

# THE ALADIN COLLABORATION

[WWW.CNRM.METEO.FR/ALADIN](http://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.



## 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**<sup>1</sup>. 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).

### → 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

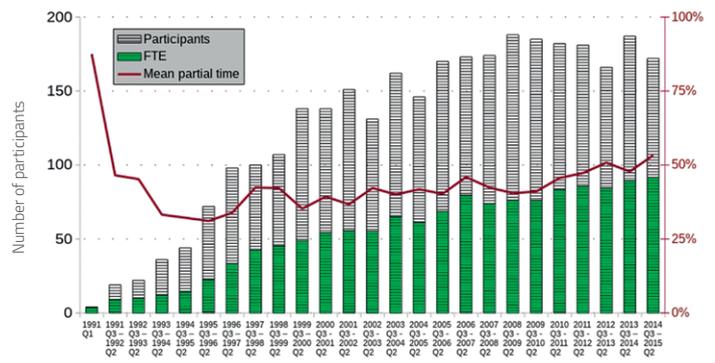
The activities of the consortium are supported by collective commitments of human resources to the operational and maintenance efforts, and to the management activities. The program has been used as a background to draw extra resources from external funding, both at national and international levels.



- 16. Portugal ALADIN-PT
- 17. Romania ALADIN-ROM
- 18. Slovakia ALADIN-SK
- 19. Slovenia ALADIN-SLO
- 20. Tunisia ALADIN-TUN
- 21. Turkey ALADIN-TUR
- 22. France ALADIN-FR
- 23. Belgium ALADIN-BEL
- 24. Austria ALADIN-AUT
- 25. Czech Republic ALADIN-CZ
- 26. Hungary ALADIN-HU
- 27. Bulgaria ALADIN-BUL
- 28. Croatia ALADIN-CRO
- 29. Morocco ALADIN-MAR
- 30. Algeria ALADIN-ALG

OPERATIONAL CONFIGURATIONS IN ALADIN CONSORTIUM

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.

## APPLICATIONS

The ALADIN consortium provides a platform for the ALADIN members for organizing optional activities related to numerical weather prediction. This can be done by individual members or in more intense optional multilateral collaborations. The applications range from nowcasting tools, specific academic case studies, to past and future climate simulations. Long model runs are used for creating atlases of wind climates. Climate-change simulations are carried out in the context of international regional climate modeling programs such as, for instance, the CORDEX project.

The most notable organization that takes part in the ALADIN consortium is the LACE consortium with 7 members in Central Europe. This consortium provides extra resources to exchange and to process meteorological data used in the model. It develops and maintains a pan-European probabilistic forecast system called LAEF. The ALADIN consortium shares its code with the HIRLAM consortium in a close scientific and technical collaboration.

## WEATHER INTELLIGENCE FOR WIND ENERGY



For the EU and future member states, the energy challenge has become a top priority for policy makers. The insecurity of traditional energy supplies, climate change threats and creation of new jobs placed the renewable energy – and in particular the wind energy – as one of the main objectives of the EU sustainable development. Due to the wind variability and its limited predictability, the increase of the wind energy share in the EU energy portfolio without the excessive costs for society requires the support of a dedicated site-specific probabilistic state-of-the-art wind and wind power forecasting system.

The project Weather Intelligence for Wind Energy – WILL4WIND ([www.will4wind.hr](http://www.will4wind.hr)), led by Meteorological and Hydrological Service, Croatia, adapted the ALADIN prediction system to the wind energy sector needs and developed innovative probabilistic methods for improving wind and wind power forecasting. The research follow-up was implementation of the operational market-oriented solutions to assist daily activities of the wind energy sector, such as transmission system operators and wind power plant managers. Finally, through intensive knowledge diffusion activities the project raised awareness on the meteorological research results and identified joint research priorities of the meteorology and the wind energy sector in Croatia.



The European Union co-funded the project through the Science and Innovation Investment Fund within the Instrument for Pre-Accession Assistance (IPA) for Croatia.

ALADIN/HR wind speed forecast at 80 m AGL for Bubrig wind power plant with uncertainty intervals using analog ensemble methods.

