AGREEMENT
BETWEEN ECMWF & METEO-FRANCE
FOR THE ACCESS AND USE
OF THE JOINTLY DEVELOPED AND MAINTAINED NWP SOFTWARE
IFS/ARPEGE

As amended by the Council at its 65th session (July 2006)
Entry into force of the Agreement on 19 February 1999

Considering:

- the successful joint project for the development of the IFS/ARPEGE NWP software that has been continuing since 1987,
- the history of the ALADIN project that has been continuing since 1991 and has developed successfully IFS-ARPEGE software integrated limited area versions,
- the history of the HIRLAM project that was initiated in 1985,
- the convergence process of the ALADIN and HIRLAM consortia, including the fact that both consortia share codes based on IFS/ARPEGE NWP software,
- 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 concurrence of ECMWF and Météo-France for the promotion of ECMWF medium- and long- range NWP products,
- the interest of the IFS/ARPEGE partners to benefit from the contributions of the ALADIN and HIRLAM communities on outstanding NWP issues that may be beneficial both to synoptic- and meso-scales weather forecasting,
- the "Rules governing the distribution of ECMWF …… and Software adopted by ECMWF Council at its 51st session (December 1995) and, most recently amended by ECMWF Council at its 82nd session (July 2014),
- Annex 1 as list of those parts of the IFS/ARPEGE software that are recognized as developed mainly by Météo-France and by the ALADIN and HIRLAM partners 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 by ECMWF and judged strategically important by ECMWF,
- Annex 3 as list of those parts of the IFS/ARPEGE software in which third parties have proprietary rights,

- the participation to the decisions of the Council of ECMWF by several partners of the ALADIN and HIRLAM projects which are also Members or Cooperating States 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:

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 HIRLAM and 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.

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 or HIRLAM 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 or HIRLAM projects at the date of signing of this agreement are subject to the ECMWF permission, which will not be

*Algeria, Poland and Tunisia

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.

Article 3

Communications

Communications about access to, maintenance,development and use of IFS/ARPEGE software by ALADIN and HIRLAM partners shall be conducted with and through Météo-France and not directly between those partners and ECMWF.

Article 4

Third Party Code

If either party wishes to introduce code, which contains third party proprietary rights into the IFS/ARPEGE software, it will seek the agreement of the other party; identify the code in Annex 3 and ensure that there are no restrictions on the continuing access to and use of the modified IFS/ARPEGE software by the parties and the ALADIN and HIRLAM partners.

Article 5

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.

Article 6

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.

Article 7

Termination

This agreement can be terminated at any time by written agreement of both parties.

Article 8

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.

For and on behalf of **ECMWF**	For and on behalf of **Météo-France**
Signature ….....	Signature ….....
Name : Florence RABIER	Name : Jean-Marc LACAVE
Position : Director-General	Position : Director-General
Date* : 21/09/2016	Date* : 21/09/2016

* The original version of this agreement was signed for and on behalf of both Parties on 19 February 1999.

ANNEX 1

ANCILLARY PARTS RELATED TO THE VARIABLE-RESOLUTION GLOBAL MODEL GEOMETRY (historically referred to as STRETCHING)

(1) Preparation of model physiographic data (aka configuration '923'): routines listed in the directory "arpifs/c9xx"

(2) Parts of the Full-POS software that are specific to a change of geometry from one ARPEGE configuration to another one, including the TRACARE and TRARECA routines (change of grid with stretching)

(3) Conversion between two ARPEGE variable-resolution geometries in spectral space (TRAGEO software and preparation of the MATDILA, MATCONT matrices)

(4) Parts of the model dynamics and horizontal diffusion that are specific to the variable-resolution geometry (codes conditional to RSTRET>1 or NSTTYP>1)

(5) Semi-implicit scheme option LSIDG=.T.

ALADIN RELATED PARTS

(6) Non hydrostatic code in "arpifs/adiab" under key LNHDYN

(7) Radiative Upper Boundary Condition code (for its part common to ARPEGE and ALADIN

(8) EGGX package in "ifsaux/utilities/eggx.F90" (geometry routines for sub-domain calculations)

DATA ASSIMILATION PARTS

(9) DFI (Digital Filter Initialisation), routines listed in the directory "arpifs/dfi"

(10) CANARI (Optimum Interpolation analysis), routines listed in the directory "arpifs/canari"

(11) Ground-based radar observation operators and codes for monitoring and screening of radar data (reflectivity, Doppler winds): "arpifs/op_obs/reflsim.F90, reflsim_2dop.F90"

GENERAL MODEL PARTS

(12) ARPEGE/ALADIN/ALARO/HIRLAM Physics Packages called below MF_PHYS (in directory "arpifs/phys_dmn")

(13) The code defining the physics/dynamics interface, routine CPTEND_FLEX

(14) ARPEGE regularised (aka simplified) physics for 4D-VAR (in “arpifs/phys_dmn”)

(15) Input/output server (in directory “arpifs/io_serv”) and drivers called from IFS/ARPEGE

ANNEX 2

VARIATIONAL DATA ASSIMILATION

Definition, computation and minimization of the cost-function for 4D-Var (excluding the parts needed by Canari).
Handling of background term and pre-conditioner.

TANGENT-LINEAR AND ADJOINT CODES

The adjoint and tangent-linear versions of the observation operators and of the forecast model.
The parts needed for the direct version of the codes and the subroutines originally written by MF are excluded as well as the software listed in annex 3 (?).

SCREENING OF OBSERVATIONS

Screening of observations developed at ECMWF, excluding the parts needed by Canari.
All subroutines under SCREEN.

ENSEMBLE PREDICTION SYSTEM

The singular vector computations.

ECMWF PHYSICS PACKAGE

Everything under directory phys_ec.

OBSERVATIONAL DATA BASE (ODB)

Everything in the project odb

VARIATIONAL BIAS CORRECTION AND VARIATIONAL QUALITY CONTROL

All subroutines named varbc_xxxx

BLACKLIST SOFTWARE

Everything under project bl

ANNEX 3

RTTOV

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RADIATION (RRTM AND SRTM)

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FFTW (use of)

FFTW is called from IFS in tpm_fftw.F90

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FFTW means Fastest Fourier Transform in the West, Version 3.3, as further described in M.I.T. Case No. *150541,* by Steven G. Johnson and Matteo Frigo, and related documentation created by or on behalf of MIT.

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