Tara Cruise Report - Leg Dubrovnik-Athenes
Nov 20th – Nov 26th
Fabrice Not – Station Biologique de Roscoff

I- Work Distribution on board

WORK REPARTITION	Date 20/11/2009-26/11/2009 Durbovnik-Athenes	
SCIENTIFIC TEAM	**Name**	**e-mail**
Protist	Chris Bowler	cbowler@biologie.ens.fr
Bacteria/virtus/Girus	Christophe Boutte	boutte@sb-roscoff.fr
Opt Eng.	Christian Rouvière	rouvière@obs-vlfr.fr
Deck Eng.	Sarah Searson	searson65@yahoo.com
Chief Scientist	Fabrice Not	not@sb-roscoff.fr

TARA-OCEANS ACTIVITY	*Operation/Protocol*	*Operator*
BIOLOGY - WET LAB	ZOOPLANKTON	Christian
	PROTISTS	Chris
	BACTERIA	Christophe
	VIRUS (PHAGES)	Christophe
	GIRUS	Christophe
	Extracellular DNA	Chris
BIOLOGY - NISKIN	Phytoplankton from Niskin (Lugol, Formol)	Fabrice
CHEMISTRY - NISKIN	HPLC	Fabrice
	Salinity	Sarah
	Carbonates	Fabrice
	Nutrients	Fabrice
IMAGING	Microscopy - SPIM	Christian
	FlowCam	Christian
	CytoFlow	Christian
	Macroscope Zeiss	Christian
	Binocular	Christian
PHYSICS	Instrumented pump (Surface, DCM)	Sarah + Tara crew
	net deployment	Sarah + Tara crew
	CTD-carousel	Sarah
	CTD-alone	Sarah
	ACS	Sarah
	TSG	Sarah
	FRRF	Sarah

II- Leg history

Saturday Nov 21st

Went out for a SHORT sampling (Station 24) 12 miles off Dubrovnik (bottom depth 300m). 3 Croatian guest scientists were on board. This sampling site is part of a regular survey they are currently conducting and is situated in the core of the inward current from the Med Sea into the Adriatic. Station started at 12:00 and ended at 17:30.
The opportunity to come back to Dubrovnik at night to drop off the guest scientists allowed Johan to kindly come on board to train Chris on the Protist protocol.

Sunday Nov 22nd

We left Dubrovnik and went straight to Greek waters as we had no authorization to sample in other foreign waters (see general comments).
Scientists organized their samples storage from the previous station, got prepared (reviwed protocols and labelled tubes) for the next one.
Christian worked on solutions to set up the Zeiss Macroscope. He installed anti-vibration devices under the Macroscope, which stop efficiently vibrations from the boat and made observation doable.

Monday Nov 23rd

We arrived at our sampling point around 10:30 am and started a CORE station (Station 25).

Everything went fine……
We left the station around 9:00 pm

Tuesday Nov 24th
We arrived on site at 8:30 am and we had to leave before 3 pm in order to get to the Corinth's canal on time. We performed a SHORT sampling station (Station 26). Filtration time and material deployments started at 9:30 and took 2 hours. Then, once the last CTD cast was completed it took 1:30 hours to finish the analysis (sampling CS).

Wednesday Nov 25th
Organization, cleaning (boat and lab) and imaging day.
Net tow for imaging. 37°50'N 23°07'E.

Thursday Nov 26th
We arrived at port in Athens at 8:30 am.

Friday Nov 27th
The new scientific team on board is going to perform a distinct scientific project

Samplers' Report

Chief scientist (Fabrice Not)
The protocol for the sampling to be performed by the chief scientist includes (Nutrients – Pigments – Carbonates – Lugol and Formol, Hg, and FlowCam). Details of the sampling protocol and associated working documents have been updated and are available on the server.
As Chlorophyll level was fairly high at the 3 stations sampled I did the HPLC filtration from 1 L of SW.
Concerns about fridge space and Neutralized Formaldehyde stock as Lugol and formol 250ml bottles take lots of room and require lots of Formaldehyde.

Protists (Chris Bowler)

- During the Dubrovnik-Athens leg I was responsible for the protist sampling, and I tried out the new 'short' and 'long' protocols that had been proposed in Paris on 16 November. We made two short (Stations 24, 26) and one long (Station 25) station. Station 24 was done together with Johan Decelle, which was very useful to see the organization onboard Tara. I found both short and long protocols to be manageable, and I think they are an excellent basis for our protist sampling for the next few months.
- I prepared protist sampling kits for both short and long stations (Protist kit for one LONG station 221109.xls and Protist kit for one SHORT station 221109.xls), as well as sampling protocols (Protist LONG sampling 221109.doc and Protist SHORT sampling 221109.doc)
- It is very important that the previous onboard scientist explains to his/her replacement about protocols, logsheets, organization onboard etc. Atleast one half-day of overlap onland is necessary for this

- Short and long sampling protocols are good, but some samples may not be worth taking, eg, metagenomics from the 180-2000 samples are full of zooplankton and so will not be very useful for metagenomics. HTM could eventually replace FISH-liquid; it is anyhow the same, just in a different container
- Sampling stations are well organized, but to avoid too much overlap of filtering ramps with the bacteria/virus sampler, I suggest to deploy the 20-180 net at the same time that the pumped water is being used for bacteria/virus
- It is not clear how important it is to dry filters for SEM, Syraco, and FISH. If it is important, a specific space for doing it should be assigned
- The arms for the GPSS are gradually getting broken, so replacements are urgently needed. Some of the different pieces are quite delicate and will get broken in the future, and so it is important to always have a full set of replacements onboard. Some of the angles are dangerous, and so it is possible that someone gets injured in the future. We should try and avoid this happening
- I remade the previous versions of the short and long protist kits to reflect the latest protocols and to help newcomers onboard
- With the new sampling protocols we are going to need more space at 4°C
- Specific space for room temp storage of protist samples (Petri slides) is not organized yet
- It should be strictly forbidden to discharge anything from the boat during subsurface sampling
- The size of the labels is not always adapted to the size of the tubes, and the ink from the printer is not indelible
- Different sized barcode labels are necessary for the different tubes. If we can find the right sized labels with a transparent part for each tube it would be ideal
- Steffi's pre-prepared stocks are a great help, but it is not necessary that she writes what each is for (eg, protist morphology 20-180) because our protocols are not yet stable. It will be sufficient to have boxes of premade tubes with the contents written on the box, not the tubes
- I made some stocks of 2ml cryotubes with PFA+GA for flow cytometry. They are in a box in the freezer. On future legs the protist scientist should remake them when needed, and I think this person should also be asked to replenish the formol stocks as well. This will be one less job for Steffi!
- The printer couldn't be used because there were no more black ink cartridges. It seems that it is not clear whose responsibility this is. It would also be a good idea to install a second printer for general use

Bacteria/Virus/Girus (Christpohe Boutte)

Zooplankton/Imaging (Christian Rouvière)

Pending status.

General comments

Protocols start to settle but next two weeks are focused on different topic so no biology sampling scheduled except the one performed by the CS.

Noticed 50µm net fragile (already a bit damaged). Think about getting spare nets or reduce frequency.
Spare nets for 20µm nets are strongly needed as well.

Request to have internet at port (very useful)

Glycine betaine to get for SCG

Choice of sampling station: 2-3 people should decide (e.g. in and out current in the Adriatic, make sure of authorizations, initial plan permissions)

Keep track of protocols to match them with the samples and stations. Match station number and protocol actually used.

Keep track of old versions for inventories, e-mails, etc…as well. Spot on server or HD for archive

Prepare neutralized formaldehyde.

No authorization to sample in Albanian and Montenegro waters, we had long run to pass through these waters. Time constraints to pass the Corinth's canal and be there during day time (media requirement).
Could not get to the outward current from the Adriatic sea because no more contact with Italian administration. Would have been nice to sample it during the previous leg.

Working organization.
Persons are designated to accomplish a defined sampling protocol (see work distribution file).
Each sampler has 4 files to help him get through the procedures (Prep kit for 1 station, Flow Chart, Logsheet, Labels).

Working boxes are efficient way to get prepared and work on deck.

Timing in sampling procedure.
CS get water from bottles at the end of the morning.
Imaging engineer treat zooplankton nets in the morning and the evening

Good timing for pump/net
Pump start, net 20µm for protists start, Rosette goes down. First 100's liters for Bacteria, meanwhile protist sampler process net material then get its water from the pump.

Net 20µm as many holes in it. Think about spare for all nets (1 20 µm net is already on board).