

METEOROLOGY

Practical activities for Meteorology and oceanography are carried out in this laboratory, pursuing the following objectives:

General objective

The study of phenomena and processes in the Earth's atmosphere, their dynamics at the interface ocean - atmosphere in order to forecast, in time and space, the aspect of the weather on board, with measuring instruments, reception equipment and data processing software.



Specific objectives

1. Use and interpretation of the information provided by the meteorological instruments existing on board, in order to determine the meteorological elements necessary for the hydro-meteorological situation during navigation.
2. Identification of the weather elements and phenomena represented on the weather maps, and prediction of weather evolution in time, to ensure acquiring *knowledge of the characteristics of various weather systems, reporting procedures and recording systems.*
3. Decode and correctly interpret meteorological messages, synoptic codes and other hydro-meteorological situations received on board, to ensure acquiring *knowledge of the characteristics of various weather systems, reporting procedures, and recording systems.*
4. Forecasting the evolution of hydro-meteorological phenomena based on meteorological observations made on board, and on the meteorological elements contained in the meteorological messages.
5. Identify and forecast the development of hydro-meteorological phenomena which can be dangerous for the ship, cargo and crew, and to develop the *ability to apply the meteorological information available.*
6. Identify and spot the areas where there are dangerous hydro-meteorological phenomena: strong winds, storms, tropical cyclones, baric interference, sea ice, etc., - develop the *ability to apply the meteorological information available.*



Equipment

- Automatic weather station type "Vantaje VUE" intended for measuring meteorological parameters, for their storage and processing, in order to develop meteograms, and short-term forecast on board.
- The radar data system, satellite data, data from forecast models along with all national meteorological data, the GTS data through the National Integrated Meteorological System (SIMIN), and also data from the DHM meteorological stations, by sending, hourly, SYNOP bulletins ;
- Instruments and devices for measuring and recording the main meteorological parameters, which play an important role in forecasting and monitoring the cargo storage conditions: barometers, barographs, hygrometers, hygrographs, thermo-hygrographs, anemometers, thermographic thermometers, rain gauges;
- Equipment for receiving meteorological information, on board, from the NAVTEX system (receiver, antenna) or via the Internet, in real time, through specialized sites (<http://weather.gmdss.org>);
- Software used on board ships, by shipping companies, for the correlation of the weather forecasting in real-time, and for navigation route optimization (MetManager application as part of Passage Plan)
- Pilot books, cloud atlas, ALRSs - sites, documentaries on the types of information received on board, in real time (notices, warnings, messages NAVTEX, combined meteo forecasts, synoptic maps etc.)
- A video projector, an internet connected laptop, 3 computers for applications, a smart board.
- Desks and chairs that can accommodate 28 students.

List of works carried on in the laboratory:

1. Measurement, recording and determining meteorological elements using meteorological instruments and automated weather stations. Elaborating meteograms.
2. Identification and interpretation of primary and secondary forms of baric relief on the synoptic maps using the integrated system (SIMIN)
3. Analysis of wind parameters influence on navigation, by determination of the gradient, direction and speed. Applications of the Buys –Balot Law.
4. Identify and analyze the main characteristics associated with air masses, atmospheric fronts and depressions, using synoptic maps and specialized software: conditions for creation, evolution – directions, regions where they appear, associated weather, measures taken on board.
5. Use of NAVTEX type receiver, SIMIN system, and specialized sites for receiving meteorological messages. Making weather forecast on board, and comparative analysis with the MetManager application. Optimizing the shipping routes under the influence of meteorological factors.

