



HungaroMet

Hungarian Meteorological Service

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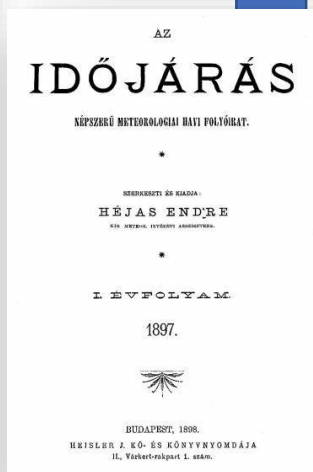
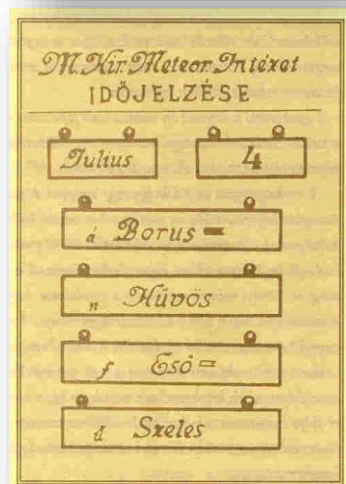
General Overview

- History: established in **1870** as the Royal Hungarian Institute of Meteorology and Earth Magnetism
- **HungaroMet** Hungarian Meteorological Service
- State-owned Nonprofit company under the Ministry of Energy
- 1870 started with only 3 people
- 1994: ~1,000 employees
- 2025: ~260 employees

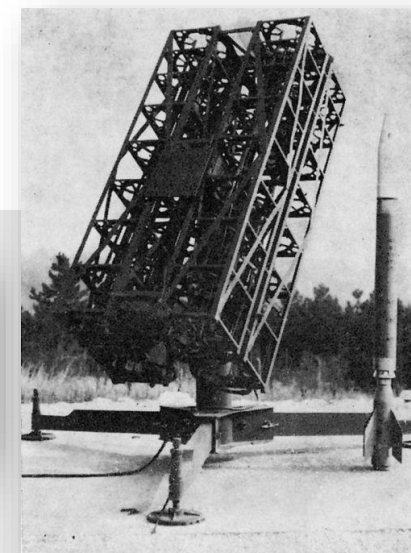


Our Headquarters since 1911

155 years of Meteorology



KEI, KMI
KLFI



1870. IV. 8.

1890

1897

1910

1934

1970

1976

2024

Legal background

- State-owned Nonprofit company under the Ministry of Energy
- Key Responsibilities (Government Decree 547/2023, XII.12.)
 - Monopoly to issue weather warnings for the country
 - Official Air Navigation Meteorological Service Provider for the entire Hungarian airspace (since 2022.01.01.)
 - Operating the National Meteorological Database
 - Environmental protection tasks according to legal requirements
 - Management of the National Air Pollution Measurement Network
 - Management & Development of the National Adaptation Geo-information System
- Aligned with EU Directives:
 - Open Data Directive – High-value meteorological datasets. odp.met.hu
 - Single European Sky – Unified conditions for air navigation services.
 - Environmental & Climate Change Agreements – Compliance with EU commitments.

Full range of activities under ISO 9001 quality management system

What are we doing at HungaroMet?

- **State responsibilities:**

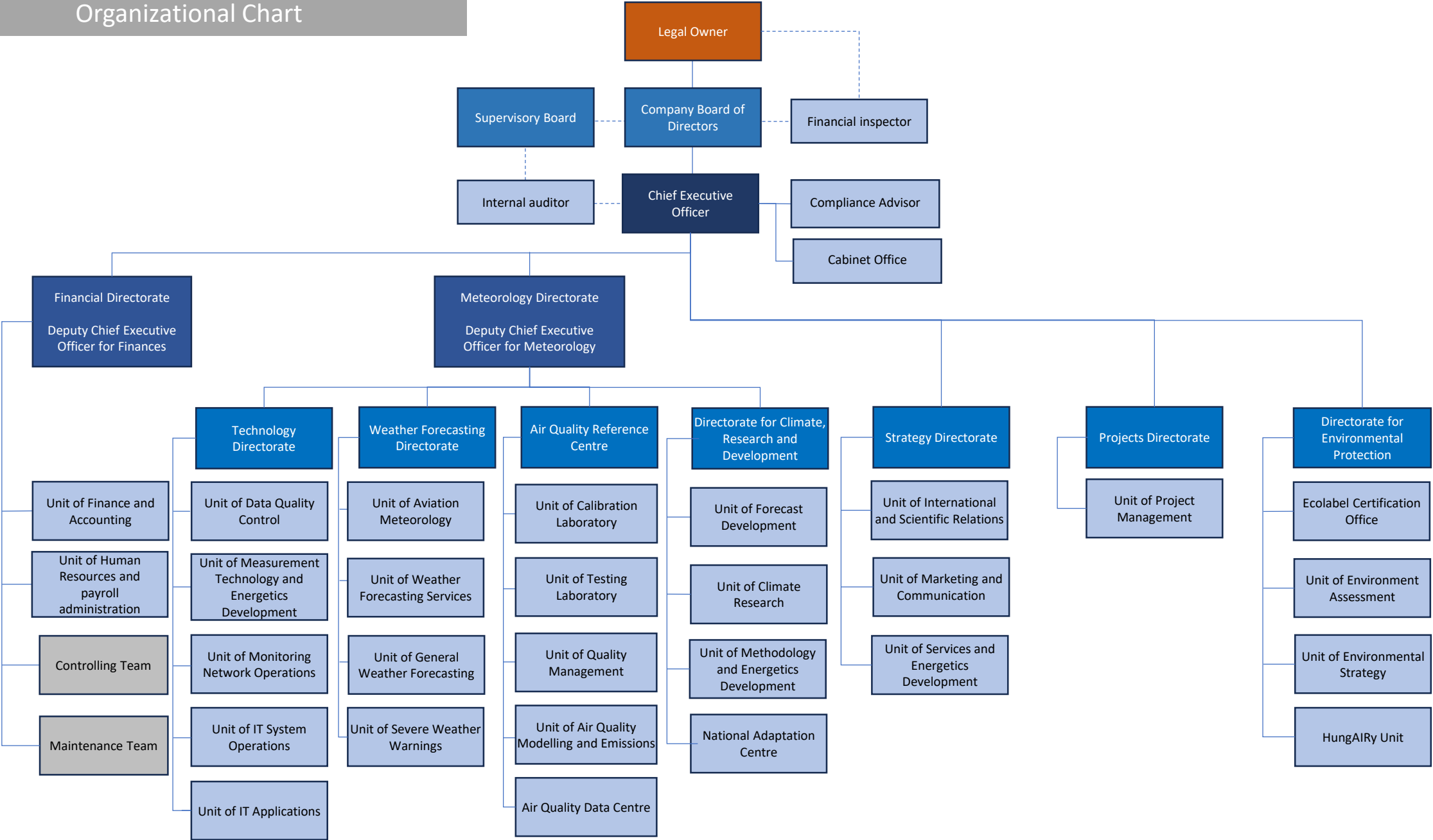
- Maintenance, development of meteorological observation network
- Collection, storage, analysis, processing, and publication of meteorological and climatological data
- Operation of open meteorological data portal
- General-purpose weather forecasting
- Aviation meteorology services
- Hazard warnings for the **protection of life and property**
- Public information and communication
- Research and development

- **Service activities:** sector-specific measurement data and forecasting services

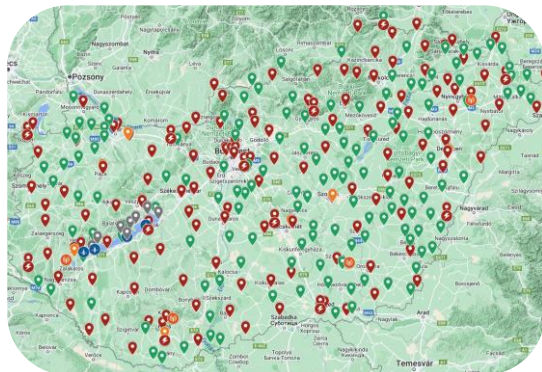
- Lake-warnings, services to agriculture, energy, road transport, media, insurance and national climate adaptation plans
- Calibration of measuring instruments
- Analysis of air pollution data
- Approval of air pollution measuring instruments



HungaroMet Hungarian Meteorological Service
Organizational Chart



Key activities



Critical infrastructure

Hungary's automatic meteorological measurement network

Radar system & calibration laboratory

Meteorological measurement system at Budapest Liszt Ferenc International Airport



Weather Forecasting:

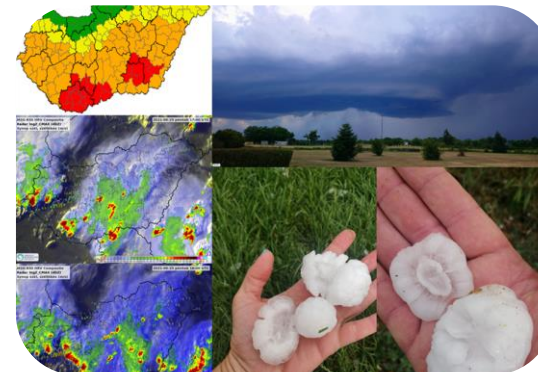
General short- and medium-term forecasts

Severe weather alerts for storms, floods, and heatwaves

Colourful, 4-page daily weather report

Detailed hydrometeorological forecasts for flood and inland water protection in the Danube and Tisza river basins

Forecasting services for contracted partners



Warnings: Protecting Life & Property

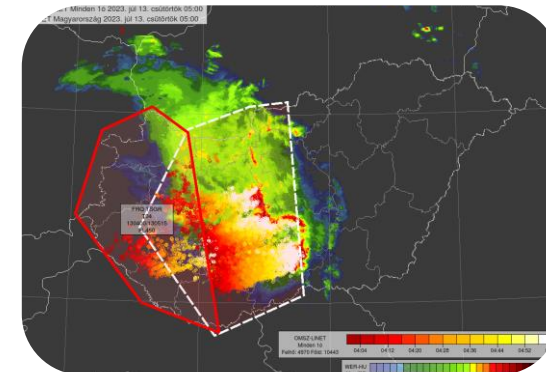
Alerts and warnings for Hungary, operating 24/7 year-round.

Lake Storm warnings (April 1 to October 31.)

Hailstorm Forecasting for agriculture

Industrial & Nuclear Accident Support – Meteorological services for state organizations in case of emergencies or drills.

Air Quality Forecasts – Regular updates on air pollution conditions.



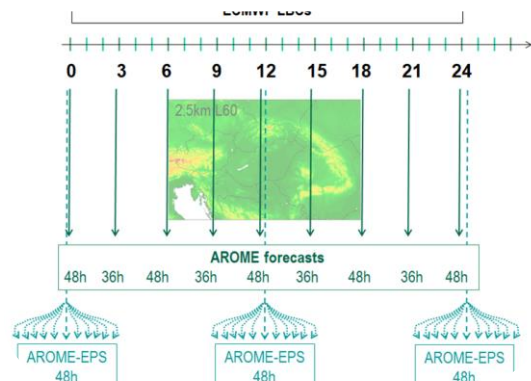
Aviation Meteorology & Air Navigation

Continuous monitoring of Hungarian airspace

TAF, SIGMET, AIRMET, GAMET aviation reports

Meteorological support for civil and military aviation

Key activities



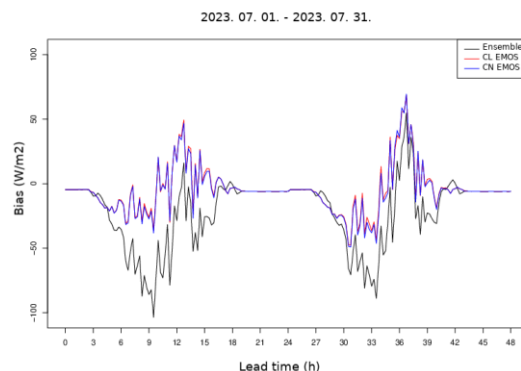
Weather Forecasting Models

Arome model development

High-resolution weather forecasts (2.5 km) for the Carpathian Basin, updated every 3 hours.

Global boundary conditions from ECMWF-IFS model at 9 km resolution.

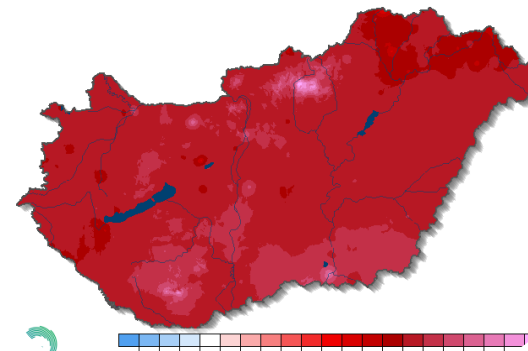
Research and improvements



Post-processing for model development

Own softver: OVISYS+HARP from ACCORD

10-15% improvement in forecasts using statistical or **machine learning post-processing techniques**



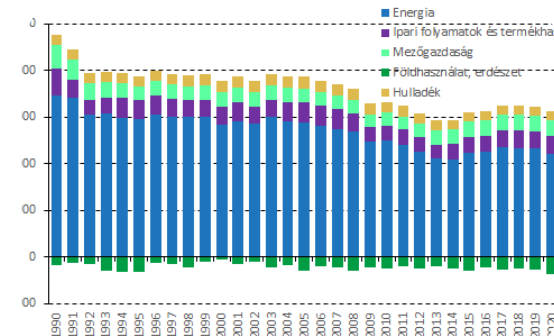
Climate monitoring, modeling and analysis

Statistical climatology

Providing sector specific (e.g. agriculture) information

Adapting regional models to study climate change, quantify uncertainties, and examine urban changes.

Maintaining the climate archive



Air Quality Modeling and Emission Inventory

EU requirement

Tracking our progress in meeting emission reduction commitments.

Identifying potential problem areas.

Providing input data for air quality modeling and chemical transport models.

Key activities

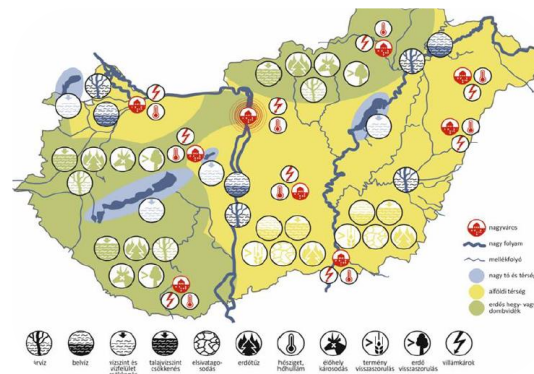


Environmental protection

Assisting government in environment protection tasks
EPA Network and EIONET activities

Strategic noise mapping and noise protection plans

Organizing professional training for administrative officials.



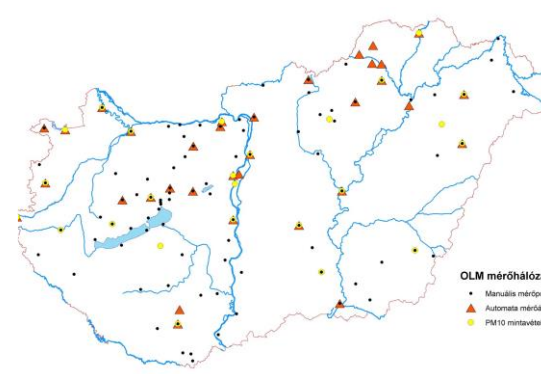
National Adaptation Centre

Operation of the National Adaptation Geo-information System (NAGiS)

Local Adaptation Projects:
Participation in projects supporting local adaptation measures (e.g., LIFE CLIMCCOP).

Targeted Vulnerability Studies:
Conducting sector-specific vulnerability assessments.

Climate Policy Planning: Supporting local and regional climate policy planning

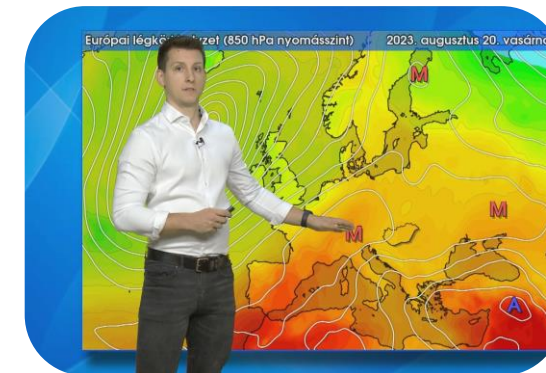


Air Quality Reference Centre:

Accredited laboratory: providing calibration, proficiency testing, and comprehensive air quality analyses

On-site calibrations and detailed laboratory analyses of pollutants.

Collections, validation, and dissemination of air quality data, producing annual assessments for Hungary and serving public and international partners.



Public Communication & Media Outreach

Managing social media platforms (Facebook, Instagram, YouTube, TikTok, Threads, LinkedIn)

Content development
Continuous monitoring of social media trends and adaptation

Service development to enhance **communication and outreach**

Presenting radio weather reports and supporting radio and TV interviews

Measurement system

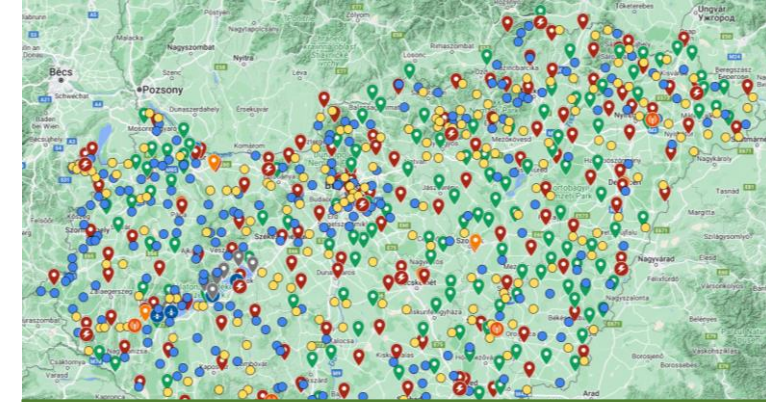
- Operation and development of the **automatic measurement network** since 2020
- Operation of the meteorological measurement system at Budapest Liszt Ferenc International Airport
- Radar network maintenance
- Calibration Laboratory



Képek forrása: HungaroMet



LIDAR, Siófok Observatory



305 AWS for precipitation measurement



LINET Stations (12)

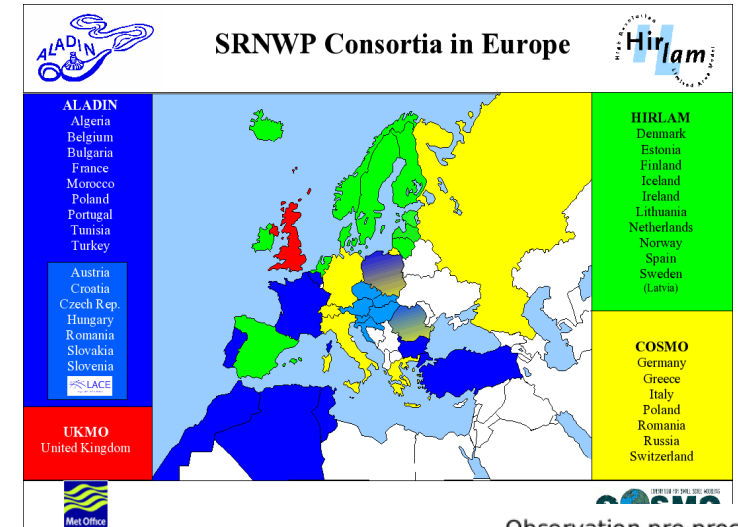
International cooperation

Hungary is a member

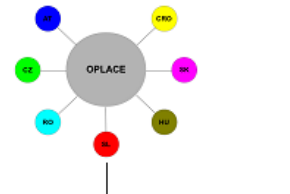
- WMO (since 1949) – participation in SEE-MHEWS project – EW4All
- EUMETSAT (since 1st January 2009) – part of HSAF consortium
- ECMWF (cooperating member since 1st July 1994)

HungaroMet is a member

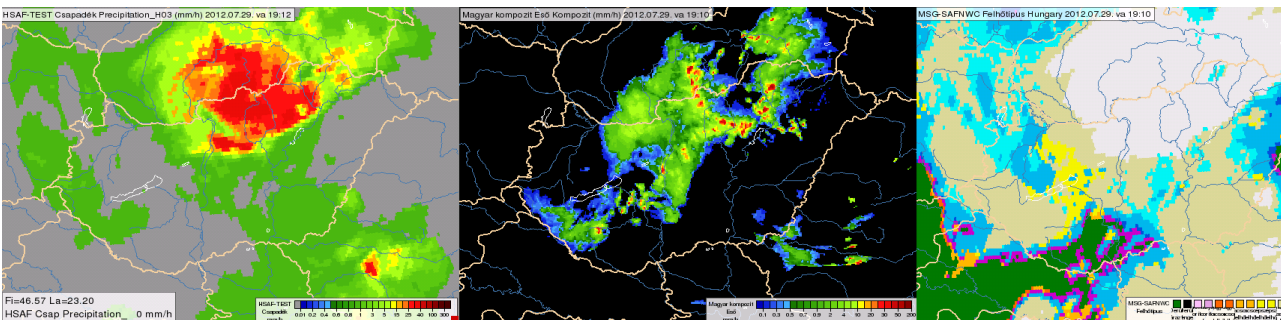
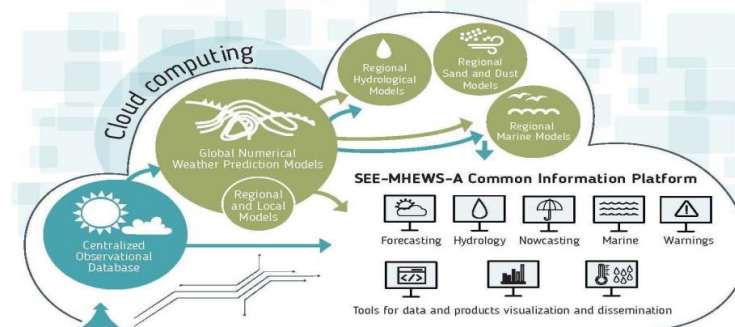
- ACCORD (A Consortium for COnvective-scale modelling Research and Development) and RC LACE consortiums
- EUMETNET – Network of European Meteorological Services
- EMS – European Meteorological Society



Observation pre-processing system for LACE (OPLACE)



SOUTH-EAST EUROPEAN MULTI-HAZARD EARLY WARNING ADVISORY SYSTEM



Képek forrása: HungaroMet

Projects

HungaroMet Nonprofit Zrt. participates in the implementation of 14 projects during 2025

- 3 national projects funded by the EU (**DIMOP**, RRF)
- 7 projects funding won through EU calls for proposals (LIFE, Interreg, Digital Europe, Copernicus)
- 3 projects funded by international meteorological organisation (Eumetnet, Eumetsat)
- 1 project supported by a national organisation (MTA)
- Ongoing: 2 Eu and 2 national grant



**NATIONAL
LABORATORY
FOR WATER SCIENCE
AND WATER SECURITY**



RODEO

The Provision of Open Access to Public Meteorological Data
and Development of Shared Federated Data Infrastructure
for the Development of Information Products and Services

DIMOP Plusz-2.3.1-23 Developing an environmental monitoring system using installed data collection network and creating a climate data repository with associated service environment



HungaroMet
Magyar Meteorológiai Szolgáltató Nonprofit Zrt.

Basic project information



Operational Programme:

Digital Renewal Operational Programme Plus, Priority 2



Identifier:

DIMOP Plusz-2.3.1-23



Project Title::

Developing an environmental monitoring system using installed data collection network and creating a climate data repository with associated service environment



Project Duration:

January 1, 2024 – March 31, 2026



Amount of funding:

10 billion HUF (Net)



Funding intensity :

100%



Financed by:

The Hungarian Government and the European Union

Open access climatological data - For future decision-making




Project goals:

- Creating a public meteorological-climatological portal
- Quick and easy access to information that helps the analysis of climate change impacts
- Support for developments based on BIG Data
- Setting up a consistent database of historical, digitized and recent monitoring network data

Results	Impacts
Network of reference stations	Providing high-quality climatological data
IoT measurement network	Nationwide, sensor-based data collection
Data collection server	Processing large volumes of meteorological data
Meteorological database	Structured storage of data from the measurement network
Digitalized climatological data archive	Processing of paper-based data and creation of database
Open Data Portal	Free and broad access to weather and climatological data

Reference network setup

130 meteorological stations installed nationwide, including 40 urban automatic (urban climate) stations.

Measured parameter 	Measurement height/depth 	Locations 
Air temperature & humidity	2 m	All stations
Air pressure	At data logger height	All stations
Wind speed and direction	10 m	All stations
Precipitation measurement	1 m	All stations
Soil temperature	10, 20, 30, 50 cm	All stations
Soil moisture content	10, 20, 30, 50 cm	All stations
Visibility and present weather sensor	At data logger height	40 urban climate stations
Snow depth sensor	At data logger height	40 locations
Dust monitor	At data logger height	40 urban climate stations

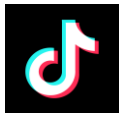


Installation of 1,500 PWSs calibrated in non-accredited laboratories → homogeneous coverage over the country

Planned measurement program

- Air temperature;
- Air humidity;
- Air pressure;
- Wind speed and direction;
- Precipitation intensity.

Social media



Webpages:

met.hu

odp.met.hu

<https://aviation.met.hu>

Linktree

linktr.ee/HungaroMet

Facebook

facebook.com/HungaroMet

Instagram

instagram.com/HungaroMet

Tik Tok

tiktok.com/@HungaroMet

Threads

threads.net/@HungaroMet

YouTube

<https://www.youtube.com/@HungaroMet>

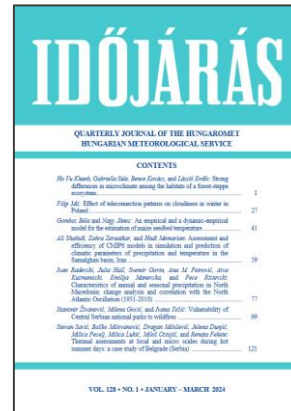
LinkedIn

<https://hu.linkedin.com/company/hungarian-meteorological-service>

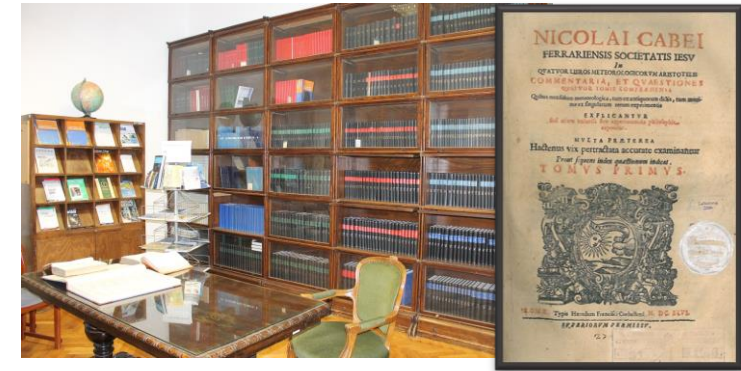
Meteorological journals



LÉGKÖR (1956):
Hungarian,
scientific journal



IDŐJÁRÁS
(1897):
English
professional
journal with
0.86 impact
factor



Library:

Holding ~10 Thousand books & 12
thousand periodicals
Including 800 books printed before 1900

Meteorological Museum Collection



Képek forrása: HungaroMet

Thank you for your
attention!

