07
CTD file name*: PE433 _ S06C05	Bottom depth CTD [m]: 24
	Altimeter at bottom [m]:
Latitude: 17° 29,002' N	CTD operator: Alice
Longitude: 63° 23,303' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	22	X	X	X	X						
2	22					X	X	X	X		
3	17	X	X	X	X						
4	17						X	X			
5	3	X	X	X	X						
6	3					X	X	X	X	X	

Missing CTD sheets Stn 06-06, 06-07, 06-08, 06-09 (Emil cross)

Cruise: 64PE433	**Date:** 3 March 2018
Station: 06 Cast: 11	Start time (UTC): 21:12
CTD file name*: PE433 _ S06C05	Bottom depth CTD [m]: 24.6
	Altimeter at bottom [m]:
Latitude: 17° 28,975' N	CTD operator: Alice
Longitude: 63° 23,237' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	22	X	X	X	X						
2	22					X	X	X			
3	18	X	X	X	X						
4	18						X	X			
5	3	X	X	X	X						
6	3					X	X	X			

Cruise: 64PE433	**Date:** 3 March 2018
Station: 06 Cast: 13	Start time (UTC):
CTD file name*: PE433 _ S06C13	Bottom depth CTD [m]: 21
	Altimeter at bottom [m]: 25?
Latitude: 17° 28,982' N	CTD operator: Alice
Longitude: 63° 23,234' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	21	X	X	X	X						
2	21					X	X	X			
3	17	X	X	X	X						
4	17						X	X			
5	3	X	X	X	X	X	X	X			
6	3										

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 3 and 4	Start time (UTC): 17:30
CTD file name*: PE433 _ S07C4	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]:
Latitude: 17° 25,246' N	CTD operator: Alice
Longitude: 63° 33,750' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	28	X	X	X	X						
2	28					X	X	X			
3	23	X	X	X	X						
4	23						X	X			
5	15	X	X	X	X						
6	15										Not closed
7	3	X	X	X	X						
8	3					X	X	X	X	X	

Remark: bottles 1-6 closed during cast 3. Bottles 7 and 8 were closed during cast 4

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 05	Start time (UTC): 18:29
CTD file name*: PE433 _ S07C05	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 2,5
Latitude: 17° 25,184' N	CTD operator: Emil
Longitude: 63° 33,755' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 06	Start time (UTC): 18:49
CTD file name*: PE433 _ S07C06	Bottom depth CTD [m]: 35
	Altimeter at bottom [m]: 4,2
Latitude: 17° 25,292' N	CTD operator: Emil
Longitude: 63° 33,875' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 07	Start time (UTC): 19:04
CTD file name*: PE433 _ S07C07	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 4
Latitude: 17° 25,406' N	CTD operator: Emil
Longitude: 63° 33,762' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 08	Start time (UTC): 19:28
CTD file name*: PE433 _ S07C08	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 2
Latitude: 17° 25,291' N	CTD operator: Emil
Longitude: 63° 33,650' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 4 March 2018
Station: 07 Cast: 12	Start time (UTC): 22:37
CTD file name*: PE433 _ S07C12	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 4
Latitude: 17° 25,238' N	CTD operator: Alice
Longitude: 63° 33,727' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	30	X	X	X	X						
2	30					X	X	X			
3	25	X	X	X	X						
4	25						X	X			
5	15	X	X	X	X						
6	15										
7	15										
8	4	X	X	X	X						
9	4					X	X	X			

Cruise: 64PE433	**Date:** 5 March 2018
Station: 07 Cast: 14	Start time (UTC): 10:25
CTD file name*: PE433 _ S07C14	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 6?
Latitude: 17° 25,247' N	CTD operator: Alice
Longitude: 63° 33,734' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	28	X	X	X	X						
2	28					X	X	X			
3	22	X	X	X	X						
4	22						X	X			
5	12	X	X	X	X						
6	12										
7	12										
8	3	X	X	X	X						
9	3					X	X	X		X	

Cruise: 64PE433	**Date:** 5 March 2018
Station: 07 Cast: 17	Start time (UTC): 15:55
CTD file name*: PE433 _ S07C17	Bottom depth CTD [m]: 34
	Altimeter at bottom [m]: 5?
Latitude: 17° 25' N	CTD operator: Laurent
Longitude: 63° 33' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	29	X	X	X	X						
2	29					X	X	X			
3	26	X	X	X	X						
4	26						X	X			
5	15	X	X	X	X						
6	15										
7	2	X	X	X	X						
8	2					X	X	X		X	

Cruise: 64PE433	**Date:** 5 March 2018
Station: 08 Cast: 01	Start time (UTC): 13:00
CTD file name*: PE433 _ S08C01	Bottom depth CTD [m]: 225
	Altimeter at bottom [m]:
Latitude: 17° 30,12' N	CTD operator: Laurent
Longitude: 63° 38,58' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	205	X	X	X	X						
2	205	X						X			
3	130	X						X			
4	80						X				
5	80	X						X			
6	71	X						X			
7	71	X						X			
8	40	X	X	X	X						
9	15	X					X				
10	15	X	X	X	X			X			
11	15						X	X			
12	3	X	X	X	X						
13	3	X				X	X	X			

Remark: NICO student station and others

Cruise: 64PE433	**Date:** 5 March 2018
Station: 09 Cast: 02	Start time (UTC): 21:15
CTD file name*: PE433 _ S09C02	Bottom depth CTD [m]: 27
	Altimeter at bottom [m]:
Latitude: 17° 15,864' N	CTD operator: Bob
Longitude: 63° 32,401' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	24	X	X	X	X						
2	24					X	X	X			
3	15	X	X	X	X						
4	15						X	X			
5	4	X	X	X	X						
6	4					X	X	X			

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 04	Start time (UTC): 10:25
CTD file name*: PE433 _ S09C04	Bottom depth CTD [m]: 26
	Altimeter at bottom [m]:4?
Latitude: 17°' ????N	CTD operator: Didier
Longitude: 63° 32,369' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	22	X	X	X	X						
2	22					X	X	X			
3	15	X	X	X	X						
4	15						X	X			
5	3	X	X	X	X						
6	3					X	X	X		X	

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 05	Start time (UTC): 12:02
CTD file name*: PE433 _ S09C05	Bottom depth CTD [m]: 20
	Altimeter at bottom [m]: 3
Latitude: 17° 15,972' N	CTD operator: Emil
Longitude: 63° 32,428' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 06	Start time (UTC): 12:20
CTD file name*: PE433 _ S09C06	Bottom depth CTD [m]: 25
	Altimeter at bottom [m]: 3
Latitude: 17° 15,857' N	CTD operator: Emil
Longitude: 63° 32,318' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 07	Start time (UTC): 12:24
CTD file name*: PE433 _ S09C07	Bottom depth CTD [m]: ?
	Altimeter at bottom [m]: 4-5
Latitude: 17° 15,752' N	CTD operator: Emil
Longitude: 63° 32,429' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 08	Start time (UTC): 12:47
CTD file name*: PE433 _ S09C08	Bottom depth CTD [m]: 26
	Altimeter at bottom [m]: 3
Latitude: 17° 15,869' N	CTD operator: Emil
Longitude: 63° 32,556' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 10	Start time (UTC): 16:10
CTD file name*: PE433	Bottom depth CTD [m]: 18
	Altimeter at bottom [m]:
Latitude: 17° 15,950' N	CTD operator: Alice
Longitude: 63° 32,437' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	15										
2	15										
3	3										
4	3										

Remark: wrong site, no water sampled. No CTD file logged (overwritten by 09-11)

Cruise: 64PE433	**Date:** 6 March 2018
Station: 09 Cast: 11	Start time (UTC): 17:10
CTD file name*: PE433 S09C11	Bottom depth CTD [m]: 27
	Altimeter at bottom [m]:
Latitude: 17° 15,852' N	CTD operator: Alice
Longitude: 63° 32,387' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	24	X	X	X	X						
2	24					X	X	X	X		
3	14	X	X	X	X						
4	14						X	X			
5	3	X	X	X	X						
6	3					X	X	X	X	X	
7	3										

Cruise: 64PE433	**Date:** 6 March 2018
Station: 10 Cast: 03	Start time (UTC): 21:11
CTD file name*: PE433 _ S10C03	Bottom depth CTD [m]: 30
	Altimeter at bottom [m]: 3??
Latitude: 17° 15,691' N	CTD operator: Didier
Longitude: 63° 34,406' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	27	X	X	X	X						
2	27					X	X	X			
3	20	X	X	X	X						
4	20						X	X			
5	3	X	X	X	X						
6	3					X	X	X			

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 05	Start time (UTC): 10:30
CTD file name*: PE433 _ S10C05	Bottom depth CTD [m]: 32
	Altimeter at bottom [m]:
Latitude: 17° 15,658' N	CTD operator: Laurent
Longitude: 63° 34,428' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	28	X	X	X	X						
2	28					X	X	X			
3	22	X	X	X	X						
4	22						X	X			
5	15	X	X	X	X						
6	15					X	X	X			
7	3	X	X	X	X						
8	3					X	X	X		X	

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 06	Start time (UTC): 12:12
CTD file name*: PE433 _ S10C06	Bottom depth CTD [m]: 27
	Altimeter at bottom [m]: 2
Latitude: 17° 15,821' N	CTD operator: Emil
Longitude: 63° 34,440' W	**Sample:** Saba Bank

Remark: Casino not operational during cast. Works again around 12:20 UTC

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 07	Start time (UTC): 12:26
CTD file name*: PE433 _ S10C07	Bottom depth CTD [m]: 32
	Altimeter at bottom [m]: 5
Latitude: 17° 15,714' N	CTD operator: Emil
Longitude: 63° 34,328' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 08	Start time (UTC): 12:42
CTD file name*: PE433 _ S10C08	Bottom depth CTD [m]: 49
	Altimeter at bottom [m]: 4
Latitude: 17° 15,611' N	CTD operator: Emil
Longitude: 63° 34,435' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 09	Start time (UTC): 12:59
CTD file name*: PE433 _ S10C09	Bottom depth CTD [m]: 28
	Altimeter at bottom [m]: 3
Latitude: 17° 15,718' N	CTD operator: Emil
Longitude: 63° 34,567' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 11	Start time (UTC): 15:45
CTD file name*: PE433 _ S10C11	Bottom depth CTD [m]: 28
	Altimeter at bottom [m]: 3?
Latitude: 17° 15,761' N	CTD operator: Alice
Longitude: 63° 34,535' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	25	X	X	X	X						
2	25					X	X	X	X		
3	15	X	X	X	X						
4	15						X				
5	15										NICO-niskin
6	15										NICO-niskin
5	15										NICO-niskin
6	3	X	X	X	X						
7	3					X	X	X	X	X	
8	3										NICO-niskin

Cruise: 64PE433	**Date:** 7 March 2018
Station: 10 Cast: 13	Start time (UTC): 18:50
CTD file name*: PE433 _ S10C13	Bottom depth CTD [m]: 31
	Altimeter at bottom [m]:
Latitude: 17° 15,695' N	CTD operator: Alice
Longitude: 63° 34,380' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	28	X	X	X	X						
2	28					X	X	X			
3	15	X	X	X	X						
4	15						X	X			
5	3	X	X	X	X						
6	3					X	X	X		X	

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 03	Start time (UTC): 10:40
CTD file name*: PE433 _ S11C03	Bottom depth CTD [m]: 26
	Altimeter at bottom [m]: 3??
Latitude: 17° 16,355' N	CTD operator: Alice
Longitude: 63° 33,127' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	23	X	X	X	X						
2	23					X	X	X			
3	13	X	X	X	X						
4	13						X	X			
5	3	X	X	X	X						
6	3					X	X	X		X	
7	3										

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 04	Start time (UTC): 11:45
CTD file name*: PE433 _ S11C04	Bottom depth CTD [m]: 24
	Altimeter at bottom [m]: 2
Latitude: 17° 16,493' N	CTD operator: Emil
Longitude: 63° 33,217' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 05	Start time (UTC): 12:07
CTD file name*: PE433 _ S11C05	Bottom depth CTD [m]: 24
	Altimeter at bottom [m]: 2
Latitude: 17° 16,375' N	CTD operator: Emil
Longitude: 63° 33,103' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 06	Start time (UTC): 12:21
CTD file name*: PE433 _ S11C06	Bottom depth CTD [m]: 25
	Altimeter at bottom [m]: 2,5
Latitude: 17° 16,278' N	CTD operator: Emil
Longitude: 63° 33,233' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 07	Start time (UTC): 12:37
CTD file name*: PE433 _ S11C07	Bottom depth CTD [m]: 28
	Altimeter at bottom [m]: 3
Latitude: 17° 16,387' N	CTD operator: Emil
Longitude: 63° 33,331' W	**Sample:** Saba Bank

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 09	Start time (UTC): 16:15
CTD file name*: PE433 _ S11C09	Bottom depth CTD [m]: 22
	Altimeter at bottom [m]: 4??
Latitude: 17° 16,362' N	CTD operator: Laurent
Longitude: 63° 33,096' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	18	X	X	X	X						
2	18					X	X	X	X		
3	15	X	X	X	X						
4	15						X	X			
5	3	X	X	X	X						
6	3					X	X	X	X	X	

Cruise: 64PE433	**Date:** 8 March 2018
Station: 11 Cast: 11	Start time (UTC): 21:20
CTD file name*: PE433 _ S11C11	Bottom depth CTD [m]: 26
	Altimeter at bottom [m]: 2??
Latitude: 17° 16,388' N	CTD operator: Alice
Longitude: 63° 33,121' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	24	X	X	X	X						
2	24					X	X	X			
3	19	X	X	X	X						
4	19						X	X			
5	3	X	X	X	X						
6	3					X	X	X			
7	3										

Cruise: 64PE433	**Date:** 9 March 2018
Station: 11 Cast: 13	Start time (UTC): 10:27
CTD file name*: PE433 _ S11C13	Bottom depth CTD [m]: 26
	Altimeter at bottom [m]: 2??
Latitude: 17° 16,351' N	CTD operator: Didier
Longitude: 63° 33,13' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	24	X	X	X	X						
2	24					X	X	X			
3	20	X	X	X	X						
4	20						X	X			
5	3	X	X	X	X						
6	3					X	X	X			
7	3										

Cruise: 64PE433	**Date:** 9 March 2018
Station: 14 Cast: 01	Start time (UTC): 17:20
CTD file name*: PE433 _ S14C01	Bottom depth CTD [m]: 200
	Altimeter at bottom [m]: 2??
Latitude: 17° 16,319' N	CTD operator: Laurent
Longitude: 63° 18,272' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	198	X	X	X	X						
2	198										
3	94										
4	94										
5	85	X	X	X	X						
6	85					X	X	X			
7	40	X	X	X	X						
8	40										
9	15	X	X	X	X		X	X			
10	15										
11	4	X	X	X	X	X	X	X			
12	4										

Cruise: 64PE433	**Date:** 10 March 2018
Station: 15 Cast: 01	Start time (UTC): 11:10
CTD file name*: PE433 _ S15C01	Bottom depth CTD [m]: 203
	Altimeter at bottom [m]: 2??
Latitude: 17° 28,525' N	CTD operator: Laurent
Longitude: 63° 28,526' W	**Sample:** Saba Bank

NISKIN bottle	Sampling depth [m]	NUTS	TP	DIC	Alkalinity	TOC TN	POM	Flow cytometry	Micro zooplankton	Metabolomics Metagenomics	Remarks
1	201	X	X	X	X						
2	201										
3	85	X	X	X	X						
4	85					X	X	X			
5	40	X	X	X	X						
6	40						X	X			
7	3	X	X	X	X						
8	3					X	X	X			

5.4 Alkalinity samples processed during the cruise

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
28/02/2018 18:20	1010	S4_C3_23m_2802	x
28/02/2018 18:31	1025	S4_C3_23m_Rep_2802	x
28/02/2018 18:45	1028	S4_C3_16m_2802	x
28/02/2018 18:56	1017	S4_C3_12m_2802	x
28/02/2018 19:09	1020	S4_C3_3m_2803	x
28/02/2018 19:22	1021	CRM1_2802	x
28/02/2018 19:33	1022	CRM2_2802	x
28/02/2018 19:53	1026	S4_C2_PB2_2802	x
28/02/2018 20:09	1024	S4_C2_PB2_2802	x
28/02/2018 20:25	1023	S4_C2_PB1_2802	x
28/02/2018 20:43	38	S4_C2_PB3_2802	x
28/02/2018 20:58	112	S4_C2_PB4_2802	x
28/02/2018 21:13	39	S4_C2_PB5_2802	x
28/02/2018 22:40	1014	S4_C12_26m_2802	x
28/02/2018 22:51	1018	S4_C12_26m_Rep_2802	x
28/02/2018 23:02	1024	S4_C12_3m_2802	x
28/02/2018 23:13	1026	S4_C12_20m_2802	x
28/02/2018 23:29	1027	S4_C12_12m_2803	x
28/02/2018 23:43	1021	S4_C11_PB2_2802	x
28/02/2018 23:55	1019	S4_C11_PB2_2802	x
01/03/2018 00:08	1020	S4_C11_PB1_2802	x
01/03/2018 00:21	1017	S4_C11_PB3_2802	x
01/03/2018 00:33	1004	S4_C11_PB4_2802	x
01/03/2018 00:47	39	S4_C11_PB5_2802	x
01/03/2018 00:59	37	S4_C11_PB6_2802	x
01/03/2018 10:57	1022	test1_0103	x
01/03/2018 11:08	1024	test2_0103	x
01/03/2018 11:21	38	S4_C14_28m_0103	x
01/03/2018 11:35	1020	S4_C14_22m_0103	x
01/03/2018 11:39	1020	S4_C14_22m_01038min	x
01/03/2018 11:52	1021	S4_C14_28m_0103	x
01/03/2018 12:19	1022	S4_C14_12m_0103	x
01/03/2018 12:33	1025	S4_C14_3m_0103	x
01/03/2018 12:06	1024	S4_C15_199m_0301	x
01/03/2018 12:52	1014	S4_C15_40m_0103	x
01/03/2018 13:08	1027	S4_C15_28m_0103(discard)	x
01/03/2018 13:29	1023	S4_C15_15m_0103	x
01/03/2018 13:46	1018	S4_C15_3m_0103	x
01/03/2018 13:59	1014	S4_C13_PB5_0103	x
01/03/2018 14:11	1024	S4_C13_PB2_0103	x
01/03/2018 14:23	1011	S4_C13_PB4_0103	x
01/03/2018 14:35	1017	S4_C13_PB1_0103	x
01/03/2018 14:49	1010	S4_C13_PB6_0103	x
01/03/2018 15:03	1026	S4_C13_PB2_rep_0103	x
01/03/2018 15:17	1021	S4_C13_PB3_0103	x
01/03/2018 17:36	1022	test_dummy	x
01/03/2018 17:52	1014	S4_C19_22m_0103	x
01/03/2018 18:23	1021	S4_C19_3m_0103_ref not recorded	x
01/03/2018 18:06	1019	S4_C19_15m_0103	x
01/03/2018 18:39	1017	S4_C19_22m_0103_rep	x
01/03/2018 18:56	1020	test_dummy	x
01/03/2018 19:09	1019	S4_C18_PB2_0103	x
01/03/2018 19:21	1027	S4_C18_PB5_0103	x
01/03/2018 19:32	1014	S4_C18_PB1_0103	x
01/03/2018 19:43	1022	S4_C18_PB6_0103	x
01/03/2018 19:57	1021	S4_C18_PB3_0103	x
01/03/2018 20:08	1023	S4_C18_PB2_rep_0103	x
01/03/2018 20:23	1028	CRM154	x
01/03/2018 21:59	1022	S5_C3_12m_0103	x
01/03/2018 22:49	1027	S5_C3_12m_0103	x
01/03/2018 23:02	1026	S5_C3_3m_0103	x
01/03/2018 23:13	1025	S5_C3_3m_0103	x
01/03/2018 23:28	1028	S5_C2_PB1_0103	x

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
01/03/2018 23:40	1027	CRM154	x
01/03/2018 23:55	1026	S5_C2_PB2_0103	x
02/03/2018 00:09	1011	S5_C2_PB3_0103	x
02/03/2018 00:24	1017	S5_C2_PB5_0103	x
02/03/2018 00:38	1023	S5_C2_PB6_0103	x
02/03/2018 00:49	1024	S5_C2_PB2_rep_0103	x
02/03/2018 01:03	1010	S5_C2_PB4_0103	x
02/03/2018 11:01	1017	S5_C9_15m_0203	x
02/03/2018 11:16	1014	S5_C9_15m_0203_rep1	x
02/03/2018 11:26	1024	S5_C9_3m_0203	x
02/03/2018 11:37	1018	S5_C9_15m_0203	x
02/03/2018 11:49	1026	S5_C9_3m_0203_rep1	x
02/03/2018 12:05	1027	S5_C8_PB1_0203	x
02/03/2018 12:21	1014	S5_C8_PB1_0203_rep	x
02/03/2018 12:35	1024	S5_C8_PB2_0203	x
02/03/2018 12:49	1023	S5_C8_PB3_0203	x
02/03/2018 13:05	1018	S5_C8_PB4_0203	x
02/03/2018 13:22	1027	S5_C8_PB5_0203	x
02/03/2018 13:34	1017	S5_C8_PB6_0203	x
02/03/2018 13:50	1025	CRM154	x
02/03/2018 14:04	1022	CRM154	x
02/03/2018 17:43	1027	S5_C11_13m_0203	x
02/03/2018 17:54	1025	S5_C11_13m_0203_rep	x
02/03/2018 18:05	1022	S5_C11_3m_0203	x
02/03/2018 18:14	1018	S5_C11_3m_0203_rep	x
02/03/2018 18:26	1024	S5_C10_PB1_0203	x
02/03/2018 18:36	1026	S5_C10_PB2_0203	x
02/03/2018 18:46	1017	S5_C10_PB2_0203_rep	x
02/03/2018 18:56	1018	S5_C10_PB3_0203	x
02/03/2018 19:06	1022	S5_C10_PB4_0203	x
02/03/2018 19:17	1023	S5_C10_PB5_0203	x
02/03/2018 19:26	1026	S5_C10_PB6_0203	x
02/03/2018 19:40	1018	CRM154	x
02/03/2018 22:41	1024	S5_C18_3m_0203	x
02/03/2018 22:43	1024	S5_C18_3m_0203logged twice	x
02/03/2018 22:54	1018	S5_C18_14m_0203	x
02/03/2018 23:07	1017	S5_C18_14m_0203	x
02/03/2018 23:19	1027	S5_C18_3m_0203	x
02/03/2018 23:33	1014	S5_C18_PB1_0203	x
02/03/2018 23:48	1025	S5_C18_PB2_0203	x
03/03/2018 00:00	1024	S5_C18_PB2_0203_rep	x
03/03/2018 00:12	1023	S5_C18_PB3_0203	x
03/03/2018 00:26	1018	S5_C18_PB4_0203	x
03/03/2018 00:38	1026	S5_C18_PB5_0203	x
03/03/2018 00:51	1022	S5_C18_PB6_0203	x
03/03/2018 11:27	1014	S6_C3_23m_0303	x
03/03/2018 11:38	1027	S6_C3_23m_0303_rep	x
03/03/2018 11:48	1025	S6_C3_23m_0303_rep2	x
03/03/2018 11:59	1018	S6_C3_18m_0303	x
03/03/2018 12:10	1023	S6_C3_3m_0303	x
03/03/2018 12:30	1027	S6_C2_PB1_0303	x
03/03/2018 12:41	1024	S6_C2_PB2_0303	x
03/03/2018 12:54	1022	S6_C2_PB3_0303	x
03/03/2018 13:05	1026	S6_C2_PB5_0303	x
03/03/2018 13:15	1027	S6_C2_PB6_0303	x
03/03/2018 13:27	1017	S6_C2_PB4_0303	x
03/03/2018 13:42	1024	S6_C2_PB3_0303_rep	x
03/03/2018 13:55	1023	CRM154	x
03/03/2018 17:39	1017	S6_C5_22m_0303	x
03/03/2018 17:49	1014	S6_C5_22m_0303_rep	x
03/03/2018 17:59	1018	S6_C5_22m_0303_rep	x
03/03/2018 18:08	1027	S6_C5_17m_0303	x
03/03/2018 18:21	1024	S6_C5_3m_0303	x
03/03/2018 18:24	1024	repeat record of previous	x

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
03/03/2018 18:35	1018	S6_C4_PB3_0303	x
03/03/2018 18:44	1014	S6_C4_PB3_0303_rep	x
03/03/2018 18:53	1017	S6_C4_PB1_0303	x
03/03/2018 19:02	1025	S6_C4_PB4_0303	x
03/03/2018 19:22	1027	S6_C4_PB6 _0303	x
03/03/2018 22:38	1025	S6_C11_22m_0303	x
03/03/2018 22:48	1018	S6_C11_22m_0303_rep	x
03/03/2018 22:58	1017	S6_C11_22m_0303_rep	x
03/03/2018 23:07	1014	S6_C11_18m_0303	x
03/03/2018 23:16	1024	S6_C11_3m_0303	x
03/03/2018 23:27	1025	S6_C10_PB1_0303	x
03/03/2018 23:40	1023	S6_C10_PB2_0303	x
03/03/2018 23:52	1027	S6_C10_PB2_0303_rep	x
04/03/2018 00:04	1017	S6_C10_PB3_0303	x
04/03/2018 00:16	1018	S6_C10_PB4_0303	x
04/03/2018 00:28	1014	S6_C10_PB5_0303	x
04/03/2018 00:40	1016	S6_C10_PB6_0303	x
04/03/2018 00:53	1026	CRM154	x
04/03/2018 10:59	1018	S6_C13_21m_0403	x
04/03/2018 11:13	1025	S6_C13_21m_0403_rep1	x
04/03/2018 11:25	1027	S6_C13_21m_0403_rep2	x
04/03/2018 11:35	1024	S6_C13_17m_0403	x
04/03/2018 11:47	1018	S6_C13_5m_0403	x
04/03/2018 11:58	1022	CRM154	x
04/03/2018 12:18	1027	S6_C12_PB2_0403	x
04/03/2018 12:30	1022	S6_C12_PB2_0403_rep	x
04/03/2018 12:40	1024	S6_C12_PB5_0403	x
04/03/2018 12:51	1026	S6_C12_PB1_0403	x
04/03/2018 13:02	1025	S6_C12_PB3_0403	x
04/03/2018 13:14	1018	S6_C12_PB4_0403	x
04/03/2018 13:23	1022	S6_C12_PB6_0403	x
04/03/2018 18:12	1014	S7_C3_28m_0403	x
04/03/2018 18:24	1022	S7_C3_28m_0407_rep	x
04/03/2018 18:34	1018	S7_C3_28m_0407_rep	x
04/03/2018 18:44	1027	S7_C3_23m_0407_rep	x
04/03/2018 18:53	1025	S7_C3_15m_0407_rep	x
04/03/2018 19:03	1024	S7_C4_3m_0407_rep	x
04/03/2018 19:15	1018	S7_C1_PB1_0403	x
04/03/2018 19:24	1014	S7_C1_PB2_0403	x
04/03/2018 19:34	1025	S7_C1_PB2_0403	x
04/03/2018 19:43	1022	S7_C1_PB3_0403	x
04/03/2018 19:53	1027	S7_C1_PB4_0403	x
04/03/2018 20:16	1023	S7_C1_PB6_0403	x
04/03/2018 20:05	1026	S7_C1_PB5_0403	x
04/03/2018 20:33	1022	CRM154	x
04/03/2018 23:08	1022	S7_C12_30m_0403_test	x
04/03/2018 23:17	1023	S7_C12_30m_0403_test2	x
04/03/2018 23:28	1025	S7_C12_30m_0403	x
04/03/2018 23:42	1018	S7_C12_04m_0403	x
05/03/2018 00:02	1023	S7_C11_PB1_0403	x
05/03/2018 00:18	1014	S7_C12_25m_0403	x
05/03/2018 00:30	1024	S7_C12_15m_0403	x
05/03/2018 00:43	1023	S7_C11_PB5_0403	x
05/03/2018 00:50	1023	S7_C11_PB5_0403_rep	x
05/03/2018 01:05	1022	S7_C11_PB2_0403	x
05/03/2018 01:17	1011	S7_C11_PB2_0403_rep	x
05/03/2018 01:29	1025	S7_C11_PB3_0403	x
05/03/2018 01:41	1018	S7_C11_PB4_0404	x
05/03/2018 01:51	1014	S7_C11_PB6_0405	x
05/03/2018 02:03	1027	CRM154	x
05/03/2018 10:58	1024	S7_C14_28m_0503-test1	x
05/03/2018 11:07	1025	S7_C14_28m_0503_test2	x
05/03/2018 11:19	1027	S7_C14_28m_0503	x
05/03/2018 11:28	1014	S7_C14_22m_0503	x

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
05/03/2018 11:38	1023	S7_C14_12m_0503	x
05/03/2018 11:48	1018	S7_C14_3m_0503	x
05/03/2018 11:59	1026	CRM154	x
05/03/2018 12:21	1023	S7_C13_PB1_0503	x
05/03/2018 12:31	1018	S7_C13_PB5,6_0503	x
05/03/2018 13:51	1014	S8_deepCTD_205m_0503	x
05/03/2018 14:02	1018	S8_deepCTD_205m_0503	x
05/03/2018 14:13	1026	S8_deepCTD_205m_0503	x
05/03/2018 14:24	1023	S8_deepCTD_40m_0504	x
05/03/2018 14:35	1025	S8_deepCTD_40m_0504	x
05/03/2018 14:36	1025	S8_repeated record of previous	x
05/03/2018 14:48	1027	S8_deepCTD_15m_0504	x
05/03/2018 15:00	1024	S8_deepCTD_3m_0504	x
05/03/2018 15:13	1018	CRM154	x
05/03/2018 15:25	1026	CRM154	x
05/03/2018 15:37	1022	CRM154	x
05/03/2018 17:39	1022	S7_C17_29m_0503	x
05/03/2018 17:52	1018	S7_C17_29m_0503	x
05/03/2018 18:07	1026	S7_C17_29m_0503	x
05/03/2018 18:21	1017	S7_C17_26m_0503	x
05/03/2018 18:34	1027	S7_C17_15m_0503	x
05/03/2018 18:47	1024	S7_C17_3m_0503	x
05/03/2018 19:01	1016	S7_C16_PB6_0503	x
05/03/2018 19:13	1014	S7_C16_PB5_0503	x
05/03/2018 19:26	1018	S7_C16_PB4_0503	x
05/03/2018 19:40	1025	S7_C16_PB3_0503	x
05/03/2018 19:53	1022	S7_C16_PB3_0503	x
05/03/2018 20:05	1023	S7_C16_PB1_0503	x
05/03/2018 22:52	1014	S9_C2_24m_0503	x
05/03/2018 23:05	1025	S9_C2_24m_0503	x
05/03/2018 23:16	1024	S9_C2_15m_0503	x
05/03/2018 23:28	1023	S9_C2_24m_0503	x
05/03/2018 23:42	1017	S9_C2_5m_0503	x
05/03/2018 23:56	1027	S9_C1_PB1_0504	x
06/03/2018 00:10	1024	S9_C5_PB5_0504	x
06/03/2018 00:19	1014	S9_C5_PB5_0504	x
06/03/2018 00:30	1026	CRM154	x
06/03/2018 00:40	1025	S9_C5_PB6_0504	x
06/03/2018 11:03	1024	S9_C4_22m_0504	x
06/03/2018 11:13	1027	S9_C4_22m_0504_rep	x
06/03/2018 11:22	1014	S9_C4_22m_0504_rep	x
06/03/2018 11:32	1025	S9_C4_15m_0504	x
06/03/2018 11:42	1017	S9_C4_3m_0504	x
06/03/2018 12:09	1025	S9_C3_PB2_0604	x
06/03/2018 12:21	1024	S9_C3_PB2_0604	x
06/03/2018 12:31	1014	S9_C3_PB5_0604	x
06/03/2018 12:43	1023	S9_C3_PB1_0604	x
06/03/2018 12:55	1017	S9_C3_PB6_0604	x
06/03/2018 13:07	1027	S9_C3_PB3_0604	x
06/03/2018 13:21	1026	S9_C3_PB4_0604	x
06/03/2018 13:34	1016	CRM154	x
06/03/2018 17:37	1026	S9_C11_deep_0603	x
06/03/2018 17:52	1023	S9_C11_deep_0603	x
06/03/2018 18:04	1025	S9_C11_middle_0603	x
06/03/2018 18:17	1026	S9_C11_surface_0603	x
06/03/2018 18:31	1014	S9_C11_deep_0603	x
06/03/2018 18:46	1023	S9_C10_PB2_0603	x
06/03/2018 19:00	1014	S9_C10_PB6_0603	x
06/03/2018 19:12	1025	S9_C10_PB2_0603	x
06/03/2018 19:25	1024	S9_C10_PB3_0603	x
06/03/2018 19:39	1026	S9_C10_PB4_0603	x
06/03/2018 19:53	1027	S9_C10_PB1_0603	x
06/03/2018 20:06	1017	S9_C10_PB5_0603	x
06/03/2018 20:17	1011	CRM154	x

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
06/03/2018 22:51	1023	S10_C3_27m_0604	x
06/03/2018 23:04	1024	S10_C3_27m_0604	x
06/03/2018 23:15	1025	S10_C3_27m_0604	x
06/03/2018 23:28	1027	S10_C3_3m_0604	x
06/03/2018 23:40	1026	S10_C3_20m_0604	x
06/03/2018 23:54	1023	S10_C2_PB2_0603	x
07/03/2018 00:06	1018	S10_C2_PB2_0603	x
07/03/2018 00:18	1024	S10_C2_PB5_0603	x
07/03/2018 00:32	1016	S10_C2_PB4_0604	x
07/03/2018 00:48	1017	S10_C2_PB3_0604	x
07/03/2018 01:05	1014	S10_C2_PB1_0604	x
07/03/2018 01:18	1011	S10_C2_PB6_0604	x
07/03/2018 01:34	1022	CRM154	x
07/03/2018 01:53	1016	CRM154	x
07/03/2018 11:07	1014	S10_C5_28m_0703	x
07/03/2018 11:22	1027	S10_C5_28m_0703	x
07/03/2018 11:34	1023	S10_C5_28m_0703	x
07/03/2018 11:45	1014	S10_C5_22m_0703	x
07/03/2018 11:56	1026	S10_C5_15m_0703	x
07/03/2018 12:07	1025	S10_C5_2m_0703	x
07/03/2018 12:19	1023	S10_C5_PB2_0703	x
07/03/2018 12:31	1024	S10_C5_PB3_0703	x
07/03/2018 12:45	1026	S10_C5_PB6_0703	x
07/03/2018 12:59	1027	S10_C5_PB3_0703	x
07/03/2018 13:11	1017	S10_C5_PB4_0703	x
07/03/2018 13:25	1025	S10_C5_PB5_0703	x
07/03/2018 17:31	1025	S10_C11_25m_0703	x
07/03/2018 17:45	1023	S10_C11_25m_0703	x
07/03/2018 17:57	1027	S10_C11_25m_0703	x
07/03/2018 18:11	1017	S10_C11_15m_0703	x
07/03/2018 18:25	1026	S10_C11_3m_0703	x
07/03/2018 18:39	1011	CRM154	x
07/03/2018 18:53	1022	CRM154	x
07/03/2018 19:23	1027	S10_C13_28m_0703	x
07/03/2018 19:38	1025	S10_C13_28m_0703	x
07/03/2018 19:51	1014	S10_C13_28m_0703	x
07/03/2018 20:04	1017	S10_C13_15m_0703	x
07/03/2018 20:18	1022	S10_C13_3m_0703	x
07/03/2018 20:29	1024	S10_C12_PB2_0703	x
07/03/2018 20:43	1023	S10_C12_PB1_0703	x
07/03/2018 20:56	1026	S10_C12_PB3_0703	x
07/03/2018 21:10	1017	S10_C12_PB6_0703	x
07/03/2018 21:22	1014	S10_C12_PB5_0703	x
07/03/2018 21:31	1025	S10_C12_PB2_0703	x
07/03/2018 21:40	1027	S10_C12_PB4_0703	x
07/03/2018 21:50	1014	CRM154	x
08/03/2018 11:17	1014	S11_C3_23m_0703	x
08/03/2018 11:27	1026	S11_C3_23m_0703_rep	x
08/03/2018 11:37	1024	S11_C3_23m_0703_rep	x
08/03/2018 11:49	1025	S11_C3_13m_0703	x
08/03/2018 11:58	1027	S11_C3_3m_0703	x
08/03/2018 12:09	1017	S11_C1_PB1_0803	x
08/03/2018 12:18	1014	S11_C1_PB2_0803	x
08/03/2018 12:28	1023	S11_C1_PB2_0803	x
08/03/2018 12:44	1024	S11_C1_PB3_0803	x
08/03/2018 12:59	1026	S11_C1_PB4_0803	x
08/03/2018 13:13	1025	S11_C1_PB5_0803	x
08/03/2018 13:27	1017	S11_C1_PB6_0803	x
08/03/2018 17:38	1026	S11_C9_18m_0803	x
08/03/2018 17:54	1024	S11_C9_18m_0803	x
08/03/2018 18:10	1023	S11_C9_15m_0803	x
08/03/2018 18:24	1027	S11_C9_03m_0803	x
08/03/2018 18:36	1025	S11_C9_18m_0803	x
08/03/2018 18:52	1017	S11_C8_PB2_0803	x

Timestamp (UTC)	Sample ID	Stn_Cst_depth_date	TA
08/03/2018 19:08	1014	S11_C8_PB3_0803	x
08/03/2018 19:19	1027	S11_C8_PB6_0803	x
08/03/2018 19:31	1026	S11_C8_PB3_0803	x
08/03/2018 19:44	1023	S11_C8_PB5_0803	x
08/03/2018 19:58	1024	S11_C8_PB4_0803	x
08/03/2018 20:10	1011	CRM154	x
08/03/2018 22:33	1025	S11_11_24m_0803	x
08/03/2018 22:43	1027	S11_11_24m_0803	x
08/03/2018 22:54	1024	S11_11_24m_0803	x
08/03/2018 23:07	1023	S11_11_5m_0803	x
08/03/2018 23:16	1017	S11_11_14m_0803	x
08/03/2018 23:28	1026	S11_C10_PB1_0803	x
08/03/2018 23:40	1024	S11_C10_PB2_0803	x
08/03/2018 23:50	1025	S11_C10_PB3_0803	x
09/03/2018 00:02	1023	S11_C10_PB5_0803	x
09/03/2018 00:14	1027	S11_C10_PB4_0803	x
09/03/2018 00:26	1017	S11_C10_PB6_0803	x
09/03/2018 00:39	1014	S11_C10_PB2_0803	x
09/03/2018 00:51	1022	CRM154	x
09/03/2018 01:05	1016	CRM154	x
09/03/2018 11:01	1024	S11_13_24m_0903	x
09/03/2018 11:10	1025	S11_13_24m_0903	x
09/03/2018 11:19	1026	S11_13_24m_0903	x
09/03/2018 11:29	1023	S11_13_20m_0903	x
09/03/2018 11:40	1014	S11_13_5m_0903	x
09/03/2018 12:02	1024	S11_C12_PB2_0903	x
09/03/2018 12:15	1023	S11_C12_PB2_0903	x
09/03/2018 12:29	1025	S11_C12_PB1_0903	x
09/03/2018 12:43	1026	S11_C12_PB3_0903	x
09/03/2018 12:54	1027	S11_C12_PB4_0903	x
09/03/2018 12:57	1027	S11_C12_PB4_0903re	x
09/03/2018 13:06	1017	S11_C12_PB6_0903	x
09/03/2018 13:18	1024	S11_C12_PB5_0903	x
09/03/2018 13:31	1025	boxcore_S13_C01_topwater_0903	x
09/03/2018 13:43	1026	boxcore_S13_C01_topwater_0903_rep	x
09/03/2018 14:16	1025	boxcore_S13_C02_mixedporewater_0903	x
09/03/2018 18:01	1023	S14_C01_198m_0903	x
09/03/2018 18:14	1014	S14_C01_198m_0903_rep	x
09/03/2018 18:31	1017	S14_C01_85m_0903	x
09/03/2018 18:44	1024	S14_C01_40m_0903	x
09/03/2018 18:57	1025	S14_C01_15m_0903	x
09/03/2018 19:09	1026	S14_C01_3m_0903	x
09/03/2018 19:30	1016	CRM154	x
10/03/2018 12:08	1024	S15_C01_201m_1003	x
10/03/2018 12:16	1017	S15_C01_201m_1003_rep	x
10/03/2018 12:26	1025	S15_C01_201m_1003_rep	x
10/03/2018 12:39	1027	S15_C01_3m_1003	x
10/03/2018 12:53	1026	S15_C01_85m_1003	x
10/03/2018 13:04	1023	S15_C01_40m_1003	x