

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.



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).

→ 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.

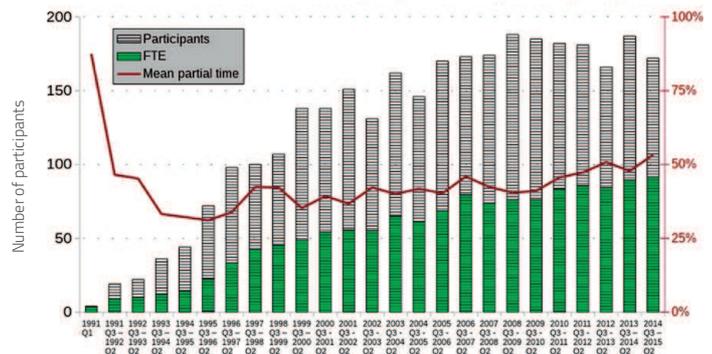
→ Pooling of Resources

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.



OPERATIONAL CONFIGURATIONS IN ALADIN CONSORTIUM

TOTAL PARTICIPATION IN THE ALADIN PROJECT
Evolution in the yearly Full Time Equivalent (green)

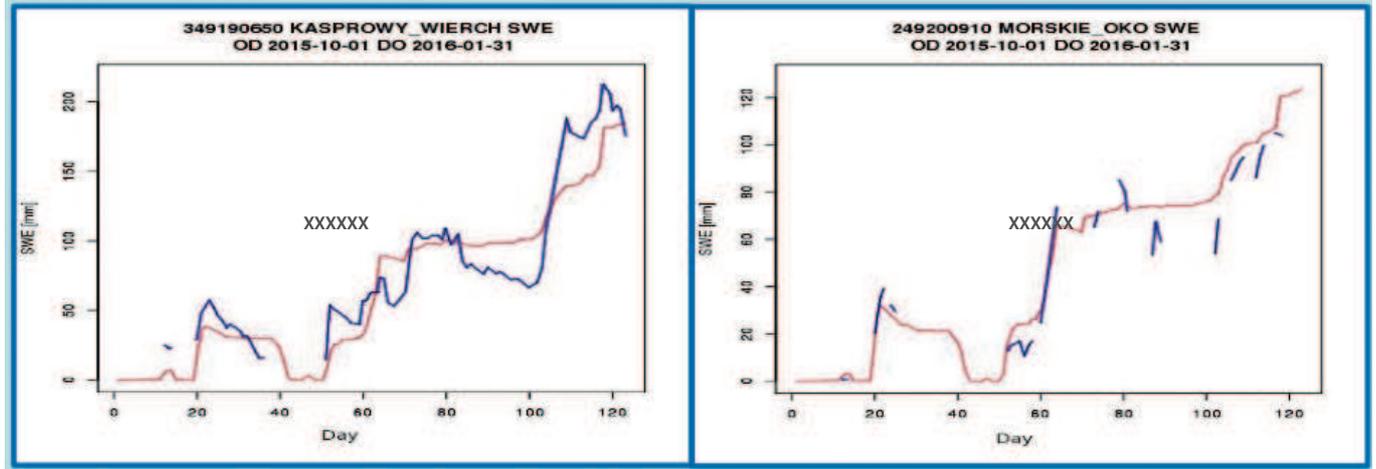


1. The acronym is derived from the French expression Aire Limitée Adaptation dynamique Développement InterNational.

MODEL CROCUS IN POLAND

The CROCUS model (of the microphysical processes within the snow layer) was adapted, installed and verified with the use of data from NWP model AROME (with spatial resolution 2.0 x 2.0 km and domain centered on Poland), in cooperation with Meteo France. For validation, historic climate data as well as snow layer parameters (stored in the form of SYNOP files) were used. The timespan of the data includes all the winter seasons starting from winter 2008/2009 till the last

winter. Main data base contains values of snow cover depth, snow water content, temperature and humidity for these winter seasons. As an example of results, comparison of manual measurements (blue) and the CROCUS forecasts (red) is shown for two mountain synoptic stations – Hala Gąsienicowa high mountain hut and valley (left) and Kasprowy Wierch summit (right), within the range of Tatras.



The current part of work on the use of CROCUS forecasts is maintained for the purpose of hydrologists. That part relies on, namely, the estimation of the amount of water reserve in snow for various river basins. The example diagram below is related to Soła river basin

(southern Poland) with snow water equivalent values for every CROCUS grid point (and for 5th January, 2015). Such type of product is expected to support and improve further hydrologic models.

