

# AGREEMENT BETWEEN ECMWF & MÉTÉO-FRANCE

## FOR THE ACCESS AND USE

## OF THE JOINTLY DEVELOPED AND MAINTAINED NWP SOFTWARE

### «IFS/ARPEGE»

#### Considering:

- ten years of successful joint project for the development of the IFS/ARPEGE NWP software,
- the seven years of history of the ALADIN project,
- the need to protect the software as developed by both projects against any unlicensed distribution and/or any unauthorized use and application,
- the interdependence of some ECMWF IFS applications and some ARPEGE developments,
- the advantage as IFS/ARPEGE partners to profit from the ALADIN community's contributions on outstanding NWP issues that may be beneficial both for synoptic- and meso-scales,
- the concurrence of ECMWF and Météo-France for the promotion of ECMWF medium- and long- range NWP products,
- the "Rules governing the distribution of results from the Centre's work" as approved by ECMWF Council at its 12th session (November 1988),
- Annex 1 as list of those parts of the IFS/ARPEGE software that are recognized as developed mainly in Toulouse and judged strategically important by Météo-France,
- Annex 2 as list of those parts of the IFS/ARPEGE software that are recognized as developed mainly in Reading and judged strategically important by ECMWF,
- the participation to the decisions of the Council of ECMWF by several partners of the ALADIN project which are also Members of ECMWF and in particular their possibility of stating their position in respect of possible co-operation agreements between ECMWF and third parties outside Member- or Co-operating States,

#### ECMWF and Météo-France have agreed the following:

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#### Article 1: Access to the IFS/ARPEGE Software

Any ECMWF Member State or Co-operating State is granted access to the IFS/ARPEGE software without restriction.

For the access of any non-Member State or non-Cooperating State of ECMWF to parts of the IFS/ARPEGE software listed in Annex 1, the agreement of Météo-France, which will not be unreasonably withheld, is required.

The access by ALADIN partner National Meteorological Services that are not from Member States or Cooperating States of ECMWF, to those parts of the IFS/ARPEGE software necessary for a potential extension from global to LAM research and operational applications, and including those listed in

Annex 2, is granted without restriction provided that such parts will not be used to run routinely a global model/data assimilation system. A corresponding exchange with ECMWF in terms of scientific results via Météo-France is implied.

Access to those parts of IFS/ARPEGE listed in Annex 2, not covered by other paragraphs of this article, will be subject to the agreement of ECMWF.

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## **Article 2 : Use of the IFS/ARPEGE software**

Any use by any third party of the IFS/ARPEGE software not including those parts listed in Annex 1 is only subject to the ECMWF Rules.

Any use by an ALADIN partner of the IFS/ARPEGE software not including those parts listed in Annex 2 is only subject to the Météo-France policy.

The use of the IFS/ARPEGE software by the National Meteorological Services of countries which have not yet adhered to the ALADIN project at the date of signing of this agreement are subject to the ECMWF permission, which will not be unreasonably withheld and that may depend on a decision by the ECMWF Council. A corresponding exchange with ECMWF in terms of scientific results via Météo -France is implied.

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## **Article 3 : Intellectual property rights**

For the avoidance of doubt it is hereby expressly declared that nothing in this agreement can be interpreted to imply the transfer of any intellectual property rights.

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## **Article 4 : Annexes**

Annex 1 and Annex 2 to this agreement may be modified by mutual consent of ECMWF and Météo-France from time to time as deemed necessary.

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## **Article 5 : Termination**

This agreement can be terminated at any time by written agreement of both parties and shall be automatically canceled if the ALADIN project is terminated.

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## **Article 6 : Arbitration**

In the event of a dispute arising in connection with this Agreement, the Parties should attempt to settle their differences in an amicable manner. In the event that any dispute cannot be settled, it shall be finally settled under the rules of conciliation and arbitration of the International Chamber of Commerce by three Arbitrators appointed in accordance with the said rules.

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For and on behalf of **ECMWF**

For and on behalf of **Météo-France**

Signed :	Signed :
Name: .....	Name: .....
Position: .....	Position: .....

## ANNEX 1

### ANCILLARY PARTS RELATED TO STRETCHING

- (1) Configuration 923 (generation of so-called "climatological data")
- (2) Configuration 926 (old way to change geometry from one ARPEGE configuration to another one)
- (3) Parts of Full-POS that are necessary for a change of geometry from one ARPEGE configuration to another one
- (4) Configurations for creating the matrices necessary for TRAGEO (MATDILA, MATROT, MATCONT)
- (5) TRAGEO routines (for going to and from tilted/stretched geometry)
- (6) Specific part of the horizontal diffusion corresponding to stretched geometries (on top of the common part for classical calculations)
- (7) Semi-implicit scheme option LSIDG=.T.

### ALADIN RELATED PARTS

- (8) Non hydrostatic code (for its part common to ARPEGE and ALADIN)
- (9) Radiative Upper Boundary Condition code (for its part common to ARPEGE and ALADIN)
- (10) EGGS package (geometry routines for sub-domain calculations)

### DATA ASSIMILATION PARTS

- (11) DFI (Digital Filter Initialisation)
  - (12) CANARI (Optimum Interpolation analysis)
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## ANNEX 2

### VARIATIONAL DATA ASSIMILATION

\* definition, computation and minimization of the cost-function for 3D-Var and 4D-Var (excluding the parts needed by Canari) : all specific subroutines under eval, sim4d and taskob.

\* background term and preconditioner, including the parts developed for the reduced-rank Kalman filter : all subroutines under subjbcov, cvar2, cvar2in and their adjoints.

### TANGENT-LINEAR AND ADJOINT CODES

The adjoint and tangent-linear versions of the observation operators and of the forecast model, regardless of the application (variational data assimilation, sensitivity studies, singular vector computation, etc.) : cnt3ad/tl, surfacad/tl, upperaad/tl, satemad/tl, tovlrad/tl.

Are excluded the parts needed for the direct version of the codes, and the subroutines originally written by MF.

### SCREENING OF OBSERVATIONS

Screening of observations developed at ECMWF, excluding the parts originally needed by Canari : all subroutines under screen.

### SATELLITE OBSERVATION OPERATORS

Radiative transfer observation operators and related setup codes, i.e. tovlr and below. The code necessary for the use of SATEM retrievals and SATOB winds is excluded, as well as software developed subject to a specific third-party agreement such as with a Eumetsat SAF.

### ENSEMBLE PREDICTION SYSTEM

The singular vector computations, including the code specific to the reduced-rank Kalman filter, i.e. cun1 and below. The forecast model parts not specific to ECMWF are excluded.

#### ECMWF PHYSICS PACKAGE

(everything under directory phys\_ec, under subroutine suphec, and modules with name starting by yoe)

#### MANAGEMENT OF DISTRIBUTED MEMORY

Code specific to memory distribution, excluding the parts necessary for the execution on a shared memory machine (everything under directory parallel).