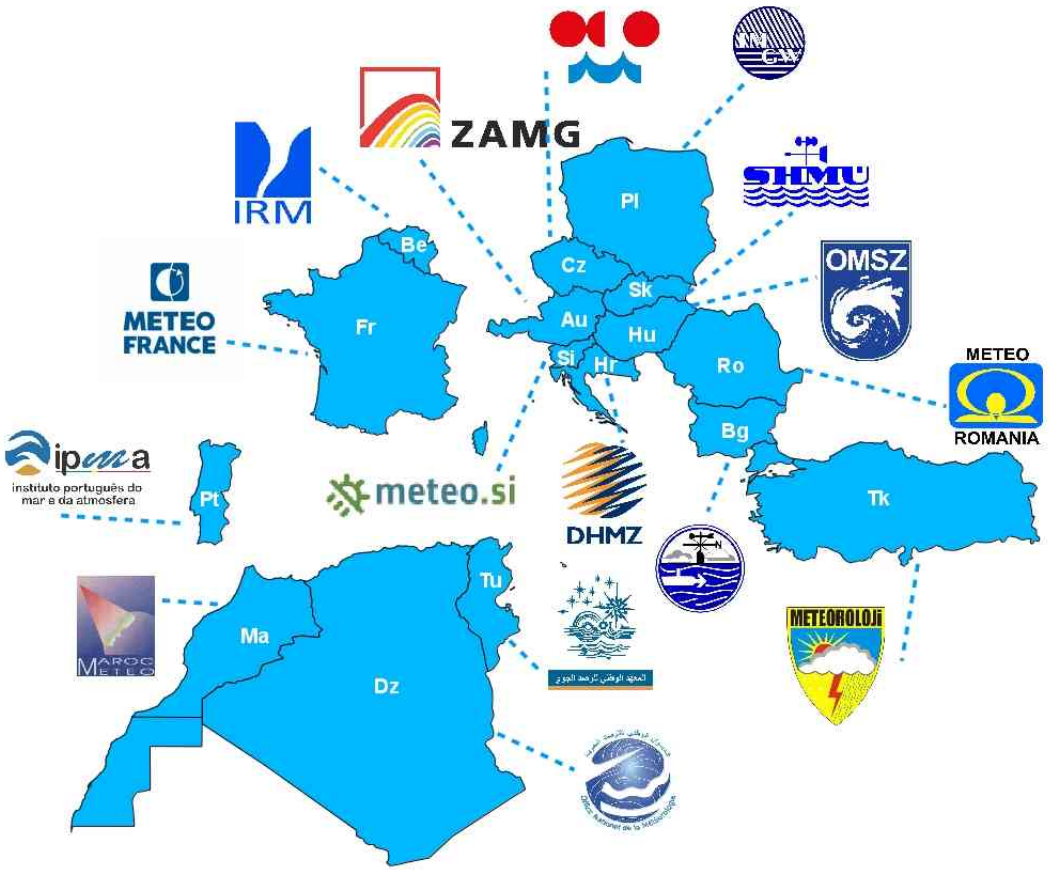
ALADIN status overview

http://www.umr-cnrm.fr/aladin/

EWGLAM 2019, Sofia, Bulgaria

ALADIN Consortium



ALADIN Consortium

General Assembly (GA)

supreme governing body of the ALADIN Consortium

Chairperson : Martin Benko (Sk)

Vice-Chairperson : Anne Debar (Fr)

Director of each of the Members (Dz, At, Be, Bg, Hr, Cz, Fr, Hu, Ma, Pl, Pt, Ro, Sk, Si, Tn, Tr)

Observers from HIRLAM and ECMWF

Program Manager (PM)

main executive officer of the ALADIN Consortium

Piet Termonia (Be)

« Bureau »

GA chairperson, PAC chairperson, CSSI chairperson, PM

Policy Advisory Committee (PAC)

advisory body

Chairperson : Daniel Gellens (Be)

Vice-Chairperson : Radmila Brozkova (Cz)

2 MF Members :

- Philippe Bougeault (Fr)
- Alain Joly (Fr)

(subst. Gwenaëlle Hello)

2 RC-LACE Members :

- Branka Ivancan-Picek (Hr)
- Jure Celdinik (Si)

(subst. Simona Tascu (Ro))

2 Flat-rate Members :

- Mohamed Mokhtari (Dz)
- Maria Monteiro (Pt)

(subst. ???)

Observers :

- LACE Project Manager
- Chairperson of CSSI
- Chairperson of HIRLAM Advisory Committee

Programme Team

Local Team Managers

Dz : Mohamed Mokhtari
At : Christoph Wittmann
Be : Alex Deckmyn
Bg : Boryana Tsenova
Hr : Alica Bajic
Cz : Radmila Brozkova
Fr : Claude Fischer
Hu : Mihaly Szucz
Ma : Hassan Haddouch
Pl : Bogdan Bochenek
Pt : Maria Monteiro
Ro : Simona Tascu
Sk : Jozef Vivoda
Si : Neva Pristov
Tn : Wafa Khalfaoui
Tr : Alper Güser

Project Team

all manpower committed by Members and acceding Members

Committee for Scientific and System/maintenance Issues (CSSI)
Chairperson : **Claude Fischer** (Fr)

ALADIN Code Architect (CA) : Daan Degrauwe
ALADIN Coordinator for Networking Activities (ACNA) : Maria Derkova
ALADIN DA coordinator (DA coord) : Maria Monteiro
Data assimilation : Claude Fischer
Dynamics and LBC coupling : Ludovic Auger
System aspects : Ryad El Khatib
Observations and Monitoring : Alena Trojakova
Physics : Daan Degrauwe
Predictability and LAM EPS : Clemens Wastl
Surface : Jean-François Mahfouf
Verification : Christoph Zingerle

Support Team

Consortium level cooperation support (LACE) :
Martina Tudor

Consortium level cooperation support (MF) :
Claude Fischer

Information officer :
Maria Derkova

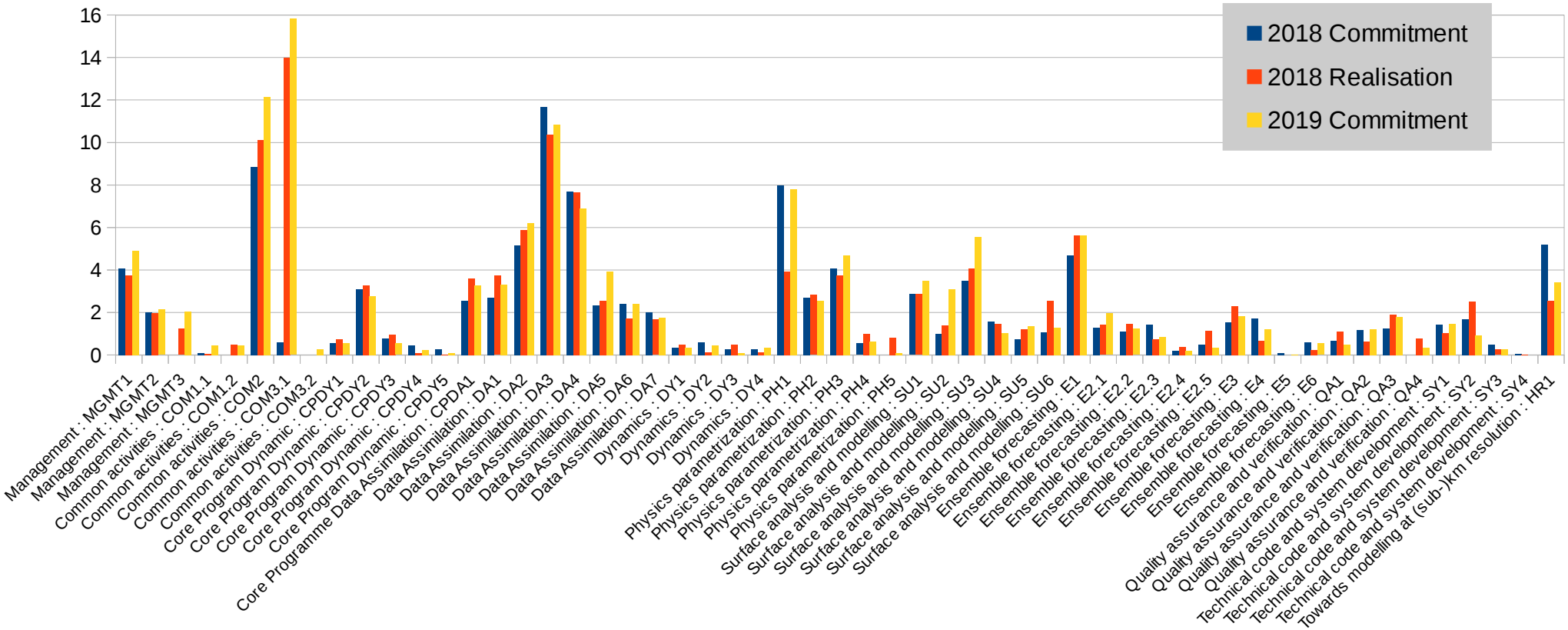
Administration and PM assistance : Patricia Pottier

CNRM/GMAP, Patricia Pottier on Feb 4, 2019

What we promised and what we actually did ...

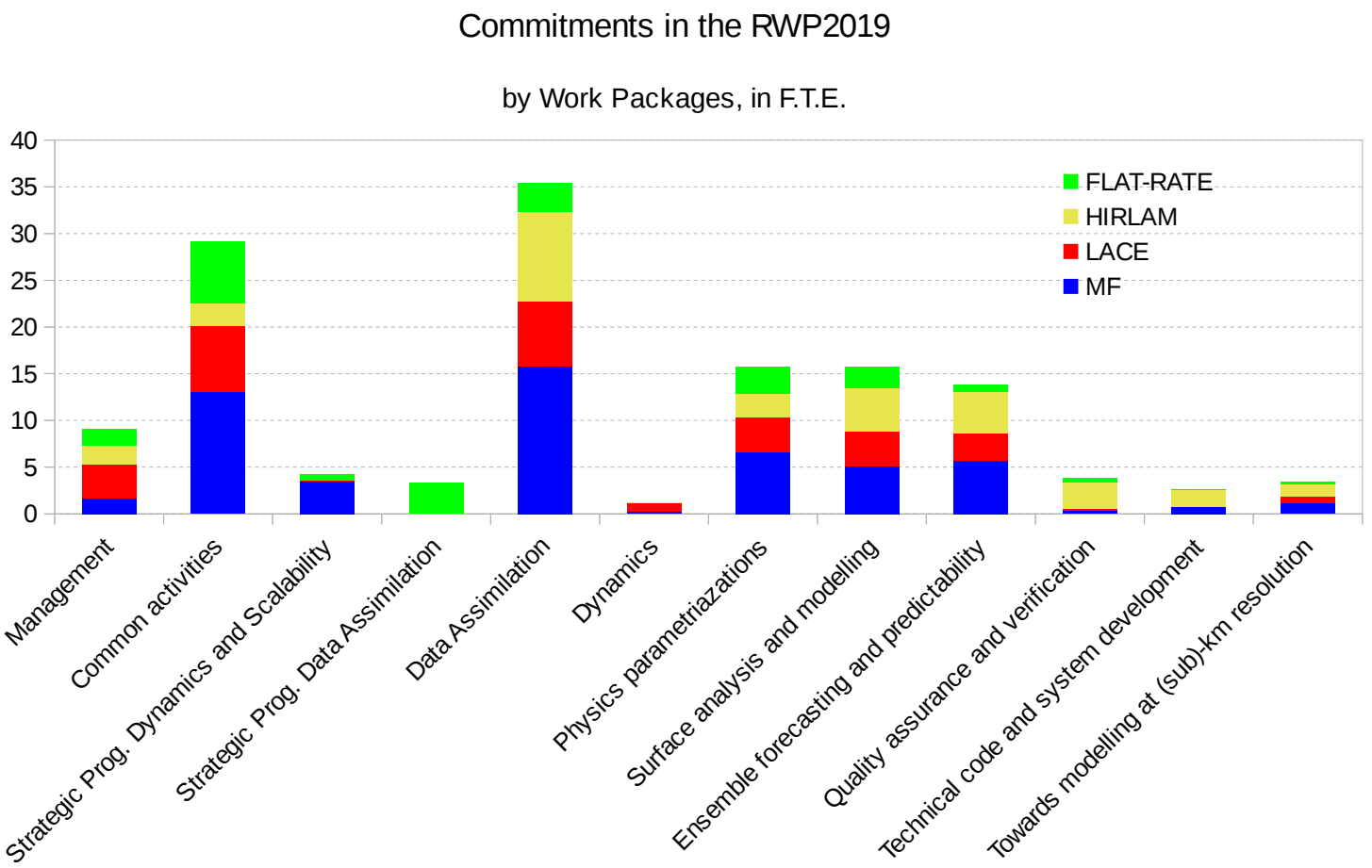
Manpower (in F.T.E.) in 2018 & 2019 RWP Work Packages

Committed in RWP2018, Reported in manpower DB in 2018, Committed in RWP2019

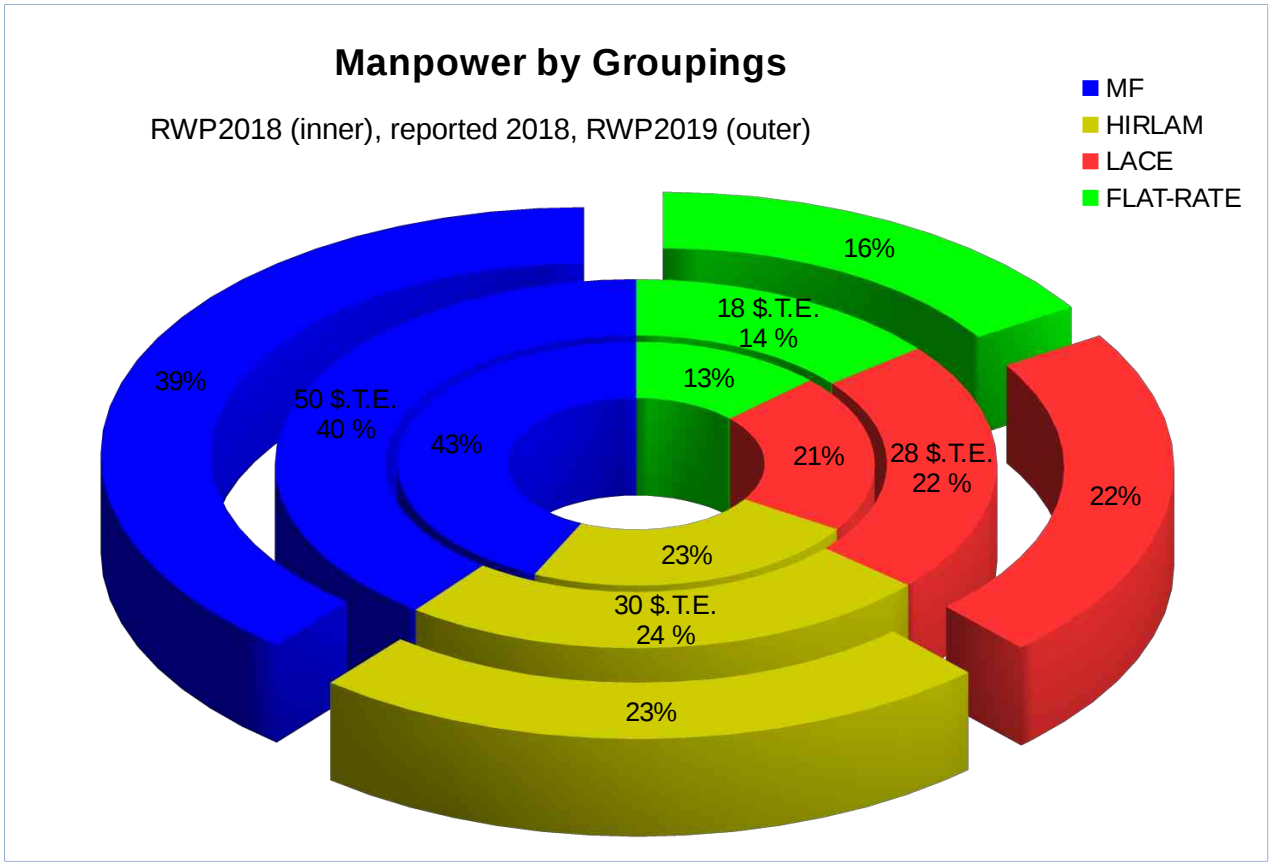


Courtesy Patricia Pottier

RWP2019


Commitments in the RWP2019
by Work Packages, in F.T.E.
40
35
30
25
20
15
10
5
0
FLAT-RATE
HIRLAM
LACE
MF
Management
Common activities
Strategic Prog. Dynamics and Scalability
Strategic Prog. Data Assimilation
Data Assimilation
Dynamics
Physics parametriazations
Surface analysis and modelling
Ensemble forecasting and predictability
Quality assurance and verification
Technical code and system development
Towards modelling at (sub)-km resolution

And per family



Courtesy Patricia Pottier

CPDY:dynamical core developments

- ALADIN dynamics currently use a constant-coefficient semi-implicit spectral Helmholtz solver
- To address scalability and steep slopes, an alternative, non-spectral iterative Helmholtz solver is considered
- Multigrid preconditioning largely improves convergence speed
- Thanks to LAM geometry and constant-coefficient formulation, convergence speed is known beforehand ⇒ Important for operational use
- Weak scalability test with ~50'000 cores shows superior scalability w.r.t. spectral solver

Manpower (in F.T.E.) in 2018 & 2019 RWP Work Packages

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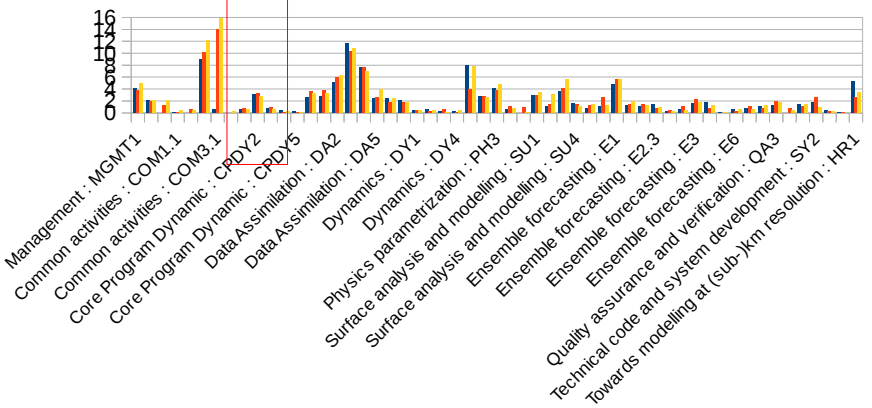
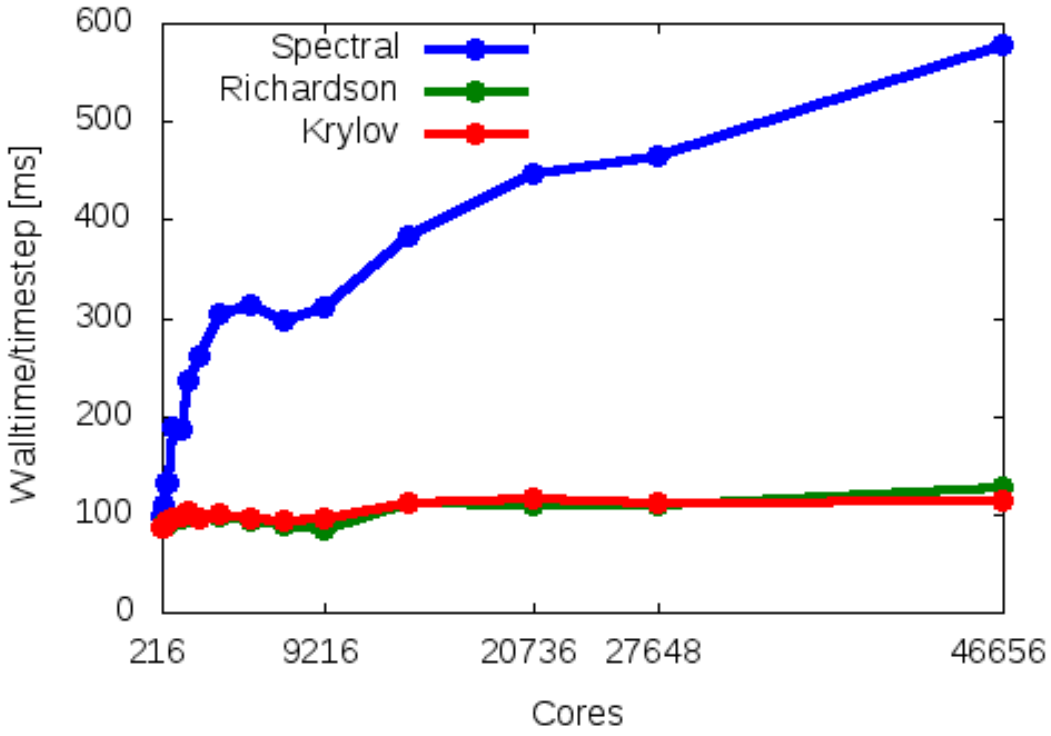
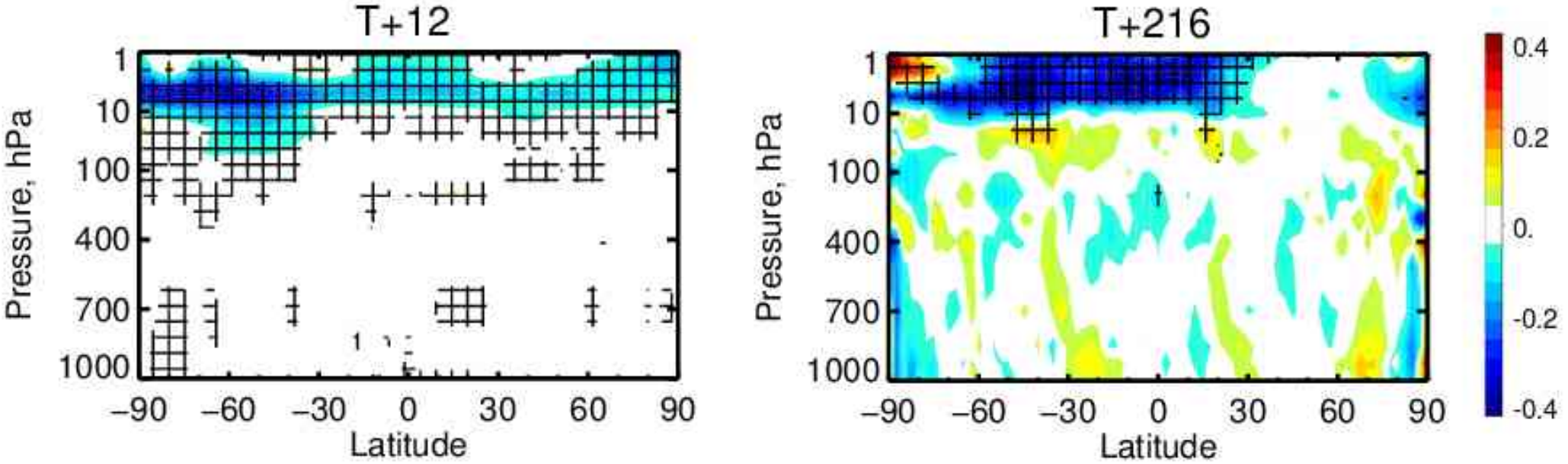




- NH dynamics as a departure from HPE [Jozef Vivoda]
- VFE new formulation for HPE [Jozef Vivoda]
  - VFE implemented in hydrostatic IFS in 2002 (Untch and Hortal)
  - extension of VFE to NH dynamics in 2013 (Vivoda and Smolíková) with new formulation of vertical integral and derivative operators with prescribed boundary conditions
  - in hydrostatic dynamics only vertical integral is needed
  - the new formulation of vertical integral together with a revised definition of explicit vertical coordinate may be beneficial for hydrostatic IFS, implemented in 2019

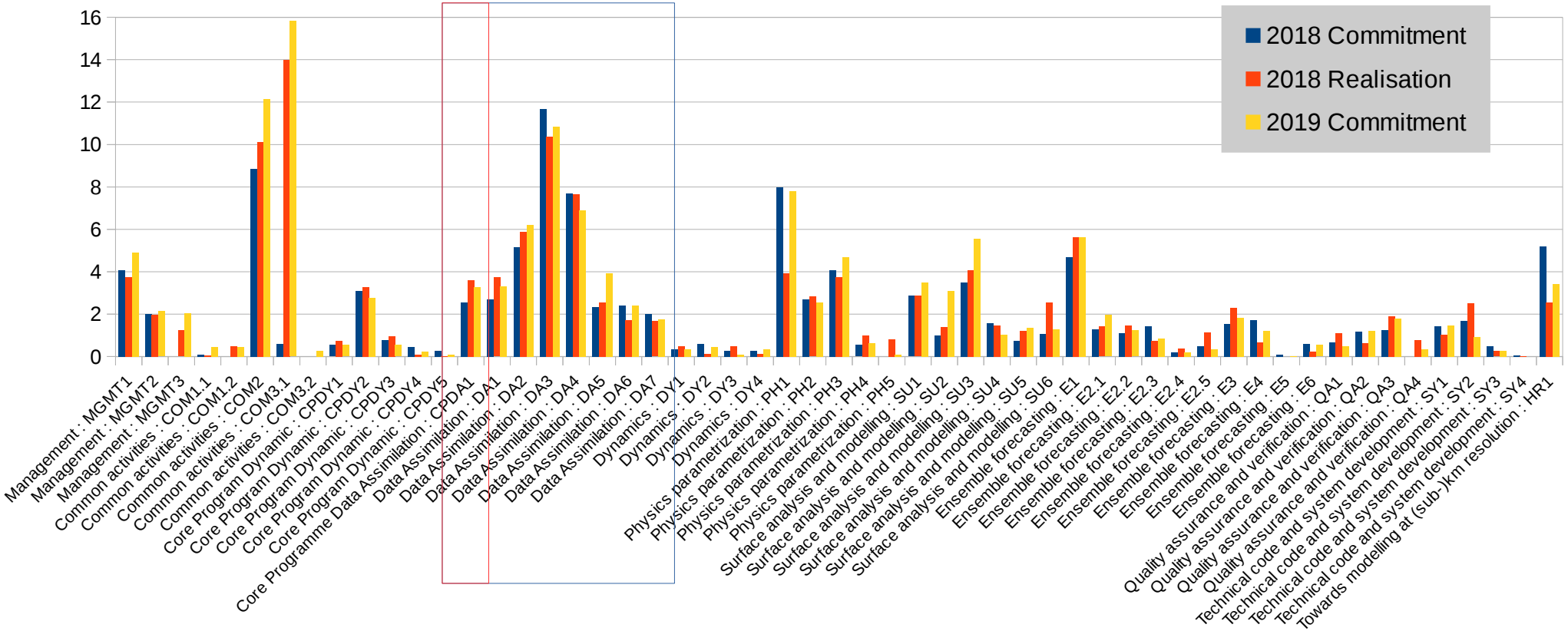


RMSE for T in IFS, Nov 2018 - Feb 2019, Tco1279: new VFE compared to the reference VFE. [**improved**, **deteriorated**, **++ statistically signif.**]

What we promised and what we actually did ...

Manpower (in F.T.E.) in 2018 & 2019 RWP Work Packages

Committed in RWP2018, Reported in manpower DB in 2018, Committed in RWP2019



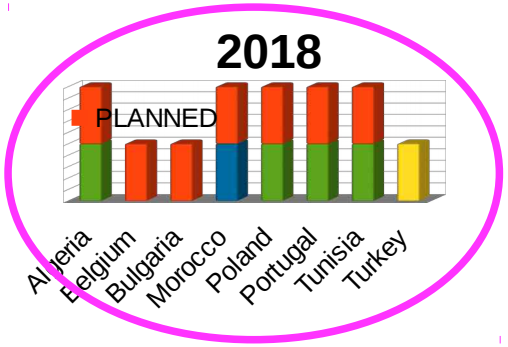
Courtesy Patricia Pottier

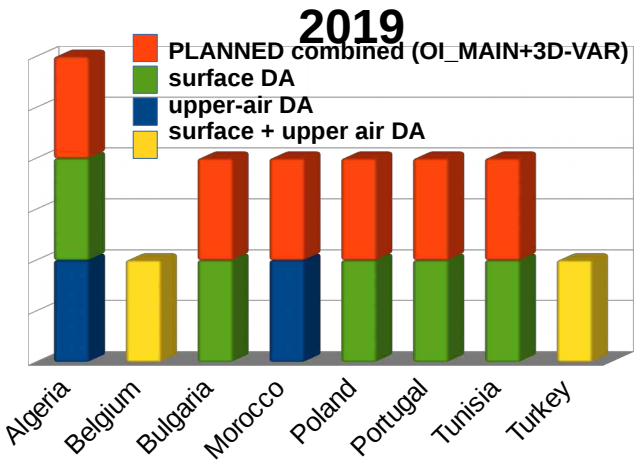
DA status in RC LACE

DA	AT ALARO	AT AROME	CR ALARO	CZ ALARO	HU ALARO	HU AROME	SK ALARO	SI ALARO	RO ALARO (preoper.)
Resol.	4.8L60	2.5L90	4L73	2.3L87	8L49	2.5L60	4.5L63	4.4L87	6.5L60
Cycle	40t1	40t1	38t1	43t2_bf8	38t1_bf3	38t1_bf3	40t1	40t1	40t1
LBC	IFS 3h (lag.)	IFS 1h (lag.)	IFS 3h (lag.)	ARP 3h	IFS 3h (lag.)	IFS 1h (lag.)	ARP 3h	IFS 1h/ 3h (lag.)	ARP 3h
Method	OI + dyn. adapt	OI_main MESCAN + 3DVar	OI + 3DVar	OI +BlendVar	OI + 3D-Var	OI_main + 3D-Var	OI + DF Blending	OI + 3D-Var	OI + 3D-Var
Cycling	6h	3h	6h	6h	6h	3h	6h	3h	6h
B-matrix	-	Downscaled LAEF	NMC	Downscaled AEARP	ALARO EDA	AROME EDA	-	Downsc. ECMWF	Downsc. AEARP
Initial.	DFI	No (SCC)	No (SCC)	IDFI in prod., SCC			No	No (SCC)	No (SCC)
Special / new observ.	Add. snow melt.	Snowgrid +SAT snow init.	Mode-S MRAR	Mode-S MRAR Mode-S EHSM		GNSS ZTD		HRW, IASI, ASCAT, Mode-S EHS	

Situation last Spring (ALADIN workshop)

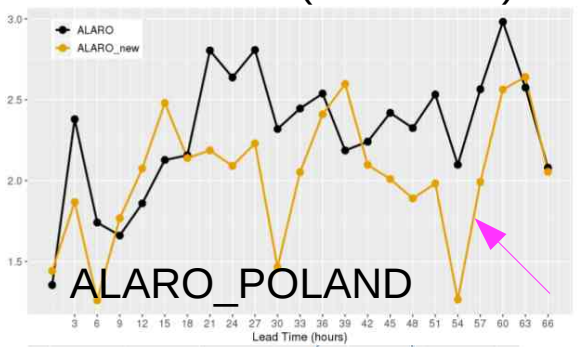
Data Assimilation Strategic Core Program (DAsKIT)

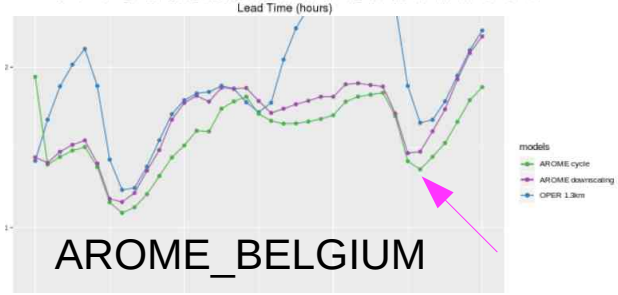




DAsKIT WD, Prague 18-20 Sep

RMSE – T2M (SUMMER)





OUTCOMES

. 8/8 countries have capacity to cycle surface DA
using WMO BUFR SYNOP, TEMP, E-AMDAR
(Giard & Bazile, 2000 for AROME; Taillefeur, 2002 for ALARO)

. 4/8 started validation of their surface DA cycling

. results are promising: surface DA has shown a clear impact over T2M and H2m

PLANS

. tuning and joint validation of a basic surface DA set (CY40T1)

. step by step move to a combined solution of surface+3D-Var DA (CY43T2)

. regular reports at http://www.umr-cnrm.fr/aladin/spip.php?rubrique74

Thank you for your attention!