

# Trip Report: Visit to the Marine Hydrophysical Institute and Research Cruise at the Institute of Biology of the Southern Seas, Ukraine, 16th – 21st March 2009

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## **Introduction**

This exchange between the University of Plymouth (UoP) in the UK and the Marine Hydrophysical Institute (MHI) of National Academy of Sciences took place in the framework of the NATO collaboration linkage grant SP.NUKR.CLG.982285. A valuable addition to the original plan of work was further collaboration with the Institute of Biology of the Southern Seas (IBSS) in Sevastopol, Ukraine (Figure 1) which followed a memorandum of cooperation signed by Wendy Purcell, Vice-Chancellor of UoP and Yuriy Tokarev, deputy director of IBSS in the spring 2009. The participants on this trip were Georgy Shapiro and Fred Wobus. The trip was made possible by the collaboration between Prof. Shapiro, Dr. Lemeshko, Dr. Stanichny, other members of MHI and Prof. Tokarev and his colleagues from the department of biophysical ecology, IBSS.



**Figure 1** The building of the Institute of Biology of the Southern Seas on the water front in Sevastopol, Ukraine.

## **Aims & Objectives**

The aims of this mini-cruise were to collect in-situ oceanographic and biophysical data in the coastal waters of the Black sea and provide appropriate training to the UoP MSc student, F. Wobus. The techniques to be used include the sampling by CTD-probe (measuring depth profiles of salinity, temperature and other parameters) and taking water samples at certain

depths using a Niskin bottle (Figure 2). As all oceanographic research, even numerical computer models, is ultimately related to the real sea in the physical world it was the aim of this trip to gain practical boating and sampling experience at sea. The cruise was also hoped to establish valuable contacts with local researchers and profit from their long-term first-hand experience of the Black Sea.



**Figure 2** Niskin bottle pictured in front of the historic Constantine battery in the bay of Sevastopol.

### **Academic exchange**

G. Shapiro's main contact during the visit included 2 seminar presentations (one at MHI and another at IBSS), and discussions with the research staff at the partner institution (MHI) and the collaborative body (IBSS) . F. Wobus' contacts were mainly with the members of staff at the department of biophysical ecology, IBSS (Figure 3).



**Figure 3** From left to right: G. Shapiro, A. Temnykh, V. Melnikov and F. Wobus.

### **Oceanographic and Plankton studies**

For studies of the response of plankton to Langmuir circulation Dr. Melnikov's team has invented and constructed a mechanical plankton sampler. Other devices such as the continuous plankton recorder used by the Sir Alister Hardy Foundation for Ocean Science (SAHFOS) had been tested in the Black Sea, but did not cope well with the amount of gelatinous biomass in the Black Sea.

### **Research Cruise**

The IBSS team usually goes out every two weeks to take samples for a number of departments within the institute, and although the travel dates didn't coincide with their regular cruises arrangements were made for two cruises during the stay. The R/V "Vyazemski" (Figure 4), a 12m long craft with a work deck and a boom with a winch, was used for a daytime cruise and a night cruise.



**Figure 4** The research vessel “Vyazemski” operated by the IBSS.

The plankton sampler was deployed once on each cruise (Figure 5). The track positions were recorded on a GPS and repeated at night.



**Figure 5** The mechanical plankton sampler is deployed on the night cruise.

A CTD probe was also towed behind the boat to record temperature and salinity values along the tow track of the plankton sampler. All devices were deployed at a depth of 4-5m.



**Figure 6** V. Melnikov and F. Wobus retrieve a water sample from a Niskin bottle.



**Figure 7** F. Wobus (right) and local assistant Misha (left) lower the Niskin bottle to a set depth using the manual winch on the night cruise.