

ORGANIZATION OF THE METEOROLOGICAL AND OCEANOGRAPHIC SERVICES IN ROMANIA

midshipman Emilia-Daniela Năstase

"Mircea cel Batran" Naval Academy in Constanta (Romania)

ABSTRACT

The article was written during the meteorology and oceanography classes conducted at the Polish Naval Academy in Gdynia as part of the term paper task, and during the ERASMUS + program. Romania has developed its own model of meteorological and oceanographic services, which is appropriate to the implementation of the tasks assigned to these services.

The aim of the article was to illustrate the organization of the meteorological and oceanographic service in Romania and to indicate their tasks.

Keywords:

meteorological service, oceanographic service

INTRODUCTION

Meteorology is the study of the atmosphere and the processes in the air, atmospheric phenomena, and atmospheric effects on our weather. Meteorology is an interdisciplinary scientific study of the atmosphere.

Over the centuries, the atmosphere has been studied for a variety of reasons, including agricultural knowledge, military defense, and planning, and developing better warnings for severe weather systems like tornadoes and hurricanes. Technological advances, such as the development of scientific computing and an increase in the total number of meteorological observations being taken daily across the globe, have allowed for better forecasts (or at least the meteorological community likes to think they are better forecasts) and a much better overall understanding of our atmosphere.

Oceanography is the study of the physical, chemical, and biological features of the ocean, including the ocean's ancient history, its current condition, and its future. In a time when the ocean is threatened by climate change and pollution, coastlines are eroding, and entire species of marine life are at risk of extinction, the role of oceanographers may be more important now than it has ever been.

ORGANIZATION OF THE METEOROLOGICAL SERVICE IN ROMANIA

The National Meteorological Administration is the national authority in the meteorological field in Romania, with a continuous service since 1884. Romania is a founding member of the International Meteorological Organization and starting with 1947-member of the Convention setting up the World Meteorological Organization.

The main responsibilities of NMA are meteorological protection of life and property, sustainable development, and improvement of life quality. The activities of meteorology, fundamental research, systematic and complete weather monitoring, international data exchange and integration in the World Meteorological Monitoring.

Romania has a vast experience in extreme events monitoring and control at national level, with a history of 120 years of observations, forecasts and case studies performed by National Meteorological Service. The scientists from National Meteorological Administration are actively involved in prevention and mitigation of all the natural risks affecting the environment and the agriculture, as well as disseminating specialized forecasts and advisories to decision-making factors and other end-users (farmer, citizens).



Figure 1. Emblem of the Romanian National Meteorological Administration

The Regional Meteorological Centers

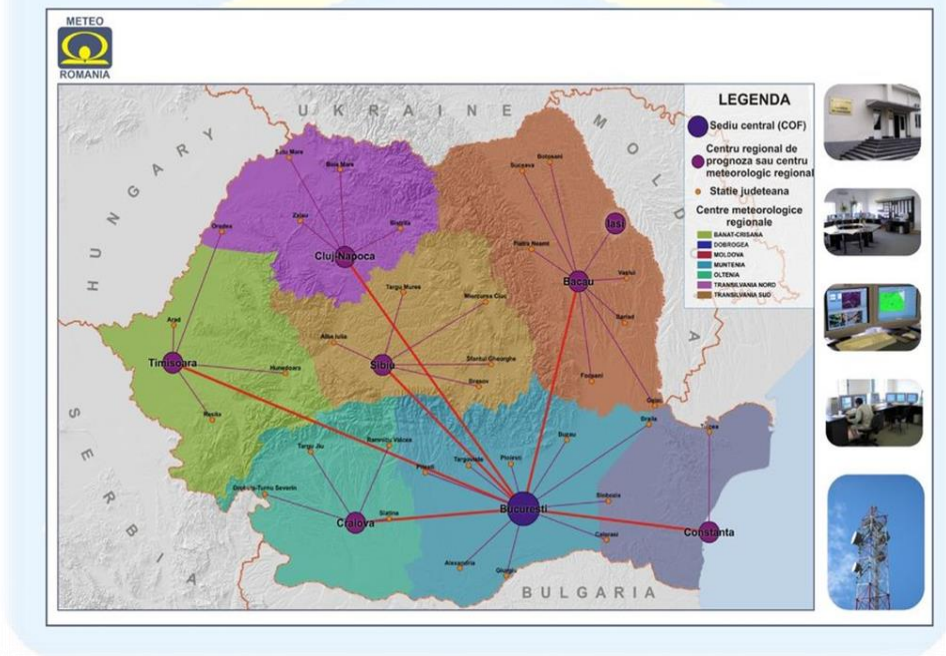


Figure 2. The division of the territory of Romania into Regional Meteorological Centers

The Regional Centres from Romania are as follows (Figure 2):

1. Regional Meteorological Center Muntenia – București.
2. Dobrogea Regional Meteorological Center – Constanța.
3. Regional Meteorological Center Moldova – Iași.
4. Transylvania Regional Meteorological Center - Cluj-Napoca.
5. Transylvania Regional Meteorological Center – Sibiu.
6. Banat – Crișana Regional Meteorological Center Timișoara.
7. Oltenia Regional Meteorological Center – Craiova.
8. National School of Meteorology – București.

In Figure 3, the National Network of Meteorological Stations and in Figure 4, the National Network of Meteorological Radars are presented.



Figure 3. The National Network of Meteorological Stations

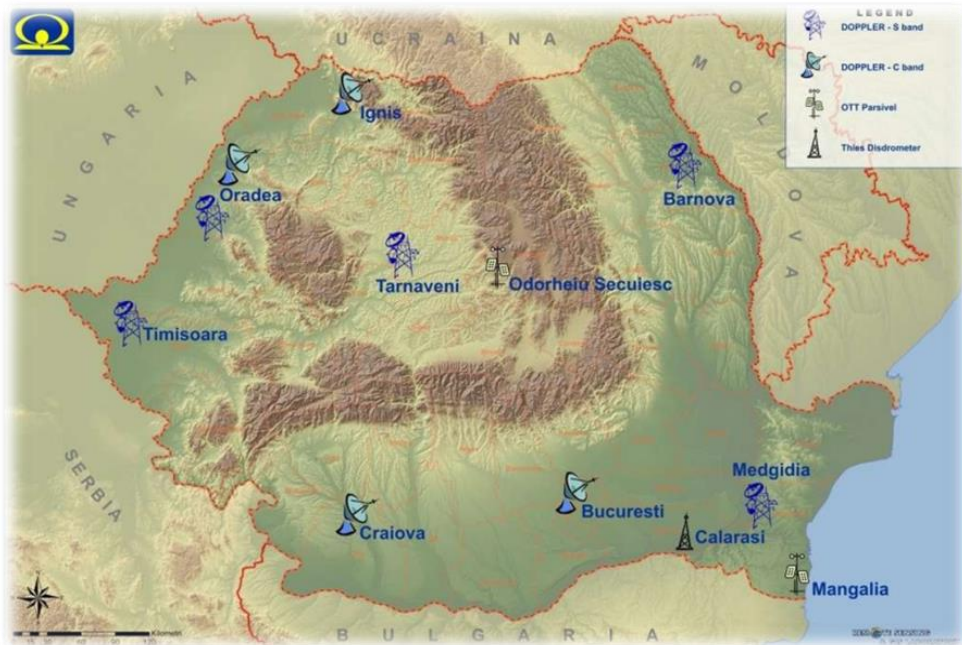


Figure 4. The National Network of Meteorological Radars

Satellite observations

METEOSAT Satellite (Figure 5) Reception Station the second generation - provides images (Figure 6) with 1–3 km resolution every 15 minutes.

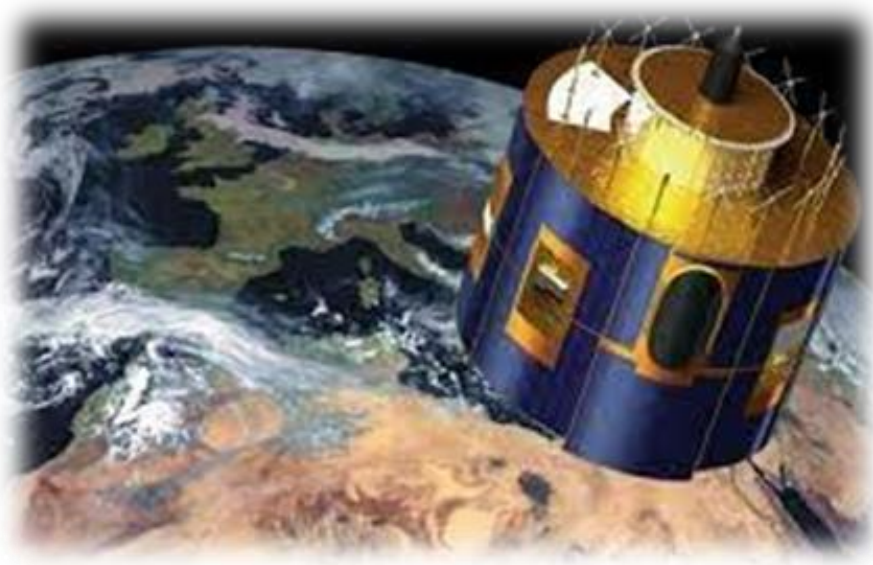


Figure 5. METEOSAT meteorological satellite

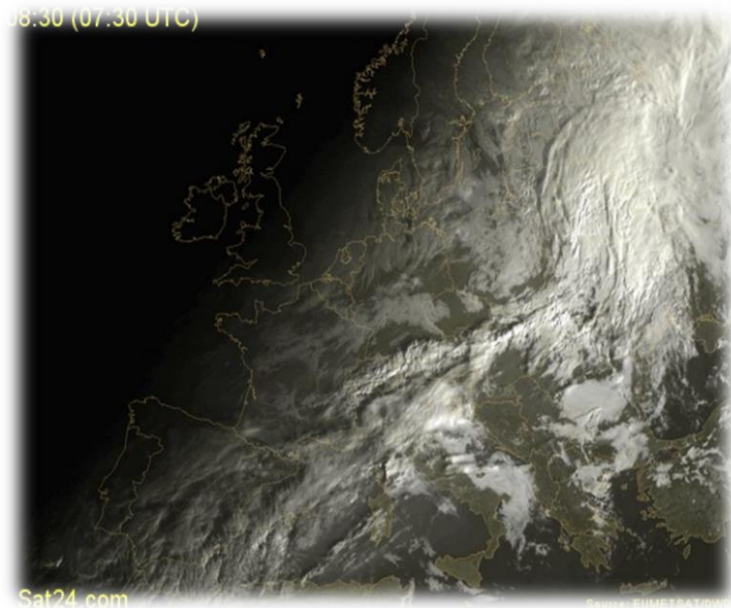


Figure 6. An example of a satellite image obtained from the METEOSAT meteorological satellite

Meteorological instruments

Figures 7-9 show the meteorological instruments used for the observations.



Figure 7. Weather station

Source: *The Weather Station „Filaret” București, Romania.*



Figure 8. Doppler radar

Source: *Doppler Radar, Romania.*



Figure 9. Ceilometer

ORGANIZATION OF THE OCEANOGRAPHIC SERVICE IN ROMANIA



Figure 10. Emblem of the Romania Maritime Hydrographic Direction

Oceanography applies chemistry, geology, meteorology, biology, and other branches of science to the study of the ocean. It is especially important today as climate

change, pollution, and other factors are threatening the ocean and its marine life. Traditionally, oceanography has been divided into four separate but related branches: physical oceanography, chemical oceanography, marine geology, and marine ecology.

Oceanographic activity in the following research areas:

1. Physical oceanography deals with the properties of seawater (temperature, density, pressure, and so on), its movement (waves, currents, and tides), and the interactions between the ocean waters and the atmosphere.
2. Chemical oceanography has to do with the composition of seawater and the biogeochemical cycles that affect it.
3. Geological oceanography focuses on the structure, features, and evolution of the ocean basins.
4. Biological oceanography, also called biological oceanography, involves the study of the plants and animals of the sea, including life cycles and food production.

About 70 percent of Earth's surface is covered by water. Nearly 97 percent of that water is the saltwater swirling in the world's ocean. Given the size of the ocean and the rapid advancements in technology, there is seemingly no end to what can and will be uncovered in the science of oceanography.

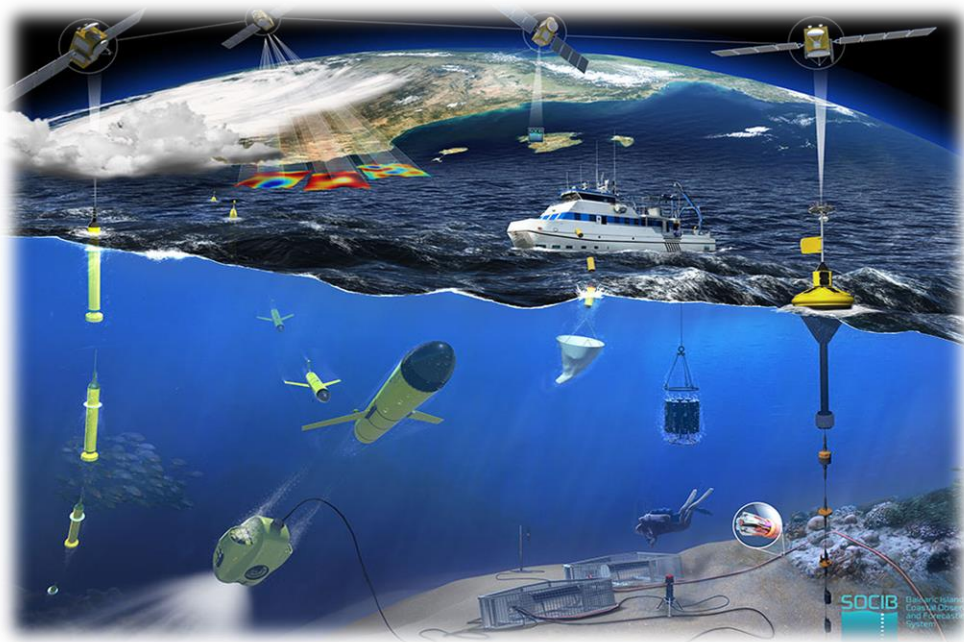


Figure 11. Methods of observations and measurements in the sea and in the ocean



Figure 12. Hydrographic Maritime Ship "Captain Commander Alexandru Cătuneanu"

The Oceanographic Research Laboratory is a specialist institution that provides the Navy with oceanographic support. The Oceanographic Research Laboratory is engaged on the following projects:

1. Oceanographic and geophysical research of the coastal and offshore area, relief and marine soil research, in the relevant parts for navigation, hydrography and SMFN actions, executed in the area of responsibility of Romania on the Black Sea.
2. Updating and managing the maritime oceanographic database based on information resulting from specific activities or obtained from other national civilian or military institutions / organizations with which it cooperates.
3. During wartime and peacetime, provide oceanographic support to the Navy.
4. Use I.H.O. processes for oceanographic research, hydrographic surveys in locations with great depths, and methods for deleting ambiguous data.
5. Enact legislation and documents to provide the Navy with oceanographic support.
6. Coordinate the technical activities of oceanographic apparatus and equipment supply for Navy vessels and units.
7. Develop modernization projects and strategies for procuring specialized equipment and apparatus.
8. Provide technical assistance in issuing notices for oceanographic operations carried out by other Romanian or foreign, public, or private, public or private

institutions, companies, or bodies that have specified such activities in their statutes in compliance with the Hydrography Law.

9. Plan and coordinate oceanic research and missions using the Maritime Hydrographic Surveying Vessel "Commander Al. Cătuneanu" and hydrographic motorboats.
10. Cooperate with military or civilian, Romanian, or international, specialist organizations and structures (NATO working groups) in the field of oceanography, providing expert advice and help to Navy onboard personnel working with specific oceanographic equipment and educating them on a regular basis.



Figure 13. Romanian military specialists in hydrography

SUMMARY

In conclusion, the meteorology is the branch of science concerned with the processes and phenomena of the atmosphere, especially as a means of forecasting the weather. The Military must be prepared to operate in any weather conditions. Weather, hydrologic, and climate forecasts are critical for planning military operations. As Oceanography applies chemistry, geology, meteorology, biology, and other branches of science to the study of the ocean, it is especially important today as climate change, pollution, and other factors are threatening the ocean and its marine life.

Navy meteorologists and oceanographers may serve in a wide variety of settings, working anywhere in the world – from serving aboard aircraft carriers or amphibious ships to conducting research at the Naval Postgraduate School, the Naval Observatory, or Naval Research Labs.

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ORGANIZACJA SŁUŻBY METEOROLOGICZNEJ I OCEANOGRAFICZNEJ W RUMUNII

STRESZCZENIE

Artykuł powstał podczas zajęć z meteorologii i oceanografii prowadzonych w Akademii Marynarki Wojennej w Gdyni jako praca semestralna w ramach programu ERASMUS+. Rumunia opracowała własny model służb meteorologicznych i oceanograficznych, który jest odpowiedni do realizacji postawionych zadań.

Celem artykułu było zilustrowanie organizacji służby meteorologicznej i oceanograficznej w Rumunii oraz wskazanie ich zadań.

Słowa kluczowe:

służba meteorologiczna, służba oceanograficzna