ALARO WDs 2016

Welcome

P. Termonia

Happy birthday ALADIN!

MINISTERE DE L'EQUIPEMENT, DU LOGEMENT,
DES TRANSPORTS ET DE LA MER

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Monsieur le Directeur et cher Collègue,

Par cette lettre, la Direction de la Météorologie Nationale souhaite proposer aux services météorologiques des Pays d'Europe Centrale une collaboration dans le domaine de la Prévision Numérique du temps (P.N.). Cette proposition s'inscrit dans une perspective à moyen terme et vise à valoriser et à accroître l'expertise déjà existante dans votre Service ou votre Pays, tout en générant des retombées positives pour nos propres actions. Elle est complémentaire de la distribution RETIM des produits du système français de P.N. EMERAUDE/PERIDOT (bientôt remplacé par le système ARPEGE).

The ALARO CMC of the ALADIN System

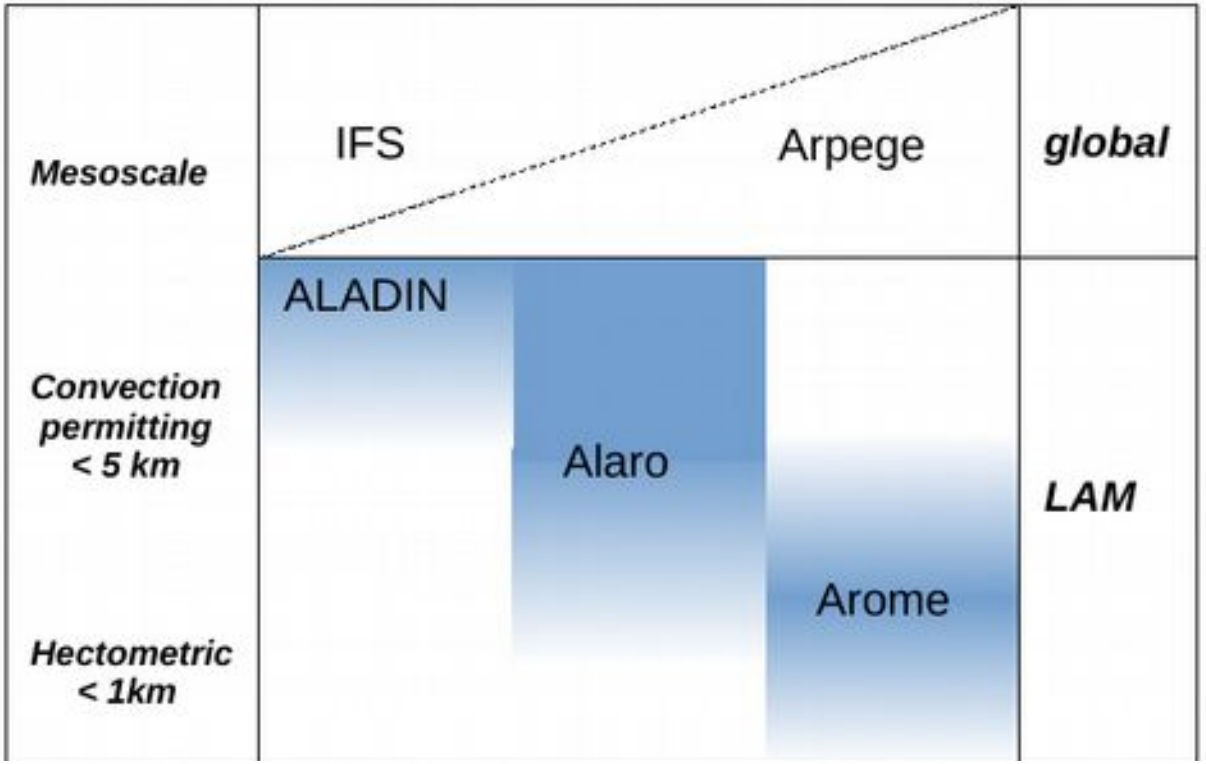

Table 2. The CMC-ALARO configuration

Physics parameterization	scheme	references
Dynamics for dx > 4km	hydrostatic ARPEGE/ALADIN	Temperton et al. (2001), Radnóti et al. (1995)
Dynamics for dx < 4km	non-hydrostatic ALADIN	Bénard et al. (2010)
radiation	ACRANEB2	Mašek et al. (2015), Geleyn et al. (1996)
turbulence	TOUCANS	Ďurán et al. (2014), Marquet and Geleyn (2013)
deep convection	3MT	Gerard et al. (2009)
sedimentation scheme		Geleyn et al. (2008)
physics-dynamics coupling	INTFLEX	Catry et al. (2007), Degrauwe et al. (2016)
LBC scheme	SAST	Davies (1976) Radnóti (1995)
		Termonia et al. (2012), Degrauwe et al. (2012)

Code declination LAM/global
The core of the definition of the **ALADIN System** is the *Architecture*

Table 1. Schematic overview of the time-step organization of the configurations of the ALADIN System and its declination choices with respect to the global ARPEGE model.

numerical task	declination options LAM/global
1. computation of the horizontal derivative (vorticity, divergence)	
2. inverse spectral transform: spectral to gridpoint	bi-FFT^{-1} Legendre, FFT
3. compute physics contributions (in the arrival points)	AROME physics ALARO physics
4. update the tendencies	INTFLEX
5. semi-Lagrangian computations	SLHD
6. compute the explicit part of the dynamics	IFS/ARPEGE/ALADIN hydrostatic ALADIN-NH
7. add all tendencies	
8. lateral boundary coupling	bi-periodic LBC conditions
9. direct spectral transforms	bi-FFT Legendre, FFT
10. solve the Helmholtz equation	IFS/ARPEGE/ALADIN Hydrostatc ALADIN NH

Most of the above-described features are embedded in the common code with the global ARPEGE model. Three features differentiate the ALADIN System configurations from its global counter part: (i) the choice of the bi-Fourier spectral transform instead of the spherical spectral transforms (steps 1, 2, 9 in table I) and a formulation of the Helmholtz equation in term of the proper operators and
150 map factors (step 10), (ii) the lateral-boundary conditions (LBCs) (step 8 in table I) and (iii) the physics packages which are adapted in step 3 in table I, for an application at the high-resolutions targetting the convection-permitting scales, as shown in Fig. I.

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Generalization and application of the flux-conservative thermodynamic equations in the AROME model of the ALADIN system

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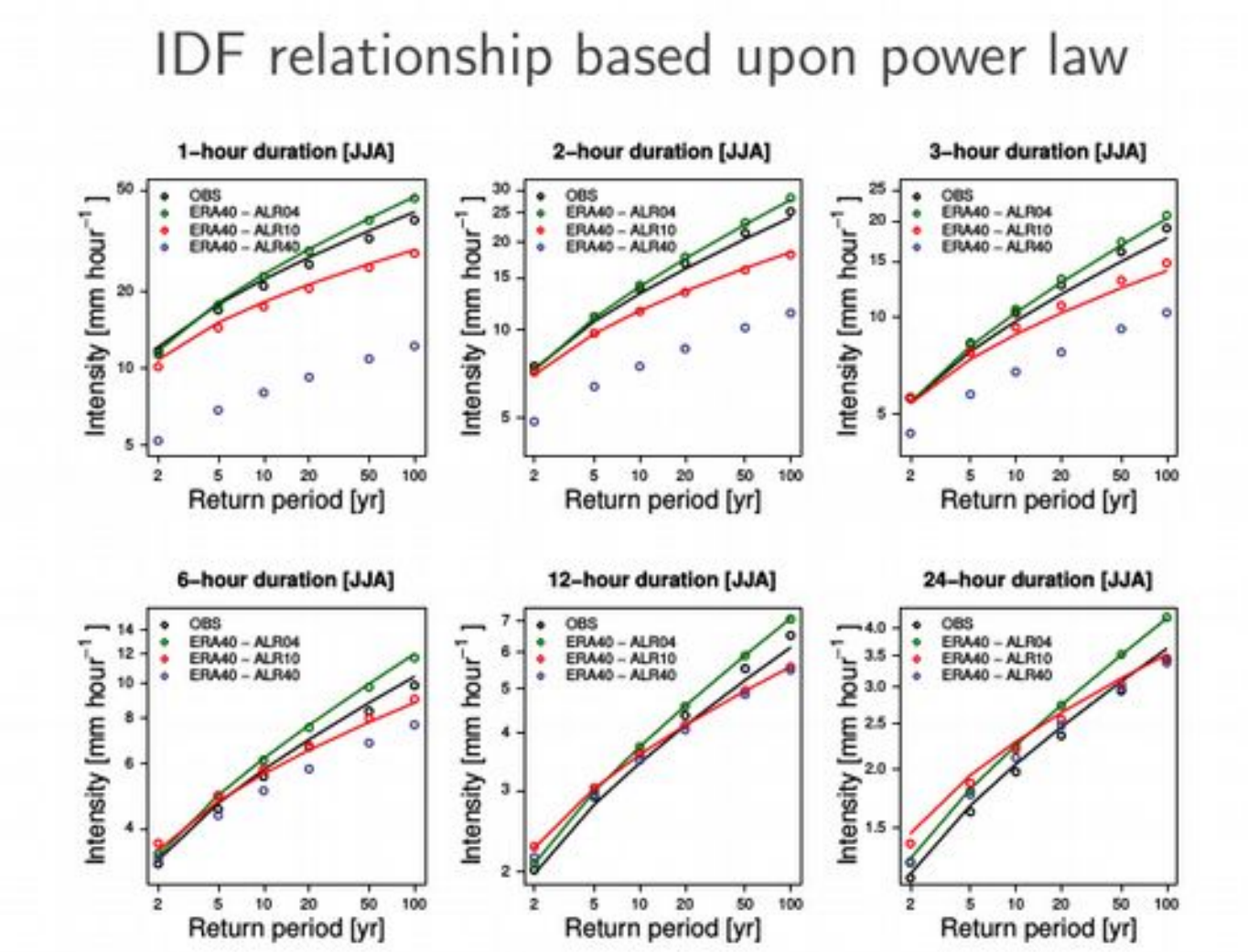
Not only NWP



PhD Rozemien

Enjoy your stay in Brussels!