# Weather and Artificial Intelligence: agreement signed between FBK and ItaliaMeteo

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**A new alliance to innovate the national weather and climate system.**

Weather, AI, and training: a strategic collaboration for weather forecasting and climate science has been established between the Fondazione Bruno Kessler (FBK) and the National Agency for Meteorology and Climatology **ItaliaMeteo**, marked by the signing of a five-year framework agreement.  The agreement, involving in particular the **DSIP** **(Data Science for Industry and Physics)** unit of the FBK Center for Digital Industry, aims to harness artificial intelligence to improve the quality, timeliness, and sustainability of meteorological and climate services in Italy.

Several activities are already underway, both in terms of research projects—such as the RUSH project and AI Factory—and training and outreach initiatives, including WebValley and the second edition of the fall school "Artificial Intelligence for Weather and Climate."

**Marco Cristoforetti**, head of the DSIP unit at **Fondazione Bruno Kessler**, explained: *"Artificial Intelligence is radically transforming research across multiple scientific fields, including meteorology and climate science. The challenge in these areas is to effectively and functionally integrate new AI approaches into an already rich and well-established ecosystem. This aims to provide new solutions to problems still unresolved by traditional methods, while also reducing computational costs without sacrificing accuracy.  In this context, the collaboration between FBK and ItaliaMeteo, through the exchange of diverse expertise, is an extraordinary opportunity to address this technological and research challenge, with the goal of delivering a meaningful impact across Italy."*

**Carlo Cacciamani**, Director of the ItaliaMeteo Agency, stated:*"The application of AI in weather forecasting can be strategic, as this technology enables the optimal use of vast amounts of historical data—essential for future weather predictions, especially at*

*the local scale.  In such cases, the uncertainty in defining the precise spatiotemporal location of weather phenomena remains high, and AI can significantly enhance forecasting accuracy.   The combination of traditional methods—based on the laws of atmospheric physics and dynamics—with advanced AI techniques can provide the leap in quality needed today. This is essential both to offer effective products and services to a broad and growing range of users across sectors, and to better protect regions from the impacts of extreme weather events, which are becoming increasingly frequent and damaging due to the worsening climate crisis. ItaliaMeteo aims to contribute on this front, also by coordinating organizations and institutions in Italy that are engaged in AI research and development in meteorology, starting with this important collaboration with FBK."*

RUSH: Weather forecast at 1 km every 5 minutes thanks to Artificial Intelligence

Among the most advanced initiatives of the collaboration is RUSH (Rapid Update SHort-term High-resolution), a project launched in the fall of 2024 and lasting 18 months, led by FBK with the ItaliaMeteo Agency and technical support from CINECA. RUSH aims to develop an AI model for short-term weather forecasting at very high resolution (1 km). The goal is ambitious: to predict rainfall across Italy every 30 minutes for the next 24 hours, with a level of reliability surpassing that of any numerical model currently in use in the country.

At the core of the project is an AI model that, rather than simulating the atmosphere physically, learns from data. It does so by leveraging 12 years of radar and satellite observations across Europe and uses CINECA's computing power for training and deployment.

If validated through testing, RUSH could become one of the first high-resolution AI-based weather models operating in Italy, with potential benefits for the wider public.

AI Factory: A European Platform for Climate AI

FBK and ItaliaMeteo are also partners in the AI Factory project, one of the first strategic platforms selected by the European Commission to develop AI applications for the public good. In the Italian context, the two institutions work together to create advanced infrastructures and models for the weather and climate sector, integrating data, computing capacity, and predictive services to support the country.

Training: From WebValley to the Second Edition of the Autumn School

The collaboration also includes initiatives to train the next generation.  For 25 years, Fondazione Bruno Kessler has organized WebValley, its long-standing international summer school for high school students, which in its latest edition focused on climate data and AI.

Following the success of its first edition in 2024, the second edition of the Autumn School on Artificial Intelligence for Weather Forecasting and Climate Studies will be held this fall. The program targets young researchers, PhD students, and technicians from both the public and private sectors. The training, organized by FBK with participation from experts at ItaliaMeteo and CINECA, features an advanced curriculum combining theory and practice, with use cases based on real data.

The new collaboration between FBK and ItaliaMeteo, leveraging their respective institutional strengths, represents a strategic step toward generating more accurate and effective weather and climate information within a national system that is integrated and open to innovation. At a time when Europe has recognized weather data as a strategic asset, the ability to develop solutions based on AI, open data, and national infrastructure is essential.

*Pictured from left to right:*

*1st row: Marco Cristoforetti, Rishabh Wanjari, Giacomo Tomezzoli, Gabriele Franch, Elena Tomasi*
*2nd row: Uladzislau Azhel, Alessandro Camilletti*

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- #webvalley

**AUTHORS**

- Michela Antino