

CRUISE REPORT 64AWVB-103

PHYVIR-1



Ship : RV Anna Weber-van Bosse
Cruise Name : PHYVR-1
Cruise Number : 64PE103
Cruise Period : 1-30 May 2026
Port of departure : Mindelo, Cape Verde
Port of return : Reykjavik, Iceland

Responsible Institute : NIOZ Royal Netherlands Institute for Sea Research, Landsdiep 4, 1797 SZ 't Horntje, Texel, The Netherlands

Chief Scientist : Prof. Dr. CPD Brussaard, Dept. Marine Microbiology and Biogeochemistry, NIOZ & Univ. Amsterdam

Acknowledgements. We like to express special thanks to Captain Len Liemer and the crew of the R/V Anna Weber-van Bosse and the onshore and onboard technical assistance of the National Marine Facilities (NMF). This work is part of the project "Resolving marine phytoplankton – virus interactions from local to global scales" (PHYVIR) with file number OCENW.XL.23.095 of the research programme NWO-XL (formerly OC ENW-GROOT), which is (partly) financed by the Dutch Research Council (NWO) under the grant <https://doi.org/10.61686/AFOMM75533>.

CONTENT

Project Introduction and objectives	page 3
Scientific activities (per variable)	page 9
Appendixes	page 21

Project Introduction and Objectives

Abstract. Despite their minute size (in size from less than a micrometer up to a millimeter), marine single-celled algae (i.e., phytoplankton) are vital for marine ecosystem productivity and play a key role in global carbon and nutrient cycling. However, like all life on Earth, phytoplankton are susceptible to viral infections. Viral-induced mortality (i.e., viral lysis) of phytoplankton cells redirects the flow of energy and elements with expected far-reaching consequences for ocean ecosystem structure and functioning. Still, phytoplankton viral lysis rates are poorly constrained, to what extent viral infections affect phytoplankton host stoichiometry and functional traits as well as how this is influenced by (global climate change-induced) environmental stressors are understudied, and a comprehensive understanding of the geographical distribution of virus and phytoplankton host traits is lacking. Moreover, virus-host dynamics in global ecosystem and biogeochemical models is generally poorly addressed. Only by integration of complementary expertise, ranging from viral ecology, phytoplankton ecophysiology, molecular biology, and biological oceanography to large scale bioinformatic data analysis and mathematical modelling, can we effectively bridge the knowledge gaps that limit our current understanding and predictive power of how viral infections impact phytoplankton communities and associated biogeochemical fluxes. The PHYVIR project aims to elucidate marine phytoplankton-virus interactions from local to global scales. It focuses on five interlinked objectives, related to the above-mentioned knowledge gaps. The research spans from genetic analysis and controlled experiments to oceanic expeditions and global ecosystem models.

The current scientific expedition or cruise, duration 1 month, covers the spring situation in the North Atlantic Ocean, from Cape Verde to Iceland. This way we will sample different oceanic provinces that vary in their environmental characteristics and phytoplankton growth, community composition, and the share of their loss factors (grazing or predation, sinking out of the sunlit surface layer of the ocean, and viral lysis).

Scientific background and research aim. Earth's climate is presently undergoing unprecedented warming as result of anthropogenic greenhouse gas emissions. This impacts all life on our planet and has far-reaching ramifications for food security, displacement of populations, health risks, and the loss of biodiversity. A large portion of the global anthropogenic carbon dioxide (CO₂) emission is absorbed by the oceans, collectively covering over 70% of the Earth's surface. The utilization of CO₂ by unicellular algae (referred to as phytoplankton), plays an important role in the marine carbon cycle. Phytoplankton are responsible for generating roughly 50% of the world's oxygen and form the base of the marine pelagic food web, facilitating the transfer of carbon and nutrients to higher trophic levels. The sinking of deceased phytoplankton cells, along with the transport of algal remains in zooplankton excrements, aids in carbon storage in the deep sea (i.e., the biological carbon pump). Phytoplankton are, however, also susceptible to viral induced mortality. Upon lytic virus infection, the host cell undergoes lysis when releasing progeny viruses. This process initiates microbial decomposition, thereby diverting particulate biomass away from higher trophic levels. Consequently, viral activity is expected to markedly impact on the efficiency of the marine carbon cycle. Recent studies highlight that viral lysis is indeed a major loss factor for marine phytoplankton, comparable to grazing induced phytoplankton losses. Still, little is known about the actual impact of viral lysis on the oceanic carbon cycle.

Viruses are obligate parasites and fully dependent on their host's cell metabolism for their reproduction. Changes in phytoplankton host physiology and cellular elemental composition (i.e., stoichiometry) can affect virus proliferation and infectivity. At the same time, viral infection causes metabolic alterations and redirects resource allocation. To what degree viruses alter host cellular composition and associated functional traits is still an important open question. Viral-induced shifts in phytoplankton host carbon and nutrient stoichiometry may have a profound influence on oceanic ecosystem functioning. After all, phytoplankton elemental composition serves as a critical factor in ocean biogeochemistry. Marine phytoplankton growth and

stoichiometry are largely controlled by nutrient availability, which is expected to change with global warming. Warming will strengthen thermal stratification in the upper water column, reducing the supply of inorganic nutrients to the sunlit surface ocean. This will enforce nutrient limitations for phytoplankton communities and potentially cause significant shifts in species and element composition. The consequences of these shifts on phytoplankton-virus interactions and how viral infections, in turn, affect phytoplankton growth and stoichiometry is thus far understudied.

The growing recognition that viruses play a pivotal role in marine phytoplankton population and biogeochemical dynamics underscores the critical importance of studying phytoplankton-virus interactions and their implications for ecosystem functioning. Notwithstanding its significance, viral lysis is still most often overlooked in ecosystem models exploring phytoplankton processes and biogeochemical cycling, only implicitly included, or erroneously assumed to affect all phytoplankton groups equally. Modeling phytoplankton-virus interactions is receiving more attention lately, but complex ecosystem models have yet to incorporate the dynamics of phytoplankton-virus interactions.

By considering the interplay between viral lysis and phytoplankton dynamics, we gain a more comprehensive understanding of the marine carbon cycle and its broader implications for Earth's ecosystems. A crucial step forward involves identifying the functional attributes of viruses and their infected hosts for key phytoplankton groups and the specific viral lysis rates. Additionally, understanding how changing environmental conditions, such as nutrient limitation and warming, influence these host-virus interactions is needed.

The larger PHYVIR project consists of 5 PhD and 2 Postdoc positions and is led by Prof. Corina Brussaard (NIOZ, coordinator), Prof. Jef Huisman (University of Amsterdam), Prof. Dedmer vd Waal (NIOO), Dr. Susanne Wilken (University of Amsterdam) and Dr. Thomas Hackl (University Groningen). Besides, we have interested collaborators in joining the PHYVIR project.

As part of the PHYVIR project, we combine during the spring PHYVIR-1 cruise different approaches, e.g., viral lysis rate measurements, cell sorting, genetic trait-based approaches and phytoplankton cellular composition along a latitudinal environmental gradient in the North Atlantic Ocean. Additionally, we perform onboard incubations to decipher the algal growth limiting nutrients and their effect on phytoplankton host-virus interactions.

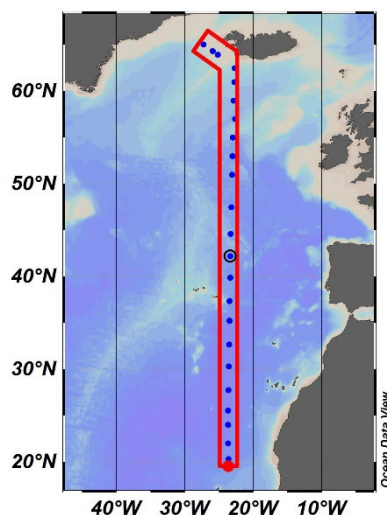


Figure: Map indicating the cruise track of PHYVIR-1

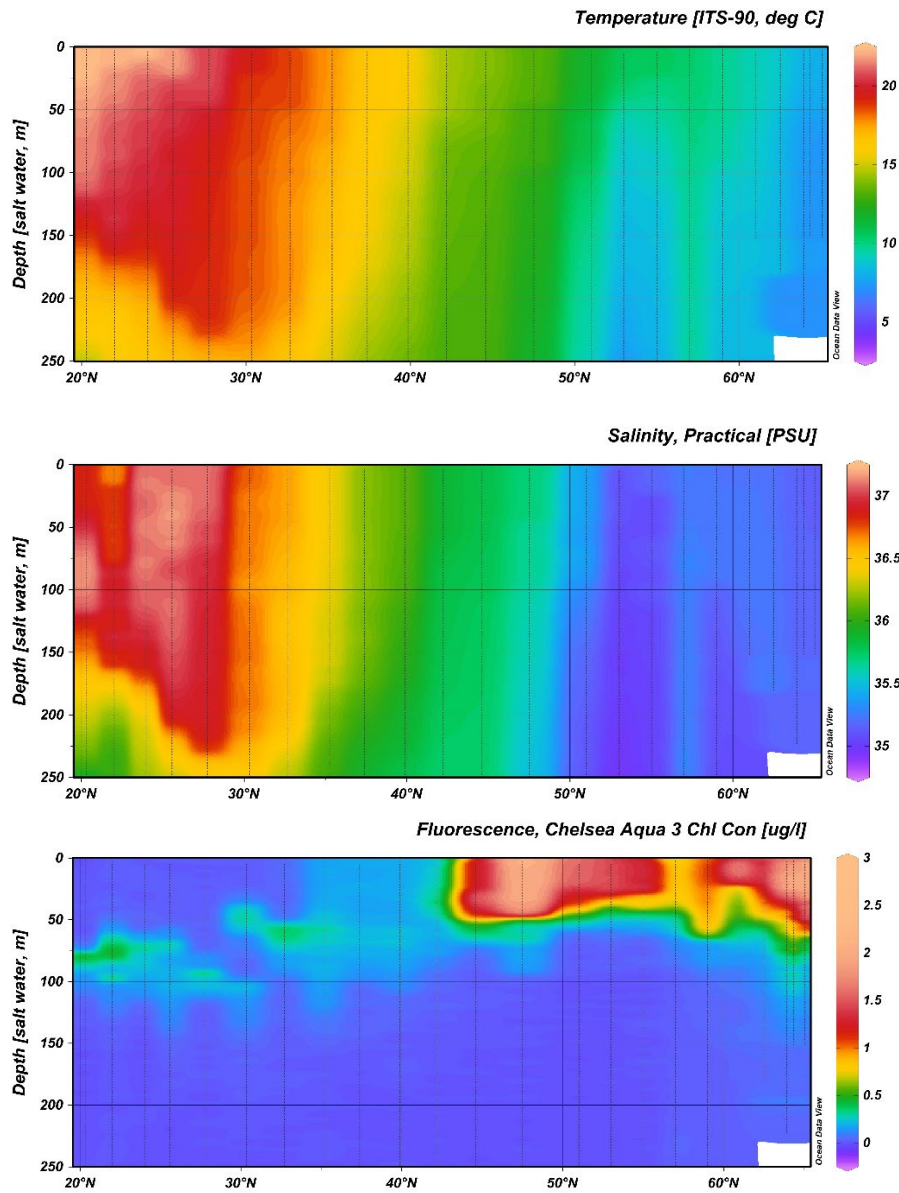


Figure: ODV images of tempature, salinity and phytoplankton Chla autofluorescence over the top 200 m along the cruise transect from Cape Verde to Iceland.

Table 1. Station list PHYVIR-1 cruise.

Station	Day	Month	Year	Latitude (N)	longitude (W)
1	3	5	2026	20.31	23.64
2	3	5	2026	21	23.66
3	4	5	2026	22	23.67
4	5	5	2026	24	23.67
5	7	5	2026	25.56	23.7
6	8	5	2026	26.69	23.64
7	8	5	2026	27.74	23.63
8	9	5	2026	30.33	23.6
9	10	5	2026	32.69	23.55
10	11	5	2026	35.24	23.5
11	13	5	2026	37.38	23.47
12	14	5	2026	39.88	23.38
13	15	5	2026	42.2	23.34
14	17	5	2026	44.61	23.41
15	18	5	2026	47	23.23
16	18	5	2026	47.49	23.22
17	19	5	2026	48.98	22.55
18	20	5	2026	51	23.12
19	21	5	2026	53	23.06
20	22	5	2026	55	23
20	23	5	2026	55.26	22.9
21	24	5	2026	57	22.69
22	25	5	2026	59.00	22.87
23	26	5	2026	61.00	22.79
24	27	5	2026	62.50	22.73
25	28	5	2026	63.93	25.21
26	28	5	2026	64.34	25.92
27	29	5	2026	65.06	27.26

Table 2. Crew listing & Scientific Participants.

Function	Name		Function	Name
Master	Len Bliemer		Chief Scientist	Corina Brussaard
Ch. Officer	Meile Bootsma		Scientist	Susanne Wilken
2nd Off.	Ravi Blok		Scientist	Dedmer vd Waal
Ch. Eng.	Ivan Cuk		Scientist	Guy Schleyer
2nd Eng.	Amber Linssen		Scientist	Yael Artzy-Randrup
3rd Eng.	Leon Vranjes		Postdoc	Hisham Shaikh
Bosun	Martin de Vries		Postdoc	Jasmin Stimple
AB 1	Peter van Maurik		Lab Technician	Anna Noordeloos
AB 2	Jacco Heneweer		Lab Technician	Sven Pont
AB 3	Robert Janssens		NMF Tech.	Leon Wuis
AB 4	Lucian Matei		PhD-student	Li Zhao
Cook	Alex Ruhland		PhD-student	Xiaonan Cai
Steward 1	Aleks Popov		PhD-student	Naomi Bakken
Steward 2	Vitalijs Maksimovs		PhD-student	Melle Versluis
			PhD-student	Lea Simon
			PhD-student	Dorien Hoexum
			MSc-student	Amelie Wittig
			MSc-student	Karlein van Bijssum
			MSc-student	Liam Mills
			MSc-student	Thomas Cupido
			MSc-student	Eva Hekma
			MSc-student	Emma Hynes
			Lab Tech. Intern	Jitske Luttikholt

CTD sampling: Marine primary productivity exerts a key control on global climate. Trace metal availability limits primary productivity in many ocean regions, influencing ecosystem dynamics and (anthropogenic) carbon sequestration. Specifically, Fe, Mn, Ni, Cu, Zn and Co, are key micronutrients for marine organisms. Notably the availability of these bioessential trace metals, and especially Fe can limit phytoplankton productivity and control the microbial community composition^{1,2}. This makes it critical to sample trace metal clean during our cruise. We used the ultraclean CTD (UCC) for trace metal clean sampling. This sampling system was developed at NIOZ in 2005 allowing efficient sampling of seawater under ultraclean conditions³. It consists of a rectangular-shaped all-titanium frame which is fitted with a CTD system in titanium housing and 24 pristine samplers (18L each and manufactured by NMF-NIOZ)⁴. After recovery, the complete system is immediately placed inside a clean-air laboratory unit for sub-sampling and remains there until its next deployment. The temperature inside the container was maintained to match the in-situ water temperature. Deployment of the frame was from a non-metallic hoisting Kevlar cable, again to ensure contamination free sampling. Besides an SBE-9+, there were an oxygen sensor, an altimeter and a combined fluorescence and turbidity sensor on the system. When on board ship, the sampler frame was stored and sampled in its own 20-foot Clean Container. The system was deployed at 16 stations, with two casts at each station. At 4 stations, the system was deployed an additional two times to collect water for small- and large-volume microcosm

experiments. Due to damage to the cable, the system could not be deployed anymore after station 20.

Additionally, a standard CTD (Seabird 9+ and auxiliary sensors) with carousel containing 24 polypropylene bottles (11.2 L each and manufactured by NMF-NIOZ). Auxiliary sensors were Oxygen (Seabird model 43), Fluorescence (Chelsea Aquatracka Mk III and WET Labs FLNTURTD) and OBS (Sea-Point turbidimeter, light transmission (Wet-Labs), and PAR (Sea-Bird PAR-LIN). Additionally, data from the ship's continuous Aquaflow system; detecting temperature, salinity, optical back scatter, and fluorescence (WET Labs FLNTURT) from a depth of 3-5 m.

In total 24 stations were sampled, 4 drifting deployed and recovered after 24h, and one longer-term buoy recovered (collaborative action), and 5 Argos floats deployed (collaborative action). For information about the different scientific activities see the following section.



Photo by Thomas Cupido

¹Finkel et al. (2010) *Phytoplankton in a changing world: cell size and elemental stoichiometry*. *J Plankton Res* 32:119–137. ² Schoffman et al. (2016) *Iron–Nutrient Interactions within Phytoplankton*. *Front Plant Sci* 7, 1223. . ³ De Baar et al. (2008) *Titan: A new facility for ultraclean sampling of trace elements and isotopes in the deep oceans in the international Geotraces program*. *Mar Chem* 111:4–21. ⁴Rijkenberg et al. (2015) “PRISTINE”, a new high-volume sampler for ultraclean sampling of trace metals and isotopes. *Mar Chem* 177, Part 3:501–509.

Scientific activities (per variable):

Macronutrient sampling

- Dedmer vd Waal –

Samples for dissolved inorganic phosphate, NO_x (=nitrate+nitrite), nitrite, and ammonium were taken from each CTD cast and for the microcosm incubations. Samples were collected in polyethylene sample bottles after three times rinsing and stored dark and cool at -20°C until analysis. Samples for silicate were filtered the same way but stored frozen at 4°C. The different nutrients will be analysed colorimetrically using a BRAN&LUEBBE QUAATRO autoanalyzer in the Nutrient Service lab at the NIOZ.

Dissolved iron

-Jasmin Stimpfle, Thomas Cupido, Melle Versluis, Yael Artzy-Randrup-
Not on board: Rob Middag

Samples for dissolved iron concentrations (Table 1) were filtered over a 0.2 µm PES Acropak filter under 0.5 bar inline filtered nitrogen pressure directly from the pristine polypropylene samples. For dissolved metals, samples were collected in acid cleaned 125 ml LDPE bottles (Nalgene). All samples were acidified to ~1.8 pH immediately after filtration. using ultra clean HCL to 0.024 M (Normatom Ultrapure, VWR) in a clean flow bench and double bagged in LDPE resealable bags. Samples will be transported back to the home lab for later analysis.

Flow cytometry CTDs

- Anna Noordeloos, Corina Brussaard –

A flow cytometer is a technology used to analyze, identify, and physically separate individual cells from a mixed liquid suspension based on their physical and chemical properties. Cells flow in a single line surrounded by a fluid stream and pass several laser beams. In our case the beam of the violet, blue, yellow-green and red laser. This causes light scatter (indicating size and internal complexity) and triggers in the phytoplankton found in the water samples fluorescent pigments (the main pigment Chlorophyll-a and in some cases also phycoerythrin).

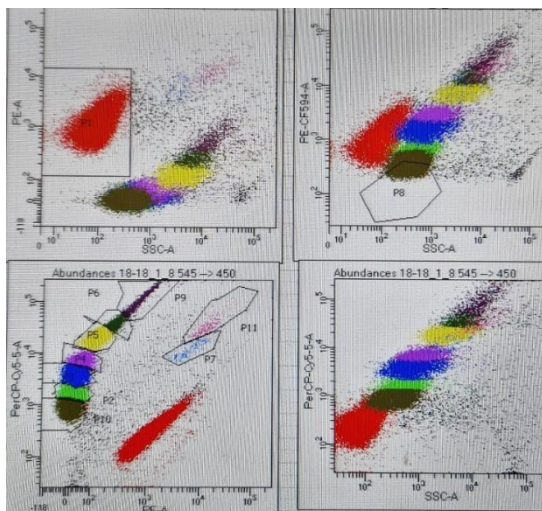


Figure: Flow cytometric image displaying different phytoplankton populations. Plotted: red Chlorophyll autofluorescence against the side scatter (SSC) in the upper image; orange phycoerythrin autofluorescence against the SSC in the upper left image; right lower image shows far-red against SSC and left lower image far-red vs orange.

For all stations samples were taken for flow cytometric detection and enumeration of phytoplankton, bacteria and viruses. Phytoplankton samples were measured fresh using flow cytometry (fixed samples were also taken), to prevent potential loss of cells due to fixing. Single-cell analysis of the phytoplankton community was performed using benchtop Becton Dickinson Celesta flow cytometer. The instrument is equipped with a 488 nm excitation laser, which have an emission in the green, orange, and red. In addition, forward and side (90°) light scatter are collected. Different phytoplankton populations were discriminated using red chlorophyll autofluorescence and side scatter. Furthermore, orange autofluorescence was used to discriminate for example phycoerythrin containing algae, e.g., *Synechococcus* cyanobacteria and chryptophytes.

Fractionation of the natural community was performed 6 times over the cruise track, using 12, 10, 8, 5, 3, 2, 1, 0.8, 0.6 and 0.4 µm pore-size PC filters. Additionally, samples from the modified dilutions assays were analysed (and fixed).

Using a cell-sorter flow cytometer Aurora CS, we sorted in dedicated flow cabinet and lab-container for most stations several distinct phytoplankton populations in 30 kDa seawater from the same or station earlier. Sheath fluid was combusted NaCl (1.5%) in ultrapure water and UV-treated. Based on the cytograms of natural pigment-based autofluorescence and side scatter, phytoplankton populations were selected (gated), after which the sorter physically isolates the specific target cells by applying an electrical charge to the droplets containing them and deflecting them into dedicated small, sterile tubes. Once the sort finished, these samples were directly frozen at -80°C. Several controls were taken along. Samples will be analysed for omics (metagenomics and metatranscriptomics) to narrow down the identification of viruses infecting the sorted phytoplankton cells and their taxonomic identification.

To allow for a similar approach for the larger-sized phytoplankton (not able for the flow cytometer), we concentrated by sieving using different pore-size sieves (5, 15, 20, 50, 100, 200 µm). Samples were pelleted by centrifugation and stored at -80°C.

Besides fresh measurements and sorting, duplicate samples (3.5 mL) for phytoplankton were fixed with glutaraldehyde & pluronic (final concentration 0.25 & 0.1%, respectively), formaldehyde & hexamine (final concentration 0.5% & 0.3%, resp.). Samples were incubated for 30 min at 4°C after which the samples were flash frozen and stored at -80°C.

Samples for bacterial and viral abundances were fixed with glutaraldehyde (25% EM-grade) to a final concentration of 0.5% for 15-30 min at 4°C, after which the samples were flash frozen and stored at -80°C. Fixed samples will be analyzed in the home laboratory.

Phytoplankton pigment composition

- Dedmer vd Waal -

Phytoplankton species community composition will be determined by pigment analysis from 1-2 depths at every station (typically 05.30 AM), i.e. mixed layer and deep chlorophyll maximum if present. After analysis by HPLC, Chlorophyll *a* concentration will be used as an indicator for algal biomass. Samples (protected against the light) were fractionated, i.e., total or whole water, fraction <20 µm and >3 (GF/D, nominal pore size 2.7 µm), and filtrate on GF75 (0.3 µm), filtered at 0.2 millibar vacuum (for a maximum of 30 min). Filters were packed in Al-foil; after which they were snap frozen in liquid nitrogen and stored at -80°C.

Photosynthetic rate and efficiency with Fast Repetition Rate Fluorometry (FRRF)

- Dedmer Van de Waal -

Samples (1L) were taken from the UCC/CTD at multiple (2-6) depths at all stations, using dark bottles and stored dark and at sea surface temperature (SST) until analyses. For analysis, a sample was transferred in a darkened and temperature controlled 1L glass container and gently mixed with a magnetic stirrer. Fluorescence measurements were performed with a FastOcean Fast Repetition Rate fluorometer (FRRf) with the Act2-based laboratory system (Chelsea Technologies Group Ltd, UK). The system was equipped with a sampling pump and temperature-controlled water jacket that was adjusted to SST using a Lauda cooler. The measuring vial was flushed prior to each measurement by running the pump for 20 s. During measurements the sample in the measuring vial was mixed by a short (200 ms) pump burst every 10 s. The pumps for the temperature-controlled chamber ran continuously during measurements. After measurements, the sampling tube was flushed with mQ, dried, and filled with a 1% sodium hypochlorite solution for at least 2 mins. The tube was subsequently flushed three times with mQ. The FRRF uses fluorescence signals to infer quantum yield of photosystem II (PSII), the maximum photosynthetic rate and efficiency. First, an induction curve was made on dark adapted samples (>30 mins) that were exposed to 100 excitation flashes with flash pitch of 2 μ s followed by 40 relaxation flashes with a pitch of 60 μ s. For excitation flashes, a blue LED was used at 450 nm, and the strength was automatically adjusted to the phytoplankton concentration. This produced F_0 and F_m . Secondly, the induction curve was repeated for the Fluorescence Light Curve (FLC) based on 12 light intensities automatically chosen by the Act2Run software depending on the phytoplankton concentration. To correct for the background fluorescence, each day a blank sample was measured on a 0.2 μ m filtered seawater sample, and the fluorescence signal was subtracted from the sample fluorescence. The data from the FLC was used to derive maximum photosynthetic rate (P_m), photosynthetic efficiency (α), the light compensation point (E_k), and an inhibition term when applicable (β), using the R package *piCurve* (see figure below). The quantum yield (Y) of photosystem II (PSII), was calculated as $(F_m - F_0)/F_m$.

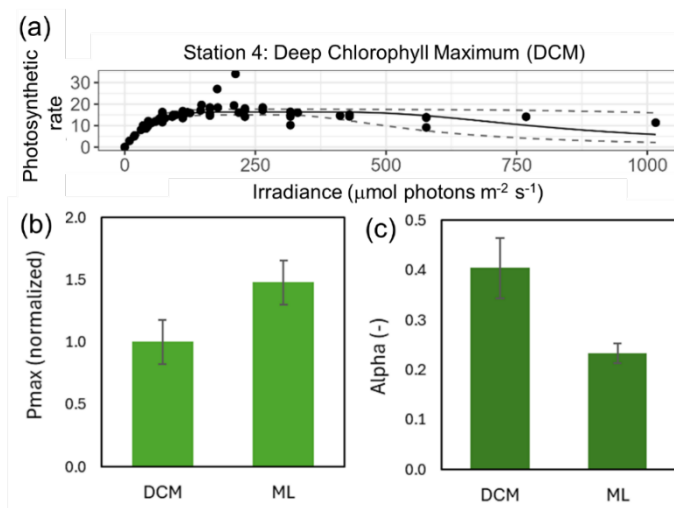


Figure: Overview of FRRF results of the DCM at station 4 with (a) typical FLC, (b) P_m normalized to DCM, and (c) α . Results show higher photosynthetic efficiency of the phytoplankton community at DCM as compared to the mixed layer. In contrast, the maximum photosynthetic rate is lower at the DCM as compared to the mixed layer. Data points in (a) denote outcomes of individual induction curves, the solid line shows the fit and the dashed lines the 95% confidence interval. Panels (b) and (c) show mean and standard deviation ($n=3$).

Primary and secondary production

- Sven Pont and Dedmer vd Waal –

Net Primary Production. Net primary production (NPP) measures the net amount of radiolabeled inorganic carbon uptake by phytoplankton. Sixty milliliter seawater samples in culture flasks were spiked with 0.3 mCi/mL ^{14}C - NaHCO_3 and incubated for 24h at in-situ light and temperature conditions. Per depth, 3 replicates and 1 dark incubation were taken along. This NPP measurement was performed for 20 stations. For stations 17, 21, 23 and 25, the standard CTD was used and for the other stations, the UCC. For station 3 – 13 both DCM and mixed layer were tested. From station 14 – 25 only the mixed layer.

Photosynthesis-Irradiance curves. With the photosynthesis-irradiance curves (PI curves) the change in photosynthetic rate with increased light intensity was tested. Again 60 mL seawater samples were incubated in culture flasks at in situ temperature but now for 2h at increasing light intensity while spiked with 0.2mCi/mL ^{14}C - NaHCO_3 . Per depth, 6 culture flasks were used with 0%, 16.8%, 34.1%, 51.8%, 71.5%, and 100% transmission. PI curves were made at 15 stations. Only for station 17 the standard CTD was used (for the other stations the UCC). For station 4-13 DCM and mixed layer were both tested, and for stations 14 – 20 only mixed layer.

Bacterial production. With the bacterial heterotrophic production (BP) the production rate of new prokaryotic biomass can be calculated. Five milliliter seawater samples were incubated inside a 50 mL Greiner tube for 2 h in the dark at in-situ temperature while spiked with 10nM L-[3,4,5- ^3H (N)]-Leucine (final concentration). Per depth, 4 replicates and 2 dark incubations were tested. BP was performed at 11 stations. For station 21, 22 the standard CTD was used and for all other stations the UCC. For station 3-14 both DCM and mixed layer were tested and station 18-23 only the mixed layer.

Viral Metagenomics

- Lea Simon and Karein van Bijssum -

To be able to study the interactions between viruses and phytoplankton, knowing who is present in the viral community is key. Different viruses display different traits. Therefore, the viral players need to be identified to make inferences and later predictions about how these systems operate now and how they might change in the future. We used 20 L water samples from either the deep chlorophyll maximum or the mixed layer for metagenomics. Serial size fractionation was carried out to alleviate issues around sequencing depth in downstream analyses. All seawater samples were filtered through a 200 μm mesh directly from the UCC to already remove DNA stemming from the larger-sized grazing community. The remaining size fractions were as follows: 200-5, 5-1.2, 1.2-0.45, 0.45-0.22 and <0.22 μm . The 5 and 1.2 μm filters were treated as pre-filters to filter out larger phytoplankton which were higher in abundance in the northern part of the transect. The remaining fractions were of interest for viral metagenomics. The <0.22 size fraction (viral fraction) was used to perform the iron chloride flocculation method to isolate viruses from water. In short, the 0.22 μm filtrate (20 L aimed) was treated with 2 mL of 10 g/L iron chloride stock solution for 1 h, after which the iron flocs were filtered onto a 0.45 μm filter (see figure).

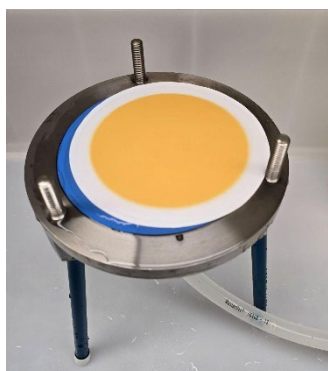


Figure. Iron chloride flocculation filter (0.45 μm) after filtration.

Filtration efficiency samples for viral and bacterial abundance were taken from the different fractions (>5 , $1.2 - 0.45$ and <0.22 μm), and the iron flocculation filtrate. Efficiency samples were fixed with 10% v/v glutaraldehyde (25% EM grade), incubated in the dark at 4°C for 15 min, flash frozen in liquid nitrogen, and stored -80°C . The 5 and 1.2 μm pre-filters were wrapped in aluminum foil and stored at -80°C . The 1.2 and 0.22 μm filters were placed in 50 mL falcon tubes and stored at -80°C . The iron flocculation filters were placed in 50 mL falcon tubes, with a little bit of liquid (100-200 μL filtrate), closed off with parafilm (and the lid on top), wrapped with aluminum foil to keep the light out, and stored at 4°C .

At station 4, 10, 18, 22, a replicate of the DCM (or mixed layer from station 13 onwards) was taken. For the size fractionation of this replicate, the 0.45 μm was excluded. This was done to test whether the addition of the 0.45 μm in the size fractionation aids in the sequencing detection of rarer, larger viruses.

Additionally, the iron flocculation filters for these replicates were stored in a 0.1M EDTA-0.2M MgCl_2 -0.2M ascorbate buffer. This buffer is typically used for resuspension of viral particles treated with iron chloride. Published protocols state the buffer can be used for time scales of several weeks, but time scales on the order of months have not been reported. These samples should provide an indication of whether this buffer is suitable for longer term storage, and also whether this will improve the storage of viral particles over longer field campaigns. Three buffer blanks were also taken for viral and bacterial abundance for flow cytometric analysis.

To test the downstream laboratory workflows, technical replicates were taken at the following stations: 14, 16, 17, 18, 19, 20, 22.

Transcriptomes and profiling of community composition by amplicon sequencing

-Naomi Bakken and Susanne Wilken-

To characterize phytoplankton transcriptional patterns along the transect, RNA samples were collected at each station. Total RNA samples were collected on 0.45 μm PES filters, while size fractionated samples were collected by sequential filtration over 20 μm PC, 3 μm PC, and 0.45 μm PES filters. Filtrations were performed using a peristaltic pump and in-line filter holders for 47mm filters. Samples were flash-frozen in liquid N_2 .

Samples for total DNA were collected on 0.45 μm PES-filters by vacuum filtration. For size-fractionation samples were first filtered over 3 μm PC-filters by gravity filtration, with the filtrate subsequently filtered over 0.45 μm PES-filters. Samples were frozen at -80°C .

Phytoplankton viral lysis and microzooplankton grazing rates

- Hisham Shaikh, Amelie Wittig, and Corina Brussaard –

Using the modified dilution assay (MDA) (Kimmance & Brussaard 2010), grazing by microzooplankton and virally induced mortality of phytoplankton can be determined simultaneously. By lowering the predator pressure (grazers and viruses) through dilution, the phytoplankton cells can increase in number over a 24h period. The difference in cell number provides an estimation of phytoplankton growth rate. By plotting the apparent growth rate against the dilution factor, the slope of the linear regression represents the specific loss rate (Figure below). Depending on the type of diluent (grazer-free or grazer and virus-free water), the grazing and viral lysis rate can be obtained.

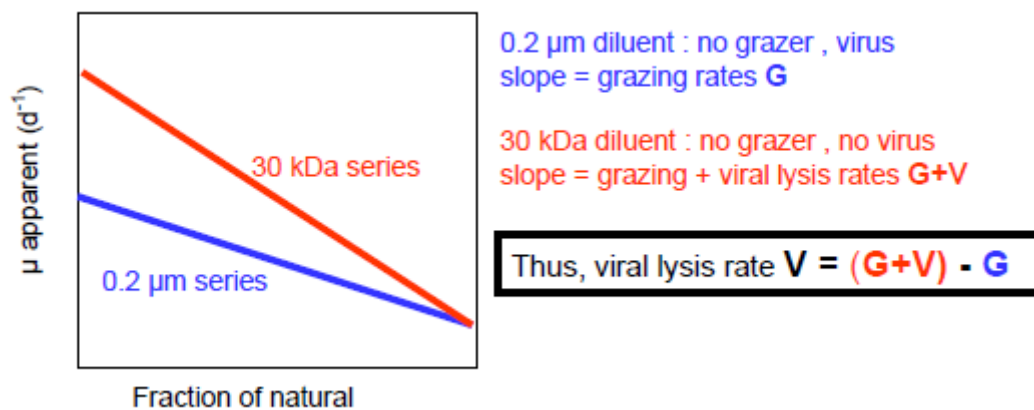


Figure: Modified dilution assay principle

The method was applied to water sampled from every station. Water samples were protected against natural light by having the sampling containers and sampling tubing rapped in several layers of black plastic. The samples were passed through a balloon-shaped 200 μ m mesh at the end of the sampling tube. The MDA assays were performed with natural sample from the deep chlorophyll maximum (DCM) if present, and otherwise from the mixed layer. Overall, 13 stations were sampled at the DCM and from station 14 to 25 we sampled at mixed layer (typically 20m). Incubations lasted 24h to accommodate synchronized cell division of phytoplankton and were performed in on-deck flow-through incubators. Using neutral density screens, the light intensity was adapted to the estimated average light percentage of the mid-mixed layer or at the DCM. For each experiment, natural seawater was filtered through a 0.45 μ m filter and either used as grazer-free filtrate or used as feed for 30 kDa ultrafiltration to obtain grazer&virus-free filtrate. Using 1L PC-bottles, whole water (gently pre-sieved through a 200 μ m mesh upon sampling from the CTD) was diluted with the 0.45 μ m and 30 kDa filtrate to 100, 70, 40 and 20% of the total volume (all dilutions in triplicate). Subsamples were taken at the start of the experiment and after 24h. Phytoplankton samples were taken at the start (T0) and end (T24) and phytoplankton were counted fresh by flow cytometry.

Viral lysis and grazing of heterotrophic prokaryotes

- Hisham Shaikh, Jitske Luttikholt, and Corina Brussaard –

To determine viral lysis of heterotrophic prokaryotes in the mixed layer and the deep chlorophyll maximum and to assess the influence of light on this process, a viral production assay According to Winget et al. (2005) was performed. This method aims to measure the production of viruses released from infected heterotrophic prokaryotes. The concentration of free virus particles in a sample is reduced while heterotrophic prokaryotes are retained as much as possible. This way the risk for new infections is close to zero. Consequently, all viruses produced in the sample over time result from heterotrophic prokaryotes that were already infected when the sample was taken. Viral lysis rates of heterotrophic prokaryotes can then be determined by dividing the total number of viruses produced by the assumed or average burst size. Overall, 4 stations (4, 8, 10, 12) were sampled at DCM and 6 stations (14, 16, 19, 20, 21, 23) at mixed layer.

Virus-free ultrafiltrate for washing out the viruses was obtained through tangential flow filtration over a 30 kDa PES filter (Vivaflow 50, Vivascience). Then, 300 mL whole seawater was brought

down to 50ml through tangential flow filtration (at 40 $\mu\text{L}/\text{min}$) by recirculating over a 0.2 μm PES filter (Vivaflow 5, Vivascience). Subsequently, 250 mL ultrafiltrate was added and the volume was again brought down to 50 mL through recirculating tangential flow filtration. This process was repeated thrice. On the third time, circulation was stopped when the volume was down to 50mL and a backflush was performed (at lowest speed) using ultrafiltrate to flush particles $>0.22 \mu\text{m}$ (i.e. heterotrophic prokaryotes) off the filter membrane. Finally, ultrafiltrate was added to the concentrate resulting in 300 mL solution. Efficiency samples for virus and bacterial check were taken of each filtrate, the natural whole water and the final product.

Two sets of triplicates (of 50 mL each) were prepared, wrapped in black duct tape, making sure no light penetrated. Additionally, a set filtered through 0.2 μm was taken along; this filtrate contained viruses at their *in-situ* concentration but no heterotrophic prokaryotes, potential viral loss from incubation over time can be determined. Each set of samples was placed at *in-situ* temperature for 24h (subsampling at start and after 3, 6, 9, 12 and 24h). Subsamples (1 mL) for viral abundances were fixed with 25% glutaraldehyde (to a final concentration of 0.5%) for 15-30 min, snap frozen in liquid nitrogen and stored at -80°C until further analysis at the NIOZ.

To determine the grazing rates on prokaryotes the method of Sherr & Sherr (1993) was used. Fluorescent labeled bacteria (FLBs) were spiked to triplicate 1 L natural whole water samples (so as not to influence grazing rates). Samples were incubated for 24h at *in-situ* temperature and light conditions. Subsamples of 20 mL were taken at the start and after 24h incubation, fixed with 2 mL 10% glutaraldehyde (30 min fixing) and stored at -80°C to be analyzed later in the home lab. Additionally, samples for the abundance of heterotrophic nanoflagellates (HNFs) were taken (20 mL) and fixed with glutaraldehyde (1% final using 10% working stock) and stored for at -80°C until further processing in the home lab.

Sinking of phytoplankton

- Hisham Shaikh, Li Zhao, Dorien Hoexum, Corina Brussaard –

SETCOLs.

Marine phytoplankton account for only about 1% of global biomass while contributing for about half of the primary production on Earth. These microscopic organisms typically float in the sunlit surface ocean, but they may also sink into deeper waters and reach the seafloor, playing an important role in carbon sequestration and global biogeochemical cycles. Phytoplankton sink for different reasons. Some of them are simply big and heavy to flow without the help from currents. Other groups, especially diatoms, produce transparent exopolymeric particles (TEP). These 'sticky' compounds cause the cells to aggregate and become more likely to sink collectively. Phytoplankton cells may also lose their ability to float after viral infection. During PHYVIR expedition 2026, our team aims to figure out who are sinking, how fast they sink and what factors contribute to the sinking of phytoplankton cells.

SETCOL is the abbreviation of settling column, a method developed to determine how fast phytoplankton sank in water columns. The equipment is a transparent vertical cylinder, in which we fill up water samples and let the phytoplankton settle down for a couple of hours. Then we collect the water from three sections, namely top (floating cells), middle (suspended or sinking cells) and bottom (settled cells), accounting for around 3%, 88% and 9% of total volume respectively, to further investigate the composition in each section.

SETCOL has been primarily used in laboratory studies, where they can stand still. To perform the settling onboard, we must figure out ways to overcome the impact of the ship's movement caused by waves, otherwise settled cells will be easily resuspended. Thanks to the support from the NIOZ workshop, we could go onboard with six SETCOLs that are tailored to cruise conditions. They are designed to swing freely with the movement of the ship, meaning they can stay perfectly

vertical. This creates a stable environment for the phytoplankton to settle down, almost entirely unaffected by the waves.

Three SETCOLs were treated as control, which were sampled at the start (directly after filling) and end (after 6h) by draining the entire volume and mixing before sampling. Three SETCOLs were sampled after 6h using the top, middle, and bottom taps. We sampled for the following variables: phytoplankton abundances (<20 µm; live and fixed), Chlorophyll-a (Chl-a), bacterial and viral abundances, TEP, aggregates, and metagenomics/transcriptomics.

Microbial abundances: Live phytoplankton samples were measured onboard; whereas glutaraldehyde-pluronic fixed samples were snap-frozen in liquid nitrogen and stored at -80 °C. Bacterial and viral abundance samples were fixed using glutaraldehyde like phytoplankton abundance (see earlier). **Chl-a:** To estimate sinking of larger phytoplankton, 250 mL seawater samples were gently filtered through GF75 glass fiber filters, snap frozen and stored at -80°C for further analysis back in the home lab. **TEP:** Transparent exopolymeric particles (TEP) is a precursor of aggregates. Many phytoplankton (especially diatoms) exude sticky, carbohydrate-rich mucus. TEP acts as a natural glue, binding single cells, dead organic matter, thereby most often enhancing their sinking rate. Twenty milliliter samples were taken from each section of the SETCOLs and the TEP inside the water sample was stained with Alcian blue (0.04%, dissolved in acetic acid, pH = 2.5; saccharides; Passow et al. 1994; Mari et al. 2017). After filtering the dyed samples through 0.4 µm Nucleopore PC filters, the filter was placed in cryovials, snap frozen, and store at -80°C for further analysis back in the home lab. Alcian blue samples will be processed in the home lab for spectrophotometric only. **Aggregates:** Twenty milliliter seawater samples were fixed with 10% glutaraldehyde (0.5 % final concentration) and stored at -20°C for further analysis back in the home lab. **Omic:** Two control and treatment SETCOLs each were sampled at T0 and T6 to determine the microbial community composition (including viruses) on the aggregates. We filtered the sample through 0.2 µm Nucleopore PC filters, snap froze the filters and stored at -80°C for further analysis back in the home lab.

DRIFTING TRAPS.

While SETCOLs allow for estimating potential sinking rates of phytoplankton population from the sampled depth, drifting traps allow to determine what sank out of the euphotic zone and if which viruses are active. Drifting traps are a set of tubes at different depths that collect sinking particles from the sunlit surface waters. We deployed four drifting traps during this cruise, each carrying tubes positioned at 100, 200, and 400 m depth. As particles sink through the ocean, they are captured in these tubes. Our goal is to understand how viruses may influence the sinking of phytoplankton, that form the base of marine food webs and play a major role in removing carbon dioxide from the atmosphere. Sinking or sedimentation transports this carbon to the depths of the ocean. On its way down these particles are also degraded so finally there is only a very small percentage reaching the seafloor.

Four drifting traps were deployed for 24 h each at 4 stations (4,10, 14, 20). The drifting traps consist of quartets of 6 L tubes at 3 depths (100 m, 200 m, and 400 m). Each tube was filled with 250 mL of dense filtered seawater and was topped with filtered seawater. Per quartet, tube 1 had OCT Compound that preserves the shape of the aggregates; 1 L water from tube 2 was filtered for Chl-a; from tube 3 and 4 (2 L) were combined and filtered over PC filters for omics.

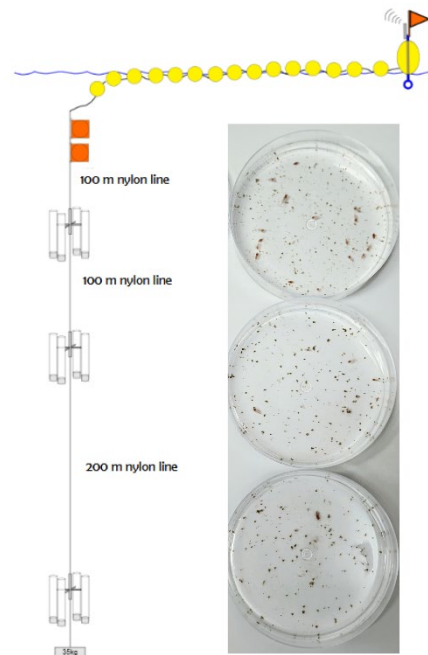
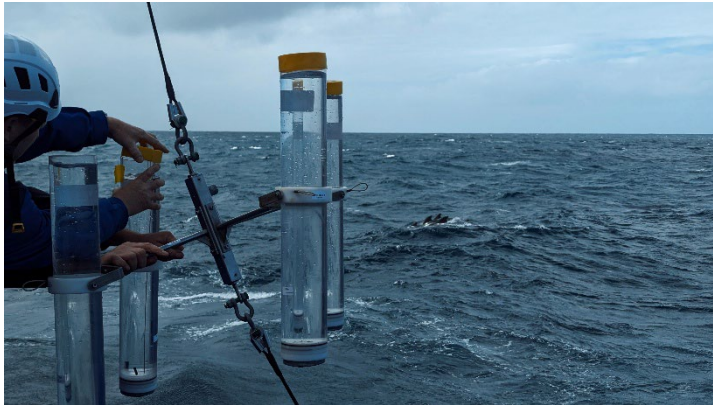


Figure: drifting trap being prepared for deployment and example of the gels after retrieving the traps from 3 different depth.

Sediment traps

- Dorien Hoexum-

The phosphorus (P) concentration in ocean is important for primary production; however marine P fluxes are still poorly understood. May 25th, 2025 a mooring was deployed with three Technicap PPS 3/4 sediment traps (1500, 3500, 5000 mbss) and Nortek Aquadopp current meters closely underneath each trap as well as cages with membranes attached. The sediment traps are funnels with a bottle for each month at the bottom to collect all particulate material sinking down through the water column. The current meters collect information on the current around the sediment trap. The stainless-steel bars supporting the sediment traps had cages attached that contained membranes (LDPE or regenerated cellulose) with seawater and a small amount of suspended material to study breakdown of organic matter over a year with in-situ conditions. Taking all together this mooring should give insight into the seasonal change in P fluxes, the role of organic matter in P transport and transformation.

Microcosm experiments

*-Naomi Bakken, Susanne Wilken, Thomas Cupido, Emma Hynes, Eva Hekma-
(and all other participants)*

Two types of microcosm experiments were performed with each of them repeated four times along the transect (see Table A). Small volume microcosm experiments (SV) were performed to assess which nutrients are limiting phytoplankton growth, while large volume experiments (LV)

were performed to characterize the physiological and transcriptomic responses of phytoplankton as well as prevalence of viral infections to nutrient availability and warming. Microcosm experiments were performed with water collected from mixed-layer depth by the UCC and handled under trace-metal clean conditions to avoid potential trace metal contamination. The only exception was the 4th SV experiment, which was set up with water collected from the regular CTD (due to weather conditions not permitting operation of the UCC). Prior to filling experimental containers, water was screened through a 200µm mesh to exclude larger zooplankton.

Table A: Microcosm experiments overview

Experiment	Station	Cast	Start coordinates	Start date (T0)	End date (T4)
LV1	4	3	24.00N, 23.40W	05/05/2026	09/05/2026
SV1	4	7	24.00N, 23.40W	06/05/2026	10/05/2026
LV2	10	3	35°14.51 N, 23°29.99 W	11/05/2026	15/05/2026
SV2	10	6	35°14.51 N, 23°29.99 W	12/05/2026	16/05/2026
LV3	14	3	44°36.4N, 23°18.29W	16/05/2026	20/05/2026
SV3	14	6	44°36.4N, 23°18.29W	17/05/2026	21/05/2026
LV4	20	5	55°0.0N, 23°0.13 W	22/05/2026	26/05/2026
SV4	20	7	55°0.0N, 23°0.13 W	23/05/2026	27/05/2026

Small scale microcosms were performed in 2L polycarbonate bottles and were designed to identify nutrients limiting phytoplankton growth. These experiments included nine nutrient amendments treatments (see Table B) adding nitrogen, phosphorus and iron individually and in all possible combinations, as well as a combined treatment of those also including a silicate addition. Bottles were incubated in incubators shaded to mimic light intensity at the depth of water collection and temperature controlled by flow through of surface seawater. After 4 days, experimental units were sampled for microbial abundances (live flow cytometry and fixed samples), Chlorophyll fluorescence and photosynthetic efficiency (by Frrf), nutrient concentrations, Chl a concentration (samples collected on GF75 filters) and DNA (for 18S amplicon sequencing). A set of 5 bottles filled at the start of the experiment (T0) was sampled immediately for the same variables.

Table B: Nutrient amendment treatments for small volume microcosms

Treatment name	Nutrients
NtC	In situ (no addition control)
Nt1	NP
Nt2	NPFe
Nt3	N
Nt4	P
Nt5	Fe
Nt6	PFe
Nt7	NFe
Nt8	NPFeSi

Large volume microcosms were performed in 19L LDPE cubitainers. Three nutrient treatments included a control (NtC), an addition of N&P (Nt1) and an addition of N,P&Fe (Nt2) all performed in triplicate and repeated in both a control (CT) and warming (HT) treatment, representing in-situ temperatures and a 3°C warming. The cubitainers were then incubated in temperature-controlled incubators shaded to approximate the light conditions at depth of water collection. Experiments were subsampled after two days for microbial abundances (live flow cytometry and samples fixed

with glutaraldehyde, glutaraldehyde + poloxamer, or formaldehyde-hexamine), nutrient concentrations, chlorophyll fluorescence and photosynthetic efficiency (by Frrf, Stimpfle), and transcriptomics (RNA collected on 0.45 µm PES filters). Final sampling after 4 days of incubation included the same variables and in addition to those also samples for Chla concentrations (collected on GF75 filters, Cupido), DNA/16&18S amplicon sequencing (collected on 0.45µm PES filters), elemental stoichiometry (POC/PON, POP collected on GF75 filters; vd Waal), cellular lipidomics (collected on GF75 filters, Schleyer), microscopy (fixation with acid Lugol's). A set of six cubitainers filled at the start of the experiment served as T0-samples, three of these were filled under control conditions and three received the full set of nutrient additions (N, P, Fe) to verify concentrations for nutrient additions. T0-samples included the same variables as sampled at day 4, except for lipidomics and additional sampling for dissolved iron concentrations.

Metabolic composition of particulate and dissolved organic matter

-Guy Schleyer and Liam Mills -

Metabolomics, lipidomics and dissolved organic carbon (DOC). The metabolic composition of particulate organic matter (POM) and dissolved organic matter (DOM) provides direct insight into microbial metabolic processes, nutrient cycling, and biochemical interactions in marine ecosystems. Within the framework of the PHYVIR project, metabolomic and lipidomic analyses will be used to identify metabolic traits associated with viral infection of phytoplankton, including virus-induced changes in cellular metabolism, lipid remodeling, and the production and release of metabolites into the DOM pool. Combined with metagenomic and metatranscriptomic analyses, these measurements will enable the linkage of microbial community composition and gene expression patterns to metabolic phenotypes and the biogeochemical consequences of virus-host interactions.

Samples for intracellular metabolomics and lipidomics were collected from the second CTD cast at each station. Sampling was conducted at all stations and targeted ML and DCM when present. Intracellular biomass was collected both as total particulate material and as size-fractionated material. Total biomass was collected without pre-sieving onto GF75 filters (nominal pore size 0.3 µm). For size-fractionated sampling, seawater was first passed through a 20 µm stainless steel sieve and subsequently filtered sequentially onto GF/D filters (nominal pore size 2.7 µm), GF75 filters, and 0.22 µm PVDF filters. Two liters of seawater were filtered per sample for the GF/D and GF75 filters, whereas one liter was filtered onto the 0.22 µm PVDF filters. Filtration was performed using gentle vacuum and glass filtration apparatus to minimize cell disruption and avoid contamination from plastic materials. Isotopically labelled internal standards for metabolomics and lipidomics analyses were added to all intracellular samples. Filters were immediately flash frozen in liquid nitrogen after collection and stored at -80°C until further analysis. The 1L filtrates obtained after the 0.22 µm PVDF filtration step were used for extracellular metabolomics and lipidomics extractions of the DOM using solid phase extraction (SPE) cartridges. Isotopically labelled internal standards were added prior to extraction. For metabolomics analyses, seawater was acidified to pH 2 to improve retention of organic acids and other semi-polar metabolites. For lipidomics analyses, samples were extracted without acidification to maximize recovery of lipids. Following SPE, samples were eluted with methanol, evaporated under a stream of nitrogen gas at 35°C, and stored at -20°C until analysis at NIOZ. Additional DOC samples were collected from the 0.22 µm filtrates and will be analyzed at NIOZ.

Additionally, subsamples were fixed with glutaraldehyde for enumeration of bacterial and viral abundances (at NIOZ) and at five stations the size-fractions were analyzed for phytoplankton by flow cytometry (FCM) (see figure below).

Intracellular lipidomics samples were additionally collected from four microcosm experiments conducted during the cruise. For each experiment, samples were obtained at the final sampling point (T = 4 days). Between 1 and 2L of seawater were filtered onto GF75 filters, flash frozen in liquid nitrogen, and stored at -80°C for subsequent lipidomic analysis.

Metaproteomics. Environmental metaproteomics provides a direct measure of proteins expressed by microbial communities and therefore complements metagenomic, metatranscriptomic and metabolomics analyses by revealing which metabolic pathways are actively translated into cellular functions. In the context of the PHYVIR project, metaproteomic analyses will help identify functional traits associated with viral infection of phytoplankton and the microbial responses to virus-mediated release of organic matter. Samples for metaproteomic analyses were collected concurrently with the metabolomics and lipidomics sampling program using the same filtration strategy and target depths. Biomass was collected on GF75 filters for total community analyses and on the size-fractionated filters described above. Protein extraction and metaproteomic analyses will be conducted in collaboration with Prof. Erin Bertrand (Dalhousie University, Canada).

*Figure legend:
Fractionation of
phytoplankton
groups on
different filter
types following
total and
sequential
filtrations and in
the remaining
filtrate based
on five stations.*

Chemotaxis. In addition, three In Situ Chemotaxis Assay (ISCA) experiments were performed during the first three 36 h process stations to identify bacterial and phytoplankton taxa exhibiting chemotactic responses to selected organic compounds. ISCA chambers contained glucose, alanine, serine, or glycine at a concentration of 1 mM, compared to filtered seawater only (negative control) and 10% MB in filtered seawater (positive control). Incubations lasted 1h for bacterial chemotaxis measurements and 6h and 12h for phytoplankton responses. Samples were fixed after 1h for bacterial abundance measurements, while phytoplankton populations were quantified after 6h and 12h FCM. At all sampling time points, biomass was additionally flash frozen for subsequent 16S and 18S rRNA gene analyses, enabling identification of bacterial and phytoplankton taxa enriched in response to each chemical treatment.

APPENDIXES

- Appendix 1. Logbook PHYVIR-1
- Appendix 2. CTD Instruments configuration file PHYVIR-1
- Appendix 3. Onboard database PHYVIR-1
- Appendix 4. Master files Variables sampled PHYVIR-1
- Appendix 5. EEZ Azores station 10-12

Appendix 1

Station	Cast	Day	Month	Year	Time of day (for UTC: +1h)	Latitude (N)	longitude (W)	Device_Name	Action_Name	Operation_Id
1	1.1	3	5	2026	1:00 PM	20.31	23.64	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
2	2.1	3	5	2026	8:45 PM	21	23.66	Argos	Released	64AW103Argos1
3	3.1	4	5	2026	5:30 AM	22	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
3	3.2	4	5	2026	8:00 AM	22	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
4	4.1	5	5	2026	5:30 AM	24	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
4	4.2	5	5	2026	8:00 AM	24	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
4	4.3	5	5	2026	11:00 AM	24	23.67	Drifting trap	InWater	64AW103Drifting trap4_3
4	4.4	5	5	2026	2:00 PM	23.99	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler4
4	4.5	5	5	2026	2:45 PM	23.99	23.67	CTD - hanging overnight	Start	64AW103CTD5
4	4.6	5	5	2026	5:00 AM	23.98	23.67	CTD - out early morning	End	
4	4.6	6	5	2026	7:30 AM	23.98	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler6
4	4.7	6	5	2026	9:30 AM	23.98	23.67	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler7
4	4.8	6	5	2026	11:00 AM	23.79	23.62	Drifting trap	OutWater	64AW103Drifting trap4_8
5	5.1	7	5	2026	5:30 AM	25.56	23.7	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
5	5.2	7	5	2026	8:00 AM	25.56	23.7	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
5	5.3	7	5	2026		25.64	23.64	Mooring pickup	Start	64AW103Mooring3
5	5.4	7	5	2026	3:00 PM	25.66	23.64	CTD for Donien	Start	64AW103CTD4
6	6.1	8	5	2026		26.69	23.64	Argos	Released	64AW103Argos6_1
7	7.1	8	5	2026	5:30 AM	27.74	23.63	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
7	7.2	8	5	2026	8:00 AM	27.74	23.63	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
8	8.1	9	5	2026	5:30 AM	30.33	23.6	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
8	8.2	9	5	2026	8:00 AM	30.33	23.6	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
9	9.1	10	5	2026	5:30 AM	32.69	23.55	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
9	9.2	10	5	2026	8:00 AM	32.69	23.55	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
9	9.1	10+	5	2026		33	23.55	Argos	Released	64AW103Argos9_1
10	10.1	11	5	2026	5:30 AM	35.24	23.5	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
10	10.2	11	5	2026	8:00 AM	35.24	23.5	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
10	10.3	11	5	2026	10:00 AM	35.24	23.5	Drifting trap	InWater	64AW103Drifting trap10_3
10	10.4	11	5	2026	2:00 PM	35.24	23.5	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler4
10	10.5	12	5	2026	7:30 AM	35.24	23.5	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler5
10	10.6	12	5	2026	2:00 PM	35.24	23.5	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler6
10	10.7	12	5	2026	10:00 AM	35.16	23.66	Drifting trap	OutWater	64AW103Drifting trap10_7
11	11.1	13	5	2026	5:30 AM	37.38	23.47	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
11	11.2	13	5	2026	8:00 AM	37.38	23.47	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
12	12.1	14	5	2026	5:30 AM	39.88	23.38	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
12	12.2	14	5	2026	8:00 AM	39.88	23.38	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
13	13.1	15	5	2026	5:30 AM	42.2	23.34	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
13	13.2	15	5	2026	8:00 AM	42.2	23.34	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
14	14.1	16	5	2026	5:30 AM	44.61	23.29	Drifting trap	InWater	64AW103Drifting trap1
14	14.2	16	5	2026	6:45 AM	44.61	23.3	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
14	14.3	16	5	2026	2:00 PM	44.61	23.3	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler3
14	14.4	17	5	2026	5:30 AM	44.61	23.41	Drifting trap	OutWater	64AW103Drifting trap4
14	14.5	17	5	2026		44.61	23.41	Drifting trap	Start	64AW103Drifting trap5
14	14.6	17	5	2026	6:30 AM	44.61	23.41	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler6
14	14.7	17	5	2026	8:45 AM	44.61	23.41	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler7
15	15.1	18	5	2026		47	23.23	Argos	Released	64AW103Argos15_1
16	16.1	18	5	2026	5:30 AM	47.49	23.22	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
16	16.2	18	5	2026	8:00 AM	47.49	23.22	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
17	17.1	19	5	2026	6:00 AM	48.98	22.55	CTD	Start	64AW103CTD1
17	17.2	19	5	2026	8:30 AM	48.98	22.55	CTD-Rosette sampler	Start	64AW103CTD-Rosette sampler2
18	18.1	20	5	2026	5:30 AM	51	23.12	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
18	18.2	20	5	2026	8:00 AM	51	23.12	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
19	19.1	21	5	2026	5:30 AM	53	23.06	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
19	19.2	21	5	2026	8:00 AM	53	23.06	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
20	20.1	22	5	2026	5:30 AM	55	23	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
20	20.2	22	5	2026	8:00 AM	55	23	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler2
20	20.3	22	5	2026		55	23	Argos	Released	64AW103Argos20_3
20	20.4	22	5	2026	10:00 AM	55	23	Drifting trap	InWater	64AW103Argos20_4
20	20.5	22	5	2026	2:00 PM	55	23	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler5
20	20.6	23	5	2026	8:00 AM	55	23	CTD	Start	64AW103CTD6
20	20.7	23	5	2026	9:00 AM	55	23	CTD	Start	64AW103CTD-Rosette sampler7
20	20.8	23	5	2026	10:00 AM	55.26	22.9	Drifting trap	OutWater	64AW103Drifting trap20_8
21	21.1	24	5	2026	5:30 AM	57	22.69	CTD	Start	64AW103CTD1
21	21.2	24	5	2026	8:00 AM	57	22.69	CTD	Start	64AW103CTD2
22	22.1	25	5	2026	5:30 AM	59.00	22.87	CTD	Start	64AW103CTD1
22	22.2	25	5	2026	8:00 AM	59.00	22.87	CTD	Start	64AW103CTD2
23	23.1	26	5	2026	5:30 AM	61.00	22.81	CTD-Ultra clean sampler	Start	64AW103CTD-Ultra clean sampler1
23	23.2	26	5	2026	6:45 AM	61.00	22.79	CTD	Start	64AW103CTD2
24	24.1	27	5	2026	5:30 AM	62.50	22.73	CTD	Start	64AW103CTD1
24	24.2	27	5	2026	8:00 AM	62.50	22.73	CTD	Start	64AW103CTD2
25	25.1	28	5	2026	5:30 AM	63.93	25.21	CTD	Start	64AW103CTD1
25	25.2	28	5	2026	8:30 AM	63.93	25.21	CTD	Start	64AW103CTD2
26	26.1	28	5	2026	4:00 PM	64.34	25.92	CTD	Start	64AW103CTD1
27	27.1	29	5	2026	5:30 AM	65.06	27.26	CTD	Start	64AW103CTD1

Appendix 2

PSA file: C:\cruises\64AW103\UCCTD\Seasave_64AW103_UCCTD_corina.psa

Date: 05/30/2026

Instrument configuration file: C:\cruises\64AW103\UCCTD\UCCTD (8204) - Calibration March 2026\AWvB UCCTD (8204) April 2026.xmlcon

Configuration report for SBE 911plus/917plus CTD

Frequency channels suppressed : 1

Voltage words suppressed : 0

Computer interface : RS-232C

Deck unit : SBE11plus Firmware Version >= 5.0

Scans to average : 1

NMEA position data added : Yes

NMEA depth data added : No

NMEA time added : No

NMEA device connected to : PC

Surface PAR voltage added : Yes

Scan time added : No

1) Frequency 0, Temperature

Serial number : 4812

Calibrated on : 07-10-2025

G : 4.36380108e-003

H : 6.42172437e-004

I : 2.16384213e-005

J : 1.78739742e-006

F0 : 1000.000

Slope : 1.00000000

Offset : 0.0000

2) Frequency 1, Conductivity

Serial number : 3263

Calibrated on : 18-09-2025

G : -1.00331580e+001

H : 1.29196775e+000

I : 1.82475926e-005

J : 6.62854796e-005

CTcor : 3.2500e-006

CPcor : -9.57000000e-008

Slope : 1.00000000

Offset : 0.00000

3) Frequency 2, Pressure, Digiquartz with TC

Serial number : 327

Calibrated on : 28-2-2017

C1 : -4.560326e+004

C2 : 6.384354e-001

C3 : 1.351670e-002

D1 : 3.987300e-002

D2 : 0.000000e+000

T1 : 3.036575e+001

T2 : -1.373321e-004

T3 : 4.342220e-006

T4 : 1.893830e-009

T5 : 0.000000e+000

Slope : 0.99998000

Offset : -2.57020

AD590M : 1.143000e-002
AD590B : -8.526850e+000

4) Frequency 3, Free

5) A/D voltage 0, Fluorometer, WET Labs ECO-AFL/FL
Serial number : 2774
Calibrated on : 2-8-2012
Dark output : 0.0690
Scale factor : 6.00000000e+000

6) A/D voltage 1, Turbidity Meter, WET Labs, ECO-NTU
Serial number : 2774
Calibrated on : 2-8-2012
ScaleFactor : 2.000000
Dark output : 0.058000

7) A/D voltage 2, Free

8) A/D voltage 3, Free

9) A/D voltage 4, PAR/Logarithmic, Satlantic
Serial number : 92
Calibrated on : 1-12-2020
a0 : 1.16000000
a1 : 0.87877000
Im : 1.35890000
Conversion units : $\mu\text{mol photons/m}^2/\text{sec}$
Multiplier : 1.00000000

10) A/D voltage 5, Fluorometer, Chelsea Aqua 3
Serial number : 088-026
Calibrated on : 30-10-2025
VB : 0.367510
V1 : 1.810330
Vacetone : 0.373750
Scale factor : 1.000000
Slope : 1.000000
Offset : 0.000000

11) A/D voltage 6, Altimeter
Serial number : 67331
Calibrated on : ?
Scale factor : 15.000
Offset : 0.000

12) A/D voltage 7, Oxygen, SBE 43
Serial number : 350
Calibrated on : 18-12-2025
Equation : Sea-Bird
Soc : 4.53800e-001
Offset : -4.97900e-001
A : -2.34750e-003
B : 9.36920e-005
C : -1.53880e-006
E : 3.60000e-002
Tau20 : 1.10000e+000

D1 : 1.92634e-004
D2 : -4.64803e-002
H1 : -3.30000e-002
H2 : 5.00000e+003
H3 : 1.45000e+003

13) SPAR voltage, Unavailable

14) SPAR voltage, SPAR/Linear, Satlantic

Serial number : 279
Calibrated on : 1-12-2020
a0 : 0.01597000
a1 : 1034.54200000
Im : 1.00000000
Conversion units : umol photons/m²/sec
Conversion factor : 1.00000000
Ratio multiplier : 1.00000000

Scan length : 37

Pump Control

This setting is only applicable to a custom build of the SBE 9plus.
Enable pump on / pump off commands: NO

Data Acquisition:

Archive data: YES
Delay archiving: NO
Data archive: C:\cruises\64AW103\UCCTD\64AW103-00UCCTD00.hex
Timeout (seconds) at startup: 60
Timeout (seconds) between scans: 20

Instrument port configuration:

Port = COM2
Baud rate = 19200
Parity = N
Data bits = 8
Stop bits = 1

Water Sampler Data:

Water Sampler Type: SBE Carousel
Number of bottles: 24
Port: COM3
Enable remote firing: NO
Firing sequence: Sequential
Tone for bottle fire confirmation uses PC sound card.

Header information:

Header Choice = Prompt for Header Information
prompt 0 = Ship (Pelagia) :
prompt 1 = Station (64PExx-ssCTDcc):
prompt 2 = Operator :

TCP/IP - port numbers:

Data acquisition:
Data port: 49163
Status port: 49165
Command port: 49164

Remote bottle firing:
Command port: 49167
Status port: 49168
Remote data publishing:
Converted data port: 49161
Raw data port: 49160

Miscellaneous data for calculations

Depth, Average Sound Velocity, and TEOS-10
Latitude when NMEA is not available: 12.23000000
Longitude when NMEA is not available: 0.00000000
Average Sound Velocity
Minimum pressure [db]: 20.00000000
Minimum salinity [psu]: 20.00000000
Pressure window size [db]: 20.00000000
Time window size [s]: 60.00000000
Descent and Acceleration
Window size [s]: 2.00000000
Plume Anomaly
Theta-B: 0.00000000
Salinity-B 0.00000000
Theta-Z / Salinity-Z 0.00000000
Reference pressure [db] 0.00000000

Oxygen
Window size [s]: 2.00000000
Apply hysteresis correction: 1
Apply Tau correction: 1

Potential Temperature Anomaly
A0: 0.00000000
A1: 0.00000000
A1 Multiplier: Salinity

Serial Data Output:

Output data to serial port: NO

Mark Variables:

Variables:
Digits Variable Name [units]

0 Scan Count
3 Depth [salt water, m]
6 Conductivity [S/m]
4 Salinity, Practical [PSU]

Shared File Output:

Output data to shared file: NO

TCP/IP Output:

Raw data:
Output raw data to socket: NO
XML wrapper and settings: NO
Seconds between raw data updates: 0.00000000

Converted data:
Output converted data to socket: NO
XML format: NO

SBE 11plus Deck Unit Alarms

Enable minimum pressure alarm: NO
Enable maximum pressure alarm: NO
Enable altimeter alarm: NO

SBE 14 Remote Display

Enable SBE 14 Remote Display: NO

PC Alarms

Enable minimum pressure alarm: NO
Enable maximum pressure alarm: NO
Enable altimeter alarm: NO
Enable bottom contact alarm: YES
Alarm uses PC sound card.

Options:

Prompt to save program setup changes: YES
Automatically save program setup changes on exit: NO
Confirm instrument configuration change: YES
Confirm display setup changes: YES
Confirm output file overwrite: YES
Check scan length: NO
Compare serial numbers: YES
Maximized plot may cover Seasave: NO

PSA file: C:\cruises\64AW103\CTD\Seasave_64AW103_CTD_corina.psa

Date: 05/30/2026

Instrument configuration file: C:\cruises\64AW103\CTD\AWvB CTD (205395) Calibration April 2026\AWvB CTD (205395) April 2026.xmlcon

Configuration report for SBE 911plus/917plus CTD

Frequency channels suppressed : 1

Voltage words suppressed : 0

Computer interface : RS-232C

Deck unit : SBE11plus Firmware Version >= 5.0

Scans to average : 1

NMEA position data added : Yes

NMEA depth data added : No

NMEA time added : No

NMEA device connected to : PC

Surface PAR voltage added : Yes

Scan time added : No

1) Frequency 0, Temperature

Serial number : 5563

Calibrated on : 07-10-2025

G : 4.35852057e-003

H : 6.28464404e-004

I : 1.98744937e-005

J : 1.54545006e-006

F0 : 1000.000

Slope : 1.00000000

Offset : 0.0000

2) Frequency 1, Conductivity

Serial number : 1204
Calibrated on : 04-04-2024
G : -4.01612277e+000
H : 4.54572924e-001
I : 7.31464866e-006
J : 2.26214981e-005
CTcor : 3.2500e-006
CPcor : -9.57000000e-008
Slope : 1.00000000
Offset : 0.00000

3) Frequency 2, Pressure, Digiquartz with TC

Serial number : 942
Calibrated on : 11-06-2021
C1 : -4.435377e+004
C2 : -5.478126e-001
C3 : 1.400400e-002
D1 : 3.568700e-002
D2 : 0.000000e+000
T1 : 2.995805e+001
T2 : -4.195330e-004
T3 : 4.022790e-006
T4 : 2.493360e-009
T5 : 0.000000e+000
Slope : 1.00006000
Offset : -1.53020
AD590M : 1.278800e-002
AD590B : -9.014420e+000

4) Frequency 3, Free

5) A/D voltage 0, Transmissometer, WET Labs C-Star

Serial number : CST-1311DR
Calibrated on : 22-05-2026
M : 21.2902
B : -0.0639
Path length : 0.250

6) A/D voltage 1, Fluorometer, Chelsea Aqua 3

Serial number : 088-092
Calibrated on : 15-04-2024
VB : 0.178198
V1 : 1.951320
Vacetone : 0.285200
Scale factor : 1.000000
Slope : 1.000000
Offset : 0.000000

7) A/D voltage 2, PAR/Logarithmic, Satlantic

Serial number : 2152
Calibrated on : 21-05-2021
a0 : 1.04930000
a1 : 0.80840000
Im : 1.35890000
Conversion units : umol photons/m²/sec
Multiplier : 1.00000000

8) A/D voltage 3, Free

9) A/D voltage 4, Oxygen, SBE 43

Serial number : 1932

Calibrated on : 18-12-2025

Equation : Sea-Bird

Soc : 4.80400e-001

Offset : -5.15400e-001

A : -2.38250e-003

B : 1.19440e-004

C : -2.01110e-006

E : 3.60000e-002

Tau20 : 1.24000e+000

D1 : 1.92634e-004

D2 : -4.64803e-002

H1 : -3.30000e-002

H2 : 5.00000e+003

H3 : 1.45000e+003

10) A/D voltage 5, Altimeter

Serial number : 54696

Calibrated on : 2017

Scale factor : 15.000

Offset : 0.000

11) A/D voltage 6, Fluorometer, WET Labs ECO-AFL/FL

Serial number : 4787

Calibrated on : 25-10-2019

Dark output : 0.0670

Scale factor : 6.00000000e+000

12) A/D voltage 7, Turbidity Meter, WET Labs, ECO-NTU

Serial number : 4787

Calibrated on : 25-10-2019

ScaleFactor : 2.000000

Dark output : 0.081000

13) SPAR voltage, Unavailable

14) SPAR voltage, SPAR/Linear, Satlantic

Serial number : 279

Calibrated on : 1-12-2020

a0 : 0.01597000

a1 : 1034.54200000

Im : 1.00000000

Conversion units : $\mu\text{mol photons/m}^2/\text{sec}$

Conversion factor : 1.00000000

Ratio multiplier : 1.00000000

Scan length : 37

Pump Control

This setting is only applicable to a custom build of the SBE 9plus.

Enable pump on / pump off commands: NO

Data Acquisition:

Archive data: YES
Delay archiving: NO
Data archive: C:\cruises\64AW103\CTD\64AW103-27CTD01.hex
Timeout (seconds) at startup: 60
Timeout (seconds) between scans: 20

Instrument port configuration:

Port = COM2
Baud rate = 19200
Parity = N
Data bits = 8
Stop bits = 1

Water Sampler Data:

Water Sampler Type: SBE Carousel
Number of bottles: 24
Port: COM3
Enable remote firing: NO
Firing sequence: Sequential
Tone for bottle fire confirmation uses PC sound card.

Header information:

Header Choice = Prompt for Header Information
prompt 0 = Ship (Pelagia) :
prompt 1 = Station (64PExxx-ssCTDcc):
prompt 2 = Operator :

TCP/IP - port numbers:

Data acquisition:
Data port: 49163
Status port: 49165
Command port: 49164
Remote bottle firing:
Command port: 49167
Status port: 49168
Remote data publishing:
Converted data port: 49161
Raw data port: 49160

Miscellaneous data for calculations

Depth, Average Sound Velocity, and TEOS-10
Latitude when NMEA is not available: 12.23000000
Longitude when NMEA is not available: 0.00000000
Average Sound Velocity
Minimum pressure [db]: 20.00000000
Minimum salinity [psu]: 20.00000000
Pressure window size [db]: 20.00000000
Time window size [s]: 60.00000000
Descent and Acceleration
Window size [s]: 2.00000000
Plume Anomaly
Theta-B: 0.00000000
Salinity-B 0.00000000
Theta-Z / Salinity-Z 0.00000000
Reference pressure [db] 0.00000000
Oxygen
Window size [s]: 2.00000000

```

    Apply hysteresis correction:      1
    Apply Tau correction:             1
    Potential Temperature Anomaly
    A0:                             0.00000000
    A1:                             0.00000000
    A1 Multiplier:                   Salinity
-----
Serial Data Output:
    Output data to serial port: NO
-----
Mark Variables:
    Variables:
    Digits  Variable Name [units]
    -----
    0      Scan Count
    3      Depth [salt water, m]
    6      Conductivity [S/m]
    4      Salinity, Practical [PSU]
-----
Shared File Output:
    Output data to shared file: NO
-----
TCP/IP Output:
    Raw data:
        Output raw data to socket:      NO
        XML wrapper and settings:      NO
        Seconds between raw data updates: 0.00000000
    Converted data:
        Output converted data to socket: NO
        XML format:                     NO
-----
SBE 11plus Deck Unit Alarms
    Enable minimum pressure alarm: NO
    Enable maximum pressure alarm: NO
    Enable altimeter alarm:      NO
-----
SBE 14 Remote Display
    Enable SBE 14 Remote Display: NO
-----
PC Alarms
    Enable minimum pressure alarm: NO
    Enable maximum pressure alarm: NO
    Enable altimeter alarm:      NO
    Enable bottom contact alarm: YES
    Alarm uses PC sound card.
-----
Options:
    Prompt to save program setup changes: YES
    Automatically save program setup changes on exit: NO
    Confirm instrument configuration change: YES
    Confirm display setup changes: YES
    Confirm output file overwrite: YES
    Check scan length: NO
    Compare serial numbers: YES
    Maximized plot may cover Seasave: NO

```

Appendix 3 - UCC

station 1-1							
<i>bottlesum_in=</i>	<i>c:\cruises\64AW103\UCCTD\64AW103-01UCCTD01.XMLCON</i>						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	126.592	20.0542	36.8596	0.0272	1.70E+03	1.76E+00	0.0352
2	126.945	20.0786	36.8633	0.0008	1.69E+03	1.73E+00	0.037
3	84.22	21.5447	37.1531	0.4499	1.74E+03	1.16E+01	0.0719
4	84.454	21.5445	37.1529	0.4401	1.75E+03	1.12E+01	0.0713
5	84.19	21.5431	37.1525	0.434	1.83E+03	1.20E+01	0.0697
6	83.828	21.5425	37.153	0.4489	1.75E+03	1.27E+01	0.066
7	84.529	21.5414	37.1525	0.4147	1.06E+03	7.41E+00	0.0665
8	84.127	21.5417	37.1528	0.4301	1.59E+03	1.04E+01	0.0661
9	84.058	21.5412	37.153	0.4182	1.70E+03	1.06E+01	0.0689
10	84.203	21.5397	37.1527	0.4448	1.98E+03	1.26E+01	0.0674
11	84.328	21.5396	37.1525	0.4192	1.97E+03	1.20E+01	0.0668
12	84.601	21.5405	37.1527	0.4124	1.95E+03	1.25E+01	0.0735
13	84.114	21.5393	37.1529	0.4012	1.72E+03	1.09E+01	0.0655
14	71.259	21.5887	37.1198	0.1026	1.06E+03	1.53E+01	0.0662
15	63.863	21.6279	37.0809	0.0198	1.40E+03	2.67E+01	0.0521
16	27.768	22.1946	36.8545	0.0213	7.40E+02	5.59E+01	0.0501
17	15.032	22.429	36.8543	0.0135	9.96E+02	9.85E+01	0.0458
18	15.212	22.4317	36.854	0.0029	1.79E+03	9.68E+01	0.0455
19	15.034	22.4341	36.8535	0.0142	1.77E+03	1.16E+02	0.0479
20	15.018	22.4344	36.8537	0.0183	1.74E+03	1.09E+02	0.0481
21	15.122	22.4348	36.8536	0.0022	1.74E+03	8.83E+01	0.0465
22	14.777	22.4357	36.8534	0.0087	1.45E+03	9.52E+01	0.0471
23	15.142	22.4372	36.8532	0.0095	1.72E+03	1.10E+02	0.0463
24	15.074	22.4376	36.8532	-0.0084	1.69E+03	9.02E+01	0.0481
Station 3-1							
<i>bottlesum_in=</i>	<i>c:\cruises\64AW103\UCCTD\64AW103-03UCCTD01.XMLCON</i>						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	132.127	20.2545	36.8993	0.0303	-1.36E+00	6.54E-02	0.0417
2	97.994	20.7151	36.9068	0.2587	1.16E+00	6.54E-02	0.0757
3	71.701	20.9579	36.7942	0.3296	3.59E+00	6.54E-02	0.1014
4	71.614	20.9594	36.7942	0.3204	3.69E+00	6.53E-02	0.0955
5	71.533	20.9597	36.7941	0.3157	3.69E+00	6.53E-02	0.0924
6	71.452	20.9595	36.7941	0.3362	3.69E+00	6.53E-02	0.0978
7	71.535	20.9594	36.7943	0.312	3.72E+00	6.53E-02	0.0962
8	71.693	20.9596	36.7945	0.342	4.46E+00	6.53E-02	0.0944
9	71.716	20.9603	36.7941	0.3443	4.95E+00	6.53E-02	0.0955
10	71.571	20.9622	36.7936	0.3186	4.95E+00	6.53E-02	0.0955
11	71.425	20.9631	36.7934	0.3481	4.95E+00	6.53E-02	0.0957
12	71.041	20.9637	36.7935	0.3343	4.95E+00	6.53E-02	0.0976
13	60.562	21.1731	36.7982	0.1306	8.79E+00	1.69E-01	0.0893
14	41.115	21.5898	36.8018	0.0307	1.13E+01	6.44E-01	0.0773
15	22.771	21.8303	36.8049	0.0069	1.76E+01	2.05E+00	0.0704
16	23.004	21.8727	36.8058	0.0056	1.76E+01	2.06E+00	0.0701
17	22.653	21.9644	36.8001	0.0167	1.76E+01	2.15E+00	0.0693
18	22.726	22.0553	36.7824	0.0198	1.87E+01	2.12E+00	0.0711
19	22.809	22.1082	36.7669	0.0206	1.88E+01	2.11E+00	0.0702
20	22.867	22.1328	36.7587	0.0205	1.88E+01	2.12E+00	0.0722

21	23.027	22.1469	36.7534	0.0161	1.88E+01	2.17E+00	0.0704
22	22.724	22.1456	36.7546	0.0138	2.00E+01	2.21E+00	0.0687
23	22.721	22.147	36.7544	0.0196	2.01E+01	2.24E+00	0.0693
24	22.943	22.1426	36.7563	0.0052	2.02E+01	2.20E+00	0.0682
Station 3-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-03UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	253.675	15.608	35.9959	0.0133	7.75E+02	6.54E-02	0.0313
2	132.042	20.2995	36.9169	0.0398	8.15E+02	1.12E-01	0.0391
3	94.304	20.6997	36.8877	0.4104	8.82E+02	7.71E-01	0.0824
4	69.165	21.0344	36.8261	0.2693	8.93E+02	5.90E+00	0.0979
5	69.396	21.0363	36.8272	0.2907	8.73E+02	4.49E+00	0.0983
6	69.174	21.0351	36.827	0.2648	8.74E+02	5.87E+00	0.0968
7	69.221	21.0392	36.8296	0.2561	8.79E+02	5.79E+00	0.0945
8	69.098	21.0369	36.8284	0.2868	8.84E+02	5.97E+00	0.0958
9	69.251	21.038	36.828	0.2498	8.96E+02	5.97E+00	0.0945
10	69.232	21.0484	36.8353	0.2606	8.71E+02	6.00E+00	0.0907
11	50.545	21.428	36.819	0.0614	8.89E+02	2.25E+01	0.0778
12	25.832	21.712	36.8054	0.0138	9.39E+02	1.04E+02	0.0744
13	25.661	21.7119	36.8054	0.0138	9.37E+02	1.12E+02	0.0717
14	25.578	21.7112	36.8053	0.0169	9.55E+02	1.13E+02	0.073
15	25.957	21.7101	36.8053	0.0171	9.66E+02	1.18E+02	0.0737
16	25.891	21.7108	36.8053	0.0235	9.83E+02	1.12E+02	0.0733
17	25.99	21.71	36.8053	0.0106	1.01E+03	1.10E+02	0.0767
18	25.966	21.7106	36.8053	0.021	1.01E+03	1.17E+02	0.0743
19	25.736	21.7107	36.8053	0.0206	9.95E+02	1.14E+02	0.0709
20	25.894	21.7072	36.805	0.01	9.99E+02	1.13E+02	0.0738
21	26.065	21.7058	36.8051	0.0202	1.01E+03	1.07E+02	0.0754
22	25.817	21.708	36.805	0.0238	9.80E+02	1.11E+02	0.0716
23	25.766	21.7054	36.805	-0.0028	9.63E+02	1.05E+02	0.0704
24	25.718	21.7054	36.8049	0.0313	9.66E+02	1.14E+02	0.0719
Station 4-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-04UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	128.559	19.8293	36.9919	0.0072	5.67E+00	6.54E-02	0.0378
2	70.344	20.595	37.1166	0.1659	1.51E+01	2.18E-01	0.0677
3	70.123	20.5958	37.1164	0.2062	1.46E+01	2.26E-01	0.0591
4	70.14	20.5956	37.1158	0.1775	1.51E+01	2.30E-01	0.0589
5	70.053	20.5954	37.1155	0.1979	1.51E+01	2.38E-01	0.0589
6	70.19	20.5965	37.1157	0.1849	1.63E+01	2.41E-01	0.0583
7	70.27	20.5986	37.116	0.1828	1.63E+01	2.46E-01	0.0548
8	70.333	20.5975	37.1151	0.3546	1.76E+01	2.51E-01	0.0597
9	69.963	20.597	37.1148	0.2064	1.72E+01	2.62E-01	0.0646
10	70.067	20.5933	37.1127	0.1903	1.78E+01	2.67E-01	0.066
11	69.929	20.593	37.1121	0.1874	1.84E+01	2.75E-01	0.0733
12	63.082	20.6836	37.1133	0.0929	2.63E+01	4.95E-01	0.0693
13	50.931	20.9419	37.142	0.0236	3.27E+01	1.05E+00	0.0554
14	20.6	21.5724	37.1302	0.0062	4.65E+01	4.67E+00	0.0556
15	20.854	21.5726	37.13	0.0084	4.66E+01	4.60E+00	0.0569

16	20.49	21.5739	37.1295	0.0042	4.67E+01	4.84E+00	0.0523
17	20.79	21.5744	37.1293	0.0114	4.96E+01	4.90E+00	0.06
18	20.702	21.5748	37.1294	0.0093	4.90E+01	4.91E+00	0.0537
19	20.507	21.5784	37.1291	0.0031	5.05E+01	5.03E+00	0.0544
20	20.808	21.5787	37.1291	0.018	5.10E+01	4.96E+00	0.051
21	20.501	21.5783	37.1294	0.0172	4.96E+01	5.11E+00	0.0542
22	20.359	21.5801	37.1292	0.023	5.17E+01	5.32E+00	0.0523
23	20.836	21.5796	37.1292	0.0168	5.31E+01	5.16E+00	0.0547
24	20.775	21.5783	37.1293	0.0154	5.42E+01	5.37E+00	0.0544
25	20.756	21.5782	37.1293	0.0155	5.42E+01	5.36E+00	0.0548
26	20.737	21.5782	37.1293	0.0155	5.41E+01	5.34E+00	0.0551
Station 4-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-04UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	130.812	19.7399	36.9736	0.0234	7.67E+02	5.01E-01	0.0373
2	106.404	20.1458	37.0631	0.1161	8.02E+02	1.42E+00	0.0459
3	86.393	20.3644	37.1078	0.19	8.34E+02	4.43E+00	0.0522
4	86.06	20.368	37.1083	0.2161	8.16E+02	4.56E+00	0.0512
5	86.146	20.3727	37.109	0.1843	8.35E+02	4.53E+00	0.0502
6	86.325	20.3829	37.1106	0.2343	8.42E+02	4.48E+00	0.05
7	86.427	20.3862	37.1108	0.1874	8.47E+02	4.48E+00	0.05
8	86.71	20.3828	37.1103	0.2076	8.28E+02	4.40E+00	0.0506
9	86.72	20.3822	37.1101	0.1935	8.38E+02	4.42E+00	0.0521
10	68.568	20.5558	37.1267	0.0633	8.55E+02	1.25E+01	0.0476
11	59.805	20.7078	37.1508	0.0251	8.80E+02	1.99E+01	0.0489
12	20.487	21.3534	37.1146	0.0174	9.01E+02	1.63E+02	0.055
13	20.411	21.3502	37.1149	0.0118	9.01E+02	1.35E+02	0.0549
14	20.16	21.3522	37.1147	0.0156	9.02E+02	1.43E+02	0.0543
15	20.5	21.3488	37.1151	0.0172	9.08E+02	1.58E+02	0.0538
16	20.525	21.3494	37.1157	0.0127	9.14E+02	1.58E+02	0.0502
17	20.539	21.3503	37.1157	0.0281	9.08E+02	1.57E+02	0.054
18	20.539	21.3495	37.1159	0.0278	9.16E+02	1.68E+02	0.0511
19	20.299	21.3481	37.1154	0.0114	9.09E+02	1.53E+02	0.0506
20	20.483	21.3483	37.1158	0.0255	9.14E+02	1.61E+02	0.0515
21	20.454	21.3487	37.116	0.0182	9.11E+02	1.83E+02	0.0537
22	20.358	21.3495	37.1168	0.026	9.14E+02	1.71E+02	0.0523
23	20.703	21.351	37.1179	0.0163	9.28E+02	1.60E+02	0.0534
24	20.214	21.352	37.119	0.0081	9.03E+02	1.72E+02	0.0538
Station 4-4							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-04UCCTD04.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	20.33	21.6409	37.1512	0.0128	8.62E+02	9.23E+01	0.0538
2	20.149	21.6423	37.1509	0.0113	1.70E+03	1.60E+02	0.049
3	20.493	21.6415	37.1513	0.0199	1.68E+03	2.14E+02	0.0536
4	20.554	21.637	37.151	0.0131	1.71E+03	1.52E+02	0.0496
5	20.776	21.6334	37.1505	0.0355	1.16E+03	1.57E+02	0.0496
6	20.647	21.6287	37.1504	-0.0022	7.67E+02	8.68E+01	0.0467
7	20.196	21.6251	37.1499	-0.008	1.73E+03	1.54E+02	0.0483
8	20.498	21.6227	37.1498	0.0122	1.81E+03	1.53E+02	0.0516

9	20.146	21.625	37.1502	0.0141	1.59E+03	2.12E+02	0.0501
10	20.604	21.6126	37.1494	0.0151	1.65E+03	2.03E+02	0.0573
11	20.228	21.6144	37.1493	0.0104	1.45E+03	1.80E+02	0.0506
12	20.276	21.6166	37.1498	0.0066	1.03E+03	9.93E+01	0.0517
13	20.431	21.6183	37.15	0.0081	9.74E+02	8.75E+01	0.0515
14	20.716	21.6178	37.15	0.0174	1.11E+03	8.56E+01	0.0499
15	20.093	21.6262	37.1509	0.0183	1.53E+03	9.85E+01	0.0476
16	20.317	21.6276	37.1509	0.01	8.12E+02	8.97E+01	0.0515
17	20.548	21.6361	37.1513	0.0226	8.29E+02	8.81E+01	0.0507
18	20.538	21.6431	37.1519	0.022	1.14E+03	1.01E+02	0.0477
19	20.246	21.6483	37.1525	0.0191	1.08E+03	1.15E+02	0.0513
20	20.429	21.6547	37.1532	0.0094	1.60E+03	1.53E+02	0.0491
21	20.409	21.6589	37.1535	0.0161	1.81E+03	1.93E+02	0.0517
22	20.352	21.6608	37.1537	0.016	1.80E+03	1.78E+02	0.0499
23	20.265	21.6637	37.1537	0.0143	1.79E+03	1.73E+02	0.0524
24	20.484	21.6656	37.1538	0.0001	1.80E+03	1.91E+02	0.0494
Station 4-6							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-04UCCTD06.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	151.262	19.8098	37.0185	0.0016	6.41E+02	1.15E-01	0.0315
2	70.918	20.4871	37.129	0.2462	6.39E+02	4.39E+00	0.0638
3	71.276	20.485	37.1276	0.2308	6.49E+02	4.18E+00	0.0698
4	60.848	20.4622	37.0843	0.286	6.66E+02	8.36E+00	0.066
5	61.065	20.4602	37.0838	0.2933	6.75E+02	8.14E+00	0.0683
6	60.464	20.4776	37.09	0.3134	6.48E+02	8.46E+00	0.0624
7	60.825	20.4884	37.0943	0.2383	6.66E+02	8.36E+00	0.0622
8	61.224	20.4801	37.0924	0.246	6.67E+02	8.15E+00	0.0633
9	60.897	20.4663	37.088	0.239	6.71E+02	8.34E+00	0.0639
10	60.587	20.4613	37.0863	0.321	6.69E+02	8.42E+00	0.0647
11	61.106	20.4466	37.0821	0.3057	6.68E+02	8.32E+00	0.0643
12	42.22	20.7129	37.1187	0.0227	7.29E+02	2.68E+01	0.0547
13	20.502	21.5356	37.0888	0.0199	7.25E+02	1.01E+02	0.0485
14	20.218	21.5188	37.0891	0.0026	7.00E+02	1.03E+02	0.0473
15	20.427	21.5399	37.0885	0.0165	7.29E+02	9.21E+01	0.0521
16	20.494	21.5179	37.089	0.0219	7.40E+02	9.42E+01	0.0454
17	20.587	21.528	37.0886	0.0143	7.27E+02	1.15E+02	0.0466
18	20.556	21.5417	37.0882	-0.0014	7.44E+02	9.82E+01	0.0475
19	20.633	21.5406	37.0884	0.0223	7.35E+02	1.01E+02	0.0529
20	20.675	21.5493	37.0885	0.016	7.38E+02	1.10E+02	0.0492
21	20.533	21.5344	37.0885	0.025	7.46E+02	9.89E+01	0.0459
22	20.303	21.5453	37.0884	0.0117	7.31E+02	1.05E+02	0.049
23	20.284	21.5408	37.0883	0.0203	7.28E+02	9.70E+01	0.0438
24	20.657	21.5409	37.088	0.0103	7.55E+02	1.02E+02	0.05
Station 4-7							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-04UCCTD07.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	20.379	21.7377	37.0771	0.0058	1.42E+03	1.67E+02	0.0477
2	19.829	21.7366	37.0772	0.0114	1.10E+03	2.04E+02	0.0478
3	20.111	21.7233	37.0772	0.0161	4.57E+02	7.35E+01	0.0484

4	19.94	21.7231	37.0771	0.0167	3.87E+02	6.91E+01	0.0475
5	20.37	21.7197	37.0771	0.0171	3.65E+02	5.94E+01	0.0466
6	20.009	21.7221	37.0765	0.0145	3.49E+02	5.96E+01	0.0486
7	20.114	21.7162	37.0766	0.0207	3.43E+02	5.95E+01	0.0468
8	20.24	21.7259	37.0768	0.0134	3.48E+02	6.08E+01	0.0489
9	20.2	21.7193	37.077	0.017	3.80E+02	6.97E+01	0.0475
10	20.294	21.7259	37.077	0.0233	1.49E+03	2.96E+02	0.0463
11	19.893	21.7437	37.0762	0.0129	1.50E+03	3.03E+02	0.0454
12	20.179	21.7678	37.0767	0.0124	1.20E+03	2.62E+02	0.0489
13	20.169	21.7548	37.0771	0.026	1.54E+03	2.62E+02	0.0466
14	19.88	21.7694	37.0751	0.0307	1.48E+03	2.73E+02	0.0456
15	20.042	21.7612	37.077	0.0321	1.48E+03	2.74E+02	0.0451
16	20.489	21.7536	37.0763	0.0219	1.08E+03	2.67E+02	0.0484
17	20.053	21.7425	37.0768	0.0216	1.45E+03	2.84E+02	0.0477
18	20.297	21.7388	37.077	0.0303	1.45E+03	2.83E+02	0.0494
19	19.752	21.7443	37.0768	0.0151	1.43E+03	2.81E+02	0.0525
20	20.002	21.7451	37.0765	0.0112	1.48E+03	2.60E+02	0.0477
21	20.04	21.7504	37.0765	0.0125	9.28E+02	2.47E+02	0.0478
22	20.326	21.7562	37.0765	0.0066	7.77E+02	1.01E+02	0.0478
23	20.074	21.7786	37.0771	0.0351	5.31E+02	1.05E+02	0.0459
24	19.92	21.8078	37.0776	0.0077	3.83E+02	7.15E+01	0.0519
Station 5-1							
bottlesum_in=	c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-05UCCTD01.XMLCON						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	152.977	19.7075	37.0465	0.033	1.16E+00	6.54E-02	0.0384
2	101.171	19.9119	37.0781	0.1856	4.95E+00	6.53E-02	0.051
3	67.592	20.2562	37.1212	0.2872	8.74E+00	1.99E-01	0.0675
4	67.462	20.2557	37.1214	0.2752	8.74E+00	2.06E-01	0.0722
5	67.515	20.2562	37.1214	0.2611	8.92E+00	2.08E-01	0.0649
6	67.64	20.2556	37.1216	0.283	1.00E+01	2.13E-01	0.0719
7	67.716	20.245	37.1187	0.2815	1.00E+01	2.17E-01	0.0692
8	67.152	20.2531	37.1208	0.2691	1.00E+01	2.27E-01	0.0687
9	67.567	20.2522	37.1205	0.3041	1.00E+01	2.21E-01	0.0675
10	67.357	20.2549	37.121	0.274	1.03E+01	2.33E-01	0.0691
11	67.409	20.2551	37.121	0.2518	1.13E+01	2.41E-01	0.0692
12	67.284	20.255	37.1209	0.2767	1.13E+01	2.47E-01	0.0708
13	50.893	20.337	37.1268	0.0219	1.54E+01	7.24E-01	0.0502
14	20.366	21.7791	37.1232	0.0098	2.26E+01	3.14E+00	0.0469
15	20.463	21.8036	37.1139	0.027	2.39E+01	3.07E+00	0.0501
16	20.62	21.8074	37.1122	0.0123	2.39E+01	3.21E+00	0.0474
17	20.52	21.8125	37.1104	0.0194	2.48E+01	3.31E+00	0.0466
18	20.714	21.8304	37.105	0.0238	2.43E+01	3.37E+00	0.0433
19	20.534	21.8187	37.1094	0.0104	2.54E+01	3.53E+00	0.0449
20	20.729	21.8205	37.1069	0.0187	2.60E+01	3.54E+00	0.0474
21	20.648	21.8266	37.1065	0.0153	2.76E+01	3.58E+00	0.0486
22	20.619	21.7593	37.1269	0.0153	2.78E+01	3.68E+00	0.0478
23	20.807	21.7763	37.1237	0.0252	2.90E+01	3.65E+00	0.0464
24	20.759	21.7969	37.1174	0.0224	2.90E+01	3.67E+00	0.0465
Station 5-2							

<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-05UCCTD02.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	162.181	19.6182	37.019	0.0226	5.71E+02	7.77E-02	0.0325
2	130.818	19.7893	37.0602	0.1518	6.46E+02	3.47E-01	0.0492
3	100.882	19.9981	37.1008	0.0823	6.13E+02	1.43E+00	0.049
4	78.311	20.1673	37.1025	0.5206	6.15E+02	5.31E+00	0.0811
5	73.678	20.2206	37.1151	0.3937	5.82E+02	7.13E+00	0.0772
6	74.428	20.2184	37.1145	0.3997	5.90E+02	6.75E+00	0.0846
7	73.687	20.2123	37.1131	0.4019	6.23E+02	7.33E+00	0.0824
8	73.966	20.2079	37.1125	0.4548	7.85E+02	7.39E+00	0.0871
9	73.776	20.2068	37.1123	0.4597	8.54E+02	7.67E+00	0.0828
10	73.958	20.2044	37.1123	0.4987	9.30E+02	8.34E+00	0.0858
11	73.537	20.2053	37.1129	0.4827	7.51E+02	9.14E+00	0.0803
12	74.528	20.2069	37.1146	0.4588	6.95E+02	7.79E+00	0.089
13	59.808	20.2854	37.134	0.0325	5.62E+02	1.36E+01	0.0568
14	20.292	21.8082	37.0938	0.0075	5.05E+02	7.54E+01	0.0459
15	19.985	21.8062	37.0945	0.0102	5.00E+02	7.58E+01	0.0442
16	20.099	21.8071	37.095	0.0236	4.89E+02	7.49E+01	0.0442
17	19.882	21.8066	37.096	0.013	4.82E+02	7.40E+01	0.0395
18	20.396	21.8086	37.0941	0.0243	4.78E+02	6.85E+01	0.0428
19	20.025	21.8102	37.0932	0.0178	4.65E+02	6.91E+01	0.043
20	20.184	21.81	37.0931	0.0227	4.63E+02	6.91E+01	0.0431
21	20.101	21.8091	37.0932	0.0176	4.59E+02	6.80E+01	0.0435
22	20.213	21.8106	37.0933	0.0009	4.49E+02	6.72E+01	0.0493
23	20.231	21.811	37.0932	0.0082	4.47E+02	6.54E+01	0.0408
24	20.027	21.8099	37.0935	0.014	4.39E+02	6.50E+01	0.0442
Station 7-1							
<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-07UCCTD01.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	130.32	19.2274	36.9411	0.0104	5.39E+01	6.53E-02	0.0332
2	87.928	19.3908	36.9679	0.2626	8.99E+01	2.53E-01	0.0685
3	88.085	19.3949	36.9681	0.2514	9.18E+01	2.53E-01	0.0695
4	88.155	19.3979	36.9683	0.254	9.56E+01	2.54E-01	0.074
5	88.496	19.3954	36.9677	0.2868	9.63E+01	2.50E-01	0.0715
6	88.096	19.3971	36.9678	0.3092	9.14E+01	2.59E-01	0.0727
7	88.551	19.3968	36.9678	0.3251	9.98E+01	2.52E-01	0.074
8	88.263	19.3967	36.9678	0.3145	9.94E+01	2.59E-01	0.0738
9	87.948	19.3969	36.9677	0.3291	1.02E+02	2.67E-01	0.0664
10	87.932	19.3969	36.9678	0.3413	1.02E+02	2.70E-01	0.0675
11	87.774	19.3958	36.9678	0.3361	1.03E+02	2.77E-01	0.0687
12	51.961	19.8858	37.0435	0.0169	8.23E+01	2.03E+00	0.0457
13	51.99	19.8983	37.0452	0.0321	7.06E+01	2.02E+00	0.0484
14	20.267	20.7094	37.0975	0.0112	7.70E+01	7.79E+00	0.0465
15	20.313	20.7326	37.0996	0.0262	1.09E+02	7.74E+00	0.047
16	19.998	20.7413	37.1007	0.0163	1.45E+02	9.72E+00	0.0463
17	19.795	20.7462	37.101	0.0226	1.45E+02	9.78E+00	0.0457
18	20.368	20.7512	37.1012	0.0249	1.54E+02	9.91E+00	0.0471
19	20.167	20.7487	37.101	0.0188	1.36E+02	9.39E+00	0.0464
20	20.2	20.7409	37.1003	0.0275	1.59E+02	1.12E+01	0.046
21	20.344	20.7405	37.1002	-0.0007	1.67E+02	1.11E+01	0.0471

22	20.046	20.7335	37.0998	0.0112	1.69E+02	1.14E+01	0.0454
23	20.108	20.705	37.0977	0.0198	1.68E+02	1.07E+01	0.0466
24	20.219	20.7071	37.0979	0.0428	1.72E+02	1.13E+01	0.046
station 7-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-07UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	125.672	19.2323	36.943	0.0096	9.46E+02	3.37E-01	0.031
2	125.822	19.2326	36.9431	0.0125	9.72E+02	3.65E-01	0.0329
3	98.329	19.3293	36.961	0.2305	2.99E+02	6.37E-01	0.0554
4	83.144	19.3784	36.9682	0.2765	2.88E+02	1.38E+00	0.0636
5	82.843	19.3807	36.9679	0.2474	3.21E+02	1.50E+00	0.0651
6	83.47	19.376	36.9681	0.2564	6.10E+02	1.61E+00	0.0662
7	83.02	19.3797	36.9681	0.3043	8.20E+02	3.30E+00	0.0625
8	83.202	19.3781	36.968	0.2656	9.75E+02	2.47E+00	0.0632
9	83.264	19.378	36.968	0.2597	9.01E+02	3.60E+00	0.0617
10	83.352	19.377	36.9679	0.2371	6.21E+02	3.04E+00	0.0633
11	83.583	19.374	36.9679	0.2567	6.02E+02	2.22E+00	0.065
12	83.04	19.3752	36.9679	0.246	9.81E+02	3.27E+00	0.0617
13	83.232	19.3743	36.9679	0.2526	1.01E+03	3.81E+00	0.0636
14	54.183	19.646	36.9944	0.0475	9.10E+02	2.13E+01	0.0514
15	20.631	20.7161	37.0992	0.0222	9.11E+02	9.63E+01	0.0429
16	20.622	20.7215	37.0999	0.0108	9.59E+02	8.32E+01	0.0441
17	20.529	20.7189	37.0997	0.0139	6.35E+02	7.73E+01	0.0445
18	20.585	20.7184	37.0996	0.0086	6.31E+02	8.03E+01	0.0448
19	20.695	20.7193	37.0997	0.0144	6.78E+02	8.51E+01	0.0455
20	20.612	20.7192	37.0996	0.0185	8.57E+02	9.34E+01	0.0417
21	20.591	20.718	37.0994	0.018	1.24E+03	1.10E+02	0.0439
22	20.45	20.7176	37.0994	0.0256	1.15E+03	1.46E+02	0.0428
23	20.544	20.7177	37.0993	0.0136	6.49E+02	1.18E+02	0.0452
24	20.663	20.7185	37.0997	0.0305	5.79E+02	9.61E+01	0.0433
Station 8-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-08UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	163.139	18.5033	36.6876	0.0372	2.01E+01	6.54E-02	0.0387
2	162.969	18.5031	36.6877	0.0412	2.01E+01	6.54E-02	0.0384
3	110.374	18.5531	36.6485	0.2002	5.17E+01	6.53E-02	0.0688
4	110.039	18.5571	36.6484	0.1846	5.79E+01	6.53E-02	0.0739
5	111.55	18.5501	36.6494	0.222	5.84E+01	6.53E-02	0.0811
6	86.404	18.7999	36.6925	0.051	7.66E+01	1.42E-01	0.0859
7	85.933	18.7998	36.6928	0.0396	7.29E+01	1.45E-01	0.0647
8	54.166	18.8475	36.6905	0.3153	1.06E+02	9.29E-01	0.0948
9	52.51	18.8476	36.6906	0.3439	1.01E+02	1.04E+00	0.0822
10	53.694	18.8474	36.6906	0.3581	1.04E+02	9.78E-01	0.092
11	54.38	18.8473	36.6904	0.3295	1.06E+02	9.28E-01	0.0939
12	52.161	18.848	36.6906	0.3234	9.88E+01	1.11E+00	0.0851
13	53.673	18.8486	36.6901	0.3458	1.14E+02	9.97E-01	0.0875
14	53.842	18.8542	36.6903	0.3113	1.17E+02	9.94E-01	0.0868
15	53.107	18.858	36.6912	0.2944	1.12E+02	1.06E+00	0.084
16	53.567	18.8629	36.6921	0.2893	1.16E+02	1.03E+00	0.0899

17	53.405	18.8638	36.6921	0.2781	1.19E+02	1.05E+00	0.0839
18	33.952	18.8916	36.6791	0.1166	1.35E+02	4.22E+00	0.0805
19	33.254	18.8913	36.6791	0.1122	1.26E+02	4.82E+00	0.0767
20	18.057	19.4611	36.7248	0.0215	1.33E+02	1.14E+01	0.047
21	18.302	19.4619	36.725	0.024	1.41E+02	1.10E+01	0.0455
22	18.061	19.4604	36.7246	0.0265	1.36E+02	1.14E+01	0.0477
23	18.358	19.466	36.7246	0.0116	1.39E+02	1.09E+01	0.0523
24	18.381	19.4656	36.7247	0.0077	1.40E+02	1.16E+01	0.0474
Station 8-2							
<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-08UCCTD02.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	152.051	18.5464	36.6984	0.037	9.26E+02	1.25E-01	0.0394
2	151.724	18.5462	36.6988	0.0138	9.08E+02	1.28E-01	0.0394
3	126.148	18.5536	36.6805	0.0871	9.49E+02	4.40E-01	0.0501
4	126.452	18.5402	36.6743	0.0757	9.78E+02	4.37E-01	0.0503
5	126.715	18.5289	36.6682	0.0802	9.62E+02	4.37E-01	0.047
6	100.531	18.5302	36.6286	0.0822	9.90E+02	1.47E+00	0.0556
7	62.102	18.8766	36.6923	0.2164	1.00E+03	1.11E+01	0.0855
8	62.02	18.8765	36.6924	0.2314	9.72E+02	1.15E+01	0.0917
9	61.709	18.8717	36.6955	0.2309	1.01E+03	1.17E+01	0.0861
10	62.461	18.8684	36.6964	0.309	1.01E+03	1.12E+01	0.0988
11	62.166	18.8715	36.6949	0.2578	1.00E+03	1.16E+01	0.0861
12	58.825	18.8823	36.6868	0.1333	1.01E+03	1.52E+01	0.0828
13	59.204	18.8838	36.6855	0.156	1.02E+03	1.52E+01	0.0813
14	59.026	18.8817	36.6863	0.1223	1.04E+03	1.57E+01	0.0805
15	58.853	18.8801	36.6868	0.1373	1.04E+03	1.54E+01	0.0824
16	58.992	18.88	36.6872	0.1526	1.01E+03	1.55E+01	0.0811
17	59.432	18.8811	36.6867	0.1393	1.03E+03	1.60E+01	0.0836
18	59.02	18.8802	36.6867	0.1337	1.02E+03	1.60E+01	0.0817
19	40.469	19.06	36.6879	0.0279	1.03E+03	5.51E+01	0.0651
20	20.379	19.5059	36.7171	0.004	1.04E+03	1.68E+02	0.0491
21	20.335	19.5065	36.7171	0.0115	1.04E+03	1.51E+02	0.0485
22	20.485	19.5065	36.7171	0.0099	1.07E+03	1.43E+02	0.0452
23	20.088	19.5061	36.7171	0.0114	1.04E+03	1.65E+02	0.0484
24	20.908	19.5058	36.7171	0.0037	1.08E+03	1.63E+02	0.0472
Station 9-1							
<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-09UCCTD01.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	96.905	17.9646	36.5661	0.0907	1.79E+01	6.53E-02	0.0329
2	97.544	17.964	36.5657	0.0834	1.82E+01	6.53E-02	0.0372
3	97.456	17.9637	36.5653	0.1055	1.89E+01	6.53E-02	0.0336
4	83.87	17.9946	36.5671	0.1546	2.56E+01	1.28E-01	0.0423
5	82.642	17.9936	36.5672	0.1775	2.64E+01	1.38E-01	0.0419
6	83.106	17.9939	36.5674	0.1606	2.57E+01	1.37E-01	0.0426
7	58.229	18.2869	36.6097	0.3355	3.58E+01	6.86E-01	0.0601
8	58.777	18.2867	36.6096	0.3141	3.68E+01	6.60E-01	0.0591
9	58.555	18.2865	36.6099	0.3301	3.48E+01	6.82E-01	0.0603
10	59.841	18.2832	36.6094	0.3519	3.82E+01	6.33E-01	0.0617
11	58.519	18.2857	36.6096	0.3291	3.90E+01	7.03E-01	0.0592

12	58.479	18.2857	36.6094	0.3355	3.96E+01	7.05E-01	0.059
13	42.218	18.6975	36.6374	0.0414	5.40E+01	1.79E+00	0.05
14	41.707	18.6996	36.6375	0.026	5.55E+01	1.88E+00	0.0487
15	42.354	18.6998	36.6376	0.0451	5.48E+01	1.83E+00	0.0522
16	41.744	18.6988	36.6376	0.0374	5.52E+01	1.92E+00	0.0486
17	20.528	18.6995	36.6374	0.041	7.76E+01	6.91E+00	0.0453
18	21.448	18.6965	36.6371	0.0332	8.29E+01	6.20E+00	0.0489
19	20.83	18.6983	36.6372	0.0363	8.62E+01	6.59E+00	0.0493
20	20.567	18.6971	36.6373	0.045	8.75E+01	7.04E+00	0.0507
21	21.21	18.6986	36.6374	0.0574	9.64E+01	6.66E+00	0.0531
22	20.951	18.6977	36.6373	0.041	9.60E+01	6.96E+00	0.0502
23	21.11	18.6977	36.6372	0.0505	9.33E+01	6.58E+00	0.0547
24	20.579	18.6989	36.6373	0.059	9.56E+01	7.00E+00	0.0515
Station 9-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-09UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	121.026	17.9163	36.5611	0.0306	1.38E+02	1.37E-01	0.0333
2	121.081	17.9194	36.5619	0.0353	1.38E+02	1.38E-01	0.0304
3	70.701	18.2513	36.6065	0.388	9.54E+02	7.56E+00	0.0542
4	70.628	18.2516	36.6066	0.3686	9.54E+02	7.72E+00	0.0558
5	70.498	18.2509	36.6062	0.371	9.57E+02	7.88E+00	0.0564
6	70.546	18.2538	36.6068	0.4265	9.41E+02	7.75E+00	0.0586
7	70.511	18.2538	36.6066	0.3795	9.52E+02	7.83E+00	0.0572
8	70.545	18.2543	36.6068	0.3643	1.00E+03	8.05E+00	0.057
9	70.71	18.253	36.6067	0.3848	9.93E+02	7.98E+00	0.0568
10	70.659	18.2526	36.6066	0.3621	9.76E+02	7.75E+00	0.0578
11	70.627	18.2518	36.6065	0.3664	9.76E+02	7.94E+00	0.0561
12	70.747	18.2517	36.6064	0.3859	9.71E+02	7.93E+00	0.0583
13	70.708	18.2506	36.6064	0.3884	9.82E+02	7.95E+00	0.0583
14	49.118	18.6932	36.6372	0.0504	9.83E+02	2.72E+01	0.0508
15	19.877	18.6896	36.6371	0.0358	1.09E+03	1.40E+02	0.0517
16	18.973	18.6896	36.6371	0.0429	1.05E+03	1.48E+02	0.0482
17	18.944	18.6892	36.637	0.0428	1.04E+03	1.44E+02	0.0461
18	19.106	18.6896	36.6371	0.0398	1.07E+03	1.35E+02	0.048
19	19.421	18.6907	36.6369	0.0282	1.07E+03	1.39E+02	0.0489
20	19.301	18.691	36.6369	0.0315	1.07E+03	1.45E+02	0.0571
21	18.974	18.6908	36.6369	0.037	1.07E+03	1.45E+02	0.0495
22	18.715	18.6902	36.6368	0.0284	1.03E+03	1.47E+02	0.0478
23	18.971	18.6897	36.6368	0.0465	1.05E+03	1.43E+02	0.0496
24	19.367	18.6908	36.6368	0.0436	1.07E+03	1.47E+02	0.0493
Station 10-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-10UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	152.004	16.9067	36.3532	0.0397	3.17E+01	6.54E-02	0.0284
2	151.918	16.9062	36.3536	0.0167	3.27E+01	6.54E-02	0.0282
3	94.482	17.278	36.3871	0.2348	4.03E+01	7.09E-02	0.0385
4	63.932	17.7398	36.4142	0.2619	4.54E+01	3.96E-01	0.0548
5	64.167	17.7393	36.4144	0.2394	4.66E+01	3.90E-01	0.0533
6	64.167	17.7392	36.4143	0.248	4.66E+01	3.98E-01	0.0617

7	63.76	17.7402	36.4146	0.2777	4.67E+01	4.14E-01	0.0508
8	63.569	17.7414	36.4145	0.2277	4.79E+01	4.27E-01	0.0491
9	63.592	17.7419	36.4147	0.2121	4.79E+01	4.33E-01	0.0507
10	21.51	17.7803	36.4144	0.178	5.04E+01	4.19E+00	0.0564
11	20.601	17.7804	36.4146	0.166	5.04E+01	4.44E+00	0.0536
12	20.922	17.7801	36.4145	0.1768	5.04E+01	4.41E+00	0.0588
13	21.015	17.7789	36.4141	0.1749	5.04E+01	4.53E+00	0.0562
14	21.072	17.7813	36.4147	0.1877	5.06E+01	4.59E+00	0.06
15	20.609	17.7805	36.4144	0.1864	5.05E+01	4.62E+00	0.055
16	20.779	17.7799	36.4146	0.169	5.14E+01	4.60E+00	0.0548
17	20.472	17.7795	36.4146	0.1683	5.08E+01	4.60E+00	0.0594
18	20.948	17.7794	36.4145	0.1737	5.17E+01	4.51E+00	0.0557
19	20.706	17.7795	36.4145	0.1821	5.17E+01	4.56E+00	0.0577
20	21.173	17.7796	36.4145	0.1737	5.19E+01	4.55E+00	0.0712
21	20.994	17.78	36.4146	0.1666	5.24E+01	4.47E+00	0.0542
22	20.996	17.7809	36.4147	0.1838	5.17E+01	4.61E+00	0.0589
23	20.741	17.7813	36.4146	0.1722	5.17E+01	4.78E+00	0.0542
24	21.072	17.7799	36.4143	0.192	5.17E+01	4.72E+00	0.0898
Station 10-2							
bottlesum_in=c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-10UCCTD02.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	132.617	16.9127	36.354	0.0205	3.16E+02	1.29E-01	0.0291
2	132.691	16.9129	36.3541	0.036	3.19E+02	1.28E-01	0.0303
3	90.433	17.2091	36.3756	0.1778	1.06E+03	1.84E+00	0.0453
4	55.708	17.7257	36.4139	0.2663	1.13E+03	1.33E+01	0.0535
5	55.919	17.7264	36.4139	0.3067	1.14E+03	1.31E+01	0.0532
6	56.096	17.7268	36.414	0.2737	1.14E+03	1.26E+01	0.0525
7	56.422	17.7258	36.4139	0.3007	1.14E+03	1.23E+01	0.0527
8	56.874	17.7246	36.4138	0.2494	1.01E+03	9.34E+00	0.0502
9	56.692	17.7242	36.4138	0.2847	9.30E+02	7.92E+00	0.0552
10	56.781	17.7241	36.4138	0.2618	7.62E+02	7.77E+00	0.0477
11	56.646	17.7245	36.4139	0.2743	6.43E+02	7.75E+00	0.056
12	19.722	17.7738	36.4085	0.1501	7.20E+02	8.47E+01	0.0596
13	19.707	17.7729	36.4084	0.1331	7.07E+02	8.23E+01	0.055
14	20.241	17.7734	36.4089	0.1366	7.49E+02	8.69E+01	0.0586
15	19.977	17.7742	36.4087	0.1526	8.03E+02	9.21E+01	0.0584
16	20.092	17.7731	36.4088	0.1364	7.76E+02	8.90E+01	0.0575
17	19.466	17.7737	36.4087	0.1377	7.83E+02	8.74E+01	0.0566
18	19.911	17.7751	36.4089	0.1375	7.97E+02	7.95E+01	0.0562
19	19.786	17.7741	36.4088	0.1373	8.21E+02	9.01E+01	0.0605
20	19.638	17.7721	36.4085	0.1115	8.76E+02	9.76E+01	0.0594
21	19.763	17.7734	36.4088	0.1449	8.05E+02	9.64E+01	0.0586
22	19.633	17.7742	36.4089	0.125	8.21E+02	9.42E+01	0.0538
23	20.22	17.7735	36.4086	0.1492	8.52E+02	9.77E+01	0.0593
24	20.369	17.7734	36.4086	0.1318	9.92E+02	9.95E+01	0.0579
Station 10-4							
bottlesum_in=c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-10UCCTD04.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	22.898	17.791	36.4168	0.1132	1.51E+03	3.50E+01	0.0563

2	22.74	17.7908	36.417	0.0891	1.49E+03	3.32E+01	0.0572
3	22.629	17.7912	36.417	0.1029	1.49E+03	3.26E+01	0.0638
4	22.748	17.7908	36.417	0.0984	1.48E+03	3.16E+01	0.0558
5	22.512	17.7908	36.4169	0.0787	1.48E+03	3.30E+01	0.0566
6	22.313	17.7905	36.417	0.1015	1.47E+03	3.17E+01	0.056
7	22.63	17.7904	36.4169	0.0682	1.46E+03	3.16E+01	0.0609
8	22.937	17.7902	36.417	0.0948	1.46E+03	3.09E+01	0.0605
9	23.018	17.7902	36.4169	0.0875	1.47E+03	3.03E+01	0.0582
10	23.186	17.79	36.417	0.1101	1.44E+03	3.01E+01	0.0655
11	22.96	17.7903	36.4169	0.0894	1.47E+03	3.00E+01	0.0611
12	22.501	17.79	36.4169	0.0946	1.46E+03	3.09E+01	0.056
13	22.636	17.7902	36.4169	0.0839	1.45E+03	2.95E+01	0.0565
14	22.643	17.7903	36.417	0.0745	1.46E+03	3.04E+01	0.0741
15	22.823	17.7906	36.4169	0.102	1.45E+03	2.93E+01	0.0584
16	22.35	17.7907	36.4169	0.0858	1.46E+03	2.97E+01	0.0949
17	22.58	17.7903	36.417	0.076	1.45E+03	2.85E+01	0.0574
18	23.039	17.7898	36.417	0.0744	1.43E+03	2.79E+01	0.0591
19	22.687	17.7903	36.417	0.1034	1.45E+03	2.85E+01	0.0564
20	22.512	17.79	36.417	0.1048	1.44E+03	2.79E+01	0.0555
21	22.814	17.79	36.4169	0.0861	1.42E+03	2.77E+01	0.0621
22	22.772	17.7899	36.4168	0.087	1.46E+03	2.78E+01	0.062
23	22.695	17.7898	36.417	0.0945	1.44E+03	2.77E+01	0.0551
24	22.278	17.7898	36.4169	0.1003	1.46E+03	2.74E+01	0.061
Station 10-5							
bottlesum_in=c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-10UCCTD05.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	121.592	16.8104	36.2767	0.0426	6.70E+02	2.62E-01	0.0368
2	121.524	16.8075	36.2762	0.0295	6.59E+02	2.62E-01	0.0395
3	86.609	17.3831	36.3881	0.1726	7.09E+02	1.29E+00	0.0522
4	86.631	17.3848	36.3882	0.1941	7.39E+02	1.29E+00	0.0526
5	57.861	17.6825	36.4066	0.2752	7.35E+02	7.03E+00	0.0659
6	57.979	17.6841	36.4066	0.242	7.21E+02	6.87E+00	0.0648
7	58.064	17.6844	36.4066	0.2454	7.30E+02	6.76E+00	0.0634
8	58.431	17.6848	36.4068	0.2679	7.32E+02	6.57E+00	0.0646
9	58.438	17.685	36.4067	0.3043	7.50E+02	6.64E+00	0.0665
10	58.37	17.6834	36.4067	0.2679	7.11E+02	6.63E+00	0.0645
11	58.511	17.6837	36.4066	0.2841	7.07E+02	6.57E+00	0.0636
12	58.606	17.6841	36.4068	0.2561	7.29E+02	6.51E+00	0.0627
13	29.313	17.7611	36.4046	0.1531	6.93E+02	4.03E+01	0.0639
14	29.918	17.7612	36.4045	0.1615	7.47E+02	3.81E+01	0.0659
15	20.579	17.7904	36.4025	0.0931	7.49E+02	6.78E+01	0.0669
16	20.007	17.7905	36.4027	0.0867	7.92E+02	7.45E+01	0.0619
17	19.753	17.7899	36.4026	0.0938	7.85E+02	7.27E+01	0.0658
18	19.405	17.7895	36.4025	0.0857	7.40E+02	7.63E+01	0.0686
19	19.73	17.7896	36.4024	0.1061	7.52E+02	7.30E+01	0.0643
20	19.545	17.7893	36.4024	0.0894	7.49E+02	7.81E+01	0.0616
21	19.72	17.7892	36.4024	0.1046	7.66E+02	7.69E+01	0.0663
22	19.848	17.7893	36.4024	0.0847	7.72E+02	7.94E+01	0.066
23	19.56	17.7893	36.4024	0.0963	7.73E+02	8.34E+01	0.0612
24	19.907	17.7895	36.4025	0.1013	8.04E+02	8.22E+01	0.066

Station 10-6							
<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-10UCCTD06.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	22.265	17.7551	36.4045	0.1025	1.20E+03	1.49E+02	0.0655
2	22.859	17.755	36.4046	0.11	1.31E+03	1.48E+02	0.071
3	22.906	17.7551	36.4046	0.0966	1.30E+03	1.41E+02	0.0633
4	22.749	17.7546	36.4047	0.1021	1.06E+03	1.36E+02	0.0757
5	22.37	17.7548	36.4046	0.0888	9.19E+02	1.12E+02	0.0718
6	22.39	17.7552	36.4045	0.0999	9.04E+02	1.03E+02	0.0678
7	22.451	17.7561	36.4045	0.0999	8.96E+02	9.92E+01	0.0697
8	22.435	17.7557	36.4044	0.1005	8.92E+02	1.00E+02	0.0594
9	21.98	17.7558	36.4046	0.1006	8.57E+02	1.01E+02	0.0633
10	22.541	17.7555	36.4046	0.1141	8.58E+02	9.17E+01	0.063
11	22.346	17.7556	36.4045	0.1063	8.32E+02	9.06E+01	0.0623
12	22.346	17.7555	36.4047	0.1067	8.06E+02	8.89E+01	0.0645
13	22.544	17.7553	36.4046	0.1179	7.99E+02	8.48E+01	0.0624
14	21.793	17.7554	36.4045	0.1137	7.93E+02	9.12E+01	0.0777
15	22.603	17.7553	36.4047	0.1111	7.88E+02	8.28E+01	0.0625
16	22.745	17.7557	36.4044	0.1218	7.79E+02	8.03E+01	0.0725
17	22.285	17.7553	36.4046	0.1234	7.65E+02	8.33E+01	0.0806
18	22.639	17.7553	36.4046	0.1324	7.60E+02	8.04E+01	0.0626
19	22.165	17.7556	36.4046	0.13	7.55E+02	8.38E+01	0.0635
20	22.349	17.7544	36.4047	0.1418	7.55E+02	7.95E+01	0.067
21	22.516	17.7546	36.4047	0.1193	7.43E+02	7.77E+01	0.0659
22	22.266	17.755	36.4046	0.1235	7.43E+02	7.94E+01	0.0635
23	22.274	17.7547	36.4047	0.1195	7.41E+02	7.85E+01	0.0922
24	22.242	17.7545	36.4047	0.1194	7.34E+02	7.96E+01	0.0652
Station 11-1							
<i>bottlesum_in=</i>		<i>c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-11UCCTD01.XMLCON</i>					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	138.064	15.778	36.1757	0.0237	2.01E+01	6.52E-02	0.0265
2	138.055	15.7778	36.1757	0.0206	2.01E+01	6.53E-02	0.0303
3	122.028	15.7402	36.1544	0.0287	2.52E+01	6.54E-02	0.0291
4	122.103	15.7392	36.1539	0.0318	2.57E+01	6.54E-02	0.0278
5	60.893	16.1036	36.1786	0.2218	3.91E+01	4.47E-01	0.0589
6	60.674	16.1008	36.1786	0.2047	3.91E+01	4.58E-01	0.0576
7	60.779	16.1009	36.1786	0.2012	4.03E+01	4.58E-01	0.0576
8	60.933	16.1046	36.1785	0.2033	4.03E+01	4.56E-01	0.0574
9	61.078	16.1075	36.1783	0.2575	4.03E+01	4.50E-01	0.0581
10	61.251	16.1076	36.1785	0.2116	4.03E+01	4.51E-01	0.0579
11	40.718	16.3108	36.1713	0.192	4.54E+01	1.69E+00	0.0603
12	40.661	16.3317	36.1716	0.1683	4.61E+01	1.75E+00	0.0564
13	19.762	16.3886	36.1739	0.1708	5.42E+01	6.39E+00	0.0501
14	19.788	16.3889	36.1741	0.1581	5.46E+01	6.41E+00	0.0554
15	19.421	16.3891	36.174	0.1935	5.55E+01	6.75E+00	0.0533
16	19.547	16.3874	36.1741	0.1874	5.57E+01	6.86E+00	0.0523
17	19.948	16.3881	36.174	0.1768	5.67E+01	6.60E+00	0.056
18	19.364	16.3896	36.1738	0.1649	5.67E+01	6.96E+00	0.0518
19	19.586	16.3903	36.1739	0.1695	5.80E+01	7.19E+00	0.0546

20	19.521	16.3903	36.174	0.2077	5.92E+01	7.28E+00	0.0535
21	20.36	16.3893	36.1741	0.1748	5.93E+01	6.79E+00	0.0531
22	19.566	16.3889	36.1741	0.1748	5.93E+01	7.02E+00	0.0556
23	19.057	16.3882	36.1741	0.1693	5.93E+01	7.39E+00	0.0551
24	19.372	16.3876	36.1742	0.1912	6.01E+01	7.44E+00	0.055
Station 11-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-11UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	121.75	15.8846	36.1711	0.0385	3.34E+02	1.63E-01	0.0272
2	121.731	15.8881	36.1715	0.032	3.36E+02	1.65E-01	0.0255
3	70.494	16.197	36.1778	0.2214	4.05E+02	2.71E+00	0.0596
4	70.353	16.202	36.1775	0.1929	4.34E+02	2.94E+00	0.057
5	70.628	16.1961	36.1779	0.2174	5.32E+02	3.17E+00	0.0576
6	70.603	16.1952	36.1778	0.2239	5.40E+02	3.42E+00	0.0561
7	70.429	16.1944	36.1779	0.1989	5.66E+02	3.58E+00	0.057
8	70.412	16.1935	36.1779	0.2247	5.43E+02	3.32E+00	0.0579
9	70.504	16.1928	36.1778	0.2061	4.87E+02	3.21E+00	0.0562
10	70.497	16.1926	36.1779	0.2111	4.38E+02	3.04E+00	0.0587
11	70.421	16.1926	36.1779	0.2158	4.10E+02	2.83E+00	0.0573
12	70.363	16.1928	36.1779	0.2025	3.94E+02	2.74E+00	0.0587
13	57.094	16.3495	36.1737	0.1642	3.61E+02	5.35E+00	0.0557
14	57.341	16.3439	36.1736	0.1843	3.60E+02	5.23E+00	0.054
15	57.208	16.3245	36.1744	0.1686	3.62E+02	5.30E+00	0.0566
16	57.017	16.3277	36.174	0.1634	3.60E+02	5.37E+00	0.054
17	57.076	16.336	36.1738	0.1619	3.61E+02	5.31E+00	0.0584
18	20.149	16.3714	36.1736	0.152	3.79E+02	3.35E+01	0.0575
19	20.595	16.3716	36.1735	0.1668	3.79E+02	3.33E+01	0.0571
20	19.977	16.3719	36.1735	0.1543	3.75E+02	3.50E+01	0.0561
21	19.978	16.3719	36.1736	0.1872	3.80E+02	3.47E+01	0.0573
22	20.045	16.372	36.1737	0.1869	3.81E+02	3.44E+01	0.0597
23	20.11	16.3723	36.1736	0.1924	3.83E+02	3.47E+01	0.0557
24	20.118	16.3721	36.1736	0.1752	3.84E+02	3.48E+01	0.0557
Station 12-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-12UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	121.118	15.0214	36.0452	0.0353	4.66E+01	6.56E-02	0.0253
2	121.039	15.0178	36.0445	0.018	4.66E+01	6.57E-02	0.0255
3	100.884	15.2762	36.0914	0.139	4.54E+01	1.44E-01	0.03
4	60.032	15.4462	36.1112	0.2219	4.03E+01	8.66E-01	0.0446
5	59.927	15.4477	36.1116	0.2383	4.03E+01	8.57E-01	0.0437
6	60.001	15.4464	36.1115	0.2591	4.03E+01	8.42E-01	0.0421
7	60.328	15.4455	36.1113	0.2553	3.92E+01	8.22E-01	0.0458
8	59.912	15.4458	36.1113	0.2479	3.91E+01	8.16E-01	0.0423
9	59.901	15.4443	36.1113	0.2369	3.87E+01	7.98E-01	0.0438
10	59.81	15.4448	36.1113	0.226	3.78E+01	7.82E-01	0.0446
11	59.647	15.446	36.1113	0.2358	3.78E+01	7.87E-01	0.0458
12	59.679	15.4448	36.1113	0.242	3.78E+01	7.84E-01	0.0438
13	45.213	15.9124	36.1275	0.1625	4.28E+01	1.71E+00	0.0422
14	45.242	15.9115	36.1277	0.1661	4.29E+01	1.70E+00	0.0441

15	20.287	15.9687	36.128	0.1537	4.66E+01	5.94E+00	0.0497
16	20.256	15.967	36.1278	0.1743	4.78E+01	5.92E+00	0.0454
17	20.143	15.9671	36.1279	0.1432	4.79E+01	5.99E+00	0.0478
18	19.986	15.9687	36.128	0.1918	4.80E+01	5.94E+00	0.0515
19	20.111	15.9694	36.1279	0.1897	4.88E+01	6.15E+00	0.0501
20	20.784	15.9697	36.128	0.1865	4.92E+01	5.73E+00	0.049
21	20.432	15.9696	36.128	0.1795	4.92E+01	6.03E+00	0.0501
22	20.199	15.969	36.128	0.2085	4.92E+01	6.08E+00	0.0497
23	20.296	15.9688	36.128	0.1644	5.04E+01	6.10E+00	0.0482
24	20.337	15.9674	36.1279	0.1312	5.04E+01	6.22E+00	0.0468
Station 12-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-12UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	131.143	15.0593	36.0529	0.0354	5.76E+02	4.39E-01	0.0269
2	131.083	15.0577	36.0524	0.0159	5.55E+02	4.25E-01	0.0289
3	100.736	15.2436	36.0857	0.1222	1.25E+03	1.88E+00	0.0301
4	100.776	15.2438	36.0858	0.1268	1.26E+03	2.00E+00	0.0283
5	73.422	15.4064	36.1082	0.2531	4.39E+02	4.29E+00	0.0418
6	73.435	15.4057	36.1081	0.2277	4.30E+02	4.23E+00	0.0418
7	62.928	15.7624	36.1223	0.2194	6.63E+02	1.53E+01	0.0467
8	63.038	15.7872	36.123	0.1978	1.06E+03	1.28E+01	0.0417
9	62.863	15.8313	36.1231	0.1933	6.32E+02	1.03E+01	0.0424
10	62.918	15.8717	36.1246	0.2073	5.27E+02	9.04E+00	0.043
11	62.912	15.8968	36.1255	0.184	5.46E+02	8.35E+00	0.0466
12	62.886	15.9026	36.1263	0.1792	5.51E+02	8.48E+00	0.0431
13	62.942	15.9026	36.1264	0.1652	6.19E+02	9.61E+00	0.0448
14	62.86	15.909	36.1267	0.1736	5.69E+02	8.92E+00	0.043
15	62.787	15.9155	36.127	0.1829	5.26E+02	8.55E+00	0.0429
16	62.984	15.9159	36.1269	0.1877	5.83E+02	8.86E+00	0.0431
17	40.916	15.9341	36.1272	0.1705	5.64E+02	3.50E+01	0.0433
18	19.988	15.9736	36.1286	0.161	1.12E+03	1.75E+02	0.0494
19	20.133	15.9736	36.1287	0.2228	7.41E+02	1.01E+02	0.0548
20	20.232	15.9728	36.1289	0.1583	7.28E+02	9.45E+01	0.0513
21	20.127	15.9731	36.1286	0.1747	8.89E+02	1.08E+02	0.051
22	20.274	15.973	36.1288	0.1486	8.60E+02	1.47E+02	0.0505
23	20.016	15.973	36.1288	0.1727	8.25E+02	1.00E+02	0.0483
24	20.139	15.9735	36.1286	0.1502	9.63E+02	1.43E+02	0.0502
Station 13-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-13UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	112.258	13.4542	35.7875	0.0193	3.40E+01	6.54E-02	0.0293
2	112.326	13.4541	35.7874	0.0248	3.40E+01	6.54E-02	0.0307
3	69.224	13.7521	35.817	0.1614	4.16E+01	4.84E-01	0.0407
4	69.092	13.752	35.817	0.1773	4.26E+01	4.90E-01	0.0402
5	41.722	14.3192	35.8546	0.2211	4.92E+01	2.10E+00	0.0517
6	41.734	14.3198	35.8545	0.2225	4.94E+01	2.13E+00	0.0523
7	41.753	14.32	35.8545	0.2508	5.04E+01	2.14E+00	0.051
8	41.69	14.3201	35.8544	0.2271	5.04E+01	2.16E+00	0.055
9	41.856	14.3198	35.8546	0.1949	5.16E+01	2.15E+00	0.0506

10	41.91	14.3193	35.8546	0.2288	5.17E+01	2.18E+00	0.0502
11	20.402	14.3718	35.8552	0.1709	6.18E+01	7.97E+00	0.0471
12	20.599	14.3516	35.8543	0.1881	6.26E+01	7.90E+00	0.0537
13	20.835	14.3494	35.8541	0.1722	6.32E+01	7.92E+00	0.0467
14	20.109	14.3555	35.8541	0.1734	6.43E+01	8.57E+00	0.0524
15	20.212	14.359	35.8541	0.2075	6.56E+01	8.44E+00	0.0479
16	20.348	14.3478	35.8539	0.2127	6.56E+01	8.49E+00	0.0512
17	20.583	14.3514	35.854	0.1892	6.68E+01	8.40E+00	0.0514
18	20.597	14.3487	35.8539	0.1764	6.78E+01	8.67E+00	0.0496
19	20.616	14.3498	35.8541	0.195	6.81E+01	8.77E+00	0.0496
20	20.189	14.3503	35.8542	0.2261	6.94E+01	8.77E+00	0.0507
21	20.489	14.349	35.8544	0.1809	6.94E+01	8.77E+00	0.0494
22	20.666	14.3494	35.8543	0.1945	6.96E+01	8.76E+00	0.0502
23	20.764	14.348	35.8544	0.1859	7.06E+01	8.85E+00	0.0531
24	20.336	14.3477	35.8545	0.2001	7.18E+01	9.02E+00	0.0488
Station 13-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-13UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
§	101.391	13.6167	35.8129	0.0394	3.71E+02	9.63E-01	0.0294
2	101.634	13.6198	35.8131	0.0385	3.71E+02	9.62E-01	0.0287
3	70.419	13.7729	35.8275	0.1694	3.60E+02	3.44E+00	0.0403
4	42.123	14.3491	35.8555	0.2517	4.08E+02	1.61E+01	0.0552
5	41.994	14.349	35.8555	0.2979	4.12E+02	1.62E+01	0.0535
6	41.942	14.3496	35.8555	0.2483	4.14E+02	1.65E+01	0.0492
7	41.762	14.35	35.8556	0.3001	4.18E+02	1.65E+01	0.0488
8	41.808	14.3499	35.8556	0.2462	4.19E+02	1.69E+01	0.0479
9	41.744	14.3512	35.8558	0.2873	4.21E+02	1.68E+01	0.0527
10	41.737	14.3514	35.8559	0.2585	4.22E+02	1.70E+01	0.0531
11	41.732	14.3521	35.856	0.2601	4.22E+02	1.70E+01	0.0536
12	41.799	14.3529	35.8561	0.242	4.21E+02	1.71E+01	0.0454
13	20.303	14.5366	35.8851	0.1498	4.15E+02	4.95E+01	0.2786
14	20.364	14.5436	35.8874	0.154	4.15E+02	4.75E+01	0.0416
15	20.345	14.5464	35.8879	0.1713	4.14E+02	4.94E+01	0.0417
16	20.397	14.5195	35.8837	0.1717	4.15E+02	4.88E+01	0.0437
17	20.799	14.4966	35.8798	0.1877	4.15E+02	4.80E+01	0.0424
18	20.59	14.4904	35.8785	0.1649	4.15E+02	4.88E+01	0.0406
19	20.794	14.4958	35.8793	0.1632	4.14E+02	4.67E+01	0.0434
20	20.627	14.4962	35.8796	0.1835	4.14E+02	4.85E+01	0.0427
21	20.742	14.4753	35.877	0.1835	4.14E+02	4.83E+01	0.0453
22	20.585	14.4658	35.8755	0.1725	4.14E+02	4.85E+01	0.0441
23	20.521	14.4651	35.8746	0.1991	4.13E+02	4.79E+01	0.0427
24	20.415	14.4785	35.8769	0.1785	4.12E+02	4.85E+01	0.0537
Station 14-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-14UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	81.716	13.5064	35.7937	0.0284	9.97E+01	8.41E-02	0.0322
2	81.591	13.5106	35.7943	0.0295	9.72E+01	8.32E-02	0.0313
3	59.676	13.7777	35.8079	0.5918	8.96E+01	2.33E-01	0.0673
4	59.457	13.7774	35.8079	0.589	8.96E+01	2.42E-01	0.0693

5	47.182	13.8058	35.8105	1.3224	9.48E+01	6.63E-01	0.0869
6	46.791	13.8089	35.8108	1.3065	9.59E+01	6.81E-01	0.0835
7	37.207	13.8344	35.8126	1.5735	1.31E+02	2.06E+00	0.0914
8	37.494	13.8348	35.8127	1.595	1.35E+02	2.07E+00	0.0871
9	37.515	13.8344	35.8126	1.6221	1.39E+02	2.08E+00	0.09
10	37.223	13.8368	35.8128	1.6056	1.43E+02	2.17E+00	0.0884
11	37.232	13.8353	35.8127	1.6004	1.45E+02	2.22E+00	0.0912
12	37.322	13.8301	35.8125	1.5405	1.50E+02	2.34E+00	0.088
13	37.207	13.8296	35.8124	1.5559	1.53E+02	2.35E+00	0.0879
14	20.343	14.0109	35.813	1.3335	2.07E+02	1.38E+01	0.0739
15	20.138	14.0111	35.8131	1.3343	2.13E+02	1.53E+01	0.077
16	20.041	14.0122	35.8132	1.3197	2.18E+02	1.57E+01	0.0735
17	20.137	14.012	35.8132	1.3639	2.22E+02	1.60E+01	0.0786
18	20.073	14.0115	35.8132	1.3457	2.27E+02	1.64E+01	0.0731
19	20.133	14.0127	35.8129	1.3105	2.30E+02	1.64E+01	0.074
20	20.229	14.0145	35.8129	1.3379	2.34E+02	1.66E+01	0.0762
21	20.116	14.0154	35.8126	1.3396	2.36E+02	1.72E+01	0.0722
22	20.088	14.0153	35.8127	1.329	2.37E+02	1.69E+01	0.0768
23	20.01	14.0153	35.8127	1.3491	2.39E+02	1.71E+01	0.0715
24	20.134	14.0157	35.8128	1.3461	2.40E+02	1.68E+01	0.0724
Station 14-3							
bottlesum_in=		c:\cruises\64	c:\cruises\64AW103\UCCTD\64AW103-14UCCTD03.XMLCON				
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	13.859	14.0502	35.8084	1.5388	7.59E+02	8.48E+01	0.0771
2	14.382	14.049	35.8084	1.5017	7.56E+02	8.22E+01	0.0807
3	14.212	14.0492	35.8083	1.6072	7.55E+02	7.82E+01	0.0773
4	13.97	14.0494	35.8084	1.5281	7.56E+02	7.92E+01	0.0785
5	14.067	14.0476	35.8083	1.4922	7.53E+02	8.49E+01	0.0808
6	14.148	14.0472	35.8084	1.5472	7.48E+02	8.21E+01	0.0796
7	13.938	14.0449	35.8083	1.549	7.45E+02	8.32E+01	0.0807
8	14.099	14.0436	35.8082	1.5437	7.43E+02	8.02E+01	0.0841
9	13.613	14.0467	35.8083	1.5371	7.39E+02	8.36E+01	0.0789
10	14.05	14.0472	35.8084	1.5291	7.39E+02	7.86E+01	0.083
11	14.377	14.0459	35.8084	1.5117	7.35E+02	7.78E+01	0.0857
12	14.451	14.0405	35.8084	1.5245	7.32E+02	8.11E+01	0.0799
13	14.329	14.0447	35.8082	1.5361	7.30E+02	7.93E+01	0.0807
14	13.905	14.0465	35.8083	1.5416	7.32E+02	8.13E+01	0.0831
15	14.414	14.0448	35.8083	1.5782	7.26E+02	7.48E+01	0.0796
16	14.209	14.0432	35.8083	1.5218	7.27E+02	7.73E+01	0.0935
17	14.379	14.0411	35.8081	1.536	7.30E+02	8.01E+01	0.0889
18	14.3	14.0391	35.8081	1.5562	7.24E+02	7.51E+01	0.0811
19	13.703	14.0404	35.8083	1.5908	7.30E+02	8.15E+01	0.0798
20	13.821	14.0427	35.8083	1.5394	7.33E+02	8.07E+01	0.0789
21	14.166	14.0438	35.8084	1.5453	7.35E+02	7.94E+01	0.0786
22	14.363	14.0487	35.8084	1.5141	7.33E+02	7.64E+01	0.0793
23	14.539	14.0478	35.8083	1.5321	7.35E+02	7.75E+01	0.0831
24	13.93	14.0465	35.8083	1.5358	7.40E+02	8.30E+01	0.0806
Station 14-6							
bottlesum_in=		c:\cruises\64	c:\cruises\64AW103\UCCTD\64AW103-14UCCTD06.XMLCON				

Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	65.857	13.534	35.7959	0.0541	2.34E+02	6.96E-01	0.0286
2	66.066	13.5359	35.7961	0.0395	2.32E+02	6.79E-01	0.032
3	44.469	13.8033	35.8042	0.3592	2.38E+02	1.92E+00	0.0473
4	44.771	13.8028	35.8041	0.3554	2.46E+02	1.89E+00	0.0485
5	21.91	14.0119	35.8066	1.7799	2.53E+02	9.82E+00	0.0857
6	21.62	14.0008	35.8062	1.7827	2.57E+02	1.02E+01	0.0852
7	21.155	14.0034	35.8061	1.7851	2.64E+02	1.07E+01	0.0856
8	21.037	14.0108	35.8061	1.7767	2.73E+02	1.01E+01	0.0812
9	21.065	14.0045	35.8064	1.798	2.77E+02	1.10E+01	0.0862
10	21.572	14.0063	35.8062	1.8339	2.79E+02	9.99E+00	0.0842
11	21.06	14.0058	35.806	1.8095	2.87E+02	1.05E+01	0.082
12	20.818	14.0018	35.8061	1.8171	2.84E+02	1.11E+01	0.0841
13	21.001	14.0065	35.8058	1.8099	2.80E+02	9.91E+00	0.0829
14	20.273	14.0047	35.8061	1.8207	2.76E+02	1.04E+01	0.0821
15	20.476	14.0021	35.806	1.7784	2.72E+02	1.08E+01	0.0887
16	20.337	13.9993	35.8061	1.7377	2.70E+02	1.03E+01	0.0818
17	21.086	13.9845	35.806	1.6247	2.63E+02	1.03E+01	0.0803
18	21.37	13.9881	35.8055	1.5813	2.55E+02	1.00E+01	0.0832
19	20.626	13.994	35.8057	1.6545	2.54E+02	1.05E+01	0.082
20	20.567	13.9959	35.8058	1.7234	2.51E+02	1.02E+01	0.0802
21	21.189	13.9848	35.8053	1.5615	2.49E+02	9.53E+00	0.0834
22	21.616	13.9799	35.8058	1.5034	2.54E+02	9.87E+00	0.0806
23	21.623	13.9829	35.8056	1.5178	2.61E+02	9.78E+00	0.0871
24	21.261	13.9882	35.8056	1.5924	2.66E+02	1.06E+01	0.0794
Station 14-7							
bottlesum_in=		c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-14UCCTD07.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	13.849	14.0569	35.8024	2.0705	4.70E+02	4.26E+01	0.0921
2	13.85	14.0522	35.8024	2.0646	4.76E+02	4.33E+01	0.0916
3	13.778	14.0585	35.8022	2.0339	4.93E+02	4.27E+01	0.0904
4	13.681	14.0597	35.8025	2.0471	5.09E+02	4.35E+01	0.09
5	13.576	14.059	35.8025	2.0264	5.26E+02	4.55E+01	0.0887
6	13.636	14.0557	35.8024	2.0522	5.36E+02	4.30E+01	0.0907
7	14.085	14.0501	35.8024	1.9991	5.51E+02	4.57E+01	0.0994
8	13.487	14.0494	35.8023	2.0475	5.42E+02	4.54E+01	0.091
9	13.884	14.0519	35.8024	2.012	5.43E+02	4.53E+01	0.0957
10	13.85	14.0546	35.8023	2.0375	5.49E+02	4.90E+01	0.0967
11	14.117	14.0548	35.8023	2.0082	5.47E+02	4.42E+01	0.0927
12	13.561	14.055	35.8026	2.0288	5.43E+02	4.82E+01	0.0935
13	13.517	14.0566	35.8024	2.0595	5.50E+02	5.01E+01	0.0915
14	14.269	14.055	35.8022	2.0537	5.61E+02	4.58E+01	0.0944
15	13.542	14.0548	35.8024	2.0574	5.61E+02	4.89E+01	0.0939
16	13.748	14.0525	35.8024	2.0921	5.50E+02	4.59E+01	0.0922
17	14.047	14.0525	35.8023	2.0648	5.32E+02	4.32E+01	0.1001
18	13.555	14.0527	35.8023	2.1299	5.28E+02	4.46E+01	0.093
19	13.474	14.0541	35.8025	2.0642	5.30E+02	4.28E+01	0.0908
20	13.512	14.0542	35.8022	2.0864	5.33E+02	4.31E+01	0.0968
21	13.335	14.051	35.8022	2.0701	5.23E+02	4.57E+01	0.1009
22	14.151	14.0505	35.8021	2.0791	4.99E+02	4.07E+01	0.1012

23	13.957	14.0504	35.8021	2.0523	4.99E+02	3.98E+01	0.0953
24	13.687	14.0494	35.8021	2.0728	5.13E+02	4.17E+01	0.0906
Station 16-1							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-16UCCTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	100.702	12.6713	35.6398	0.0511	4.68E+01	6.55E-02	0.059
2	100.564	12.6737	35.6398	0.0556	4.77E+01	6.55E-02	0.0575
3	58.494	12.8414	35.6586	0.2648	5.80E+01	6.54E-02	0.0879
4	58.638	12.8414	35.6586	0.242	5.80E+01	6.54E-02	0.0988
5	34.188	13.2236	35.6998	1.8363	6.15E+01	4.94E-01	0.1416
6	34.2	13.2464	35.702	1.8663	6.05E+01	4.57E-01	0.1415
7	19.119	13.3063	35.7098	2.1249	5.67E+01	2.00E+00	0.1455
8	19.566	13.3079	35.7099	2.1168	5.68E+01	1.73E+00	0.1461
9	19.182	13.3063	35.7099	2.1861	5.80E+01	2.08E+00	0.1371
10	19.215	13.3071	35.7099	2.1279	5.93E+01	2.23E+00	0.1553
11	19.721	13.3063	35.7097	2.1151	5.93E+01	1.97E+00	0.1375
12	19.64	13.3055	35.7097	2.1316	6.05E+01	2.00E+00	0.1415
13	19.429	13.3053	35.7097	2.2009	6.18E+01	2.30E+00	0.1363
14	19.801	13.3065	35.7099	2.1545	6.31E+01	2.19E+00	0.136
15	19.125	13.3064	35.7099	2.1684	6.43E+01	2.41E+00	0.1426
16	19.732	13.3062	35.7099	2.1604	6.43E+01	2.41E+00	0.1447
17	19.034	13.3061	35.7099	2.1763	6.56E+01	2.73E+00	0.1437
18	19.457	13.3065	35.7099	2.1801	6.56E+01	2.44E+00	0.1487
19	19.855	13.3068	35.7098	2.189	6.56E+01	2.10E+00	0.1459
20	19.575	13.3065	35.7099	2.1668	6.43E+01	2.10E+00	0.1488
21	19.886	13.3067	35.7098	2.1726	6.18E+01	2.25E+00	0.1383
22	19.526	13.3067	35.7099	2.2112	6.05E+01	2.17E+00	0.1395
23	19.501	13.3067	35.7098	2.1544	6.05E+01	2.07E+00	0.1435
24	19.457	13.3066	35.7098	2.0772	6.18E+01	2.35E+00	0.151
Station 16-2							
<i>bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-16UCCTD02.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	90.535	12.6318	35.6347	0.0431	2.92E+02	6.55E-02	0.0576
2	90.588	12.6434	35.6356	0.047	2.93E+02	6.55E-02	0.0595
3	60.5	12.8369	35.6578	0.2264	3.57E+02	2.40E-01	0.0994
4	60.314	12.8365	35.6579	0.2656	3.53E+02	2.32E-01	0.0863
5	41.767	13.2207	35.7013	1.9236	3.38E+02	1.18E+00	0.1234
6	41.446	13.2457	35.7038	2.0386	3.43E+02	1.15E+00	0.1297
7	20.502	13.2532	35.7049	2.1509	3.40E+02	8.97E+00	0.1244
8	21.34	13.2539	35.7047	2.1858	3.45E+02	8.47E+00	0.131
9	21.628	13.2541	35.7047	2.1617	3.55E+02	2.80E+00	0.1248
10	21.029	13.2537	35.7048	2.1512	3.62E+02	8.09E+00	0.1214
11	21.367	13.2539	35.7046	2.2124	3.76E+02	9.85E+00	0.1265
12	21.26	13.254	35.7045	2.2261	3.85E+02	6.54E+00	0.1284
13	20.992	13.2542	35.7045	2.2199	3.94E+02	4.00E+00	0.124
14	20.734	13.2543	35.7045	2.2004	4.05E+02	4.45E+00	0.1271
15	20.742	13.2544	35.7044	2.2627	4.15E+02	6.49E+00	0.1254
16	21.253	13.2541	35.7044	2.2128	4.21E+02	9.30E+00	0.1273
17	21.533	13.2542	35.7045	2.2292	4.27E+02	9.54E+00	0.1315

18	20.642	13.2541	35.7045	2.2305	4.30E+02	2.20E+00	0.1286
19	20.9	13.2539	35.7044	2.229	4.31E+02	1.11E+01	0.1335
20	21.306	13.2541	35.7043	2.2018	4.27E+02	1.01E+01	0.1391
21	20.8	13.2541	35.7043	2.2735	4.17E+02	1.21E+01	0.1326
22	21.1	13.2523	35.7041	2.2441	4.05E+02	1.03E+01	0.1323
23	21.14	13.2516	35.7039	2.2093	3.97E+02	7.73E+00	0.1253
24	21.481	13.2519	35.704	2.2129	3.94E+02	7.97E+00	0.1342
Station 18-1							
bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-18UCCTD01.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	66.269	11.2248	35.4105	0.0282	5.22E+01	6.54E-02	0.0504
2	66.222	11.2279	35.4121	0.0094	5.58E+01	6.54E-02	0.0483
3	42.589	11.6819	35.427	0.7273	7.30E+01	2.68E-01	0.1339
4	42.653	11.6891	35.4278	0.7328	7.71E+01	2.85E-01	0.1393
5	30.129	11.7857	35.4392	1.3156	7.13E+01	8.90E-01	0.1496
6	29.8	11.7885	35.4388	1.3035	6.70E+01	8.42E-01	0.1576
7	16.452	11.8146	35.4369	1.5515	5.67E+01	3.12E+00	0.1694
8	15.551	11.8145	35.4368	1.557	5.32E+01	3.38E+00	0.1638
9	16.684	11.8152	35.4365	1.5661	5.05E+01	2.86E+00	0.1739
10	16.589	11.8151	35.4366	1.6166	4.91E+01	3.24E+00	0.1727
11	17.148	11.8171	35.4349	1.5967	4.79E+01	2.61E+00	0.1819
12	17.235	11.8164	35.4362	1.5967	4.92E+01	2.79E+00	0.1753
13	16.447	11.8171	35.4358	1.5823	5.17E+01	3.26E+00	0.1615
14	16.069	11.8169	35.4363	1.586	5.30E+01	3.67E+00	0.1637
15	16.702	11.8162	35.4364	1.6232	5.44E+01	3.28E+00	0.1647
16	16.746	11.8155	35.4362	1.5688	5.55E+01	3.29E+00	0.1586
17	15.76	11.8147	35.4366	1.5769	5.70E+01	3.89E+00	0.1587
18	16.746	11.8136	35.4369	1.5665	5.59E+01	3.53E+00	0.1844
19	16.94	11.814	35.4366	1.5766	5.42E+01	3.13E+00	0.1606
20	16.242	11.8146	35.4364	1.5776	5.28E+01	3.11E+00	0.1558
21	16.22	11.8145	35.4368	1.5936	5.18E+01	3.26E+00	0.168
22	16.953	11.8145	35.4372	1.5829	5.04E+01	2.61E+00	0.183
23	15.768	11.8146	35.4371	1.577	4.92E+01	3.23E+00	0.1639
24	17.298	11.8133	35.4367	1.5451	4.94E+01	2.29E+00	0.1731
Station 18-2							
bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-18UCCTD02.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	70.626	11.2427	35.4119	0.0444	2.49E+02	7.97E-02	0.049
2	70.738	11.2423	35.4129	0.0418	2.38E+02	7.59E-02	0.0453
3	42.953	11.8107	35.439	1.4536	2.17E+02	6.37E-01	0.1611
4	42.994	11.8071	35.4385	1.4777	2.03E+02	6.37E-01	0.1546
5	19.353	11.8241	35.4393	1.6673	2.97E+02	1.28E+01	0.1532
6	20.09	11.8269	35.4399	1.634	2.96E+02	1.05E+01	0.1605
7	19.864	11.8252	35.4406	1.6179	3.04E+02	1.24E+01	0.166
8	20.528	11.8234	35.4382	1.6623	3.14E+02	1.03E+01	0.1627
9	19.995	11.8205	35.4362	1.6619	3.15E+02	1.15E+01	0.1597
10	20.508	11.8197	35.4356	1.6805	3.02E+02	9.60E+00	0.1782
11	20.363	11.8198	35.4355	1.6892	2.82E+02	9.12E+00	0.1901
12	20.266	11.8203	35.436	1.6706	2.55E+02	8.85E+00	0.1671

13	20.261	11.8204	35.4362	1.6996	2.31E+02	7.24E+00	0.1576
14	20.268	11.8215	35.4372	1.6667	2.18E+02	7.25E+00	0.1616
15	20.254	11.821	35.4368	1.6804	2.10E+02	6.88E+00	0.1581
16	20.588	11.8211	35.4365	1.6724	2.00E+02	6.37E+00	0.1559
17	19.926	11.8204	35.4363	1.6669	1.94E+02	6.96E+00	0.1577
18	20.49	11.8216	35.4371	1.6506	1.92E+02	6.53E+00	0.157
19	20.311	11.8216	35.4369	1.6667	1.89E+02	6.71E+00	0.1526
20	20.259	11.8209	35.4364	1.6637	1.93E+02	6.91E+00	0.151
21	20.327	11.821	35.4365	1.6611	2.02E+02	7.57E+00	0.1774
22	20.298	11.8206	35.4364	1.6857	2.10E+02	7.56E+00	0.1549
23	19.911	11.8196	35.4356	1.6823	2.15E+02	8.85E+00	0.1532
24	20.129	11.8186	35.4349	1.664	2.23E+02	8.26E+00	0.1575
Station 19-1							
bottlesum_in=c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-19UCCTD01.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	70.444	8.7473	35.0258	0.0281	1.01E+02	6.54E-02	0.0686
2	70.601	8.7462	35.0262	0.0205	1.01E+02	6.54E-02	0.0703
3	38.865	10.045	35.0779	0.4619	7.06E+01	3.08E-01	0.2573
4	38.893	10.0424	35.0776	0.4152	6.94E+01	3.01E-01	0.2533
5	25.237	10.563	35.054	1.4386	6.05E+01	1.18E+00	0.2578
6	25.547	10.5663	35.0535	1.4331	6.05E+01	1.04E+00	0.23
7	17.75	10.5877	35.0517	1.45	6.43E+01	3.10E+00	0.24
8	17.886	10.586	35.0521	1.4719	6.43E+01	2.93E+00	0.2505
9	18.173	10.5839	35.0522	1.5023	6.51E+01	2.67E+00	0.2637
10	18.466	10.5849	35.0521	1.5178	6.56E+01	2.65E+00	0.233
11	17.853	10.5866	35.0521	1.4427	6.56E+01	2.94E+00	0.231
12	17.907	10.5868	35.0522	1.5062	6.58E+01	2.81E+00	0.2727
13	18.492	10.5895	35.052	1.4886	6.68E+01	2.66E+00	0.2522
14	18.073	10.589	35.0521	1.4701	6.69E+01	2.64E+00	0.282
15	17.768	10.5903	35.0521	1.4439	6.81E+01	2.78E+00	0.2304
16	18.075	10.5869	35.0522	1.4688	6.81E+01	2.70E+00	0.2454
17	18.045	10.5883	35.0521	1.4801	6.81E+01	2.85E+00	0.2387
18	18.31	10.5879	35.052	1.4596	6.94E+01	2.77E+00	0.2302
19	17.878	10.5882	35.0523	1.4584	6.94E+01	3.04E+00	0.2457
20	18.092	10.5879	35.0522	1.48	6.94E+01	2.90E+00	0.229
21	17.875	10.5883	35.0523	1.4832	7.04E+01	3.00E+00	0.2436
22	18.336	10.5867	35.0523	1.4379	7.06E+01	2.82E+00	0.2456
23	18.291	10.5875	35.0523	1.4535	7.19E+01	3.05E+00	0.2378
24	18.063	10.5865	35.0525	1.4576	7.19E+01	3.11E+00	0.2326
Station 19-2							
bottlesum_in=c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-19UCCTD02.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	65.236	8.9239	35.0391	0.0954	4.15E+02	2.02E-01	0.0946
2	65.239	8.9232	35.039	0.0671	4.12E+02	2.02E-01	0.0985
3	40.192	10.2665	35.103	0.7507	3.93E+02	1.53E+00	0.2911
4	40.634	10.2681	35.1031	0.8071	3.91E+02	1.27E+00	0.2853
5	24.428	10.5652	35.0554	1.4893	3.46E+02	6.47E+00	0.2476
6	24.696	10.5623	35.0559	1.4184	3.46E+02	6.39E+00	0.2255
7	17.561	10.6036	35.0513	1.4698	4.03E+02	1.20E+01	0.2658

8	16.894	10.6035	35.0513	1.4894	5.50E+02	1.35E+01	0.2269
9	17.78	10.6058	35.0512	1.4305	5.61E+02	1.07E+01	0.2905
10	17.167	10.6086	35.051	1.4507	7.78E+02	1.26E+01	0.228
11	16.996	10.609	35.051	1.4761	7.31E+02	1.26E+01	0.2343
12	16.854	10.6107	35.0508	1.4557	7.28E+02	1.29E+01	0.2444
13	17.153	10.6111	35.0506	1.4507	7.38E+02	1.13E+01	0.2228
14	17.214	10.6098	35.0509	1.4336	6.86E+02	1.02E+01	0.2301
15	16.746	10.6098	35.0508	1.5048	6.92E+02	1.14E+01	0.2391
16	17.689	10.6097	35.0509	1.4489	6.30E+02	9.36E+00	0.2535
17	16.96	10.6101	35.0507	1.4596	6.44E+02	1.04E+01	0.2297
18	17.59	10.6125	35.0507	1.4524	5.62E+02	9.01E+00	0.2703
19	17.938	10.6119	35.0506	1.4564	5.85E+02	8.91E+00	0.2899
20	17.489	10.6104	35.0507	1.4606	6.43E+02	1.07E+01	0.2281
21	16.729	10.6055	35.0511	1.4757	6.56E+02	1.18E+01	0.2273
22	17.047	10.6036	35.0514	1.5107	5.05E+02	1.02E+01	0.257
23	16.715	10.6021	35.0513	1.5501	5.34E+02	1.14E+01	0.2352
24	17.115	10.5961	35.0521	1.6551	5.57E+02	1.15E+01	0.2725
Station 20-1							
bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-20UCCTD01.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	62.16	9.4289	35.1121	0.0661	5.99E+01	8.32E-02	0.075
2	62.041	9.424	35.111	0.0313	5.60E+01	8.06E-02	0.0782
3	34.747	9.9454	35.0668	0.7984	3.02E+01	3.26E-01	0.1369
4	34.918	9.9393	35.0673	0.7867	2.77E+01	2.98E-01	0.1246
5	24.751	10.5385	35.1561	1.3102	2.90E+01	8.14E-01	0.1638
6	24.764	10.5509	35.1607	1.3353	2.77E+01	7.85E-01	0.1545
7	24.441	10.5783	35.1634	1.4433	2.64E+01	8.02E-01	0.1608
8	13.852	10.5806	35.1633	1.3473	3.02E+01	2.92E+00	0.1643
9	13.278	10.5777	35.1628	1.3401	3.15E+01	2.98E+00	0.1611
10	13.04	10.5716	35.1618	1.3297	3.15E+01	3.71E+00	0.1583
11	13.792	10.5753	35.1621	1.3527	3.11E+01	3.16E+00	0.177
12	13.553	10.5769	35.1626	1.3496	2.90E+01	3.03E+00	0.1596
13	13.153	10.5788	35.1631	1.3347	2.64E+01	3.02E+00	0.167
14	13.439	10.5808	35.1635	1.3417	2.39E+01	2.74E+00	0.1623
15	13.501	10.5794	35.1634	1.3625	2.26E+01	2.32E+00	0.1616
16	13.168	10.5785	35.1632	1.3697	2.01E+01	2.18E+00	0.1728
17	13.055	10.5796	35.1632	1.3557	1.89E+01	2.10E+00	0.1636
18	13.454	10.5798	35.1632	1.3365	2.02E+01	2.20E+00	0.1662
19	13.377	10.5794	35.1632	1.3845	2.39E+01	2.34E+00	0.1554
20	13.036	10.574	35.1621	1.3285	2.67E+01	2.86E+00	0.1601
21	13.308	10.5655	35.1606	1.3182	2.77E+01	2.83E+00	0.1596
22	13.507	10.5606	35.1597	1.3069	2.71E+01	2.55E+00	0.162
23	13.205	10.5658	35.1607	1.345	2.52E+01	2.78E+00	0.1612
24	12.994	10.5645	35.1606	1.3566	2.56E+01	3.08E+00	0.1628
Station 20-2							
bottlesum_in= c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-20UCCTD02.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	70.407	9.2663	35.0845	0.0618	4.53E+02	2.40E-01	0.0829
2	70.279	9.2671	35.0859	0.0593	4.55E+02	2.42E-01	0.1469

3	34.533	10.3205	35.1169	1.326	5.41E+02	3.50E+00	0.1461
4	35.395	10.4108	35.1318	1.4793	5.52E+02	3.17E+00	0.1491
5	20.452	10.5513	35.1565	1.4687	5.85E+02	1.41E+01	0.1588
6	20.239	10.5506	35.1565	1.4698	5.85E+02	1.53E+01	0.1653
7	20.505	10.5512	35.1564	1.4335	5.88E+02	1.46E+01	0.1611
8	19.97	10.5503	35.1563	1.4372	5.85E+02	1.52E+01	0.1581
9	20.208	10.5438	35.155	1.4784	5.92E+02	1.51E+01	0.1646
10	20.429	10.5439	35.155	1.4536	5.82E+02	1.41E+01	0.1635
11	20.135	10.5447	35.1552	1.4537	5.82E+02	1.52E+01	0.1591
12	20.427	10.5496	35.1559	1.4311	5.78E+02	1.34E+01	0.1597
13	20.518	10.5415	35.1547	1.4553	5.87E+02	1.45E+01	0.157
14	20.602	10.5388	35.154	1.503	5.87E+02	1.40E+01	0.1543
15	20.168	10.544	35.1553	1.4965	5.75E+02	1.49E+01	0.165
16	20.884	10.5446	35.1552	1.4832	5.91E+02	1.36E+01	0.1636
17	20.029	10.5439	35.1552	1.5036	5.78E+02	1.51E+01	0.159
18	20.772	10.5138	35.1494	1.464	5.79E+02	1.35E+01	0.159
19	20.648	10.516	35.1504	1.4945	5.87E+02	1.36E+01	0.1619
20	20.734	10.5374	35.1537	1.5051	6.06E+02	1.37E+01	0.1542
21	20.148	10.5295	35.1528	1.519	6.16E+02	1.60E+01	0.1547
22	20.403	10.5462	35.1552	1.4764	6.08E+02	1.39E+01	0.1767
23	20.314	10.549	35.1559	1.4485	6.36E+02	1.57E+01	0.1704
24	20.205	10.5477	35.1557	1.4909	6.15E+02	1.53E+01	0.1769
Station 20-5							
bottlesum_in=		c:\cruises\64 c:\cruises\64AW103\UCCTD\64AW103-20UCCTD05.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	20.837	10.641	35.1739	1.4667	6.33E+02	2.40E+01	0.1692
2	20.378	10.6475	35.1764	1.4753	6.43E+02	2.76E+01	0.1745
3	20.504	10.6141	35.1706	1.5282	6.51E+02	2.70E+01	0.1675
4	20.585	10.6247	35.1704	1.5085	6.72E+02	2.83E+01	0.1814
5	20.434	10.623	35.172	1.5158	6.75E+02	2.83E+01	0.1673
6	20.503	10.6225	35.1714	1.4982	6.64E+02	2.85E+01	0.1622
7	20.624	10.6229	35.172	1.5602	6.59E+02	2.79E+01	0.1651
8	20.23	10.6259	35.1728	1.4932	6.42E+02	2.84E+01	0.166
9	20.384	10.6281	35.1733	1.5059	6.42E+02	2.74E+01	0.1707
10	20.613	10.6353	35.1738	1.5406	6.28E+02	2.50E+01	0.1689
11	19.749	10.6325	35.1739	1.5152	6.17E+02	2.91E+01	0.1682
12	20.215	10.635	35.1742	1.551	6.05E+02	2.60E+01	0.1589
13	20.522	10.6353	35.1742	1.5134	5.94E+02	2.29E+01	0.1727
14	20.497	10.6372	35.1743	1.5285	6.10E+02	2.49E+01	0.1745
15	20.707	10.6461	35.1764	1.4821	6.22E+02	2.53E+01	0.1651
16	21.361	10.649	35.1758	1.4547	6.27E+02	2.10E+01	0.1743
17	20.569	10.651	35.1768	1.4326	6.31E+02	2.36E+01	0.1637
18	20.036	10.652	35.1777	1.4795	6.34E+02	2.49E+01	0.1683
19	20.394	10.6747	35.1798	1.4491	6.33E+02	2.17E+01	0.1767
20	20.505	10.689	35.181	1.4835	6.29E+02	2.14E+01	0.1721
21	20.319	10.6938	35.1826	1.4374	6.23E+02	2.07E+01	0.1606
22	20.516	10.6861	35.1816	1.4657	6.10E+02	1.96E+01	0.1703
23	20.202	10.6729	35.1801	1.4513	5.99E+02	2.06E+01	0.167
24	20.444	10.6751	35.1799	1.4707	5.90E+02	1.90E+01	0.1741

Appendix 3 – standard CTD

Station 04-5							
bottlesum_in =		c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-04CTD05.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	90.392	20.3015	37.1344	0.2437	3.53E+01	3.21E-01	0.1017
2	91.201	20.2972	37.1335	0.2437	3.55E+01	3.08E-01	0.102
3	91.284	20.2997	37.1332	0.2438	3.65E+01	3.11E-01	0.1017
4	91.24	20.2961	37.133	0.2466	3.65E+01	3.14E-01	0.1036
5	91.337	20.2975	37.1331	0.2401	3.77E+01	3.12E-01	0.1035
6	91.799	20.2961	37.1329	0.2417	3.78E+01	3.04E-01	0.1025
7	90.742	20.3059	37.1361	0.2448	3.78E+01	3.25E-01	0.1012
8	90.939	20.3134	37.1372	0.2442	3.78E+01	3.24E-01	0.0982
9	90.897	20.3172	37.1385	0.286	3.79E+01	3.25E-01	0.1042
10	91.245	20.3197	37.1386	0.245	3.91E+01	3.21E-01	0.102
11	90.713	20.322	37.1391	0.2515	3.91E+01	3.31E-01	0.103
12	90.531	20.3225	37.1389	0.2501	3.91E+01	3.40E-01	0.0981
13	91.11	20.3173	37.1385	0.2521	4.03E+01	3.25E-01	0.1016
14	91.23	20.3197	37.1391	0.2446	4.03E+01	3.28E-01	0.1142
15	91.351	20.318	37.1391	0.2447	4.03E+01	3.27E-01	0.1003
16	90.984	20.3208	37.1394	0.2441	4.04E+01	3.34E-01	0.1021
17	91.241	20.3186	37.1384	0.2454	4.16E+01	3.30E-01	0.1012
18	90.965	20.3203	37.139	0.2469	4.16E+01	3.40E-01	0.1048
19	91.33	20.317	37.1386	0.2458	4.16E+01	3.34E-01	0.1029
20	91.147	20.316	37.1384	0.2446	4.28E+01	3.36E-01	0.1026
21	90.95	20.3137	37.1383	0.2423	4.28E+01	3.43E-01	0.1022
22	91.177	20.3054	37.1365	0.2396	4.28E+01	3.40E-01	0.1017
23	90.988	20.3066	37.1366	0.2373	4.40E+01	3.43E-01	0.0993
24	90.967	20.3047	37.1358	0.2379	4.41E+01	3.46E-01	0.103
Station 05-4							
bottlesum_in =		c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-05CTD04.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb
1	5153.715	2.4371	34.8914	0.0099	9.02E+02	9.61E-02	0.0917
2	5153.362	2.4374	34.8913	0.0117	4.72E+02	9.61E-02	0.0931
3	5089.854	2.4284	34.8915	0.0114	6.88E+02	9.61E-02	0.0933
4	5090.305	2.4283	34.8915	0.0159	8.07E+02	9.61E-02	0.0951
5	4577.235	2.3739	34.8933	0.0106	8.27E+02	9.61E-02	0.0894
6	4577.009	2.3743	34.8933	0.0091	6.73E+02	9.61E-02	0.0906
7	4063.999	2.3975	34.9017	0.0113	6.90E+02	9.61E-02	0.0926
8	4064.971	2.3978	34.9016	0.0142	2.42E+02	9.61E-02	0.0931
9	3552.597	2.4993	34.9163	0.0096	2.28E+02	9.61E-02	0.0902
10	3553.153	2.4992	34.9164	0.0094	4.20E+02	9.61E-02	0.0896
11	3040.342	2.6835	34.9374	0.0104	6.21E+02	9.61E-02	0.0906
12	3039.965	2.6841	34.9375	0.0156	5.89E+02	9.61E-02	0.092
13	2530.081	3.1547	34.9837	0.013	4.82E+02	9.61E-02	0.0919
14	2530.956	3.1549	34.9836	0.0115	4.87E+02	9.61E-02	0.092
15	2021.858	3.9991	35.0673	0.0158	4.59E+02	9.61E-02	0.0945
16	2021.748	4.0014	35.0677	0.0158	4.39E+02	9.61E-02	0.0928
17	1514.148	5.3456	35.1786	0.0138	1.58E+02	9.61E-02	0.0921
18	1514.361	5.3458	35.1784	0.0161	1.63E+02	9.61E-02	0.092
19	1008.56	7.4563	35.2526	0.0181	2.73E+02	9.60E-02	0.0932
20	1008.837	7.4599	35.252	0.0207	2.49E+02	9.60E-02	0.0939
21	403.516	13.6988	35.8263	0.0179	1.39E+02	9.59E-02	0.0955
22	403.464	13.6997	35.8275	0.0184	1.38E+02	9.60E-02	0.0956
23	101.305	20.0666	37.1048	0.2478	8.96E+01	4.49E-01	0.1085

24	4.577	22.0491	37.1043	0.0592	7.32E+01	3.67E+01	0.1072	
Station 17-1								
bottlesum_in =		c:\cruises\64c:\cruises\64AW103\CTD\64AW103-17CTD01.XMLCON						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	90.741	13.0415	35.7215	0.1267	2.15E+02	2.91E-01	0.0981	
2	91.488	13.0492	35.7227	0.1323	2.19E+02	2.98E-01	0.0988	
3	75.439	13.3517	35.756	0.4585	2.25E+02	8.28E-01	0.1154	
4	76.11	13.3524	35.7558	0.461	2.42E+02	8.23E-01	0.1176	
5	48.527	13.3601	35.7575	0.4703	2.98E+02	4.70E+00	0.1172	
6	48.482	13.3601	35.7575	0.4684	2.89E+02	4.40E+00	0.1184	
7	20.381	13.3604	35.7585	0.4814	2.19E+02	1.56E+01	0.1111	
8	20.411	13.3604	35.7585	0.4822	2.18E+02	1.70E+01	0.1145	
9	19.008	13.3601	35.7585	0.4634	2.27E+02	1.90E+01	0.1161	
10	19.498	13.3602	35.7582	0.4937	2.31E+02	1.77E+01	0.1151	
11	20.761	13.3603	35.7585	0.4813	2.57E+02	1.98E+01	0.1203	
12	21.83	13.3606	35.7585	0.4701	2.12E+02	1.81E+01	0.119	
13	20.934	13.3587	35.7588	0.4883	2.02E+02	1.72E+01	0.1127	
14	20.062	13.3588	35.7586	0.4721	2.07E+02	2.02E+01	0.1151	
15	20.333	13.3585	35.7583	0.485	2.16E+02	2.01E+01	0.1177	
16	20.499	13.3571	35.758	0.4723	2.15E+02	1.92E+01	0.1135	
17	19.556	13.3575	35.7575	0.4624	2.39E+02	2.24E+01	0.1279	
18	20.739	13.3579	35.7586	0.4681	2.49E+02	2.03E+01	0.1139	
19	19.939	13.3577	35.7576	0.4647	2.63E+02	2.09E+01	0.1127	
20	19.947	13.3578	35.7579	0.472	2.68E+02	2.15E+01	0.112	
21	20.354	13.3572	35.7583	0.4956	3.87E+02	2.11E+01	0.1132	
22	20.589	13.3573	35.7583	0.4755	4.13E+02	2.18E+01	0.1155	
23	20.422	13.3569	35.7571	0.4665	3.93E+02	2.03E+01	0.1182	
24	20.92	13.3583	35.7587	0.4621	2.54E+02	1.82E+01	0.1193	
Station 17-2								
bottlesum_in =		c:\cruises\64c:\cruises\64AW103\CTD\64AW103-17CTD02.XMLCON						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	100.588	12.8328	35.6888	0.0298	1.06E+03	1.23E+00	0.0871	
2	76.063	13.247	35.7434	0.3591	1.11E+03	4.54E+00	0.1067	
3	49.463	13.3635	35.7567	0.4574	1.24E+03	2.21E+01	0.1217	
4	36.636	13.3611	35.7589	0.4559	1.18E+03	5.78E+01	0.1128	
5	22.61	13.359	35.7594	0.3844	1.20E+03	1.36E+02	0.1125	
6	22.582	13.3591	35.705	0.368	9.93E+02	1.16E+02	0.1148	
7	23.839	13.3591	35.759	0.3924	1.11E+03	9.73E+01	0.1124	
8	23.095	13.3594	35.7585	0.3774	1.24E+03	1.51E+02	0.1138	
9	22.835	13.3591	35.7579	0.3868	1.14E+03	1.63E+02	0.1104	
10	23.891	13.359	35.7593	0.3998	1.22E+03	1.52E+02	0.1152	
11	22.754	13.3592	35.7583	0.3789	1.20E+03	1.24E+02	0.1133	
12	23.914	13.3591	35.7591	0.3932	8.68E+02	1.37E+02	0.1122	
13	22.965	13.3593	35.7587	0.3788	1.02E+03	1.43E+02	0.1132	
14	23.068	13.3592	35.759	0.3845	1.25E+03	1.68E+02	0.1252	
15	23.148	13.3591	35.759	0.4149	1.21E+03	1.58E+02	0.1125	
16	22.545	13.3592	35.758	0.3729	1.19E+03	1.60E+02	0.1085	
17	23.064	13.3587	35.759	0.3909	1.19E+03	1.34E+02	0.1107	
18	23.134	13.3582	35.7594	0.4001	1.23E+03	1.14E+02	0.1136	
19	22.811	13.359	35.7591	0.3744	1.23E+03	1.52E+02	0.1096	
20	23.339	13.3585	35.7584	0.3937	1.19E+03	1.62E+02	0.1117	
21	23.223	13.3591	35.7578	0.3962	1.13E+03	1.41E+02	0.1266	

22	22.377	13.3591	35.7587	0.3764	1.08E+03	1.68E+02	0.1265	
23	22.723	13.359	35.7562	0.3956	1.28E+03	1.51E+02	0.1124	
24	22.511	13.3587	35.7576	0.4024	9.18E+02	1.17E+02	0.1138	
Station 20-6								
<i>bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-20CTD06.XMLCON</i>								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	41.871	10.5999	35.191	0.8172	8.08E+02	6.35E+00	0.2013	
2	25.017	10.6103	35.192	0.7585	7.75E+02	3.70E+01	0.1962	
3	25.068	10.61	35.192	0.7841	6.38E+02	3.22E+01	0.2099	
4	25.088	10.6093	35.1919	0.7936	6.26E+02	3.06E+01	0.1984	
5	25.36	10.6065	35.1919	0.7885	5.99E+02	2.80E+01	0.2103	
6	25.081	10.6083	35.1919	0.7819	5.69E+02	2.91E+01	0.1996	
7	25.024	10.6083	35.1919	0.8028	5.85E+02	2.68E+01	0.2067	
8	24.655	10.6075	35.1919	0.8144	4.78E+02	2.50E+01	0.2044	
9	24.741	10.6065	35.1915	0.8088	4.66E+02	2.45E+01	0.1996	
10	24.4	10.6021	35.1917	0.8029	4.95E+02	2.72E+01	0.1968	
11	24.509	10.5994	35.1912	0.7937	5.08E+02	2.71E+01	0.2107	
12	24.973	10.6025	35.1919	0.8071	5.52E+02	2.78E+01	0.192	
13	24.793	10.6009	35.1917	0.8027	5.97E+02	3.06E+01	0.2016	
14	24.662	10.6024	35.1917	0.7918	6.16E+02	3.34E+01	0.2155	
15	25.281	10.5883	35.1904	0.8059	1.16E+03	5.40E+01	0.2027	
16	7.988	10.6092	35.1927	0.4762	7.27E+02	2.72E+02	0.1955	
17	8.513	10.6086	35.1926	0.4408	7.15E+02	2.45E+02	0.1906	
18	8.143	10.6083	35.1925	0.4452	8.31E+02	3.21E+02	0.1939	
19	8.363	10.6073	35.1925	0.4666	9.43E+02	2.53E+02	0.2004	
20	8.827	10.6051	35.1923	0.4821	7.22E+02	2.45E+02	0.2202	
21	8.097	10.6056	35.1924	0.474	1.10E+03	4.25E+02	0.1927	
22	8.797	10.6031	35.1924	0.4618	6.82E+02	2.59E+02	0.2015	
23	7.881	10.6037	35.1923	0.399	6.45E+02	2.39E+02	0.1913	
24	8.569	10.605	35.1925	0.4003	8.50E+02	2.28E+02	0.2133	
Station 20-7								
<i>bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-20CTD07_bottle_close.XMLCON</i>								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	19.906	10.5863	35.1921	0.6973	6.48E+02	5.06E+01	0.1991	
2	19.696	10.5866	35.1922	0.6976	6.30E+02	5.59E+01	0.1957	
3	19.934	10.5873	35.1924	0.7141	6.66E+02	5.67E+01	0.205	
4	20.13	10.589	35.1927	0.7539	6.51E+02	5.33E+01	0.2081	
5	19.805	10.5866	35.1918	0.7524	6.31E+02	5.23E+01	0.1953	
6	19.542	10.5835	35.191	0.7496	6.24E+02	5.64E+01	0.1988	
7	19.749	10.5826	35.1915	0.7489	6.22E+02	5.59E+01	0.1904	
8	19.949	10.5828	35.1915	0.7382	7.34E+02	5.87E+01	0.2088	
9	19.781	10.5828	35.1915	0.7005	1.14E+03	1.08E+02	0.1882	
Station 21-1								
<i>bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-21CTD01.XMLCON</i>								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	80.698	10.1628	35.3125	0.0558	3.21E+01	9.59E-02	0.0972	
2	80.529	10.164	35.3126	0.06	3.42E+01	9.59E-02	0.0982	
3	60.326	10.2289	35.2981	0.1864	4.79E+01	1.16E-01	0.1469	
4	60.459	10.2289	35.2981	0.1891	5.10E+01	1.21E-01	0.1299	
5	36.665	10.3959	35.2755	0.6904	8.71E+01	1.67E+00	0.2205	
6	36.283	10.3961	35.2753	0.7005	8.66E+01	1.68E+00	0.2257	

7	21.7	10.3952	35.2748	0.7074	9.97E+01	6.78E+00	0.2339	
8	20.546	10.3943	35.2746	0.7213	9.94E+01	6.87E+00	0.232	
9	20.291	10.3945	35.2746	0.7106	9.84E+01	7.40E+00	0.2285	
10	21.488	10.3943	35.2745	0.7149	9.59E+01	5.98E+00	0.2421	
11	20.931	10.3949	35.275	0.7195	9.46E+01	6.89E+00	0.2342	
12	21.044	10.3953	35.2751	0.6981	9.21E+01	6.30E+00	0.2251	
13	20.661	10.3953	35.2751	0.7042	8.86E+01	6.25E+00	0.22	
14	20.641	10.3952	35.275	0.7105	8.71E+01	6.13E+00	0.2221	
15	20.995	10.395	35.2755	0.6938	8.58E+01	5.82E+00	0.2268	
16	20.412	10.3957	35.2749	0.7012	8.58E+01	6.97E+00	0.2257	
17	20.739	10.3952	35.2752	0.7023	8.58E+01	5.92E+00	0.2321	
18	20.713	10.3956	35.275	0.7053	8.45E+01	5.62E+00	0.2328	
19	20.764	10.3943	35.2755	0.699	8.07E+01	5.34E+00	0.2216	
20	21.184	10.3952	35.2752	0.7005	7.58E+01	4.83E+00	0.2354	
21	21.081	10.3963	35.2752	0.6938	7.45E+01	4.90E+00	0.2296	
22	20.018	10.3958	35.2752	0.6934	7.57E+01	5.98E+00	0.2217	
23	20.06	10.3938	35.2756	0.6831	7.70E+01	5.60E+00	0.239	
24	20.545	10.3939	35.2755	0.6941	7.85E+01	5.01E+00	0.2401	
Station 21-2								
<i>bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-21CTD02.XMLCON</i>								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	95.079	10.3496	35.3628	0.1652	3.72E+02	2.92E-01	0.1113	
2	94.73	10.3465	35.3622	0.1731	3.54E+02	2.49E-01	0.1075	
3	71.216	10.1415	35.3078	0.0435	7.67E+02	2.05E+00	0.0982	
4	40.444	10.3866	35.2768	0.6762	1.07E+03	1.41E+01	0.2343	
5	22.237	10.4026	35.2761	0.6384	1.10E+03	6.21E+01	0.2265	
6	21.92	10.4027	35.2764	0.6133	9.96E+02	8.88E+01	0.23	
7	22.276	10.4067	35.2759	0.6226	9.82E+02	8.23E+01	0.2263	
8	22.329	10.4045	35.276	0.6626	6.50E+02	3.70E+01	0.2327	
9	23.131	10.4059	35.2763	0.6763	3.57E+02	2.25E+01	0.2472	
10	22.493	10.4048	35.2756	0.6361	3.18E+02	2.28E+01	0.2323	
11	23.028	10.4071	35.2762	0.6338	3.12E+02	2.13E+01	0.2336	
12	22.128	10.4069	35.2761	0.6099	3.33E+02	2.77E+01	0.2303	
13	21.384	10.4073	35.2761	0.6183	6.77E+02	7.51E+01	0.2331	
14	21.983	10.4081	35.2764	0.5974	9.94E+02	8.21E+01	0.2377	
15	22.683	10.4053	35.2761	0.5652	1.04E+03	7.14E+01	0.2397	
16	22.501	10.4082	35.2763	0.623	1.03E+03	7.98E+01	0.2286	
17	22.689	10.4072	35.2761	0.6261	9.70E+02	7.62E+01	0.2432	
18	23.424	10.3957	35.2784	0.6477	3.08E+02	1.98E+01	0.2312	
19	22.711	10.4002	35.2773	0.6445	2.94E+02	2.03E+01	0.2259	
20	22.793	10.3979	35.2775	0.6494	3.05E+02	2.16E+01	0.2404	
21	22.455	10.3989	35.2773	0.6459	3.77E+02	2.59E+01	0.2357	
22	22.942	10.3985	35.2781	0.6545	3.45E+02	2.52E+01	0.2343	
23	23.29	10.4157	35.2773	0.6595	1.04E+03	7.71E+01	0.2426	
24	23.02	10.4127	35.2773	0.6154	9.99E+02	7.83E+01	0.2336	
Station 22-1								
<i>bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-22CTD01.XMLCON</i>								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	70.924	9.7545	35.2266	0.6319	1.01E+02	9.59E-02	0.1625	
2	70.776	9.7475	35.2261	0.6908	1.05E+02	9.59E-02	0.1683	
3	55.08	9.8272	35.2271	1.0627	1.73E+02	2.72E-01	0.1976	
4	55.342	9.8156	35.2267	1.0202	1.78E+02	2.55E-01	0.1984	

5	40.31	9.8497	35.2327	1.099	2.04E+02	1.27E+00	0.1948	
6	40.432	9.8468	35.2322	1.0909	2.02E+02	1.27E+00	0.2009	
7	20.946	9.8635	35.2367	1.1287	1.43E+02	8.23E+00	0.2011	
8	20.861	9.8656	35.2373	1.1198	1.46E+02	7.96E+00	0.1981	
9	21.16	9.866	35.2373	1.0765	1.40E+02	7.90E+00	0.1908	
10	20.246	9.8674	35.2376	1.06	1.39E+02	9.32E+00	0.1883	
11	20.218	9.8696	35.2382	1.0723	1.37E+02	8.90E+00	0.1903	
12	20.59	9.8704	35.2384	1.0976	1.36E+02	7.89E+00	0.1983	
13	20.426	9.871	35.2387	1.1033	1.31E+02	8.04E+00	0.1961	
14	21.362	9.8707	35.2381	1.1186	1.28E+02	6.47E+00	0.2032	
15	20.846	9.8721	35.2392	1.116	1.22E+02	6.90E+00	0.1987	
16	21.365	9.8709	35.2386	1.1296	1.20E+02	6.20E+00	0.1942	
17	20.816	9.8718	35.2381	1.1278	1.15E+02	6.84E+00	0.1967	
18	21.618	9.8716	35.2385	1.1326	1.15E+02	6.18E+00	0.2049	
19	21.191	9.8709	35.2377	1.1226	1.16E+02	6.18E+00	0.1891	
20	20.558	9.8703	35.2378	1.1162	1.17E+02	6.56E+00	0.1916	
21	21.065	9.8695	35.2377	1.1333	1.19E+02	6.21E+00	0.1956	
22	20.037	9.8679	35.2372	1.1197	1.20E+02	7.28E+00	0.1895	
23	19.985	9.8653	35.2372	1.1088	1.22E+02	7.50E+00	0.1992	
24	20.196	9.8818	35.2409	1.1317	1.22E+02	6.94E+00	0.1927	
Station 22-2								
bottlesum_in =		c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-22CTD02.XMLCON						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	80.878	9.5725	35.2373	0.1401	9.91E+02	9.77E-02	0.1157	
2	67.503	9.8397	35.2389	0.9615	3.66E+02	1.67E-01	0.1835	
3	40.792	9.9597	35.2537	1.052	4.37E+02	4.16E+00	0.1911	
4	40.861	9.9655	35.2544	1.043	1.08E+03	7.47E+00	0.1945	
5	19.963	9.9786	35.2571	0.9984	1.03E+03	7.03E+01	0.1958	
6	20.092	9.9785	35.2571	0.9963	8.92E+02	5.95E+01	0.1989	
7	20.667	9.9789	35.2573	1.0065	1.06E+03	6.11E+01	0.2104	
8	20.403	9.9789	35.2572	0.9823	8.96E+02	6.51E+01	0.1957	
9	19.972	9.9797	35.2574	0.956	1.02E+03	6.41E+01	0.1968	
10	19.964	9.9801	35.2571	0.944	9.53E+02	7.03E+01	0.203	
11	19.187	9.9801	35.2571	0.9185	9.60E+02	8.40E+01	0.1964	
12	19.234	9.9804	35.2573	0.909	9.69E+02	7.03E+01	0.1968	
13	20.187	9.9805	35.2576	0.9375	9.88E+02	6.84E+01	0.1972	
14	20.346	9.9789	35.2575	0.9374	1.01E+03	7.00E+01	0.2048	
15	20.652	9.9773	35.2573	0.9702	9.24E+02	5.57E+01	0.1992	
16	20.17	9.9792	35.2575	0.9596	9.00E+02	6.59E+01	0.2043	
17	20.105	9.9783	35.257	0.9323	9.34E+02	6.40E+01	0.1966	
18	19.403	9.9794	35.2572	0.928	9.40E+02	7.44E+01	0.1948	
19	19.865	9.9773	35.2571	0.922	9.64E+02	6.49E+01	0.1962	
20	20.313	9.9798	35.2574	0.9337	9.38E+02	6.56E+01	0.1993	
21	20.047	9.9805	35.2575	0.9047	1.00E+03	6.80E+01	0.202	
22	20.212	9.9807	35.2572	0.9042	9.20E+02	6.11E+01	0.1918	
23	19.788	9.9805	35.2557	0.8967	9.24E+02	6.79E+01	0.1944	
24	20.234	9.9803	35.2573	0.9063	9.70E+02	6.39E+01	0.1984	
Station 23-2								
bottlesum_in =		c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-23CTD02.XMLCON						
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	90.766	9.0057	35.2465	0.0663	1.73E+02	9.59E-02	0.0979	
2	50.496	9.2825	35.2507	0.3796	1.86E+02	8.23E-01	0.1473	

3	19.75	9.2958	35.2265	1.5905	2.13E+02	1.09E+01	0.2172	
4	13.245	9.2841	35.2215	1.7185	2.13E+02	2.15E+01	0.2431	
5	11.966	9.2801	35.2191	1.8817	2.12E+02	2.93E+01	0.2371	
6	12.004	9.281	35.2196	1.7335	2.12E+02	2.81E+01	0.2372	
7	11.803	9.2831	35.2207	1.9144	2.12E+02	2.89E+01	0.2339	
8	12.281	9.2794	35.219	2.1104	2.12E+02	2.56E+01	0.2689	
9	12.941	9.2815	35.2201	1.8448	2.11E+02	2.35E+01	0.2659	
10	12.362	9.2864	35.2222	1.7057	2.10E+02	2.73E+01	0.2279	
11	12.186	9.2831	35.2208	1.712	2.09E+02	2.58E+01	0.2538	
12	12.622	9.2755	35.218	1.9278	2.08E+02	2.43E+01	0.2599	
13	12.036	9.28	35.2185	1.8141	2.07E+02	2.91E+01	0.2429	
14	12.559	9.2816	35.2217	1.8776	2.07E+02	2.61E+01	0.2447	
15	12.836	9.2811	35.2202	1.8551	2.06E+02	2.52E+01	0.2524	
16	11.912	9.2803	35.2197	1.7921	2.05E+02	2.80E+01	0.2347	
17	12.389	9.2821	35.2209	1.8917	2.05E+02	2.62E+01	0.2366	
18	12.875	9.2926	35.2266	1.7194	2.04E+02	2.45E+01	0.2298	
19	12.765	9.2806	35.2201	1.7058	2.03E+02	2.52E+01	0.2404	
20	12.252	9.2852	35.2221	1.7651	2.03E+02	2.87E+01	0.2316	
21	12.378	9.2867	35.2231	1.8001	2.02E+02	2.75E+01	0.2262	
22	12.706	9.2838	35.2223	1.6944	2.02E+02	2.41E+01	0.2175	
23	12.481	9.2815	35.2211	1.8746	2.02E+02	2.52E+01	0.2565	
24	12.218	9.2781	35.2193	2.0076	2.02E+02	2.47E+01	0.2361	
Station 24-1								
bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-24CTD01.XMLCON								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	70.696	8.7588	35.259	0.0896	8.03E+01	9.59E-02	0.1065	
2	70.736	8.7594	35.259	0.0885	7.95E+01	9.59E-02	0.1146	
3	33.177	9.1692	35.2391	0.9708	7.70E+01	1.20E+00	0.1938	
4	33.044	9.097	35.2428	0.9367	7.82E+01	1.24E+00	0.2112	
5	20.218	9.1723	35.2389	0.9684	7.57E+01	4.63E+00	0.1885	
6	20.106	9.1723	35.2389	0.9867	7.57E+01	4.70E+00	0.2165	
7	20.09	9.1739	35.2388	1.0357	7.69E+01	4.62E+00	0.1911	
8	20.111	9.1747	35.2389	0.9841	7.70E+01	4.64E+00	0.2187	
9	20.544	9.1756	35.2387	1.0545	7.77E+01	4.59E+00	0.2149	
10	20.528	9.1755	35.2388	1.0619	7.82E+01	4.53E+00	0.2051	
11	20.077	9.1757	35.2388	0.99	7.84E+01	5.31E+00	0.2021	
12	20.482	9.1762	35.2387	1.0283	7.95E+01	4.84E+00	0.2123	
13	20.552	9.1757	35.2388	1.0514	7.95E+01	4.73E+00	0.2134	
14	19.973	9.1777	35.2386	1.0802	7.95E+01	5.47E+00	0.2	
15	20.206	9.1781	35.2386	1.0327	7.97E+01	5.10E+00	0.1984	
16	20.489	9.1776	35.2385	1.059	8.07E+01	5.04E+00	0.1946	
17	20.246	9.1783	35.2379	1.0204	8.08E+01	5.37E+00	0.1957	
18	20.532	9.1772	35.2385	1.0583	8.20E+01	4.97E+00	0.2214	
19	20.446	9.1756	35.2387	0.9467	8.20E+01	5.23E+00	0.1941	
20	20.104	9.1749	35.2386	0.9876	8.21E+01	5.22E+00	0.1921	
21	20.62	9.1777	35.2384	1.0276	8.30E+01	4.63E+00	0.2082	
22	20.016	9.1777	35.2384	1.0091	8.20E+01	5.24E+00	0.2022	
23	20.235	9.1802	35.2383	1.0635	8.32E+01	4.86E+00	0.2037	
24	20.43	9.1806	35.2383	1.0852	8.27E+01	4.66E+00	0.1948	
Station 24-2								
bottlesum_in = c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-24CTD02.XMLCON								
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	

1	70.542	8.7519	35.264	0.0707	2.63E+02	3.88E-01	0.1023	
2	70.762	8.7519	35.264	0.0604	2.63E+02	3.66E-01	0.1169	
3	46.058	8.9037	35.2507	0.3403	2.64E+02	9.28E-01	0.1436	
4	46.222	8.9153	35.2514	0.3814	2.60E+02	9.04E-01	0.1604	
5	21.733	9.1719	35.2387	1.0236	2.18E+02	9.80E+00	0.2063	
6	21.966	9.1731	35.2386	1.0208	2.18E+02	8.76E+00	0.2053	
7	21.576	9.1729	35.2385	1.0419	2.17E+02	9.90E+00	0.1965	
8	21.862	9.1722	35.2387	1.1027	2.17E+02	9.14E+00	0.1992	
9	21.766	9.1729	35.2385	1.1268	2.17E+02	9.40E+00	0.207	
10	21.537	9.1731	35.2384	1.1195	2.17E+02	1.00E+01	0.2158	
11	21.571	9.1737	35.238	1.0744	2.17E+02	9.31E+00	0.2085	
12	21.146	9.1738	35.2374	1.1009	2.17E+02	1.04E+01	0.2048	
13	21.829	9.1776	35.2385	1.0178	2.18E+02	8.98E+00	0.2212	
14	21.601	9.1856	35.2378	1.0997	2.21E+02	9.63E+00	0.1995	
15	21.893	9.1922	35.2375	1.1564	2.22E+02	9.31E+00	0.2112	
16	21.639	9.1828	35.2368	1.1176	2.23E+02	9.52E+00	0.2032	
17	21.252	9.1848	35.2373	1.0533	2.25E+02	1.06E+01	0.2065	
18	21.584	9.1856	35.2374	1.1456	2.27E+02	9.94E+00	0.2093	
19	21.789	9.1867	35.2375	1.0986	2.30E+02	1.00E+01	0.2143	
20	21.885	9.1834	35.2377	1.0819	2.32E+02	9.98E+00	0.2008	
21	21.663	9.1813	35.238	1.1213	2.34E+02	1.07E+01	0.2117	
22	21.633	9.1827	35.2377	1.0577	2.37E+02	1.09E+01	0.206	
23	21.538	9.1782	35.2382	1.1082	2.39E+02	1.08E+01	0.1885	
24	21.817	9.1855	35.2375	1.1514	2.41E+02	1.01E+01	0.2324	
Station 25-1								
bottlesum_ir =	c:\cruises\64 c:\cruises\64AW103\CTD\64AW103-25CTD01.XMLCON							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	60.967	7.4936	35.1741	0.1809	6.68E+01	9.59E-02	0.1353	
2	60.878	7.4935	35.1742	0.2454	6.72E+01	9.59E-02	0.132	
3	36.355	7.6701	35.1668	0.7777	7.32E+01	9.59E-02	0.1652	
4	36.438	7.7168	35.166	0.6768	7.32E+01	9.59E-02	0.2034	
5	28.079	8.1275	35.1624	1.7882	7.44E+01	2.57E-01	0.3407	
6	27.959	8.1155	35.1622	1.8299	7.44E+01	2.55E-01	0.3748	
7	19.748	8.2235	35.1625	2.0649	7.57E+01	1.32E+00	0.4056	
8	19.515	8.2169	35.1627	2.0433	7.57E+01	1.47E+00	0.3685	
9	19.594	8.2411	35.1626	2.0706	7.51E+01	1.34E+00	0.3785	
10	19.413	8.2403	35.1629	2.0752	7.49E+01	1.52E+00	0.3626	
11	19.633	8.2387	35.163	2.0313	7.44E+01	1.33E+00	0.4063	
12	19.525	8.2395	35.1628	2.0639	7.44E+01	1.44E+00	0.365	
13	19.442	8.2375	35.163	2.1	7.44E+01	1.45E+00	0.4153	
14	19.512	8.235	35.1629	2.0702	7.44E+01	1.39E+00	0.4107	
15	19.376	8.2333	35.1629	2.1187	7.44E+01	1.43E+00	0.3906	
16	19.465	8.2382	35.1628	2.0379	7.44E+01	1.50E+00	0.3529	
17	19.56	8.2389	35.1628	2.0249	7.37E+01	1.48E+00	0.35	
18	19.554	8.2349	35.1629	2.6828	7.32E+01	1.44E+00	0.4133	
19	19.728	8.2371	35.1627	2.1727	7.32E+01	1.35E+00	0.6837	
20	19.471	8.2306	35.1628	2.0838	7.22E+01	1.52E+00	0.3754	
21	19.51	8.2298	35.1626	2.1839	7.19E+01	1.42E+00	0.4117	
22	19.338	8.2321	35.1622	2.2204	7.12E+01	1.58E+00	0.3433	
23	19.689	8.2321	35.1624	2.0416	7.06E+01	1.38E+00	0.3863	
24	18.906	8.2388	35.1611	2.0827	6.94E+01	1.76E+00	0.3671	
Station 25-2								

bottlesum_ir =		c:\cruises\64	c:\cruises\64AW103\CTD\64AW103-25CTD02.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	60.64	7.4937	35.1738	0.212	2.03E+02	9.59E-02	0.1473	
2	41.021	7.9392	35.1635	1.3434	1.98E+02	9.59E-02	0.2824	
3	20.403	8.2586	35.1635	2.1359	2.13E+02	2.87E+00	0.3925	
4	20.329	8.2584	35.1636	2.1932	2.15E+02	2.92E+00	0.4876	
5	20.52	8.2599	35.1636	2.191	2.16E+02	2.84E+00	0.503	
6	20.444	8.2592	35.1636	2.1362	2.16E+02	3.03E+00	0.4117	
7	20.365	8.2586	35.1635	2.1862	2.17E+02	2.90E+00	0.4315	
8	20.187	8.2593	35.1635	2.1236	2.17E+02	3.10E+00	0.4136	
9	20.318	8.2601	35.1635	2.1423	2.18E+02	3.00E+00	0.4465	
10	20.367	8.2594	35.1635	2.1297	2.20E+02	3.01E+00	0.4323	
11	20.231	8.2597	35.1635	2.1113	2.21E+02	3.20E+00	0.3912	
12	20.328	8.2601	35.1629	2.1473	2.21E+02	3.07E+00	0.3944	
13	20.216	8.2605	35.1633	2.1293	2.22E+02	3.16E+00	0.3837	
14	20.518	8.2606	35.1635	2.1751	2.22E+02	2.95E+00	0.4164	
15	20.227	8.2608	35.1634	2.1719	2.23E+02	3.37E+00	0.3806	
16	20.454	8.2606	35.1634	2.2197	2.25E+02	2.91E+00	0.4241	
17	20.152	8.2608	35.163	2.355	2.26E+02	3.26E+00	0.379	
18	20.306	8.2609	35.1632	2.1253	2.26E+02	3.06E+00	0.4266	
19	20.443	8.2604	35.1635	2.14	2.27E+02	3.08E+00	0.4026	
20	20.296	8.261	35.1634	2.1991	2.30E+02	3.27E+00	0.3806	
21	20.466	8.2607	35.1634	2.1352	2.30E+02	3.03E+00	0.385	
22	20.204	8.2611	35.1632	2.0988	2.31E+02	3.48E+00	0.3731	
23	20.329	8.2607	35.1633	2.2027	2.33E+02	3.23E+00	0.3771	
24	20.474	8.2606	35.1633	2.0969	2.35E+02	3.19E+00	0.3698	
Station 26-1								
bottlesum_ir =		c:\cruises\64	c:\cruises\64AW103\CTD\64AW103-26CTD01.XMLCON					
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	101.3	7.1554	35.1593	0.4478	5.66E+02	9.59E-02	0.1464	
2	65.863	7.3145	35.1565	1.2985	4.64E+02	9.59E-02	0.1668	
3	65.821	7.3117	35.1568	1.1959	4.59E+02	9.59E-02	0.2017	
4	66.035	7.3047	35.1567	1.0208	4.61E+02	9.59E-02	0.1894	
5	65.95	7.3153	35.1565	1.3363	4.56E+02	9.59E-02	0.2245	
6	65.83	7.3191	35.1564	1.0186	4.44E+02	9.59E-02	0.1767	
7	65.871	7.3236	35.1562	1.055	4.39E+02	9.59E-02	0.2055	
8	65.792	7.3292	35.1561	1.3174	4.35E+02	9.59E-02	0.1753	
9	65.891	7.3289	35.1562	1.1613	4.42E+02	9.59E-02	0.1759	
10	65.701	7.3265	35.1563	1.2976	4.34E+02	9.59E-02	0.1994	
11	65.935	7.3053	35.1569	1.1829	4.18E+02	9.59E-02	0.1724	
12	65.932	7.3	35.1572	1.1882	4.08E+02	9.59E-02	0.1808	
13	65.753	7.3103	35.1565	1.2326	3.89E+02	9.59E-02	0.2174	
14	19.675	7.9998	35.144	1.6027	2.61E+02	9.59E+00	0.2027	
15	19.59	8.0009	35.1441	1.7619	2.58E+02	9.88E+00	0.2022	
16	19.674	8	35.1441	2.5944	2.61E+02	9.63E+00	0.2222	
17	19.724	7.9983	35.1442	1.401	2.64E+02	9.93E+00	0.2152	
18	19.753	7.9985	35.1442	1.8609	2.69E+02	1.04E+01	0.2168	
19	19.625	7.9997	35.144	1.596	2.75E+02	1.04E+01	0.2263	
20	19.778	7.9981	35.1442	1.7581	2.80E+02	1.06E+01	0.2306	
21	19.891	7.9984	35.1441	1.684	2.87E+02	1.02E+01	0.2331	
22	19.714	7.9994	35.1441	1.6401	2.89E+02	1.09E+01	0.2067	
23	19.552	8	35.1439	1.9787	2.93E+02	1.23E+01	0.2203	
24	19.663	8	35.1441	2.3034	2.97E+02	1.19E+01	0.2322	

Station 27-1								
<i>bottlesum_in =</i>	<i>c:\cruises\64AW103\CTD\64AW103-27CTD01.XMLCON</i>							
Bottle	PrDM	T090C	Sal00	FIC	Spar	PAR	Turb	
1	71.25	7.3158	35.1522	0.3787	1.12E+02	9.59E-02	0.1041	
2	51.375	7.7791	35.1505	2.2727	9.73E+01	9.59E-02	0.2242	
3	20.709	7.7744	35.1506	2.4327	9.29E+01	2.06E+00	0.2255	
4	20.497	7.7722	35.1506	1.6356	9.47E+01	2.23E+00	0.2126	
5	21.016	7.7745	35.1505	1.9504	9.47E+01	1.78E+00	0.2367	
6	20.976	7.7732	35.1506	2.1004	9.46E+01	1.88E+00	0.204	
7	20.55	7.773	35.1507	1.9036	9.22E+01	2.06E+00	0.2292	
8	21.128	7.7731	35.1507	2.0872	9.04E+01	1.63E+00	0.2601	
9	21.267	7.773	35.1502	2.2164	8.73E+01	1.48E+00	0.2154	
10	20.879	7.7733	35.1502	2.0622	8.58E+01	1.67E+00	0.224	
11	21.174	7.7732	35.1507	2.8724	8.45E+01	1.56E+00	0.2447	
12	20.659	7.7746	35.1505	1.7169	8.45E+01	1.84E+00	0.2043	
13	20.563	7.7739	35.1507	1.8901	8.62E+01	1.84E+00	0.2273	
14	21.243	7.7744	35.1506	1.7365	8.98E+01	1.51E+00	0.2284	
15	20.623	7.7743	35.1505	1.7544	9.38E+01	1.95E+00	0.213	
16	21.017	7.7748	35.1506	1.9575	9.83E+01	1.85E+00	0.2362	
17	20.631	7.7768	35.1505	1.7763	1.02E+02	2.45E+00	0.2584	
18	21.093	7.7774	35.1504	2.2128	1.06E+02	2.33E+00	0.2206	
19	20.586	7.7771	35.1503	2.1121	1.07E+02	2.89E+00	0.2139	
20	20.81	7.7749	35.1506	2.7952	1.10E+02	2.73E+00	0.2103	
21	20.996	7.774	35.1506	2.4235	1.11E+02	2.48E+00	0.2181	
22	20.536	7.7737	35.1505	2.3242	1.11E+02	2.52E+00	0.2093	
23	20.937	7.7733	35.1507	2.1679	1.10E+02	2.30E+00	0.2425	
24	21.016	7.7746	35.1505	1.9643	1.10E+02	2.47E+00	0.2366	

Appendix 4

PHIVIR-1 cruise May 2026; 64AWB103							
Variable : NUTS= Dissolved inorganic nutrients (NO3, NH4, PO4, SiO2)							
Station	Cast	Variable	device	time of day (ship)	time of day (UTC)	Depths (m)	Bottle #
1	1	NUTS	UCCTD	11:45 AM	12:45 PM	126, 83, 71, 63, 28, 15	1, 3, 14, 15, 16, 17
3	1	NUTS	UCCTD	5:30 AM	6:30 AM	130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 15
3	2	NUTS	UCCTD	8:00 AM	9:00 AM	68, 25	4, 12
4	1	NUTS	UCCTD	5:30 AM	6:30 AM	127, 70, 63, 50, 20	1, 2, 12, 13, 14
4	2	NUTS	UCCTD	8:00 AM	9:00 AM	106, 85, 68, 20	2, 3, 10, 12
5	1	NUTS	UCCTD	5:30 AM	6:30 AM	150, 100, 67, 50, 20	1, 2, 3, 13, 14
5	2	NUTS	UCCTD	8:00 AM	9:00 AM	160, 130, 100, 78, 73, 60, 20	1, 2, 3, 4, 5, 13, 14
7	1	NUTS	UCCTD	5:30 AM	6:30 AM	130, 88, 51, 20	1, 2, 12, 14
7	2	NUTS	UCCTD	8:00 AM	9:00 AM	98, 82, 20	3, 4, 15
8	1	NUTS	UCCTD	5:30 AM	6:30 AM	162, 106, 85, 53, 33, 20	2, 3, 6, 8, 18, 20
8	2	NUTS	UCCTD	8:00 AM	9:00 AM	125, 62, 59, 20	3, 7, 12, 20
9	1	NUTS	UCCTD	5:30 AM	6:30 AM	97, 83, 57, 42, 20	2, 4, 7, 13, 17
9	2	NUTS	UCCTD	8:00 AM	9:00 AM	70, 19	3, 15
10	1	NUTS	UCCTD	5:30 AM	6:30 AM	150, 94, 63, 20	2, 3, 4, 10
10	2	NUTS	UCCTD	8:00 AM	9:00 AM	130, 89 56, 20	2, 3, 4, 12
10	5	NUTS	UCCTD	7:30 AM	8:30 AM		6, 16
11	1	NUTS	UCCTD	5:30 AM	6:30 AM	140, 121, 60, 40, 20	2, 4, 6, 12, 14
11	2	NUTS	UCCTD	8:00 AM	9:00 AM	70, 20	3, 18
12	1	NUTS	UCCTD	5:30 AM	6:30 AM	120, 100, 59, 45, 20	2, 3, 4, 14, 19
12	2	NUTS	UCCTD	8:00 AM	9:00 AM	130, 100, 73, 62, 40, 20	2, 3, 5, 7, 17, 18
13	1	NUTS	UCCTD	5:30 AM	6:30 AM	110, 68, 41, 20	2, 4, 5, 13
13	2	NUTS	UCCTD	8:00 AM	9:00 AM	100, 70, 41, 20	2, 3, 4, 13
14	2	NUTS	UCCTD	6:45 AM	7:45 AM	80, 60, 47, 37, 20	2, 4, 6, 7, 14
14	6	NUTS	UCCTD	6:30 AM	7:30 AM	65, 44, 20	2, 4, 6
16	1	NUTS	UCCTD	5:30 AM	6:30 AM	100, 58, 34, 20	2, 4, 6, 13
16	2	NUTS	UCCTD	8:00 AM	9:00 AM	90, 60, 41, 21	2, 4, 6, 9
17	1	NUTS	CTD	5:30 AM	6:30 AM	90, 76, 50, 20	2, 4, 6, 8
17	2	NUTS	CTD	8:30 AM	9:30 AM	100, 76, 49, 37, 22	1, 2, 3, 4, 5
18	1	NUTS	UCCTD	5:30 AM	6:30 AM	65, 42, 30, 16	2, 4, 6, 8
18	2	NUTS	UCCTD	8:00 AM	9:00 AM	70, 42, 20	2, 4, 6
19	1	NUTS	UCCTD	5:30 AM	6:30 AM	70, 38, 25 ,18	2, 4, 6, 8
19	2	NUTS	UCCTD	8:00 AM	9:00 AM	64, 40, 25, 17	2, 4, 6, 8
20	1	NUTS	UCCTD	5:30 AM	6:30 AM	62, 35, 24, 13	2, 4, 6, 8
20	2	NUTS	UCCTD	8:00 AM	9:00 AM	70, 34, 20	2, 4, 6
21	1	NUTS	CTD	5:30 AM	6:30 AM	80, 60, 37, 20	2, 4, 6, 8

21	2	NUTS	CTD	8:00 AM	9:00 AM	94, 70, 40, 22	2, 3, 4, 6
22	1	NUTS	CTD	5:30 AM	6:30 AM	70, 55, 39, 20	2, 4, 6, 8
22	2	NUTS	CTD	8:00 AM	9:00 AM	80, 67, 40, 20	1, 2, 4, 7
23	2	NUTS	CTD	6:45 AM	7:45 AM	90, 50, 19, 12	1, 2, 3, 4
24	1	NUTS	CTD	5:30 AM	6:30 AM	70, 33, 20	2, 4, 6
24	2	NUTS	CTD	8:00 AM	9:00 AM	70, 46, 21	2, 4, 7
25	1	NUTS	CTD	5:30 AM	6:30 AM	60, 36, 28, 19	2, 4, 6, 8
25	2	NUTS	CTD	8:30 AM	9:30 AM	60, 40, 20	1, 2, 4
26	1	NUTS	CTD	4:00 PM	5:00 PM	100, 65, 20	1, 2, 17
27	1	NUTS	CTD	5:30 AM	6:30 AM	70, 50, 20	1, 2, 3

PHIVIR-1 cruise May 2026; 64AWB103								
Variable : Dissolved Inorganic Carbon (DIC)								
Station	Cast	Variable	Sampling device	time of day (ship)	time of day (UTC)	Depths (m)	Bottle #	comments
1	1	DIC	CTD	11:45 AM	12:45 PM	126, 83, 71, 63, 28, 15	1, 3, 14, 15, 16, 17	Fix (HgCl2)
3	1	DIC	CTD	5:30 AM	6:30 AM	130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 15	Fix (HgCl2)
3	2	DIC	CTD	8:00 AM	9:00 AM	68, 25	4, 12	Fix (HgCl2)
4	1	DIC	CTD	5:30 AM	6:30 AM	127, 70, 63, 50, 20	1, 2, 12, 13, 14	Fix (HgCl2)
4	2	DIC	CTD	8:00 AM	9:00 AM	106, 85, 68, 20	2, 3, 10, 12	Fix (HgCl2)
5	1	DIC	CTD	5:30 AM	6:30 AM	150, 100, 67, 50, 20	1, 2, 3, 13, 14	Fix (HgCl2)
5	2	DIC	CTD	8:00 AM	9:00 AM	100, 78, 20	4, 5, 14	Fix (HgCl2)
7	1	DIC	CTD	5:30 AM	6:30 AM	88, 20	2, 14	Fix (HgCl2)
7	2	DIC	CTD	8:00 AM	9:00 AM	82, 20	4, 15	Fix (HgCl2)
8	1	DIC	CTD	5:30 AM	6:30 AM	53, 20	8, 20	Fix (HgCl2)
8	2	DIC	CTD	8:00 AM	9:00 AM	125, 62, 59, 20	3, 7, 12, 20	Fix (HgCl2)
9	1	DIC	CTD	5:30 AM	6:30 AM	57, 20	7, 17	Fix (HgCl2)
9	2	DIC	CTD	8:00 AM	9:00 AM	70, 19	3, 15	Fix (HgCl2)
10	1	DIC	CTD	5:30 AM	6:30 AM	63, 20	4, 10	Fix (HgCl2)
10	2	DIC	CTD	8:00 AM	9:00 AM	56, 20	4, 12	Fix (HgCl2)
11	1	DIC	CTD	5:30 AM	6:30 AM	60, 20	6, 14	Fix (HgCl2)
11	2	DIC	CTD	8:00 AM	9:00 AM	70, 20	6, 18	Fix (HgCl2)
12	1	DIC	CTD	5:30 AM	6:30 AM	59, 20	4, 19	Fix (HgCl2)
12	2	DIC	CTD	8:00 AM	9:00 AM	62, 20	7, 18	Fix (HgCl2)
13	1	DIC	CTD	5:30 AM	6:30 AM	41, 20	5, 13	Fix (HgCl2)
14	6	DIC	CTD	6:30 AM	7:30 AM	20	6	Fix (HgCl2)
16	1	DIC	CTD	5:30 AM	6:30 AM	20	13	Fix (HgCl2)
16	2	DIC	CTD	8:00 AM	9:00 AM	21	9	Fix (HgCl2)
17	1	DIC	CTD	5:30 AM	6:30 AM	20	8	Fix (HgCl2)
17	2	DIC	CTD	8:30 AM	9:30 AM	22	5	Fix (HgCl2)
18	1	DIC	CTD	5:30 AM	6:30 AM	16	8	Fix (HgCl2)
18	2	DIC	CTD	8:00 AM	9:00 AM	20	6	Fix (HgCl2)
19	1	DIC	CTD	5:30 AM	6:30 AM	18	8	Fix (HgCl2)
19	2	DIC	CTD	8:00 AM	9:00 AM	17	8	Fix (HgCl2)
20	1	DIC	CTD	5:30 AM	6:30 AM	13	8	Fix (HgCl2)
20	2	DIC	CTD	8:00 AM	9:00 AM	20	6	Fix (HgCl2)
21	1	DIC	CTD	5:30 AM	6:30 AM	20	8	Fix (HgCl2)
22	1	DIC	CTD	5:30 AM	6:30 AM	20	8	Fix (HgCl2)
23	2	DIC	CTD	6:45 AM	7:45 AM	12	4	Fix (HgCl2)
24	1	DIC	CTD	5:30 AM	6:30 AM	20	6	Fix (HgCl2)

25	1	DIC	CTD	5:30 AM	6:30 AM	19	8	Fix (HgCl ₂)
26	1	DIC	CTD	4:00 PM	5:00 PM	100, 65, 20	1, 2, 17	Fix (HgCl ₂)
27	1	DIC	CTD	5:30 AM	6:30 AM	20	3	Fix (HgCl ₂)

PHYVIR-1 cruise May 2026; 64AVW103								
Variable: Dissolved Iron (dFe)								
Station	Cast	Variable	Sampling device	time of day	UTC	Depths (m)	Bottle #	Other comments
3	2	dFe	UCCTD	8.00	9.00	250, 130, 93, 60, 68, 50, 25	1, 2, 3, 4, 11, 10, 13	
4	2	dFe	UCCTD	8.00	9.00	85, 20	8, 18	
6	2	dFe	UCCTD	8.00	9.00	160, 130, 100, 78, 73, 73, 20	1, 2, 3, 4, 5, 9, 20	Bottle 5 and 9 were both at 73 m depth
7	2	dFe	UCCTD	8.00	9.00	125, 98, 82, 55, 20	2, 3, 4, 14, 15	
8	2	dFe	UCCTD	8.00	9.00	150, 125, 62, 50, 20	2, 4, 7, 12, 21	
9	2	dFe	UCCTD	8.00	9.00	120, 70, 50, 20	2, 7, 14, 19	
10	2	dFe	UCCTD	8.00	9.00	130, 56, 20	2, 9, 15	
11	2	dFe	UCCTD	8.00	9.00	70, 20	12, 23	
12	2	dFe	UCCTD	8.00	9.00	130, 100, 73, 62, 62, 20	2, 4, 5, 7, 16, 23	Bottle 5 and 9 were both at 62 m depth
13	2	dFe	UCCTD	8.00	9.00	100, 70, 41, 20	2, 3, 4, 16	
14	6	dFe	UCCTD	8.00	9.00	65, 44, 20	2, 4, 6	
16	2	dFe	UCCTD	8.00	9.00	90, 60, 41, 21	2, 4, 6, 15	
18	2	dFe	UCCTD	8:00	9:00	70, 42, 20	2, 4, 15	
19	2	dFe	UCCTD	8:00	9:00	64, 40, 25, 17	2, 4, 6, 15	
20	2	dFe	UCCTD	8:00	9:00	70, 34, 20	2, 4, 9	

PHIVIR-1 cruise May 2026; 64AWB103						
Variable : Chlorophyll-a concentration (Chla)						
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle
1	1	Chla	UCC	11:45 AM		
3	1	Chla	UCC	5:30 AM	71, 23	5, 16
4	1	Chla	UCC	5:30 AM	70, 20	5, 14
5	1	Chla	UCC	5:30 AM	67, 20	5, 15
7	1	Chla	UCC	5:30 AM	88, 20	4, 15
8	1	Chla	UCC	5:30 AM	106, 53, 33, 20	4, 12, 19, 21
9	1	Chla	UCC	5:30 AM	83, 57, 20	6, 9, 19
10	1	Chla	UCC	5:30 AM	63, 20	6, 11
11	1	Chla	UCC	5:30 AM	60, 19.5	8, 16
12	1	Chla	UCC	5:30 AM	59, 20	7, 20
13	1	Chla	UCC	5:30 AM	41, 20	7, 14
14	6	Chla	UCC	6:30 AM	20	17
16	1	Chla	UCC	5:30 AM	20	16
17	1	Chla	Normal CTD	5:30 AM	20	11
18	1	Chla	UCC	5:30 AM	16	20
19	1	Chla	UCC	5:30 AM	18	14
20	1	Chla	UCC	5:30 AM	13	14
21	1	Chla	Normal CTD	5:30 AM	20	15+16
21	2	Chla	Normal CTD	8:00 AM	94	2
22	1	Chla	Normal CTD	5:30 AM	20	13+14
23	2	Chla	Normal CTD	6:45 AM	12	9+10
24	1	Chla	Normal CTD	5:30 AM	20	10+11
25	1	Chla	Normal CTD	5:30 AM	19	11+12
26	1	Chla	Normal CTD	4:00 PM	65, 20	8, 18
27	1	Chla	Normal CTD	5:30 PM	20	20+21

PHIVIR-1 cruise May 2026; 64AWB103							
Variable : Particulate organic carbon (POC), organic nitrogen (PON), organic phosphorus (POP) and total carbon (TC)							
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle	
1	1	POP, PON, POC, TC	Ultra clean CTD	11:45 AM			
3	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	71, 23	5, 16	
4	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	70, 20	5, 14	
5	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	67, 20	5, 15	
7	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	88, 20	4, 15	
8	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	53, 20	12, 21	
9	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	57, 20	9, 19	
10	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	63, 20	6, 11	
11	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	60, 19.5	8, 16	
12	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	59, 20	7, 20	
13	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	41, 20	7, 14	
14	6	POP, PON, POC, TC	Ultra clean CTD	6:30 AM	20	17	
16	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	20	16	
17	6	POP, PON, POC, TC	Normal CTD	5:30 AM	20	11	
18	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	16	20	
19	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	18	14	
20	1	POP, PON, POC, TC	Ultra clean CTD	5:30 AM	13	14	
21	1	POP, PON, POC, TC	Normal CTD	5:30 AM	20	15+16	
22	1	POP, PON, POC, TC	Normal CTD	5:30 AM	20	13+14	
23	2	POP, PON, POC, TC	Normal CTD	6:45 AM	12	9+10	
24	1	POP, PON, POC, TC	Normal CTD	5:30 AM	20	10+11	
25	1	POP, PON, POC, TC	Normal CTD	5:30 AM	19	11+12	
26	1	POP, PON, POC, TC	Normal CTD	4:00 PM	65, 20	8, 18	
27	1	POP, PON, POC, TC	Normal CTD	5:30 PM	20	20+21	

PHIVIR-1 cruise May 2026; 64AWB103

Variable : Lugol - microscopy

Station	Cast	Variable	Sampling device	time of day (ship)	time of day (UTC)	Depths (m)	Bottle #
2	2	lugol plankton	UCCTD	5:30 AM	6:30 AM	63	15
3	2	lugol plankton	UCCTD	5:30 AM	6:30 AM	68, 25	9, 16
4	2	lugol plankton	UCCTD	7:30 AM	8:30 AM	85, 20	3, 12
5	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	20	14
7	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	82, 20	4, 15
8	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	20, 59	12, 20
9	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	70, 19	3, 15
10	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	56, 20	4, 12
12	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	62, 20	7, 18
13	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	41, 20	4, 13
14	6	lugol plankton	UCCTD	6:30 AM	7:30 AM	20	6
16	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	21	9
17	2	lugol plankton	CTD	8:00 AM	9:00 AM	22	5
18	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	20	6
19	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	17	8
20	2	lugol plankton	UCCTD	8:00 AM	9:00 AM	20	6
21	2	lugol plankton	CTD	8:00 AM	9:00 AM	22	6
22	2	lugol plankton	CTD	8:00 AM	9:00 AM	20	7
23	2	lugol plankton	CTD	6:45 AM	7:45 AM	12	4
24	2	lugol plankton	CTD	8:00 AM	9:00 AM	21	7
25	2	lugol plankton	CTD	8:30 AM	9:30 AM	20	4
26	1	lugol plankton	CTD	4:00 PM	5:00 PM	65, 20	2, 17
27	1	lugol plankton	CTD	8:00 AM	9:00 AM	20	3

PHIVIR-1 cruise May 2026; 64AWB103						
Variable : toxins						
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle
19	2	Toxins	Ultra clean CTD	8:00 AM	17	11
20	2	Toxins	Ultra clean CTD	8:00 AM	20	11
21	2	Toxins	Normal CTD	8:00 AM	22	17
22	2	Toxins	Normal CTD	8:00 AM	20	6
23	2	Toxins	Normal CTD	6:45 AM	12	9+10
24	1	Toxins	Normal CTD	5:30 AM	20	10+11
25	1	Toxins	Normal CTD	5:30 AM	19	11+12
27	1	Toxins	Normal CTD	5:30 AM	20	20+21

PHYVIR-1 cruise May 2026; 64AWVB103**Variables: Microbial abundances**

Station	Cast	Variable	device	time of day	UTC	Depths (m)	Bottle #
1	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	126, 83, 71, 63, 28, 15	1, 3, 14, 15, 16, 17
		FIXED abundances phyto, bact, viri (FCM)				126, 83, 71, 63, 28, 15	1, 3, 14, 15, 16, 17
3	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 24
		FIXED abundances phyto, bact, viri (FCM)				130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 24
4	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	127, 70, 63, 50, 20	1, 2, 12, 13, 14
		FIXED abundances phyto, bact, viri (FCM)				127, 70, 63, 50, 20	1, 2, 12, 13, 14
4	2	Phytoplankton abundances (FCM)	UCC	8:00AM	9:00 AM	130, 106, 85, 68, 59, 20	1, 2, 3, 10, 11, 12
		FIXED abundances phyto, bact, viri (FCM)				130, 106, 85, 68, 59, 20	1, 2, 3, 10, 11, 12
4	6	Phytoplankton abundances (FCM)	UCC	7:30AM	8:30 AM	150, 70, 61, 42, 20	1, 2, 4, 12, 13
		FIXED abundances phyto, bact, viri (FCM)				150, 70, 61, 42, 20	1, 2, 4, 12, 13
		Fractionation				61	4
5	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	150, 100, 67, 50, 20	1, 2, 3, 13, 14
		FIXED abundances phyto, bact, viri (FCM)				150, 100, 67, 50, 20	1, 2, 3, 13, 14
5	2	Phytoplankton abundances (FCM)	UCC	8:00AM	9:00 AM	160, 130, 100, 78, 73, 60, 20	1, 2, 3, 4, 5, 13, 14
		FIXED abundances phyto, bact, viri (FCM)				160, 130, 100, 78, 73, 60, 20	1, 2, 3, 4, 5, 13, 14
7	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	138, 88, 51, 20	1, 2, 12, 14
		FIXED abundances phyto, bact, viri (FCM)				138, 88, 51, 20	1, 2, 12, 14
7	2	FIXED abundances phyto, bact, viri (FCM)	UCC	8:00AM	9:00 AM	98, 82, 20	3, 4, 15
8	1	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	162, 106, 85, 53, 33, 20	2, 3, 6, 8, 18, 20
		FIXED abundances phyto, bact, viri (FCM)				162, 106, 85, 53, 33, 20	2, 3, 6, 8, 18, 20
		Fractionation				53	8
8	2	Phytoplankton abundances (FCM)	UCC	8:00AM	9:00 AM	62, 59	7, 12
		FIXED abundances phyto, bact, viri (FCM)				150, 125, 100, 62, 59, 40, 20	2, 3, 6, 7, 12, 19, 20
10	1	Phytoplankton abundances (FCM)	UCC	5:30AM	9:00 AM	150, 94, 63, 20	2, 3, 4, 10
		FIXED abundances phyto, bact, viri (FCM)				150, 94, 63, 20	2, 3, 4, 10
10	2	Phytoplankton abundances (FCM)	UCC	8:00AM	9:00 AM	130, 89, 56, 20	2, 3, 4, 12
		FIXED abundances phyto, bact, viri (FCM)				130, 89, 56, 20	2, 3, 4, 12
10	5	Phytoplankton abundances (FCM)	UCC	5:30AM	6:30	120, 86, 58, 30, 20	2, 4, 6, 14, 16
		FIXED abundances phyto, bact, viri (FCM)				120, 86, 58, 30, 20	2, 4, 6, 14, 16
11	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	140, 121, 60, 40, 20	2, 4, 6, 12, 14
		FIXED abundances phyto, bact, viri (FCM)					
11	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	120, 70, 50, 20	2, 3, 17, 18
		FIXED abundances phyto, bact, viri (FCM)					
12	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	120, 100, 59, 50, 20	2, 3, 4, 14, 19
		FIXED abundances phyto, bact, viri (FCM)					
		Fractionation				59	4
12	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	130, 100, 73, 62, 40, 20	2, 3, 5, 7, 17, 18
		FIXED abundances phyto, bact, viri (FCM)					

13	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	110, 68, 41, 20	2, 4, 5, 13
		FIXED abundances phyto, bact, viri (FCM)					
14	2	Phytoplankton abundances (FCM)	UCC	6:45 AM	7:45 AM	80, 60, 47, 37, 20	2, 4, 6, 7, 14
		FIXED abundances phyto, bact, viri (FCM)					
14	6	Phytoplankton abundances (FCM)	UCC	6:30 AM	7:30 AM	65, 44, 20	2, 4, 6
		FIXED abundances phyto, bact, viri (FCM)					
		Fractionation					
16	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	100, 58, 34, 20	2, 4, 6, 13
		FIXED abundances phyto, bact, viri (FCM)					
16	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	90, 60, 41, 21	2, 4, 6, 9
		FIXED abundances phyto, bact, viri (FCM)					
17	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	90, 76, 50, 20	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
17	2	Phytoplankton abundances (FCM)	CTD	8:30 AM	9:30 AM	100, 75, 49, 37, 22	1, 2, 3, 4, 5
		FIXED abundances phyto, bact, viri (FCM)					
18	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	65, 42, 30, 16	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
18	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	70, 42, 20	2, 4, 6
		FIXED abundances phyto, bact, viri (FCM)					
19	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	70, 38, 25, 18	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
19	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	64, 40, 25, 17	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
20	1	Phytoplankton abundances (FCM)	UCC	5:30 AM	6:30	62, 35, 24, 13	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
20	2	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	70, 34, 20	2, 4, 6
		FIXED abundances phyto, bact, viri (FCM)					
20	6	Phytoplankton abundances (FCM)	UCC	8:00 AM	9:00 AM	42, 25, 8	1, 2, 16
		FIXED abundances phyto, bact, viri (FCM)					
21	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	80, 60, 37, 20	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
21	2	Phytoplankton abundances (FCM)	CTD	8:00 AM	9:00 AM	94, 70, 40, 20	2, 3, 4, 6
		FIXED abundances phyto, bact, viri (FCM)					
22	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	70, 55, 39, 20	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
		Fractionation					
22	2	Phytoplankton abundances (FCM)	CTD	8:00 AM	9:00 AM	80, 67, 40, 20	1, 2, 4, 7
		FIXED abundances phyto, bact, viri (FCM)					
23	2	Phytoplankton abundances (FCM)	CTD	6:45 AM	7:45 AM	90, 50, 19, 12	1, 2, 3, 4
		FIXED abundances phyto, bact, viri (FCM)					
24	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	70, 33, 20	2, 4, 6

		FIXED abundances phyto, bact, viri (FCM)					
24	2	Phytoplankton abundances (FCM)	CTD	8:00 AM	9:00 AM	70, 46, 21	2, 4, 7
		FIXED abundances phyto, bact, viri (FCM)					
25	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	60, 36, 28, 19	2, 4, 6, 8
		FIXED abundances phyto, bact, viri (FCM)					
		Fractionation					
26	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	100, 65, 20	1, 2, 17
		FIXED abundances phyto, bact, viri (FCM)					
27	1	Phytoplankton abundances (FCM)	CTD	5:30 AM	6:30	70, 50, 20	1, 2, 3
		FIXED abundances phyto, bact, viri (FCM)					

PHYVIR-1 cruise May 2026; 64AWVB103							
Variables: Sorting phytoplankton							
Station	Cast	Variable	device	time of day	UTC	Depths (m)	Bottle #
4	6	Sorting	UCC	7:30AM	8:30AM	61	4
5	1	Sorting	UCC	5:30AM	6:30AM	67, 20	3, 14
5	2	Sorting	UCC	8:00AM	9:00AM	73	5
7	1	Sorting	UCC	5:30AM	6:30AM	88	2
7	2	Sorting	UCC	8:00AM	9:00AM	82	4
8	2	Sorting	UCC	8:00AM	9:00AM	59	12
9	2	Sorting	UCC	8:00AM	9:00AM	70	3
10	2	Sorting	UCC	8:00AM	9:00AM	56, 20	4, 12
11	2	Sorting	UCC	8:00AM	9:00AM	70, 20	3, 18
12	2	Sorting	UCC	8:00AM	9:00AM	62, 20	7, 18
13	2	Sorting	UCC	8:00AM	9:00AM	41, 20	4, 13
14	2	Sorting	UCC	8:00AM	9:00AM	37, 20	7, 14
14	6	Sorting	UCC	6:30AM	7:30AM	20	6
16	2	Sorting	UCC	8:00AM	9:00AM	21	9
17	2	Sorting	UCC	8:30AM	9:30AM	22	5
18	2	Sorting	UCC	8:00AM	9:00AM	20	6
19	2	Sorting	UCC	8:00AM	9:00AM	40, 17	4, 8
20	2	Sorting	UCC	8:00AM	9:00AM	34, 20	4, 6
20	6	Sorting	UCC	8:00AM	9:00AM	25	2
21	2	Sorting	UCC	8:00AM	9:00AM	22	6
22	2	Sorting	UCC	8:00AM	9:00AM	20	7
24	2	Sorting	UCC	8:00AM	9:00AM	21	7
25	1	Sorting	UCC	5:30AM	6:30AM	19	8

PHIVIR-1 cruise May 2026; 64AWB103								
Variable : FRRF								
Station	Cast	Variable	device	(ship)	time of day (UTC)	Depths (m)	Bottle #	Other comments
3	1	FRRF	UCCTD	5:30 AM	6:30 AM	130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 15	Temperature offset Lauda
4	1	FRRF	UCCTD	5:30 AM	6:30 AM	127, 70, 63, 50, 20	1, 2, 12, 13, 14	Temperature offset Lauda
4	6	FRRF	UCCTD	7:30 AM	8:30 AM	61	4	Temperature offset Lauda
5	1	FRRF	UCCTD	5:30 AM	6:30 AM	150, 100, 67, 50, 20	1, 2, 3, 13, 14	Temperature offset Lauda
5	2	FRRF	UCCTD	8:00 AM	9:00 AM	160, 130, 100, 60, 20	4, 5, 14	Temperature offset Lauda
7	1	FRRF	UCCTD	5:30 AM	6:30 AM	130, 88, 51, 20	1, 2, 12, 14	Temperature offset Lauda
7	2	FRRF	UCCTD	8:00 AM	9:00 AM	98, 82, 20	3, 4, 15	Temperature offset Lauda
8	1	FRRF	UCCTD	5:30 AM	6:30 AM	162, 106, 85, 53, 33, 20	2, 3, 6, 8, 18,20	
8	2	FRRF	UCCTD	8:00 AM	9:00 AM	125, 62, 59, 20	3, 7, 12, 20	
9	1	FRRF	UCCTD	5:30 AM	6:30 AM	97, 83, 57, 42, 20	2, 4, 7, 13, 17	
9	2	FRRF	UCCTD	8:00 AM	9:00 AM	70, 19	3, 15	
10	1	FRRF	UCCTD	5:30 AM	6:30 AM	150, 94, 63, 20	2, 3, 4, 10	
10	2	FRRF	UCCTD	8:00 AM	9:00 AM	56, 20	4, 12	
10	5	FRRF	UCCTD	7:30 AM	8:30 AM	58, 20	6, 16	
11	1	FRRF	UCCTD	5:30 AM	6:30 AM	140, 121, 60, 40, 20	2, 4, 6, 12, 14	
11	2	FRRF	UCCTD	8:00 AM	9:00 AM	70, 20	3, 18	
12	1	FRRF	UCCTD	5:30 AM	6:30 AM	120, 100, 59, 45, 20	2, 3, 4, 14, 19	
12	2	FRRF	UCCTD	8:00 AM	9:00 AM	73, 62, 20	5, 7 18	
13	1	FRRF	UCCTD	5:30 AM	6:30 AM	110, 68, 41, 20	3, 4, 5, 13	
13	2	FRRF	UCCTD	8:00 AM	9:00 AM	41, 20	4, 13	
14	2	FRRF	UCCTD	6:45 AM	7:45 AM	80, 60, 47, 37, 20	2, 4, 6, 7, 14	
14	6	FRRF	UCCTD	7:30 AM	8:30 AM	65, 44, 20	2, 4, 6	
16	1	FRRF	UCCTD	5:30 AM	6:30 AM	100, 58, 34, 20	2, 4, 6, 13	
16	2	FRRF	UCCTD	8:00 AM	9:00 AM	21	9	
17	1	FRRF	CTD	5:30 AM	6:30 AM	90, 76, 50, 20	2, 4, 6, 8	
17	2	FRRF	CTD	8:00 AM	9:00 AM	22	5	
18	1	FRRF	UCCTD	5:30 AM	6:30 AM	65, 42, 30, 16	2, 4, 6, 8	
18	2	FRRF	UCCTD	8:00 AM	9:00 AM	20	6	
19	1	FRRF	UCCTD	5:30 AM	6:30 AM	70, 38, 25 ,18	2, 4, 6, 8	
19	2	FRRF	UCCTD	8:00 AM	9:00 AM	17	8	
20	1	FRRF	UCCTD	5:30 AM	6:30 AM	62, 35, 24, 13	2, 4, 6, 8	
20	2	FRRF	UCCTD	8:00 AM	9:00 AM	20	6	
20	6	FRRF	UCCTD	8:00 AM	9:00 AM	25	1, 2, 16	
21	1	FRRF	CTD	5:30 AM	6:30 AM	80, 60, 37, 20	2, 4, 6, 8	
21	2	FRRF	CTD	8:00 AM	9:00 AM	94, 22	2, 6	
22	1	FRRF	CTD	5:30 AM	6:30 AM	70, 55, 39, 20	2, 4, 6, 8	
22	2	FRRF	CTD	8:00 AM	9:00 AM	20	7	

23	2	FRRF	CTD	6:45 AM	7:45 AM	90, 50, 19, 12	1, 2, 3, 4	
24	1	FRRF	CTD	5:30 AM	6:30 AM	70, 33, 20	2, 4, 6	
24	2	FRRF	CTD	8:00 AM	9:00 AM	21	7	
25	1	FRRF	CTD	5:30 AM	6:30 AM	60, 36, 28, 19	2, 4, 6, 8	
25	2	FRRF	CTD	8:30 AM	9:30 AM	60, 40, 20	1, 2, 4	
26	1	FRRF	CTD	4:00 PM	5:00 PM	100, 65, 20	1, 2, 17	
27	1	FRRF	CTD	5:30 AM	6:30 AM	70, 50, 20	1, 2, 3	

PHYVIR-1 cruise May 2026; 64AVW103								
Variable: PI Curve								
Station	Cast	Variable	Sampling device	time of day	UTC time	Depths (m)	Bottle #	Other comments
4	2	PI curve	UCCTD	8am	9am	56, 20	4, 12	
5	2	PI curve	UCCTD	8am	9am	78, 73, 73 again	4, 5, 5 again, 14	dcm 73m was incubated twice
7	2	PI curve	UCCTD	8am	9am	82, 20	4, 15	
8	2	PI curve	UCCTD	8am	9am	125, 62, 59, 20	3, 7, 12, 20	
9	2	PI curve	UCCTD	8am	9am	70, 19	3, 15	
10	2	PI curve	UCCTD	8am	9am	56, 20	4, 12	
11	2	PI curve	UCCTD	8am	9am	70, 20	3, 18	
12	2	PI curve	UCCTD	8am	9am	73, 62, 62 again	5, 7, 7 again, 18	dcm 62m was incubated twice
13	2	PI curve	UCCTD	8am	9am	41, 20	4, 13	
14	6	PI curve	UCCTD	5:30am	6:30am	20	6	ML duplo
16	2	PI curve	UCCTD	8am	9am	21	9	ML duplo
17	2	PI curve	Rosette CTD	8am	9am	22	5	ML duplo
18	2	PI curve	UCCTD	8am	9am	20	6	ML duplo
19	2	PI curve	UCCTD	8am	9am	17	8	
20	2	PI curve	UCCTD	8am	9am	20	6	

PHYVIR-1 cruise May 2026; 64AVW103							
Variable: Net primary production (NPP)							
Station	Cast	Variable	Sampling device	time of day		Depths (m)	Bottle #
3	1	NPP	UCCTD	5:30am	6:30am	71, 41	3, 14
4	1	NPP	UCCTD	5:30am	6:30am	70, 20	2, 14
4	6	NPP	UCCTD	8am	9am	61, 20	4, 14
5	1	NPP	UCCTD	5:30am	6:30am	67, 20	3, 14
7	1	NPP	UCCTD	5:30am	6:30am	88, 20	2, 14
8	1	NPP	UCCTD	5:30am	6:30am	53, 20	8, 20
9	1	NPP	UCCTD	5:30am	6:30am	57, 20	8, 18
10	1	NPP	UCCTD	5:30am	6:30am	63, 20	4, 10
11	1	NPP	UCCTD	5:30am	6:30am	60, 19komma5	6, 14
12	1	NPP	UCCTD	5:30am	6:30am	59, 20	4, 19
13	1	NPP	UCCTD	5:30am	6:30am	41, 40	5, 13
14	6	NPP	UCCTD	5:30am	6:30am	20	6
16	1	NPP	UCCTD	5:30am	6:30am	20	13
17	1	NPP	Rosette CTD	5:30am	6:30am	20	9
18	1	NPP	UCCTD	5:30am	6:30am	16	10
19	1	NPP	UCCTD	5:30am	6:30am	18	8
20	1	NPP	UCCTD	5:30am	6:30am	13	9
21	1	NPP	Rosette CTD	5:30am	6:30am	20	8
23	2	NPP	Rosette CTD	5:30am	6:30am	12	4
25	1	NPP	Rosette CTD	5:30am	6:30am	19	8

PHYVIR-1 cruise May 2026; 64AVW103							
Variable: Bacterial production							
Station	Cast	Variable	Sampling device	time of day	UTC time	Depths (m)	Bottle #
4	6	Bacterial production	UCCTD	8am	9am	61, 20	4, 13
8	1	Bacterial production	UCCTD	5:30am	6:30am	53, 20	8, 20
10	5	Bacterial production	UCCTD	8am	9am	58, 20	6, 16
12	1	Bacterial production	UCCTD	5:30am	6:30am	59	4
14	2	Bacterial production	UCCTD	5:30am	6:30am	37, 20	7, 14
16	1	Bacterial production	UCCTD	5:30am	6:30am	20	13
18	1	Bacterial production	UCCTD	5:30am	6:30am	16	10
19	1	Bacterial production	UCCTD	5:30am	6:30am	18	8
20	1	Bacterial production	UCCTD	5:30am	6:30am	13	9
21	1	Bacterial production	Rosette CTD	5:30am	6:30am	20	8
23	2	Bacterial production	Rosette CTD	5:30am	6:30am	12	4

PHYVIR-1 cruise May 2026; 64AVW103						
Variable: Phytoplankton viral lysis and microzooplankton grazing (MDA assay)						
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle #
3	1, 2	MDA	UC-CTD	5:30, 8:00	71, 68	4, 8
4	1, 2	MDA	UC-CTD	5:30, 8:00	70, 85	3, 5
5	1, 2	MDA	UC-CTD	5:30, 8:00	67, 73	4, 6
7	1, 2	MDA	UC-CTD	5:30, 8:00	88, 82	3, 7
8	1, 2	MDA	UC-CTD	5:30, 8:00	53, 59	10, 16
10	1, 2	MDA	UC-CTD	5:30, 8:00	63, 50	5, 5
11	1, 2	MDA	UC-CTD	5:30, 8:00	60, 70	7, 6
12	1, 2	MDA	UC-CTD	5:30, 8:00	59, 62	5, 10
13	1, 2	MDA	UC-CTD	5:30, 8:00	41	5, 5
14	1	MDA	UC-CTD	6:30	37	9, 8
16	1, 2	MDA	UC-CTD	5:30, 8:00	20, 21	14, 15
17	1, 2	MDA	CTD	5:30, 8:00	20, 22	18, 19, 10, 11
18	1, 2	MDA	UC-CTD	5:30, 8:00	16, 20	16, 13
19	1, 2	MDA	UC-CTD	5:30, 8:00	18, 17	21, 16
20	1, 2	MDA	UC-CTD	5:30, 8:00	13, 20	10, 7
21	1, 2	MDA	CTD	5:30, 8:00	20, 22	10, 11, 12, 13
22	1, 2	MDA	UC-CTD	5:30, 8:00	20	10, 11, 12, 13
23	2	MDA	UC-CTD	6:45	12	5, 6, 22, 23
24	1, 2	MDA	UC-CTD	5:30, 8:00	20, 21	8, 9, 13, 14
25	1, 2	MDA	UC-CTD	5:30, 8:00	19, 20	15, 16, 9, 10

PHYVIR-1 cruise May 2026; 64-AVW-103						
Variable: Viral Production (VP)						
Station	Cast	Variable	Sampling device	Time of day	Depth (m)	Bottle #
4	6	VP	UCC	7.30 AM	61	6
8	1	VP	UCC	5.30 AM	53	15
10	5	VP	UCC	7.30 AM	58	8
12	1	VP	UCC	5.30 AM	59	6
14	2	VP	UCC	6.30 AM	37	14
16	1	VP	UCC	5.30 AM	20	15
19	1	VP	UCC	5.30 AM	18	19
20	1	VP	UCC	5.30 AM	13	12
21	1	VP	Normal CTD	5.30 AM	20	12
23	2	VP	Normal CTD	6.45 AM	12	7

PHYVIR-1 cruise May 2026; 64AVW103							
Variable: grazing by fluorescently labelled bacterial prey (FLBs)							
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle #	Incubator #
4	6	FLBs	UC-CTD	6:30	61	6	2
8	1	FLBs	UC-CTD	5:30	53	11	2
10	5	FLBs	UC-CTD	7:30	63	8	1
12	1	FLBs	UC-CTD	5:30	59	6	1
14	1	FLBs	UC-CTD	6:30	37	10	1
16	1	FLBs	UC-CTD	5:30	20	15	2
18	1	FLBs	UC-CTD	5:30	16	18	1
19	1	FLBs	UC-CTD	5:30	18	19	2
20	1	FLBs	UC-CTD	5:30	13	12	1
21	1	FLBs	CTD	5:30	20	13	1
23	2	FLBs	CTD	6:45	12	5, 22	1

PHYVIR-1 cruise May 2026; 64AVW103						
Variable: heterotrophic nanoflagellates abundances (HNFs)						
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle #
3	2	HNFs	UC-CTD	8:00	68	8
4	6	HNFs	UC-CTD	6:30	61	6
5	2	HNFs	UC-CTD	8:00	73	6
7	2	HNFs	UC-CTD	8:00	82	7
8	1	HNFs	UC-CTD	5:30	53	11
10	5	HNFs	UC-CTD	7:30	63	8
11	2	HNFs	UC-CTD	8:00	70	6
12	1	HNFs	UC-CTD	5:30	59	6
13	2	HNFs	UC-CTD	8:00	41	5
14	1	HNFs	UC-CTD	6:30	37	10
16	1	HNFs	UC-CTD	5:30	20	15
17	2	HNFs	CTD	8:00	22	10, 11
18	1	HNFs	UC-CTD	5:30	16	18
19	1	HNFs	UC-CTD	5:30	18	19
20	1	HNFs	UC-CTD	5:30	13	12
21	1	HNFs	CTD	5:30	20	13
22	2	HNFs	UC-CTD	8:00	20	12, 13
23	2	HNFs	CTD	6:45	12	5, 22
24	2	HNFs	UC-CTD	8:00	21	13, 14
25	2	HNFs	UC-CTD	8:00	20	9, 10

PHIVIR-1 cruise May 2026; 64AWB103							
Variable : Dissolved Inorganic n (TDN) and P (TDP)							
Station	Cast	Variable	Sampling device	time of day (ship)	time of day (UTC)	Depths (m)	Bottle #
1	1	TDN and TDP	UCCTD	11:45 AM	12:45 PM	126, 83, 71, 63, 28, 15	1, 3, 14, 15, 16, 17
3	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	130, 97, 71, 60, 41, 23	1, 2, 3, 13, 14, 15
3	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	68, 25	4, 12
4	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	127, 70, 63, 50, 20	1, 2, 12, 13, 14
4	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	106, 85, 68, 20	2, 3, 10, 12
5	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	150, 100, 67, 50, 20	1, 2, 3, 13, 14
5	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	160, 130, 100, 78, 73, 60, 20	1, 2, 3, 4, 5, 13, 14
7	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	130, 88, 51, 20	1, 2, 12, 14
7	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	98, 82, 20	3, 4, 15
8	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	162, 106, 85, 53, 33, 20	2, 3, 6, 8, 18, 20
8	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	125, 62, 59, 20	3, 7, 12, 20
9	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	97, 83, 57, 42, 20	2, 4, 7, 13, 17
9	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	70, 19	3, 15
10	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	150, 94, 63, 20	2, 3, 4, 10
10	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	130, 89 56, 20	2, 3, 4, 12
10	5	TDN and TDP	UCCTD	7:30 AM	8:30 AM		6, 16
11	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	140, 121, 60, 40, 20	2, 4, 6, 12, 14
11	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	70, 20	3, 18
12	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	120, 100, 59, 45, 20	2, 3, 4, 14, 19
12	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	130, 100, 73, 62, 40, 20	2, 3, 5, 7, 17, 18
13	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	110, 68, 41, 20	2, 4, 5, 13
13	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	100, 70, 41, 20	2, 3, 4, 13
14	2	TDN and TDP	UCCTD	6:45 AM	7:45 AM	80, 60, 47, 37, 20	2, 4, 6, 7, 14
14	6	TDN and TDP	UCCTD	6:30 AM	7:30 AM	65, 44, 20	2, 4, 6
16	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	100, 58, 34, 20	2, 4, 6, 13
16	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	90, 60, 41, 21	2, 4, 6, 9
17	1	TDN and TDP	CTD	5:30 AM	6:30 AM	90, 76, 50, 20	2, 4, 6, 8
17	2	TDN and TDP	CTD	8:30 AM	9:30 AM	100, 76, 49, 37, 22	1, 2, 3, 4, 5
18	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	65, 42, 30, 16	2, 4, 6, 8
18	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	70, 42, 20	2, 4, 6
19	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	70, 38, 25 ,18	2, 4, 6, 8
19	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	64, 40, 25, 17	2, 4, 6, 8
20	1	TDN and TDP	UCCTD	5:30 AM	6:30 AM	62, 35, 24, 13	2, 4, 6, 8
20	2	TDN and TDP	UCCTD	8:00 AM	9:00 AM	70, 34, 20	2, 4, 6
21	1	TDN and TDP	CTD	5:30 AM	6:30 AM	80, 60, 37, 20	2, 4, 6, 8

21	2	TDN and TDP	CTD	8:00 AM	9:00 AM	94, 70, 40, 22	2, 3, 4, 6
22	1	TDN and TDP	CTD	5:30 AM	6:30 AM	70, 55, 39, 20	2, 4, 6, 8
22	2	TDN and TDP	CTD	8:00 AM	9:00 AM	80, 67, 40, 20	1, 2, 4, 7
23	2	TDN and TDP	CTD	6:45 AM	7:45 AM	90, 50, 19, 12	1, 2, 3, 4
24	1	TDN and TDP	CTD	5:30 AM	6:30 AM	70, 33, 20	2, 4, 6
24	2	TDN and TDP	CTD	8:00 AM	9:00 AM	70, 46, 21	2, 4, 7
25	1	TDN and TDP	CTD	5:30 AM	6:30 AM	60, 36, 28, 19	2, 4, 6, 8
25	2	TDN and TDP	CTD	8:30 AM	9:30 AM	60, 40, 20	1, 2, 4
26	1	TDN and TDP	CTD	4:00 PM	5:00 PM	100, 65, 20	1, 2, 17
27	1	TDN and TDP	CTD	5:30 AM	6:30 AM	70, 50, 20	1, 2, 3

PHYVIR-1 cruise May 2026 Viral Metagenomic Samples Metadata								
Cruise number	64-AWB-103							
Chief Scientist	Corina Brussaard (NIOZ)							
Track:	Mindelo, Cape Verde - Reykjavic, Iceland							
Project:	PHYVIR							
PI:	Thomas Hackl (Rijksuniversiteit Groningen)							
PhD:	Lea Simon							
Variable:	Viral metagenomic samples							
Station	Cast	Variable	Sampling device	day	day	Date	Depths (m)	Bottle #
1	1	Viral metagenomics	UCC	11:45	12:45	3-5-2026	15, 83	24, 13
3	2	Viral metagenomics	UCC	8:00	9:00	4-5-2026	25, 68	17, 10
4	2	Viral metagenomics	UCC	8:00	9:00	5-5-2026	20, 85	17, 7
4	6	Viral metagenomics	UCC	7:30	8:30	6-5-2026	61	7
5	2	Viral metagenomics	UCC	8:00	9:00	7-5-2026	20, 73	21, 8
7	2	Viral metagenomics	UCC	8:00	9:00	8-5-2026	20, 82	21, 9
8	2	Viral metagenomics	UCC	8:00	9:00	9-5-2026	20, 62	22, 11
9	2	Viral metagenomics	UCC	8:00	9:00	10-5-2026	19, 70	18, 6
10	2	Viral metagenomics	UCC	8:00	9:00	11-5-2026	20, 56	13, 7
10	5	Viral metagenomics	UCC	7:30	8:30	12-5-2026	58	7
11	2	Viral metagenomics	UCC	8:00	09:00	13-5-2026	20, 70	22, 8
12	2	Viral metagenomics	UCC	8:00	09:00	14-5-2026	20, 62	22, 12
13	2	Viral metagenomics	UCC	8:00	09:00	15-5-2026	20, 41	15, 7
14	6	Viral metagenomics	UCC	6:30 AM	07:30	17-5-2026	20	14, 15
16	2	Viral metagenomics	UCC	8:00 AM	09:00	18-5-2026	21	17, 18
17	2	Viral metagenomics	UCC	8:30 AM	09:30	19-5-2026	22	12, 13, 23, 24
18	2	Viral metagenomics	UCC	8:00 AM	09:00	20-5-2026	20	17, 22
19	2	Viral metagenomics	UCC	8:00 AM	09:00	21-5-2026	17	20, 21
20	2	Viral metagenomics	UCC	8:00 AM	09:00	22-5-2026	20	22, 23
20	6	Viral metagenomics	UCC	8:00 AM	09:00	23-5-2026	25	4, 5
21	2	Viral metagenomics	UCC	8:00 AM	09:00	24-5-2026	22	15, 16
22	2	Viral metagenomics	UCC	8:00 AM	09:00	25-5-2026	20	15, 16, 17, 18
23	2	Viral metagenomics	UCC	6:45 AM	07:45	26-5-2026	20	16, 17
24	2	Viral metagenomics	UCC	8:00 AM	09:00	27-5-2026	21	16, 17, 18, 19
25	2	Viral metagenomics	UCC	8:30 AM	09:30	28-5-2026	20	13, 12
26	1	Viral metagenomics	UCC	4:00 PM	17:00	28-5-2026	20, 65	20, 13
27	1	Viral metagenomics	UCC	5:30 AM	06:30	29-5-2026	20	9, 10

PHYVIR-1 cruise May 2026; 64-AWB-103									
Variable: DNA and RNA									
Station	Cast	Variable	Sampling device	Time of day	UTC	Date	Depths (m)	Bottle #	Other comments
1	1	DNA	UC-CTD	11:45 AM	12:45	3-5-2026	83, 15	4 or 5, 18	DNA-total, >3um and 0.45-3um
1	1	RNA	UC-CTD	11:45 AM	12:45	3-5-2026	83, 15	4 or 5, 18	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
3	2	DNA	UC-CTD	8 AM	9 AM	4-5-2026	68, 25	9, 16	DNA-total, >3um and 0.45-3um
3	2	RNA	UC-CTD	8 AM	9 AM	4-5-2026	68, 25	7, 15	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
4	2	DNA	UC-CTD	8 AM	9 AM	5-5-2026	85, 20	6, 16	DNA-total, >3um and 0.45-3um
4	2	RNA	UC-CTD	8 AM	9 AM	5-5-2026	85, 20	4, 13	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
5	2	DNA	UC-CTD	8 AM	9 AM	7-5-2026	78, 73, 20	4, 7, 22	DNA-total, >3um and 0.45-3um
5	2	RNA	UC-CTD	8 AM	9 AM	7-5-2026	73, 20	10, 23	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
7	2	DNA	UC-CTD	8 AM	9 AM	8-5-2026	82, 20	8, 18	DNA-total, >3um and 0.45-3um
7	2	RNA	UC-CTD	8 AM	9 AM	8-5-2026	82, 20	5, 16	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
8	2	DNA	UC-CTD	8 AM	9 AM	9-5-2026	125, 62, 54, 20	4, 10, 17, 21	DNA-total, >3um and 0.45-3um
8	2	RNA	UC-CTD	8 AM	9 AM	9-5-2026	62, 20, 59	8, 23, 14	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
9	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/10/2026	70, 19	7, 19	DNA-total, >3um and 0.45-3um
9	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/10/2026	70, 19	4, 16	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
10	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/11/2026	56, 20	6, 13	DNA-total, >3um and 0.45-3um
10	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/11/2026	56, 20	10, 16	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
11	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/13/2026	70, 20	7, 21	DNA-total, >3um and 0.45-3um
11	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/13/2026	70, 20	4, 19	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
12	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/14/2026	62, 20	11, 21	DNA-total, >3um and 0.45-3um
12	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/14/2026	62, 20	8, 19	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
13	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/15/2026	41, 20	6, 14	DNA-total, >3um and 0.45-3um
13	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/15/2026	41, 20	11, 17	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
14	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/17/2026	20	12	DNA-total, >3um and 0.45-3um
14	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/17/2026	20	8	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
16	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/18/2026	21	16	DNA-total, >3um and 0.45-3um
16	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/18/2026	21	10	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
17	2	DNA	CTD	8:00 AM	9:00 AM	5/19/2026	22	14	DNA-total, >3um and 0.45-3um
17	2	RNA	CTD	8:00 AM	9:00 AM	5/19/2026	22	6, 7	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
18	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/20/2026	20	15	DNA-total, >3um and 0.45-3um
18	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/20/2026	20	8, 9	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
19	2	DNA	UC-CTD	8:00 AM	9:00 AM	5/21/2026	17	18	DNA-total, >3um and 0.45-3um
19	2	RNA	UC-CTD	8:00 AM	9:00 AM	5/21/2026	17	10	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
20	2	DNA	CTD	8:00 AM	9:00 AM	5/22/2026	20	9	DNA-total, >3um and 0.45-3um
20	2	RNA	CTD	8:00 AM	9:00 AM	5/22/2026	20	18	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
20	7	DNA	CTD	8:00 AM	9:00 AM	5/23/2026	8, 25	6, 17	check for quenching
21	2	DNA	CTD	8:00 AM	9:00 AM	5/24/2026	22	14	DNA-total, >3um and 0.45-3um
21	2	RNA	CTD	8:00 AM	9:00 AM	5/24/2026	22	8	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
22	2	DNA	CTD	8:00 AM	9:00 AM	5/25/2026	20	14	DNA-total, >3um and 0.45-3um
22	2	RNA	CTD	8:00 AM	9:00 AM	5/25/2026	20	8	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
23	2	DNA	CTD	8:00 AM	9:00 AM	5/26/2026	15	12	DNA-total, >3um and 0.45-3um
23	2	RNA	CTD	8:00 AM	9:00 AM	5/26/2026	20	11	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
24	2	DNA	CTD	8:00 AM	9:00 AM	5/27/2026	21	15	DNA-total, >3um and 0.45-3um
24	2	RNA	CTD	8:00 AM	9:00 AM	5/27/2026	21	10, 11	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
25	2	DNA	CTD	8:00 AM	9:00 AM	5/28/2026	20	11	DNA-total, >3um and 0.45-3um
25	2	RNA	CTD	8:00 AM	9:00 AM	5/28/2026	20	5, 6	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um

26	1	DNA	CTD	16:00 PM	17:00 PM	5/28/2026	65, 20	6, 16	DNA-total, >3um and 0.45-3um
26	1	RNA	CTD	16:00 PM	17:00 PM	5/28/2026	65, 20	5, 14	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um
27	1	DNA	CTD	5:30 AM	6:30 AM	5/29/2026	20	8	DNA-total, >3um and 0.45-3um
27	1	RNA	CTD	5:30 AM	6:30 AM	5/29/2026	20	4, 5	RNA-total (0.45um filter), >20um, 3-20um, 0.45-3um

PHYVIR-1 cruise May 2026; 64AVW103				OMICS' = Metabolomics, lipidomics, proteomics			
Variable: Metabolomics etc				metabolomics total: GF75, sequential: GF/D, GF75, 0.22 um PVDF			
Station	Cast	Variable	Sampling device	time of day	UTC	Depths (m)	Bottle #
3	2	Intracellular omics	UCCTD	8 AM	9 AM	68	6
3	2	Intracellular omics	UCCTD	8 AM	9 AM	25	14
3	2	extracellular omics	UCCTD	8 AM	9 AM	68	6
3	2	extracellular omics	UCCTD	8 AM	9 AM	25	14
4	2	Intracellular omics	UCCTD	8 AM	9 AM	85	9
4	2	Intracellular omics	UCCTD	8 AM	9 AM	20	14
4	2	extracellular omics	UCCTD	8 AM	9 AM	85	9
4	2	extracellular omics	UCCTD	8 AM	9 AM	20	14
5	2	Intracellular omics	UCCTD	8 AM	9 AM	73	11
5	2	Intracellular omics	UCCTD	8 AM	9 AM	20	24
5	2	extracellular omics	UCCTD	8 AM	9 AM	73	11
5	2	extracellular omics	UCCTD	8 AM	9 AM	20	24
7	2	Intracellular omics	UCCTD	8 AM	9 AM	82	6
7	2	Intracellular omics	UCCTD	8 AM	9 AM	20	17
7	2	extracellular omics	UCCTD	8 AM	9 AM	82	6
7	2	extracellular omics	UCCTD	8 AM	9 AM	20	17
8	2	Intracellular omics	UCCTD	8 AM	9 AM	62	9
8	2	Intracellular omics	UCCTD	8 AM	9 AM	59	15
8	2	Intracellular omics	UCCTD	8 AM	9 AM	20	24
8	2	extracellular omics	UCCTD	8 AM	9 AM	62	9
8	2	extracellular omics	UCCTD	8 AM	9 AM	59	15
8	2	extracellular omics	UCCTD	8 AM	9 AM	20	24
9	2	Intracellular omics	UCCTD	8 AM	9 AM	70	5
9	2	Intracellular omics	UCCTD	8 AM	9 AM	19	17
9	2	extracellular omics	UCCTD	8 AM	9 AM	70	5
9	2	extracellular omics	UCCTD	8 AM	9 AM	19	17
10	2	Intracellular omics	UCCTD	8 AM	9 AM	56	11
10	2	Intracellular omics	UCCTD	8 AM	9 AM	20	17
10	2	extracellular omics	UCCTD	8 AM	9 AM	56	11
10	2	extracellular omics	UCCTD	8 AM	9 AM	20	17
11	2	Intracellular omics	UCCTD	8 AM	9 AM	70	5
11	2	Intracellular omics	UCCTD	8 AM	9 AM	20	20
11	2	extracellular omics	UCCTD	8 AM	9 AM	70	5
11	2	extracellular omics	UCCTD	8 AM	9 AM	20	20
12	2	Intracellular omics	UCCTD	8 AM	9 AM	62	9
12	2	Intracellular omics	UCCTD	8 AM	9 AM	20	20
12	2	extracellular omics	UCCTD	8 AM	9 AM	62	9
12	2	extracellular omics	UCCTD	8 AM	9 AM	20	20
13	2	Intracellular omics	UCCTD	8 AM	9 AM	41	12
13	2	Intracellular omics	UCCTD	8 AM	9 AM	20	18
13	2	extracellular omics	UCCTD	8 AM	9 AM	41	12
13	2	extracellular omics	UCCTD	8 AM	9 AM	20	18
14	1	Intracellular omics	UCCTD	6:30 AM	7:30 AM	37	7
14	1	extracellular omics	UCCTD	6:30 AM	7:30 AM	37	7
16	2	Intracellular omics	UCCTD	8 AM	9 AM	20	14
16	2	Intracellular omics	UCCTD	8 AM	9 AM	20	13
16	2	extracellular omics	UCCTD	8 AM	9 AM	20	14
16	2	extracellular omics	UCCTD	8 AM	9 AM	20	13
17	2	Intracellular omics	CTD	8:30 AM	9:30 AM	22	8+9
17	2	extracellular omics	CTD	8:30 AM	9:30 AM	22	8+9
18	2	Intracellular omics	UCCTD	8 AM	9 AM	20	11
18	2	extracellular omics	UCCTD	8 AM	9 AM	20	11
19	2	Intracellular omics	UCCTD	8 AM	9 AM	17	15

19	2	extracellular omics	UCCTD	8 AM	9 AM	17	15
20	2	Intracellular omics	UCCTD	8 AM	9 AM	20	20
20	2	extracellular omics	UCCTD	8 AM	9 AM	20	20
21	2	Intracellular omics	CTD	8 AM	9 AM	22	10+11
21	2	extracellular omics	CTD	8 AM	9 AM	22	10+11
22	2	Intracellular omics	CTD	8 AM	9 AM	20	10+11
22	2	extracellular omics	CTD	8 AM	9 AM	20	10+11
23	2	Intracellular omics	CTD	6:45 AM	7:45 AM	12	13+14
23	2	extracellular omics	CTD	6:45 AM	7:45 AM	12	13+14
24	2	Intracellular omics	CTD	8 AM	9 AM	21	11+12
24	2	extracellular omics	CTD	8 AM	9 AM	21	11+12
25	2	Intracellular omics	CTD	8:30 AM	9:30 AM	20	7+8
25	2	extracellular omics	CTD	8:30 AM	9:30 AM	20	7+8
26	2	Intracellular omics	CTD	4 PM	5 PM	20	15
26	2	Intracellular omics	CTD	4 PM	5 PM	20	15
26	2	extracellular omics	CTD	4 PM	5 PM	65	3
26	2	extracellular omics	CTD	4 PM	5 PM	65	3
27	2	Intracellular omics	CTD	5:30 AM	6:30 AM	22	6+7
27	2	extracellular omics	CTD	5:30 AM	6:30 AM	22	6+7

PHYVIR-1 cruise May 2026; 64AVW103							
Variable: Dissolved organic carbon (DOC)							
Station	Cast	Variable	Sampling device	time of day	UTC	Depths (m)	Bottle #
3	2	DOC	UCCTD	8 AM	9 AM	68	6
3	2	DOC	UCCTD	8 AM	9 AM	25	14
4	2	DOC	UCCTD	8 AM	9 AM	85	9
4	2	DOC	UCCTD	8 AM	9 AM	20	14
5	2	DOC	UCCTD	8 AM	9 AM	73	11
5	2	DOC	UCCTD	8 AM	9 AM	20	24
7	2	DOC	UCCTD	8 AM	9 AM	82	6
7	2	DOC	UCCTD	8 AM	9 AM	20	17
8	2	DOC	UCCTD	8 AM	9 AM	62	9
8	2	DOC	UCCTD	8 AM	9 AM	59	15
8	2	DOC	UCCTD	8 AM	9 AM	20	24
9	2	DOC	UCCTD	8 AM	9 AM	70	5
9	2	DOC	UCCTD	8 AM	9 AM	19	17
10	2	DOC	UCCTD	8 AM	9 AM	56	11
11	2	DOC	UCCTD	8 AM	9 AM	70	5
11	2	DOC	UCCTD	8 AM	9 AM	20	20
12	2	DOC	UCCTD	8 AM	9 AM	62	9
12	2	DOC	UCCTD	8 AM	9 AM	20	20
13	2	DOC	UCCTD	8 AM	9 AM	41	12
13	2	DOC	UCCTD	8 AM	9 AM	20	18
14	1	DOC	UCCTD	6:30 AM	7:30 AM	37	7
16	2	DOC	UCCTD	8 AM	9 AM	20	14
16	2	DOC	UCCTD	8 AM	9 AM	20	13
17	2	DOC	CTD	8:30 AM	9:30 AM	22	8+9
18	2	DOC	UCCTD	8 AM	9 AM	20	11
19	2	DOC	UCCTD	8 AM	9 AM	17	15
20	2	DOC	UCCTD	8 AM	9 AM	20	20
21	2	DOC	CTD	8 AM	9 AM	22	10+11
22	2	DOC	CTD	8 AM	9 AM	20	10+11
23	2	DOC	CTD	6:45 AM	7:45 AM	12	13+14
24	2	DOC	CTD	8 AM	9 AM	21	11+12
25	2	DOC	CTD	8:30 AM	9:30 AM	20	7+8
26	2	DOC	CTD	4 PM	5 PM	20	15
26	2	DOC	CTD	4 PM	5 PM	65	3
27	2	DOC	CTD	5:30 AM	6:30 AM	22	6+7

PHYVIR-1 cruise May 2026; 64AWB103					
Variables: SETCOL (sedimentation column)					
option 1 - Phytoplankton, bacterial and viral abundance; Aggregates; TEP; C					
Station	Cast	Variables	CTD	Depths (m)	Bottle #
3	1	option 1	UCC	71	7
4	1	option 1	UCC	70	6
4	6	option 1	UCC	61	8
5	1	option 1	UCC	67	6
7	1	option 1	UCC	88	5
8	1	option 1	UCC	53	13
9	1	option 1	UCC	57	11
10	1	option 1	UCC	63	7
11	1	option 1	UCC	60	9
12	1	option 1	UCC	59	8
13	1	option 1	UCC	41	9
14	2	option 1	UCC	37	11
16	1	option 1	UCC	20	17
17	1	option 1	CTD	20	14+15
18	1	option 1	UCC	16	22
19	1	option 1	UCC	18	22
20	1	option 1	UCC	13	16
21	1	option 1	CTD	20	18+19
22	1	option 1	CTD	20	16+17
23	2	option 1	CTD	12	18+19
24	1	option 1	CTD	20	13+14
25	1	option 1	CTD	19	21+22
27	1	TEP	CTD	20	13

PHYVIR-1 cruise May 2026; 64AVW103						
Station	Cast	Variable	Sampling device	time of day	Depths (m)	Bottle #
3	2	aggregates	UC-CTD	8:00	68	8
4	6	aggregates	UC-CTD	6:30	61	6
5	2	aggregates	UC-CTD	8:00	73	6
7	2	aggregates	UC-CTD	8:00	82	7
8	1	aggregates	UC-CTD	5:30	53	11
10	5	aggregates	UC-CTD	7:30	63	8
11	2	aggregates	UC-CTD	8:00	70	6
12	1	aggregates	UC-CTD	5:30	59	6
13	2	aggregates	UC-CTD	8:00	41	5
14	1	aggregates	UC-CTD	6:30	37	10
16	1	aggregates	UC-CTD	5:30	20	15
17	2	aggregates	CTD	8:00	22	10, 11
18	1	aggregates	UC-CTD	5:30	16	18
19	1	aggregates	UC-CTD	5:30	18	19
20	1	aggregates	UC-CTD	5:30	13	12
21	1	aggregates	CTD	5:30	20	13
22	2	aggregates	UC-CTD	8:00	20	12, 13
23	2	aggregates	CTD	6:45	12	5, 22
24	2	aggregates	UC-CTD	8:00	21	13, 14
25	2	aggregates	UC-CTD	8:00	20	9, 10

PHYVIR-1 cruise May 2026, 64-AWvB103							
Nutrients	NO3,NO4, PO4						
DIC	Dissolved organic matter						
Si	Silica						
Talk	Total alkalinity						
Station	Cast	Variable	Sampling	Time of day	UTC	Depths (m)	Bottle#
5	4	Nutrients	CTD	18:30	19:30	5060	1
5	4	DIC	CTD	18:30	19:30	5060	1
5	4	Si	CTD	18:30	19:30	5060	1
5	4	Talk	CTD	18:30	19:30	5060	1
5	4	Nutrients	CTD	18:30	19:30	5000	3
5	4	DIC	CTD	18:30	19:30	5000	3
5	4	Si	CTD	18:30	19:30	5000	3
5	4	Talk	CTD	18:30	19:30	5000	3
5	4	Nutrients	CTD	18:30	19:30	4500	5
5	4	DIC	CTD	18:30	19:30	4500	5
5	4	Si	CTD	18:30	19:30	4500	5
5	4	Talk	CTD	18:30	19:30	4500	5
5	4	Nutrients	CTD	18:30	19:30	4000	7
5	4	DIC	CTD	18:30	19:30	4000	7
5	4	Si	CTD	18:30	19:30	4000	7
5	4	Talk	CTD	18:30	19:30	4000	7
5	4	Nutrients	CTD	18:30	19:30	3500	9
5	4	DIC	CTD	18:30	19:30	3500	9
5	4	Si	CTD	18:30	19:30	3500	9
5	4	Talk	CTD	18:30	19:30	3500	9
5	4	Nutrients	CTD	18:30	19:30	3000	11
5	4	DIC	CTD	18:30	19:30	3000	11
5	4	Si	CTD	18:30	19:30	3000	11
5	4	Talk	CTD	18:30	19:30	3000	11
5	4	Nutrients	CTD	18:30	19:30	2500	13
5	4	DIC	CTD	18:30	19:30	2500	13
5	4	Si	CTD	18:30	19:30	2500	13
5	4	Talk	CTD	18:30	19:30	2500	13
5	4	Nutrients	CTD	18:30	19:30	2000	15
5	4	DIC	CTD	18:30	19:30	2000	15
5	4	Si	CTD	18:30	19:30	2000	15
5	4	Talk	CTD	18:30	19:30	2000	15
5	4	Nutrients	CTD	18:30	19:30	1500	17
5	4	DIC	CTD	18:30	19:30	1500	17
5	4	Si	CTD	18:30	19:30	1500	17
5	4	Talk	CTD	18:30	19:30	1500	17
5	4	Nutrients	CTD	18:30	19:30	1000	19
5	4	DIC	CTD	18:30	19:30	1000	19
5	4	Si	CTD	18:30	19:30	1000	19
5	4	Talk	CTD	18:30	19:30	1000	19
5	4	Nutrients	CTD	18:30	19:30	400	21
5	4	DIC	CTD	18:30	19:30	400	21
5	4	Si	CTD	18:30	19:30	400	21
5	4	Talk	CTD	18:30	19:30	400	21
5	4	Nutrients	CTD	18:30	19:30	100	23
5	4	DIC	CTD	18:30	19:30	100	23
5	4	Si	CTD	18:30	19:30	100	23
5	4	Talk	CTD	18:30	19:30	100	23
5	4	Nutrients	CTD	18:30	19:30	4	24
5	4	DIC	CTD	18:30	19:30	4	24
5	4	Si	CTD	18:30	19:30	4	24
5	4	Talk	CTD	18:30	19:30	4	24

Large volume microcosm experiments 19L (LV)					
LV1 Station 4 Cast 3 Sampled with UC-CTD at 20 m depth on 5-5-2026 at 14:00					
Experiment	Variable	Time of day	UTC	Date	Other comments
T0	DNA	14:00	15 PM	5/5/2026	
T0	RNA	14:00	15 PM	5/5/2026	
T0	Dissolved Fe	14:00	15 PM	5/5/2026	
T0	FCM	15:00	16:00	5/5/2026	
T0	FRRF	14:00	15 PM	5/5/2026	
T0	Microscopy	17:00	18 PM	5/5/2026	
T0	Chlorophyll-a	17:00	18 PM	5/5/2026	
T2	RNA	15:00	16 PM	5/7/2026	
T2	FCM	14:00	15:00	5/7/2026	
T2	FRRF	15:00	16 PM	5/7/2026	
T4	DNA	14:50	15:50 PM	5/9/2026	HT NT1 R2 missing due to holes in cubitainer
T4	RNA	14:50	15:50 PM	5/9/2026	HT NT1 R2 missing due to holes in cubitainer
T4	FCM	13:00	16:00	5/9/2026	including size fractionation of 1 replicate of each NtC and Nt2 treatment
T4	FRRF	14:50	15:50 PM	5/9/2026	HT NT1 R2 missing due to holes in cubitainer
T4	Microscopy	17:00	18 PM	5/9/2026	
T4	Chlorophyll-a	17:00	18 PM	5/9/2026	HT NT1 R2 missing due to holes in cubitainer
LV2 Station 10 Cast 3 Sampled with UC-CTD at 20 m depth on 11-5-2026 at 14:00					
Experiment	Variable	Time of day	UTC	Date	Other comments
T0	DNA	17:00	18 PM	5/11/2026	
T0	RNA	17:00	18 PM	5/11/2026	
T0	Dissolved Fe	17:00	18 PM	5/11/2026	
T0	FCM	16:00	17:00	5/11/2026	
T0	FRRF	17:00	18 PM	5/11/2026	
T0	Microscopy	17:00	18 PM	5/11/2026	
T0	Chlorophyll-a	17:00	18 PM	5/11/2026	
T2	RNA	14:45	15:45 PM	5/13/2026	
T2	FCM	13:00	16:00	5/13/2026	
T2	FRRF	14:45	15:45 PM	5/13/2026	
T4	DNA	14:45	15:45 PM	5/15/2026	HT NT2 R1 missing due to holes in the cubitainer
T4	RNA	14:45	15:45 PM	5/15/2026	HT NT2 R1 missing due to holes in the cubitainer
T4	FCM	15:00	16:00	5/15/2026	
T4	FRRF	14:45	15:45 PM	5/15/2026	HT NT2 R1 missing due to holes in the cubitainer
T4	Microscopy	17:00	18 PM	5/15/2026	
T4	Chlorophyll-a	17:00	18 PM	5/15/2026	HT NT2 R1 missing due to holes in the cubitainer
LV3 Station 14 Cast 3 Sampled with UC-CTD at 14 m depth on 16-5-2026 at 14:00					
Experiment	Variable	Time of day	UTC	Date	Other comments
T0	DNA	17:30	18:30 PM	5/16/2026	
T0	RNA	17:30	18:30 PM	5/16/2026	
T0	Dissolved Fe	17:30	18:30 PM	5/16/2026	
T0	FCM	16:00			
T0	FRRF	17:30	18:30 PM	5/16/2026	
T0	Microscopy	17:00	18 PM	5/16/2026	
T0	Chlorophyll-a	17:00	18 PM	5/16/2026	
T2	RNA	14:00	15:00 PM	5/13/2026	

T2	FRRF	14:00	15:00 PM	5/13/2026	
T4	DNA	14:00	15:00 PM	5/20/2026	CT Nt2 R2 missing due to holes in the cubitainer
T4	RNA	14:00	15:00 PM	5/20/2026	CT Nt2 R2 missing due to holes in the cubitainer; 8 sets of pump tubing broke, so many filtrations were paused until a channel was available (pauses noted in RNA datasheets)
T4	FRRF	14:00	15:00 PM	5/20/2026	CT Nt2 R2 missing due to holes in the cubitainer; 8 sets of pump tubing broke, so many filtrations were paused until a channel was available (pauses noted in RNA datasheets)
T4	Microscopy	17:00	18 PM	5/20/2026	
T4	Chlorophyll-a	17:00	18 PM	5/20/2026	CT NT2 R2 missing due to holes in the cubitainer
LV4 Station 20 Cast 5 Sampled with UC-CTD at 20 m depth on 22-5-2026 at 14:00					
Experiment	Variable	Time of day	UTC	Date	Other comments
T0	DNA	17:30	18:30	5/22/2026	
T0	Dissolved Fe	17:30	18:30	5/22/2026	
T0	FCM	17:30	18:30	5/22/2026	
T0	FRRF	17:30	18:30	5/22/2026	
T0	Microscopy	17:00	18 PM	5/22/2026	
T0	RNA	17:00	18:00		
T0	Chlorophyll-a	17:00	18 PM	5/22/2026	
T2	FCM	17:30	18:30	5/22/2026	
T2	FRRF	14:00	15:00 PM	5/24/2026	
T2	RNA	14:45	15:45	5/25/2026	
T4	DNA	14:00	15:00	5/26/2026	
T4	FRRF	14:00	15:00 PM	5/26/2026	
T4	RNA	14:00	15:00	5/26/2026	
T4	FCM	14:00	15:00	5/26/2026	including size fractionation of 1 replicate of each NtC and Nt2 treatment
T4	Microscopy	17:00	18 PM	5/26/2026	
T4	Chlorophyll-a	17:00	18 PM	5/26/2026	

Small volume microcosm experiments 2L (SV)

SV1 Station 4 Cast 7 Sampled with UC-CTD at 20 m depth on 6-5-2026 at 9:30

Experiment	Variable	Time of day	UTC	Date
T0	DNA	9:30	10:30	5/6/2026
T0	FCM	9:30	10:30	5/6/2026
T0	FRRF	9:30	10:30	5/6/2026
T0	Chlorophyll-	9:30	10:30	5/6/2026
T4	DNA	12:30	13:30	5/10/2026
T4	FCM	12:30	13:30	5/10/2026
T4	FRRF	12:30	13:30	5/10/2026
T4	Chlorophyll-	12:30	13:30	5/10/2026

SV2 Station 10 Cast 6 Sampled with UC-CTD at 22 m depth on 12-5-2026 at 9:15

Experiment	Variable	Time of day	UTC	Date
T0	DNA	9:15	10:15	5/12/2026
T0	FRRF	9:15	10:15	5/12/2026
T0	FCM	9:15	10:15	5/12/2026
T0	Chlorophyll-	9:15	10:15	5/12/2026
T4	DNA	8:30	9:30	5/16/2026
T4	FRRF	8:30	9:30	5/16/2026
T4	FCM	8:30	9:30	5/16/2026
T4	Chlorophyll-	8:30	9:30	5/16/2026

SV3 Station 14 Cast 6 Sampled with UC-CTD at 14m depth on 17-5-2026 at 8:45

Experiment	Variable	Time of day	UTC	Date
T0	DNA	10:00	11:00	5/17/2026
T0	FCM	10:00	11:00	5/17/2026
T0	FRRF	10:00	11:00	5/17/2026
T0	Chlorophyll-	10:00	11:00	5/17/2026
T4	DNA	12:45	13:45	5/21/2026
T4	FCM	12:45	13:45	5/21/2026
T4	FRRF	12:45	13:45	5/21/2026
T4	Chlorophyll-	12:45	13:45	5/21/2026

SV4 Station 20 Cast 7 Sampled with CTD at 20m depth on 23-5-2026 at 9:15

Experiment	Variable	Time of day	UTC	Date
T0	DNA	10:00	11:00	5/23/2026
T0	FRRF	10:00	11:00	5/23/2026
T0	FCM	10:00	11:00	5/23/2026
T0	Chlorophyll-	10:00	11:00	5/23/2026
T4	DNA	12:30	13:30	5/27/2026
T4	FCM	12:45	13:45	5/27/2026
T4	FRRF	12:45	13:45	5/27/2026
T4	Chlorophyll-	12:45	13:45	5/27/2026

Large volume microcosm experiments 19L (LV)				
LV1 Station 4 Cast 3 Sampled with UC-CTD at 20 m depth on 05-05-2026 at 14:00				
Experiment	Variable	Time of day	UTC	Date
T0	Particulate CNP	6:00 PM	7:00 PM	05-05-2026
T4	Particulate CNP	6:00 PM	7:00 PM	09-05-2026
LV2 Station 10 Cast 3 Sampled with UC-CTD at 20 m depth on 11-05-2026 at 14:00				
Experiment	Variable	Time of day	UTC	Date
T0	Particulate CNP	7:00 PM	8:00 PM	11-05-2026
T4	Particulate CNP	6:00 PM	7:00 PM	15-05-2026
LV3 Station 14 Cast 3 Sampled with UC-CTD at 14 m depth on 16-5-2026 at 14:00				
Experiment	Variable	Time of day	UTC	Date
T0	Particulate CNP	7:00 PM	8:00 PM	16-05-2026
T4	Particulate CNP	6:00 PM	7:00 PM	20-05-2026
LV4 Station 20 Cast 5 Sampled with UC-CTD at 20 m depth on 22-5-2026 at 14:00				
Experiment	Variable	Time of day	UTC	Date
T0	Particulate CNP	7:00 PM	8:00 PM	22-05-2026
T4	Particulate CNP	6:00 PM	7:00 PM	26-05-2026
T4	Toxins	7:00 PM	8:00 PM	26-05-2026

Other comments

HT NT1 R2 missing due to holes in cubitainer

Other comments

HT NT2 R1 missing due to holes in the cubitainer

Other comments

CT Nt2 R2 missing due to holes in the cubitainer

Other comments

Appendix 5

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - CTD							PI responsible:	Dedmer Van de Waal	
Station	Cast	Depth (m)	Variable	Fraction	Volume	Type of sample	Measured onboard	Fixed	Stored Temp (°C)
10	1	20	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
10	1	63	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
10	1	20	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
10	1	63	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
10	1	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	63	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	94	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	150	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	56	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	89	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	130	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	20	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	1	63	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	1	94	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	1	150	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	2	20	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	2	56	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	2	89	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
10	1	20	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	63	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	94	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	150	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	20	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	56	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	89	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	2	130	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
10	1	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
10	1	63	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
10	2	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
10	2	56	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
10	1	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	1	63	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	1	94	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	1	150	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	2	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	2	56	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	5	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	5	58	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
10	2	20	Phytoplankton community	Whole water	180 mL	Seawater	No	Yes	4

10	2	82	Phytoplankton community	Whole water	180 mL	Seawater	No	Yes	4
11	1	19.5	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
11	1	60	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
11	1	19.5	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
11	1	60	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
11	1	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	40	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	60	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	121	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	140	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	2	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	2	70	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	20	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	1	40	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	1	60	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	1	121	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	1	140	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	2	20	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	2	70	Silcate	Water <0.2 µm	4 nL	Filtrate	No	No	4
11	1	20	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	40	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	60	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	121	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	140	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	2	20	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	2	70	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
11	1	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
11	1	60	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
11	2	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
11	2	70	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
11	1	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	1	40	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	1	60	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	1	121	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	1	140	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	2	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
11	2	70	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	1	20	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
12	1	59	Chlorophyll-a	Total >0.3/2.7-20 µm/0.3-2.7 µm	3 L	Filter	No	No	-80
12	1	20	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
12	1	59	Particulate organic C, N and P and total C	Total >0.3/2.7-20 µm/0.3-2.7 µm	2 L	Filter	No	No	-20
12	1	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20

12	1	45	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	59	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	100	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	120	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	20	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	40	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	62	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	73	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	100	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	130	Macronutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	20	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	1	45	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	1	59	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	1	100	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	1	120	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	2	20	Silcate	Water <0.2 µm	4 mL	Filtrate	No	No	4
12	2	40	Silcate	Water <0.2 µm	5 mL	Filtrate	No	No	4
12	2	62	Silcate	Water <0.2 µm	6 mL	Filtrate	No	No	4
12	2	73	Silcate	Water <0.2 µm	7 mL	Filtrate	No	No	4
12	2	100	Silcate	Water <0.2 µm	8 mL	Filtrate	No	No	4
12	2	130	Silcate	Water <0.2 µm	9 mL	Filtrate	No	No	4
12	1	20	Total Dissolved Nutrients	Water <0.2 µm	10 mL	Filtrate	No	No	-20
12	1	45	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	59	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	100	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	120	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	20	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	40	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	62	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	73	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	100	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	2	130	Total Dissolved Nutrients	Water <0.2 µm	4 mL	Filtrate	No	No	-20
12	1	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
12	1	59	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
12	2	20	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
12	2	62	Dissolved Inorganic Carbon	Water <0.2 µm	4 mL	Filtrate	No	Yes	4
12	1	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	1	45	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	1	59	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	1	100	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	1	120	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	2	20	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA

12	2	62	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	2	73	FRRF Fluorescence	Whole water	1 L	Seawater	Yes	No	NA
12	2	20	Phytoplankton community	Whole water	180 mL	Seawater	No	Yes	4
12	2	62	Phytoplankton community	Whole water	180 mL	Seawater	No	Yes	4
10	1	20	net primary production	Whole water	1 L	Seawater	Yes	No	NA
10	1	63	net primary production	Whole water	1 L	Seawater	Yes	No	NA
11	1	19.5	net primary production	Whole water	1 L	Seawater	Yes	No	NA
11	1	60	net primary production	Whole water	1 L	Seawater	Yes	No	NA
12	1	20	net primary production	Whole water	1 L	Seawater	Yes	No	NA
12	1	59	net primary production	Whole water	1 L	Seawater	Yes	No	NA
13	2	20	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	3	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	20	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	70	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	20	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	61	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA
13	2	73	Photosynthetic rate and efficiency (PI-curve)	Whole water	1 L	Seawater	Yes	No	NA

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - CTD							PI responsible: Guy Schleyer		
Station	Cast	Depth (m)	Variable	Fraction	Volume	Type of sample	Measured onboard	Fixed	Stored Temp (°C)
10	2	20	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
10	2	20	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
10	2	20	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4
10	2	56	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
10	2	56	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
10	2	56	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4
11	2	20	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
11	2	20	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
12	2	20	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4
11	2	70	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
11	2	70	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
12	2	70	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4
12	2	20	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
12	2	20	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
12	2	20	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4
12	2	62	Intracellular metabolomics/lipidomics/proteomics	whole water/2.7um/0.3um/0.22um	2 L	filter	no	no	-80
12	2	62	Extracellular metabolomics/lipidomics/proteomics	0.22 µm filtered water	1 L	dry extract	no	no	-20
12	2	62	Dissolved organic carbon	0.22 µm filtered water	8 mL	water	no	no	4

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - CTD							PI responsible: Susanne Wilken		
Station	Cast	Depth (m)	Variable	fraction	volume	type of sample	Measured onboard	Fixed	Stored Temp (°C)
10	2	56	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	6.1 L	filter	no	no	-80
10	2	20	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	2.3 L	filter	no	no	-80
10	2	56	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80
10	2	20	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80
11	2	70	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	5.6 L	filter	no	no	-80
11	2	20	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	4.2 L	filter	no	no	-80
11	2	70	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80
11	2	20	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80
12	2	62	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	3.2 L	filter	no	no	-80
12	2	20	Transcriptomics	total >0.45 µm/>20 µm/3-20 µm/0.45-3 µm	9.3 L	filter	no	no	-80
12	2	62	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80
12	2	20	DNA for amplicon sequencing	total >0.45 µm/>3 µm/0.45-3 µm	1 L	filter	no	no	-80

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - CTD							PI responsible: Thomas Hackl		
Station	Cast	Depth (m)	Variable	Fraction	Volume	Type of sample	Measured onboard	Fixed	Stored Temp (°C)
10	2	20	viral metagenomics iron flocculation filter	<0.22 um	20 L	filter	no	no	4
10	2	20	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
10	2	20	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
10	2	20	viral metagenomics pre-filter	200-5 um	20 L	filter	no	yes	-80
10	2	20	viral metagenomics pre-filter	5-1.2 um	20 L	filter	no	yes	-80
10	2	20	viral abundance	200-5um	1 mL	water	no	yes	-80
10	2	20	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
10	2	20	viral abundance	<0.22 um	1 mL	water	no	yes	-80
10	2	20	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80
10	2	20	viral metagenomics iron flocculation filter	<0.22 um	19.8 L	filter	no	no	4
10	2	20	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
10	2	20	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
10	2	20	viral metagenomics pre-filter	200-5 um	20.1 L	filter	no	yes	-80
10	2	20	viral metagenomics pre-filter	5-1.2 um	20.1 L	filter	no	yes	-80
10	2	20	viral abundance	200-5um	1 mL	water	no	yes	-80
10	2	20	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
10	2	20	viral abundance	<0.22 um	1 mL	water	no	yes	-80
10	2	20	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80
10	5	58	viral metagenomics iron flocculation filter	<0.22 um	20 L	filter	no	no	4
10	5	58	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
10	5	58	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
10	5	58	viral metagenomics pre-filter	200-5 um	20.3 L	filter	no	yes	-80
10	5	58	viral metagenomics pre-filter	5-1.2 um	20.3 L	filter	no	yes	-80
10	5	58	viral abundance	200-5um	1 mL	water	no	yes	-80
10	5	58	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
10	5	58	viral abundance	<0.22 um	1 mL	water	no	yes	-80
10	5	58	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80
11	2	20	viral metagenomics iron flocculation filter	<0.22 um	20 L	filter	no	no	4
11	2	20	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
11	2	20	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
11	2	20	viral metagenomics pre-filter	200-5 um	20.3 L	filter	no	yes	-80
11	2	20	viral metagenomics pre-filter	5-1.2 um	20.3 L	filter	no	yes	-80
11	2	20	viral abundance	200-5um	1 mL	water	no	yes	-80
11	2	20	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
11	2	20	viral abundance	<0.22 um	1 mL	water	no	yes	-80
11	2	20	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80

11	2	70	viral metagenomics iron flocculation filter	<0.22 um	20 L	filter	no	no	4
11	2	70	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
11	2	70	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
11	2	70	viral metagenomics pre-filter	200-5 um	20.4 L	filter	no	yes	-80
11	2	70	viral metagenomics pre-filter	5-1.2 um	20.4 L	filter	no	yes	-80
11	2	70	viral abundance	200-5um	1 mL	water	no	yes	-80
11	2	70	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
11	2	70	viral abundance	<0.22 um	1 mL	water	no	yes	-80
11	2	70	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80
12	2	20	viral metagenomics iron flocculation filter	<0.22 um	20 L	filter	no	no	4
12	2	20	viral metagenomics filters	1.2-0.45 um	20 L	filter	no	no	-80
12	2	20	viral metagenomics filters	0.45-0.22 um	20 L	filter	no	no	-80
12	2	20	viral metagenomics pre-filter	200-5 um	20.7 L	filter	no	yes	-80
12	2	20	viral metagenomics pre-filter	5-1.2 um	20.7 L	filter	no	yes	-80
12	2	20	viral abundance	200-5um	1 mL	water	no	yes	-80
12	2	20	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
12	2	20	viral abundance	<0.22 um	1 mL	water	no	yes	-80
12	2	20	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80
12	2	62	viral metagenomics iron flocculation filter	<0.22 um	19 L	filter	no	no	4
12	2	62	viral metagenomics filters	1.2-0.45 um	19.5 L	filter	no	no	-80
12	2	62	viral metagenomics filters	0.45-0.22 um	19.5 L	filter	no	no	-80
12	2	62	viral metagenomics pre-filter	200-5 um	20.2 L	filter	no	yes	-80
12	2	62	viral metagenomics pre-filter	5-1.2 um	20.2 L	filter	no	yes	-80
12	2	62	viral abundance	200-5um	1 mL	water	no	yes	-80
12	2	62	viral abundance	1.2-0.45 um	1 mL	water	no	yes	-80
12	2	62	viral abundance	<0.22 um	1 mL	water	no	yes	-80
12	2	62	viral abundance	Iron floccultion filtrate	1 mL	water	no	yes	-80

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - CTD							PI responsible: Corina Brussaard		
Station	Cast	Depth (m)	Variable	Fraction	Volume	Type of sample	Measured	Fixed	Stored Temp (°C)
10	5	63	Heteronanoflagellates	Whole water	20 mL	Seawater	no	yes	-20
11	2	70	Heteronanoflagellates	Whole water	20 mL	Seawater	no	yes	-20
12	1	59	Heteronanoflagellates	Whole water	20 mL	Seawater	no	yes	-20
10	5	58	Viral production assay	Whole water	9 L	Seawater	no	yes	-80
12	1	59	Viral production assay	Whole water	9 L	Seawater	no	yes	-80
10	5	63	Aggregates	Whole water	20 mL	Seawater	no	yes	-20
11	2	70	Aggregates	Whole water	20 mL	Seawater	no	yes	-20
12	1	59	Aggregates	Whole water	20 mL	Seawater	no	yes	-20
10	3	100, 200, 400 m	Drifting traps	Whole water	12 L	Seawater (for abundance); filters (for Chl-a and omics)	no	yes	-80 and -20
10	5	63	Fluorescent-labelled bacteria assay	Whole water	9 L	Seawater	no	yes	-20
12	1	59	Fluorescent-labelled bacteria assay	Whole water	9 L	Seawater	no	yes	-20
10	1, 2	63, 50	Modified dilution assay	Whole water	40 L	Seawater	yes	yes	-80
11	1, 2	60, 70	Modified dilution assay	Whole water	40 L	Seawater	yes	yes	-80
12	1, 2	59, 62	Modified dilution assay	Whole water	40 L	Seawater	yes	yes	-80
10	1	63	SETCOLs	Whole water	20 L	Seawater (for abundance); filters (for Chl-a and omics)	yes	yes	-20 and -80
11	1	60	SETCOLs	Whole water	20 L	Seawater (for abundance); filters (for Chl-a and omics)	yes	yes	-20 and -80
12	1	59	SETCOLs	Whole water	20 L	Seawater (for abundance); filters (for Chl-a and omics)	yes	yes	-20 and -80
10	2	50	Fixation for sorting	Whole water	100 mL	Seawater	no	yes	-80
11	2	70	Fixation for sorting	Whole water	100 mL	Seawater	no	yes	-80
12	2	62	Fixation for sorting	Whole water	100 mL	Seawater	no	yes	-80

EEZ Azores, 64-AWB-103 PHYVIR, Stations 10-12 - Microcosm experiments										
Station	Cast	Depth (m)	Variable	Fraction	Volume	Type of sample	Measured onboard	Fixed	Stored (temp)	PI responsible
10	3	20	DNA for amplicon sequencing	total >0.45 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	3	20	Transcriptomics	total >0.45 µm	6 filters (2.6L-5L per filter)	filter	no	no	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	0.6 mL	water	yes	no	na.	Susanne Wilken
10	3	20	phytoplankton abundance	na	3.5 mL	water	no	formaldehyde-hexamine	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	bacterial and viral abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	0.2 L	water	no	Lugol's	4C	Susanne Wilken
10	3	20	chlorophyll concentration	>0.3 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	3	20	efficiency of PSII	total	3 mL	filter	yes	no	na.	Susanne Wilken
10	3	20	dissolved iron	<0.2 µm	50 mL	water	no	acidified	4C	Susanne Wilken
10	3	20	dissolved macronutrients	<0.2 µm	4 mL	water	no	no	minus 20C	Guy Schleyer
10	3	20	dissolved silicate	<0.2 µm	4 mL	water	no	no	4C	Guy Schleyer
10	3	20	Particulate organic C and N	>0.3 µm	2 L	water	no	no	minus 20C	Dedmer van de Waal
10	3	20	Particulate organic P	>0.3 µm	2 L	water	no	no	minus 20C	Dedmer van de Waal
10	3	20	Transcriptomics	total >0.45 µm	18 filters (1.8L-5.25L per filter)	filter	no	no	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	0.6 mL	water	yes	no	na.	Susanne Wilken
10	3	20	phytoplankton abundance	na	3.5 mL	water	no	formaldehyde-hexamine	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	bacterial and viral abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	efficiency of PSII	total	3mL	filter	yes	no	na.	Susanne Wilken
10	3	20	dissolved macronutrients	<0.2 µm	4 mL	water	no	no	minus 20C	Guy Schleyer
10	3	20	dissolved silicate	<0.2 µm	4 mL	water	no	no	4C	Guy Schleyer
10	3	20	DNA for amplicon sequencing	total >0.45 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	3	20	Transcriptomics	total >0.45 µm	17 filters (1L-5L per filter)	filter	no	no	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	0.6 mL	water	yes	no	na.	Susanne Wilken
10	3	20	phytoplankton abundance	na	3.5 mL	water	no	formaldehyde-hexamine	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	bacterial and viral abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	3	20	phytoplankton abundance	na	0.2 L	water	no	Lugol's	4C	Susanne Wilken
10	3	20	chlorophyll concentration	>0.3 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	3	20	efficiency of PSII	total	3mL	filter	yes	no	na.	Susanne Wilken
10	3	20	Intracellular lipidomics	total	2 L	filter	no	no	minus 80C	Guy Schleyer
10	3	20	dissolved macronutrients	<0.2 µm	4 mL	water	no	no	minus 20C	Guy Schleyer
10	3	20	dissolved silicate	<0.2 µm	4 mL	water	no	no	4C	Guy Schleyer
10	3	20	Particulate organic C and N	>0.3 µm	1-2 L	water	no	no	minus 20C	Dedmer van de Waal
10	3	20	Particulate organic P	>0.3 µm	1-2 L	water	no	no	minus 20C	Dedmer van de Waal
10	6	22	DNA for amplicon sequencing	total >0.45 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	6	22	phytoplankton abundance	na	0.6 mL	water	yes	no	na.	Susanne Wilken
10	6	22	phytoplankton abundance	na	3.5 mL	water	no	formaldehyde-hexamine	minus 80C	Susanne Wilken
10	6	22	phytoplankton abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	6	22	bacterial and viral abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken
10	6	22	chlorophyll concentration	>0.3 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	6	22	efficiency of PSII	total	3 mL	filter	yes	no	na.	Susanne Wilken
10	6	22	DNA for amplicon sequencing	total >0.45 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	6	22	phytoplankton abundance	na	0.6 mL	water	yes	no	na.	Susanne Wilken
10	6	22	phytoplankton abundance	na	3.5 mL	water	no	formaldehyde-hexamine	minus 80C	Susanne Wilken
10	6	22	phytoplankton abundance	na	1.5 mL	water	no	glutaraldehyde-poloxamer	minus 80C	Susanne Wilken

10	6	22	bacterial and viral abundance	na	1.5 mL	water	no	glutaraldehyde-podoxamer	minus 80C	Susanne Wilken
10	6	22	chlorophyll concentration	>0.3 µm	1 L	filter	no	no	minus 80C	Susanne Wilken
10	6	22	efficiency of PSII	total	3mL	filter	yes	no	na.	Susanne Wilken
10	6	20	dissolved macronutrients	<0.2 µm	4 mL	water	no	no	minus 20C	Dedmer van de Waal
10	6	20	dissolved silicate	<0.2 µm	4 mL	water	no	no	4C	Dedmer van de Waal