



Report from the 3rd meeting of 1st year PhD students of Interdisciplinary Polar Studies Sopot, 9-11 December 2015

From 9 to 11 December 2015 in Sopot the 3rd meeting of Interdisciplinary Polar Studies was organized. During these three days, students from the University of Silesia and Institute of Oceanography Polish Academy of Sciences within the Centre for Polar Studies had the pleasure to take part in interesting lectures, exercises and laboratories. The main topic of the meeting was *“Oceanographic research in the region of the Arctic”*.

The first day of the meeting started with a lecture given by Prof. Waldemar Walczowski from IO PAS, which concerned *“Characteristics of physical environment of the Arctic seas”*. The first part of the lecture contained information about oceanographers work and their research subject – ocean. The second part of the lecture was focused on the influence of the ocean in climate formation problem. Professor Walczowski referred to the words of Nansen from the 20th century that oceanic conditions of Arctic Ocean have had a great influence on the climate and changes of these conditions - significantly change the climate.



Fig.1. First year PhD students during “Fjords Oceanography” lecture.

After short coffee break, Prof. Eva Falck from UNIS, presented an interesting lecture about *“Fjords Oceanography”*. The main information and the latest research about fjord’s bathymetry, circulation, water masses and fresh water in Svalbard’s fjords were shown to the students. The lecture gathered much attention not only among PhD students, but also employees of the Institute. In the afternoon of the first day of the meeting, *“The use of outsourced database for climatic analyses”* seminar took a place. MSc Ilona Goszczko from IO PAS presented a short introduction about climate and its changes. Secondly, the most important websites with climatology, glaciology and oceanology database were shown to the students. During the seminar all participants could check some available data and publications which could be necessary for their future work. At the end of the day, Dr J. Jakacki presented a lecture about *“Numerical models as an additional tool for improving experimental research”* which was a theoretical introduction for the next-day seminar. A couple of numerical models e.g.: predator – victim, simple energy balance of Earth and ice cover of the Arctic region model were shown to the students.

The second day of the meeting was started with a lecture *“Polar Ocean Observing System”* given by Dr. A. Beszczyńska-Moeller. The lecture contained the methods of measurements, information about equipment for acoustic measurements and historical mentions e.g. about Nansen’s journey on the Arctic Ocean by *“Fram”* ship.

After short coffee break, Dr Jakacki presented *“Numerical models as an additional tool for improving experimental research”*. During the seminar students could make a simple model of the energy balance of the Earth using the Excel spreadsheet. For this purpose, students had to calculate the energy incoming to the Earth and the power transmitted from the Earth surface. The results were presented on the graph and analysed by students.

In the afternoon of the second day of the meeting a lecture about *“Chemistry of seawater and bottom sediments as well as seawater properties determined by chemical composition”* given by Prof. Janusz Pempkowiak took a place. Prof. Pempkowiak comprehensively discussed issues related with the origin of the water and Earth, water-amount on the Earth and spheres of the ocean. Also seawater components and salinity concentration of the ocean were presented to the students.

At the end of the second day of meeting, during the *“Chemistry of seawater and bottom sediments as well as seawater properties determined by chemical composition”* seminar students were able to practical exercises in laboratory. The participants had to determine the seawater salinity: on the basis of the equivalent of chloride (titrate), and based on measurement of electrical conductivity.

On the last day of meeting, Prof. Pempkowiak presented lecture about *“Seawater properties: density (σ_t), carbonate system (buffer capacity), optical properties (colour of seawater), acoustical properties (underwater acoustic channel)”*. After the lecture, the students along with Dr A. Winogradow determined pH and alkalinity of the water samples during laboratory *“Buffer capacity of*

seawater". The aim of those exercise was to compare the properties of water by measuring pH and determined alkalinity. After the practical exercises, a lecture "*Buffering properties of seawater*" given by Dr K. Kuliński was started. The lecture was focused on carbonate system and their related with high or low pH of seawater.



Fig.2. First year PhD students in laboratory.

During the third meeting of 1st year PhD students of the Centre for Polar Studies, all participants had chance to participate in interesting lectures, seminars and laboratories. Students had a great opportunity to gain a new knowledge which will be very useful for their future work and get to know many interesting people from the world of science. The third meeting was very nice and in very pleasant ambiance.

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