NATIONAL METEOROLOGICAL ADMINISTRATION

ROMANIAN METEOROLOGICAL SERVICE
Established in 1884

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The National Meteorological Administration – Autonomous Board, settled through Law 216/2004 Autonomous Board is a Romanian legal entity, of national, public interest, whose main aim is to ensure the meteorological protection of life and property.

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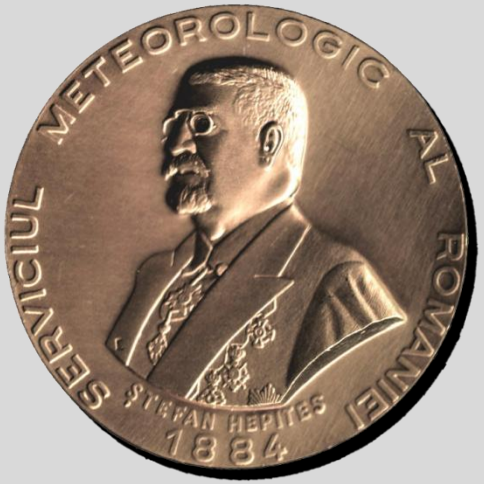
HISTORICAL LANDMARKS

- The Romanian Meteorological Service was settled on 18/30 July 1884, through the decision of the Department of Agriculture, Industry, Commerce and Estates.



- Its first director was Dr. Stefan Hepites. That moment marked the beginning of systematic activity, unitary at national level. It crowned the efforts of some enthusiastic and passionate people, who understood that this activity was necessary in the country's economic life.

- In recognition of the meteorological activity in Romania, the Romanian Institute of Meteorology was awarded the silver medal and the Diploma of Honor.

- Romania is a founding member of the International Meteorological Organization (IMO), and a signer, in 1947, of the Convention for the settlement of the World Meteorological Organization.

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THE MAIN ACTIVITIES

- **BASIC OPERATIONAL ACTIVITY**
  - Weather forecasting
  - Observation system
  - Telecommunication
- **RESEARCH ACTIVITY**
  - Numerical modelling
  - Climatology and Agro-meteorology
  - Remote Sensing and GIS
- **EDUCATION AND TRAINING**

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REMOTE SENSING AND GIS LABORATORY

- Founded in the former National Institute of Meteorology and Hydrology in 1975.
- The staff formed by scientists with different basic formation: physicists, geographers, land-surveyors, hydrologists, computer scientists and with high level of specialization in remote sensing, GIS and applications.
- The laboratory is equipped with interpretation devices and with equipment for processing and analyzing the satellite numerical data. Image processing methods were developed and tested on high and medium satellite data (NOAA-AVHRR, LANDSAT-MSS and TM, and SPOT-HRV, IRS, TERRA/MODIS/ASTER, etc).
- Most of the remote sensing and GIS procedures are based on professional software (ERDSAS Imagine, ENVI, Arc/Info, Arc View, PV Studio), but some applications developments were locally developed.
- The Laboratory disposes of a new METEOSAT SECOND GENERATION / HRSU VCS system in order to take advantage of the increased capabilities of this new generation of EUMETSAT satellites.

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REMOTE SENSING AND GIS LABORATORY

- The main directions of the operational and research activities:
  - Predominant orientation toward operative applications in the field of meteorology, hydrology, water management and environment protection (sea surface temperatures, vegetation indexes, snow cover estimation, assessment and surveillance of the snow-cover evolution and of the water volumes stored within);
  - Integration in the national programs;
  - Participation in international programs and projects.
  - The modernization of the acquisition, processing and analysis systems and means for the remote sensing data through internal and/or external resources.
  - Formation of a staff with superior theoretical and practical training.

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REMOTE SENSING AND GIS ACTIVITY

- **OPERATIONAL and RESEARCH ACTIVITY**
  - Applications in monitoring of meteorological and hydrological hazardous phenomena
  - Applications in the environmental impacts studies
  - Satellite-based products validation using “in situ” measurements
  - Satellite data integration in crops growth models
- **RESEARCH DIRECTIONS**
  - Floods
  - Droughts
  - Soil moisture
  - Snow cover

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Applications in monitoring of meteorological and hydrological hazardous phenomena

- An operational system has been design and is developing, that includes the network of ground sampling data, the communication channels with satellite receiving stations or with the units that can supply such data, and with the meteorological radar network;
- The achievement and operation or the system implies:
  - to ensure the Earth Observation (EO) data from the existing and the new spatial platforms (METOSAT, NOAA, TERRA-MODIS, SeaWIFS, IKONOS, SENTINEL etc.);
  - to create the image database and its integration in the hydro-meteorological database;
  - to develop and test specialized algorithms and methods for processing and interpretation of EO data;
  - to utilize an integrated approach based on EO data combined with other non-space data in a GIS structure, in order to derive information useful for hydro-meteorological dangerous events: thematic maps, hazard and vulnerability parameters)

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Applications in the environmental impacts studies

- the evaluation and monitoring of some complex environmental indicators as: land use structure, vegetation cover and vegetation stress, pollution sources and contaminated areas;

- the damage assessment: early recognition of damage features, evaluation of sensible area for the pollution impact, spatial distribution and mitigation of pollutants.

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Field of interest in developing space technology

- Terra/Aqua MODIS direct broadcast reception, EPS upgrade in order to obtain real-time EO data.
- Integration of new research domains interested in Space Technology, such as the study of GPS signal in Meteorology in order to obtain atmospheric sounding by using ground GPS reception stations and using radio-occultation technology;
- Determining of the terrestrial geoid by specialized measurements using GPS data (CHAMP-ESA programme);

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Participation in international programs and projects

- **LIFE program:**
  - **CLEANWATER** “Integrated system for protect and analyse the status and trends of water threatened by nitrogen pollution”, 2010-2014;
  - **RIVERLIFE** “The protection of RIVER LIFE by mitigation of flood damages”, 2001-2003;
  - **MOSYM** “MOdernisation du SYstème de Mesure, Stockage Transmission et Diffusion de Données Hydrologiques à Différents Niveaux de Décision”, 1999 – 2001;
- **NATO Program:**
  - **Nato SfP 978016** “Monitoring of extreme flood events in Romania and Hungary using EO data”, 2002-2006
- **COST Program:**
  - **Action 718**, “Meteorological Applications for Agriculture” (2000 - 2004);
- **PHARE Program:**
  - **MARS and MERA** projects, 1995-1996;
  - **CORINE LAND COVER IN ROMANIA**, 1994 – 1996;
- **Bilateral co-operation:**
  - **ADEMA Program** “ Support a la mise en place d’un systeme de gestion des innondatios en Roumanie”, 2000-2002;

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Participation in international programs and projects

- **SEE Program:**
  - **SNOWBALL** “Remote sensing, model and in-situ data fusion for snowpack parameters and related hazards in a climate change perspective”, 2014-2017;
  - **ORIENTGATE** “A structured network for integration of climate knowledge into policy and territorial planning”, 2012-2014;
  - **HYDRATE** “Hydrometeorological data resources and technologies for effective flash flood forecasting” ,2006-2008;
- **ESA Program:**
  - **SiAiR** “Satellite & in-situ Information for Advanced Air Quality Forecast Services”, 2014-2015;
- **EU Programs (FP5, 6, 7):**
  - **CRYOLAND** “Service Snow and Land Ice - Stimulating the development of downstream GMES Services”, 2014-2015;
  - **MIDMURES** “Mitigation Drought in Vulnerable Area of the Mures Basin”, 2010-2012;
  - **MACC** “Monitoring atmospheric composition & climate”, 2009-2011;
  - **EFFS** “European Flood Forecasting System”, 2003-2004;

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Participation in national programs and projects

- **MEDGAME** “Serious Games based Virtual Centre for education and training in natural hazards emergency situations”, 2014-2016;
- **ASSIMO** “Assessment of Satellite Derived Soil Moisture Products over Romania”, 2013-2016;
- **GEODIM** “Platform for GeoInformation in Support of Disaster Management”, 2012-2016;
- **CLIMHYDEX** “Changes in climate extremes and associated impact in hydrological events in Romania”, 2012-2015;
- **DROMOSIS** “Drought monitoring based on space and in-situ data”, 2012-2014;
- **MUTER** “Services and applications for land monitoring using geospatial techniques”, 2008-2011;
- **SIGUR** „Satellite based service for emergency situations”, 2007-2010;
- **RISCASAT** „Development of New Satellite-Derived Products Adapted to Users’ Requirements for Hydro-Meteorological Risk Management”, 2007-2010;
- **MODVEGET** “Vegetation Reflectance Modelling for the Biophysical Parameters Valuation from Remote Sensing data”, 2004-2006;

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