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.
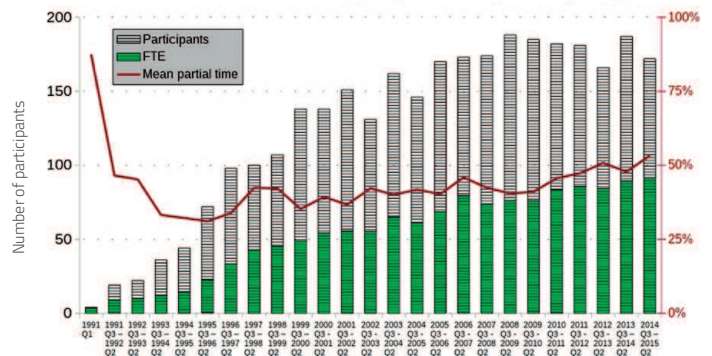
→ **Pooling of Resources**

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)

AROME "DUST" CONFIGURATION:
# A CRUCIAL TOOL FOR PREDICTING VISIBILITY OVER THE SOUTHERN PART OF ALGERIA

The interest in modeling the desert aerosols cycle in Algeria is important because the desert covers more than 75% of the total country's surface. This interest is reinforced by the fact that desert dust is a very dangerous phenomenon for aviation and has a direct impact on the economy, the environment and public health.

In September 2016, an upgrade of AROME DUST version was carried out based on a recent cycle and covering the whole domain of Algeria (from 18°N to 42°N of latitude, and from 10°W to 13°E of longitude). An important new diagnostic field was introduced in this version which is visibility. Therefore, this version is often consulted by forecasters for drawing up aeronautical bulletins, including the regional meteorological departments in southern Algeria. Furthermore, visibility outputs of this model can be used as decision making tool, especially for the organization of civil aviation.

POWERFUL SANDSTORM OVER THE ALGERIAN SAHARA

FIG. 1: VISIBILITY SIMULATED BY AROME DUST OVER ALGERIA ON APRIL 1ST 2016 AT 12 UTC.
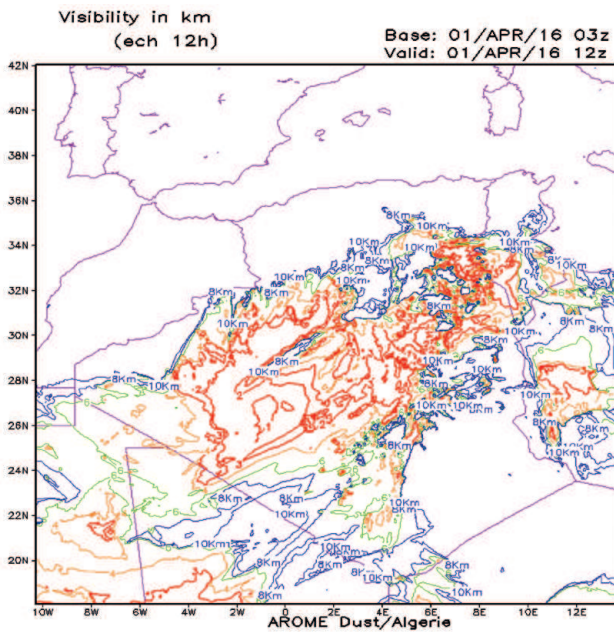
FIG. 2: DUST CONCENTRATION SIMULATED BY AROME DUST OVER ALGERIA ON APRIL 1ST 2016 AT 12 UTC.