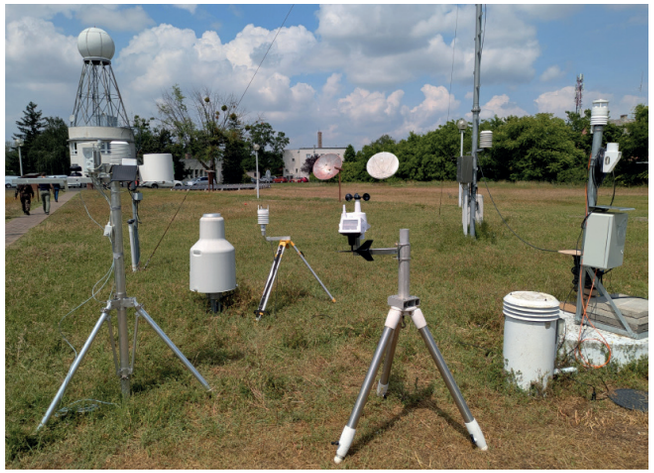
ABOUT THE PROJECT

The largest ongoing project of HungaroMet is being implemented with a budget of 10 billion HUF (25,7 M EUR) under the Széchenyi Plan Plus – Digital Renewal Operational Programme Plus. The project is titled "Developing an environmental monitoring system using installed data collection network and creating a climate data archive and service environment built upon it."

The project will result in the development of a meteorological database and station network, as well as the creation of a portal that supports climate change adaptation by providing a more accurate picture of the extent of climate change in our country.

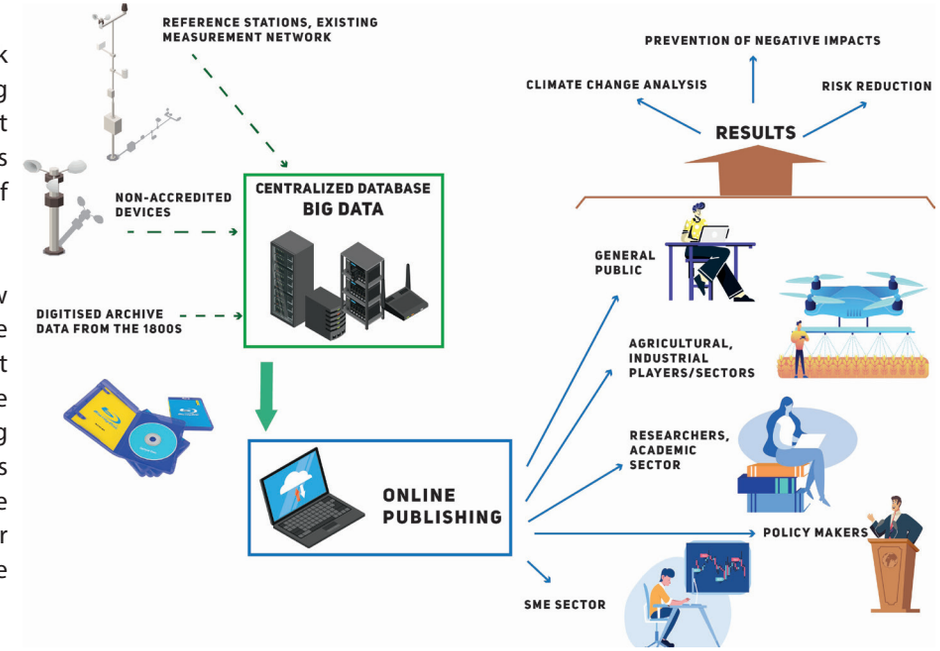
STATION NETWORK DEVELOPMENT

Our main objective is to expand and renew HungaroMet's current network of nearly 150 professional meteorological stations, all of which comply with WMO standards, by procuring 130 new devices. This upgrade will enable us to continue providing high-quality, validated measurements in accordance with international standards, while nearly doubling the number of stations in our current network by 2026. At the same time, increasing the amount of data needed to support national climate change adaptation efforts and contribute to the improvement of disaster resilience.



Instruments are tested at Marczell György Main Observatory (July 2025)

During the installation of the new professional reference stations, we are focusing on identifying the most suitable measurement sites that ensure nationwide coverage, while also considering areas with specific weather conditions. This guarantees the long-term and sustainable availability of measurement data, further improving the detection of local climate change.



NON-ACCREDITED MEASUREMENT STATIONS

The most interesting part of the project is the establishment of a network of nearly 1500 non-accredited measuring instruments.

The Personal Weather Stations (PWSs) will provide a more detailed picture of Hungary's weather and climate system than the professional reference network. Due to their large number they will generate a substantially higher volume of data. This could serve as a valuable foundation for analyses and research based on BIG DATA. These stations will also allow for the assessment of local impacts, supporting the development of targeted climate adaptation strategies for the community. It is crucial to determine the quality of the data coming from PWSs, as it has a significant impact on its analytical benefits, so the data validation methodology developed in this project is fundamental.

In addition to receiving, validating, and processing data from non-accredited measurements, the project includes the development of data quality control algorithms that can manage large volumes of data, along with the implementation of associated software solutions. The data from the reference stations will serve as a kind of benchmark in the qualification process. Naturally, just like the reference stations, the PWS devices will also transmit their data in real time to the central database, making them available through the same database.

WEATHER STATIONS FOR EVERYONE

The 1500 PWS units will be made available primarily to the general public, municipalities, and NGOs. The devices can be requested free of charge after registering on the HungaroMet website. Applications will be prioritised according to a set of transparent criteria, including the proposed measurement site and its environment.

With the help of a clear and easy-to-follow guide, anyone will be able to install and set up their own weather station. By collecting data over the years, participants will be able to observe and monitor the weather conditions in their local environment.

ARCHIVED DATA

Since the establishment of the Hungarian Meteorological Institute in 1870, and now under the management of HungaroMet, a huge amount of observed and measured data has been collected in the form of synoptic and climate daily reports, registers, and precipitation datasheets, all on paper. This project aims to fully digitize these records - not merely scan them - and make them freely accessible to everyone. This is no small task; the paper-based records, which fill several rooms, require manual data entry due to their unique formats and characteristics. The necessary softwares to support this process are also being developed in the framework of the project.

Due to this complete digital transformation, including 100-150 year-long records of main climatic stations, and with Hungary's climate will become increasingly researchable. This is especially important in the current era of climate change.

DATA PUBLICATION – WEB PORTAL

The goal of the project is to create a public meteorological-climatological portal providing easy access to data that supports the adaptation to the impacts of climate change. The aim is to develop a comprehensive database containing both historical, digitised data, and the data collected from the measuring network established in the framework of this project. The portal will not merely enable the online publication of the data, but will also support climatological developments based on BIG DATA technologies, and further increase the public's resilience to climate change.

For easier application, API access will be provided. The large amount of information gathered in the central database will be useful to decision-makers, researchers, and to all weather-sensitive sectors, while also serving the needs of small and medium sized enterprises and the general public.

This component is the final step in the implementation of project objectives. The specific developments carried out under this component providing up-to date digital and IT solutions will enable Hungary to monitor and analyse climate change and its impacts continuously.
By enhancing our adaptive capacity, these efforts will broadly help mitigate negative effects and reduce climate-related risks.

The project is expected to be completed by
30 June 2027

MORE INFORMATION

https://www.met.hu/dimop-plusz-2-3-1-23/hu/projekt/

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Az Európai Unió társfinanszírozásával

DIMOP_PLUSZ-2.3.1-23-2023-00001

DEVELOPING AN ENVIRONMENTAL MONITORING SYSTEM USING INSTALLED DATA COLLECTION NETWORK AND CREATING A CLIMATE DATA REPOSITORY WITH ASSOCIATED SERVICE ENVIRONMENT

HungaroMet
Hungarian Meteorological Service