THE ALADIN COLLABORATION

WWW.CNRM.METEO.FR/ALADIN

ALADIN is a successful collaboration on numerical weather prediction involving 16 National Meteorological Services in Europe and Northern Africa. It started after an initiative taken by Météo France in 1990 and has been growing to a large-size international collaboration of about 90 full time equivalents. Since its start, the program has brought its members to the forefront of the developments in high-resolution short-range Numerical Weather Prediction.

ALGERIA | AUSTRIA | BELGIUM | BULGARIA | CROATIA | CZECH REPUBLIC | FRANCE | HUNGARY

MOROCCO | POLAND | PORTUGAL | ROMANIA | SLOVAKIA | SLOVENIA | TUNISIA | TURKEY

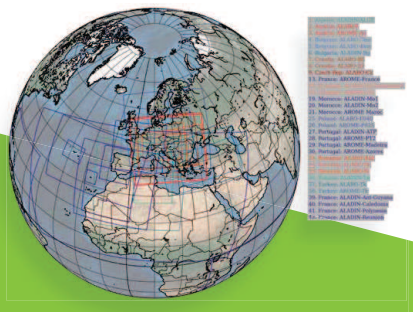
OBJECTIVES

→ Code development

The main activity is the conceptualization, definition, development, operation, and the maintenance of a shared, state-of-the-art, high-resolution Numerical Weather Prediction system called ***the ALADIN System***[1]. This system is used to configure the Numerical Weather Prediction applications in the participating member states. The code is shared with the global ARPEGE model of Météo France and the Integrated Forecast System (IFS) of the European Centre for Medium Range Weather Forecasts (ECMWF). The applications of the ALADIN System can run on limited geographical areas at about ten times higher resolutions than the ones of the global applications, allowing to compute weather forecast maps in high detail.

→ From science to operations

Significant scientific achievements are published in leading international journals. The ALADIN program coordinates scientific research and implements the scientific results into the new versions of the ALADIN System. These versions are regularly exported and installed on the High-Performance Computers in the Institutes of the ALADIN members. They are implemented in the operational applications. The members then run the numerical weather prediction model on limited areas covering their national territories Feedback from the weather forecasters of the Institutes is used to steer future Research and Development (R&d).



OPERATIONAL CONFIGURATIONS IN ALADIN CONSORTIUM

→ Expertise building

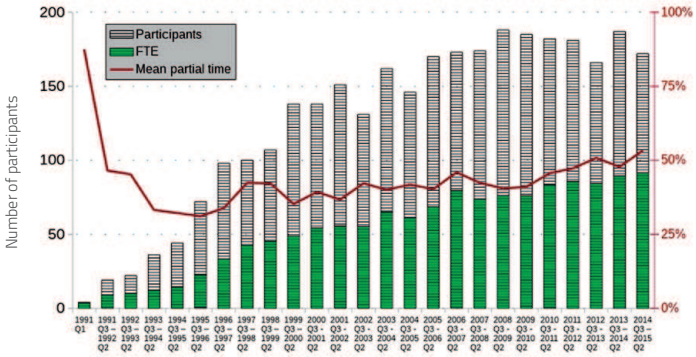
ALADIN provides a specialized background for training and recruitment of experts. This background is tightly linked to the national applications and is, as such, unique compared to purely academic research. This allows the members to create small to medium size teams to carry out R&D at a state-of-the-art international level.

→ Pooling of Resources

The activities of the consortium are supported by collective commitments of human resources to the operational and maintenance efforts, and to the management activities. The program has been used as a background to draw extra resources from external funding, both at national and international levels.

TOTAL PARTICIPATION IN THE ALADIN PROJECT

Evolution in the yearly Full Time Equivalent (green)



1. The acronym is derived from the French expression Aire Limitée Adaptation dynamique Développement InterNational.

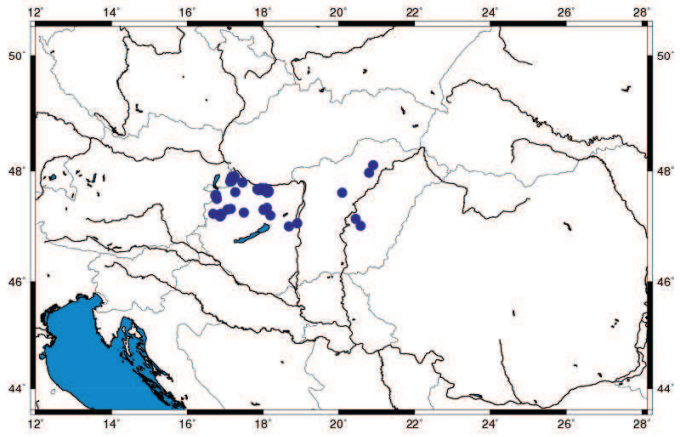
WIND ENERGY FORECASTING WITH THE AROME MODEL

Nowadays it is a crucial question to use renewable energy all over the world and to integrate it to the electricity system. The production of wind energy strongly dependent on weather, resulting that its planning is very difficult. It is an important task for the meteorologists to prepare the most accurate forecasts for the target users. The goal for the Hungarian Meteorological Service (OMSZ) is to adapt and develop algorithms connected to the calculation of power energy for wind, solar, and water resources. The operational usage is also important and expected.

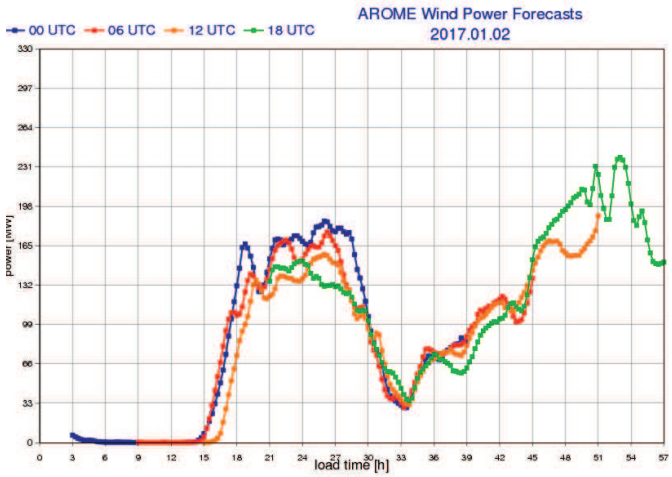
OMSZ provides forecast of the wind power production estimation for the whole country for the Hungarian Transmission System Operator Ltd. It is a derived and spatially integrated parameter. We use AROME model's wind speed for that purpose, vertically interpolated to hub height, and horizontally to turbine position. To some of the individual power-plants OMSZ is responsible for sending 48 hours ahead wind speed forecasts as well.

OMSZ made efforts to apply statistical correction methods for the wind speed and the energy estimation. Different approaches have been tested, such as bias correction, Kalman Filter, those aimed to gain forecasts closer to measurements, with no real success so far.

THE LOCATION OF WIND TURBINES OVER HUNGARY.



WIND POWER FORECASTS FROM AROME OVER HUNGARY



STATISTICAL CORRECTION OF WIND SPEED FORECAST AT 90 M