

Recent changes in AROME :

- 1) Fireworks
- 2) SBL diagnostics
- 3) Rain distribution



New setup of horizontal diffusion in AROME (diffusion is reduced)

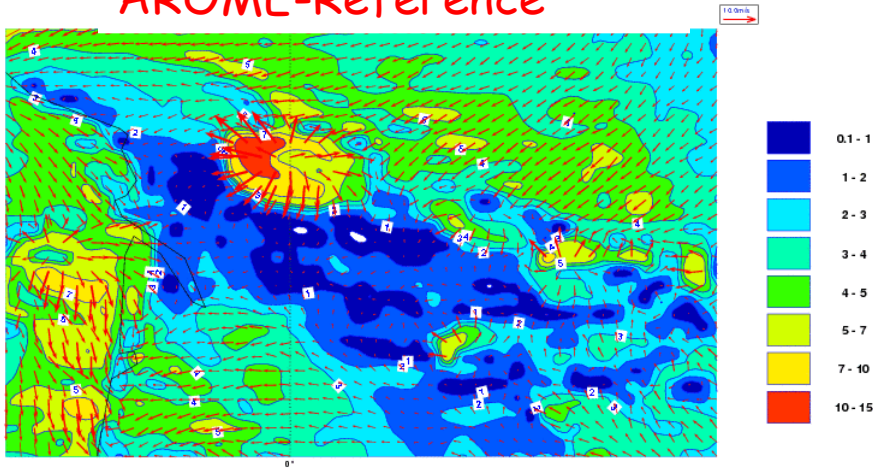
- Based on MesoNH coefficients

	T	D	Vor	dP(NH)	d4 (NH)	
AROME NH	5	1	5	5	1	(old setup)
AROME NH	20	20	20	200000	20	(new setup)
AROME H	20	20	20	X	X	(nouveau setup)

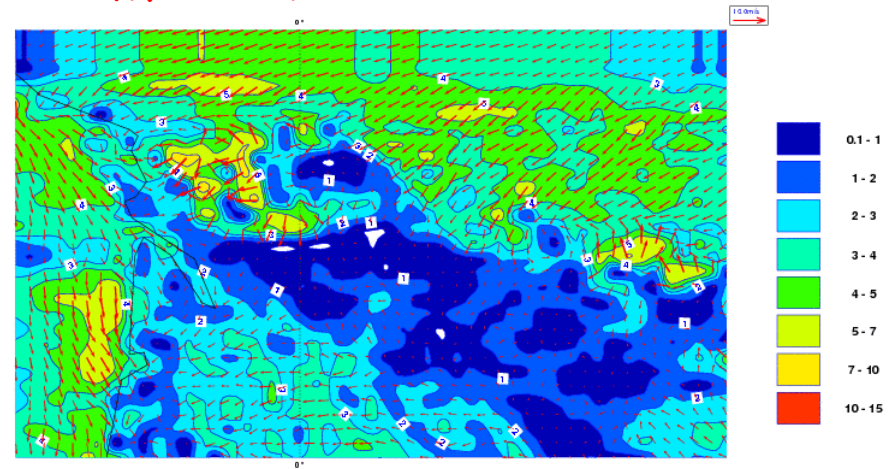


04-11-2007 (Wind L41 at 15TU)

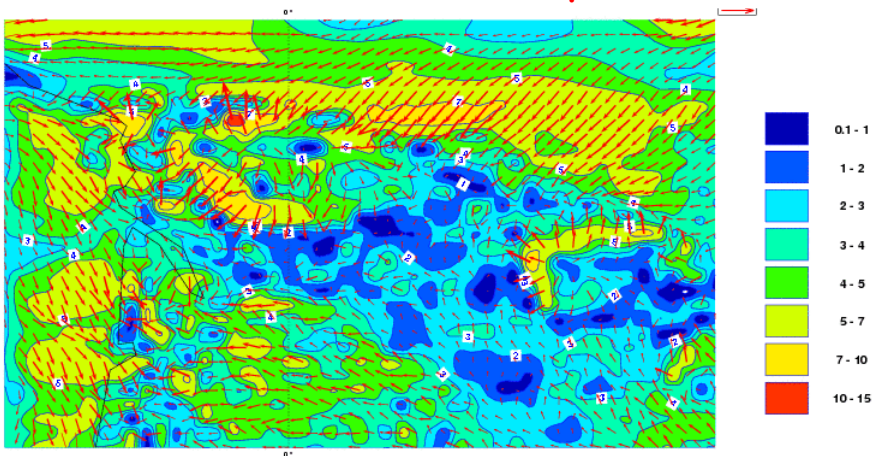
AROME-Reference



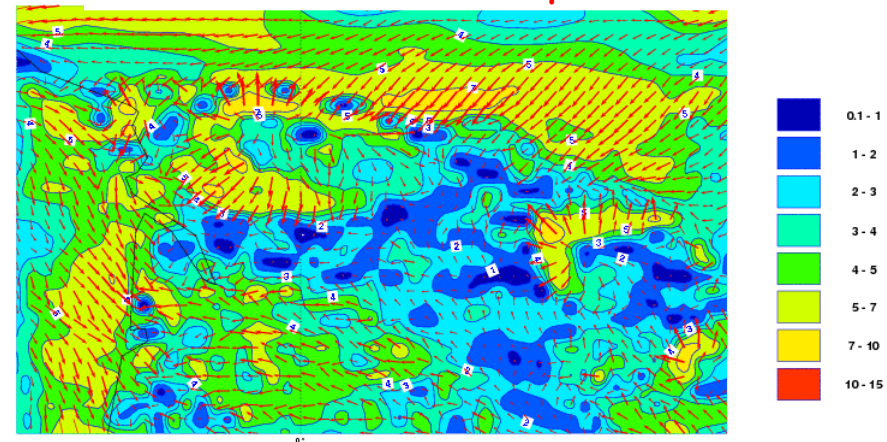
Meso-NH



AROME-NH new setup

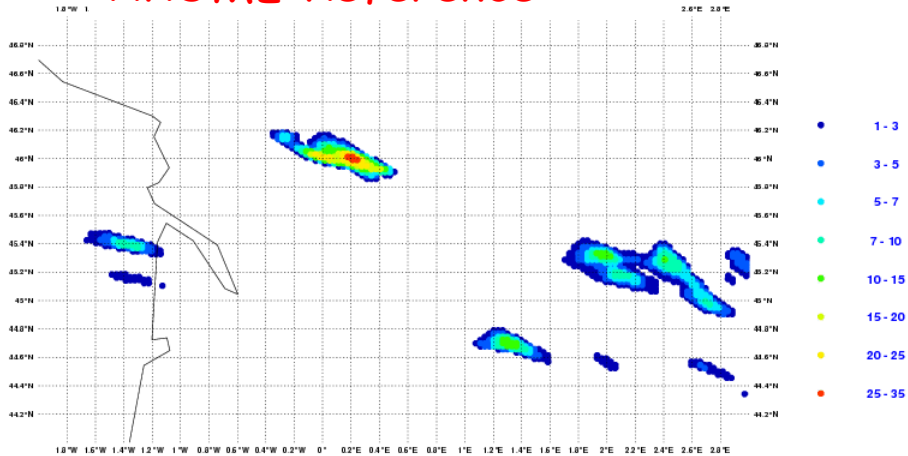


AROME-H new setup

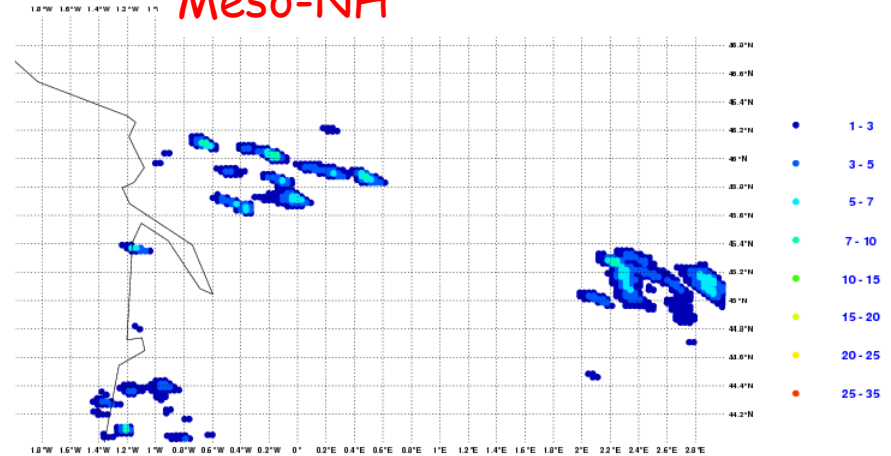


04-11-2007 (Cumulated rainfalls at 15TU)

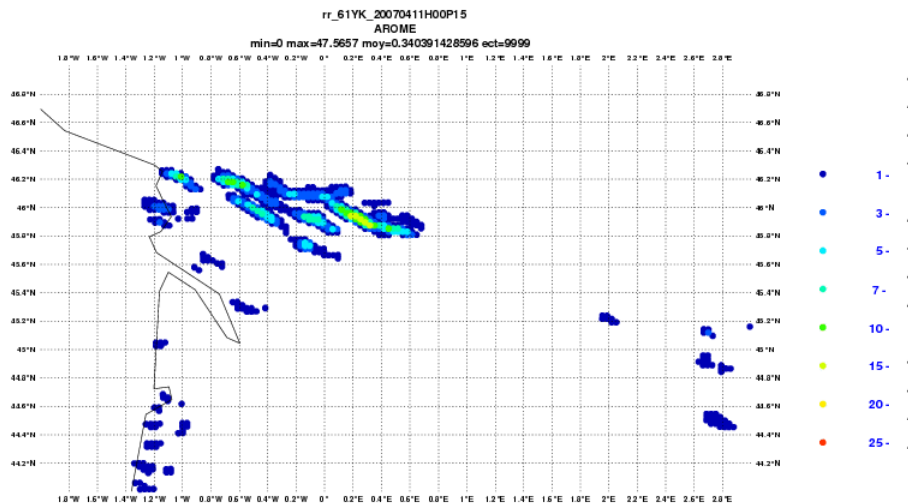
AROME-Reference



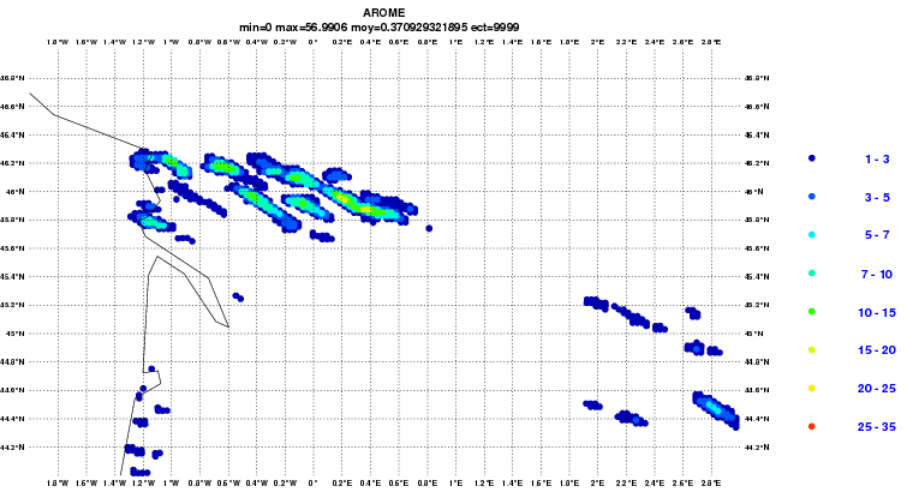
Meso-NH



AROME-NH new setup



AROME-H new setup

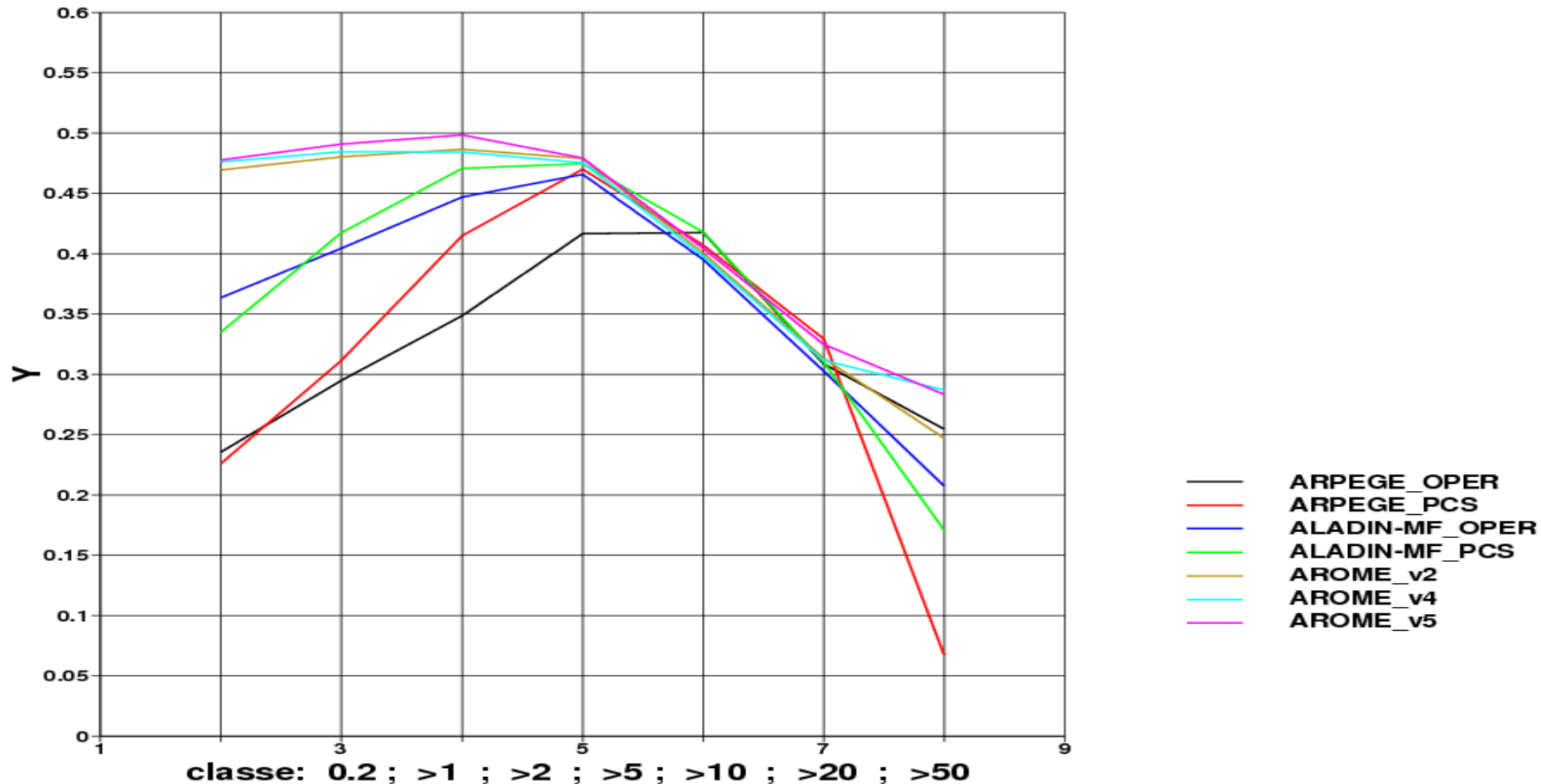


Precipitation scores

August 2005 over Austria :

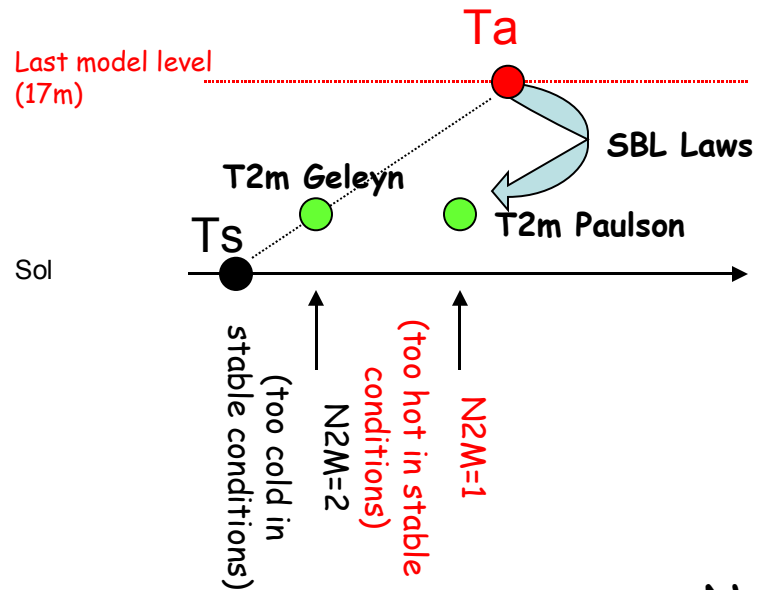
Equitable Threat Score (20km grid and 24h rain)

August2005

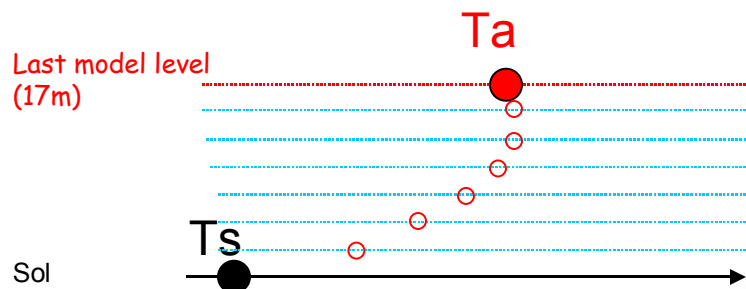


SBL diagnostics

Previously :



Now : SBL (CANOPY) V. Masson

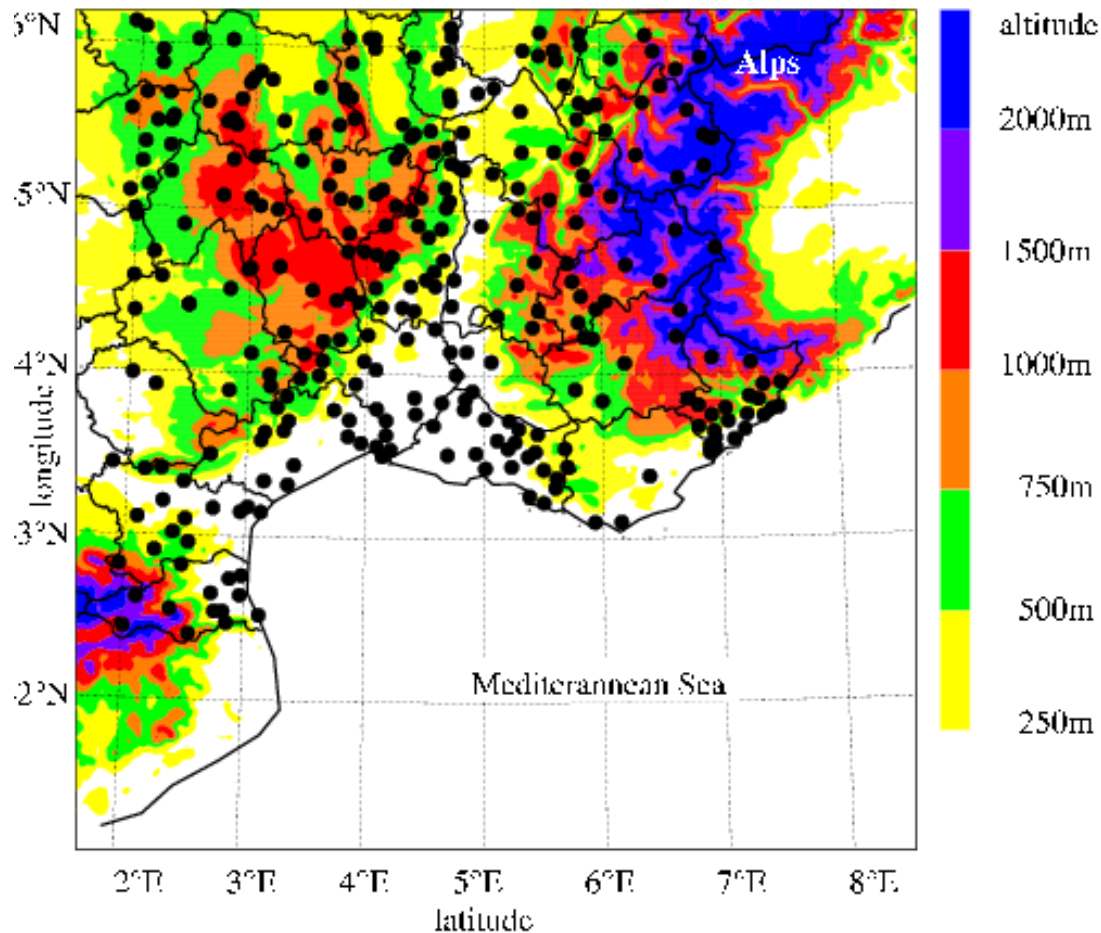


6 vertical levels added
in SURFEX + use a
turbulence scheme



METEO FRANCE
Toujours un temps d'avance

Evaluation of CANOPY in AROME



Domain SUDE :

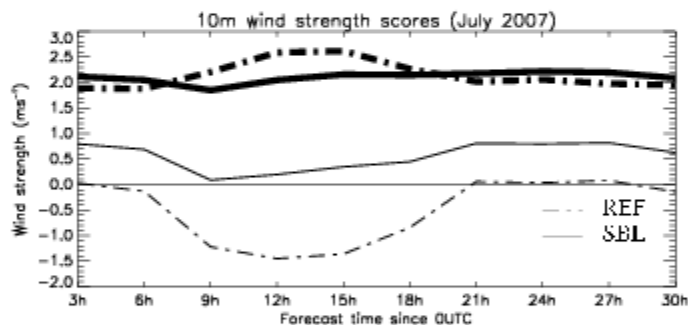
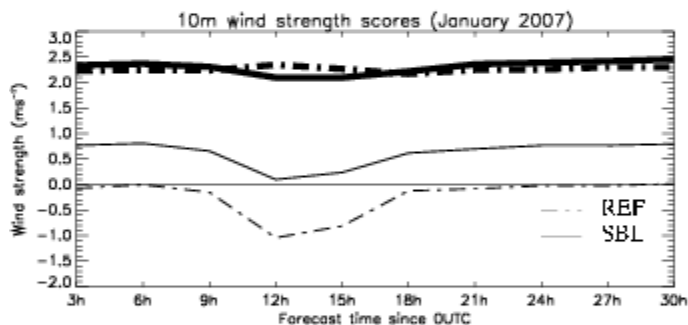
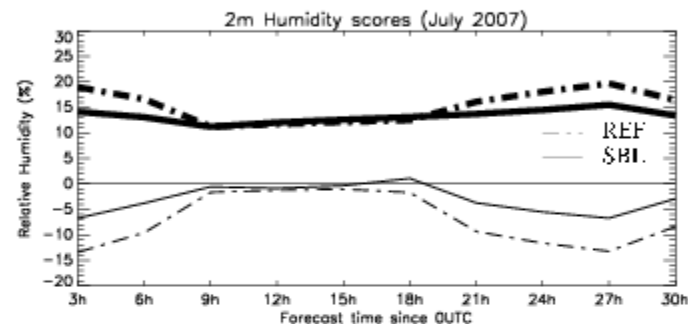
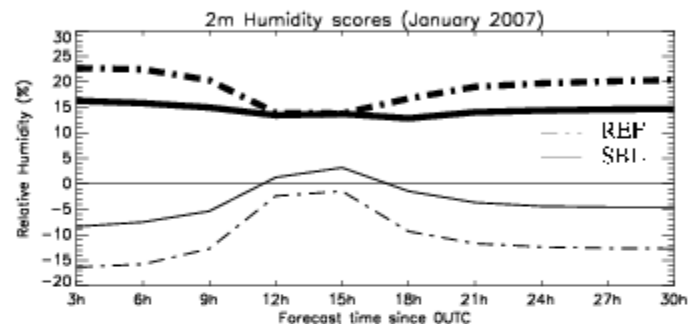
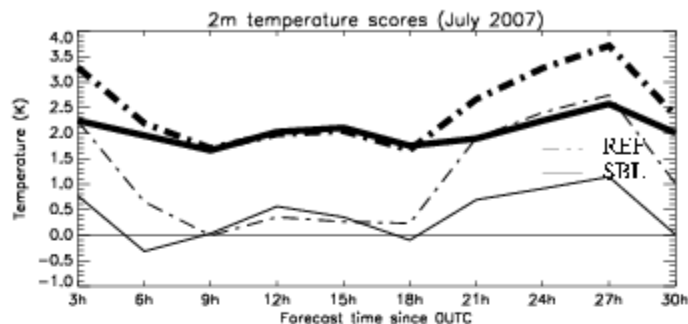
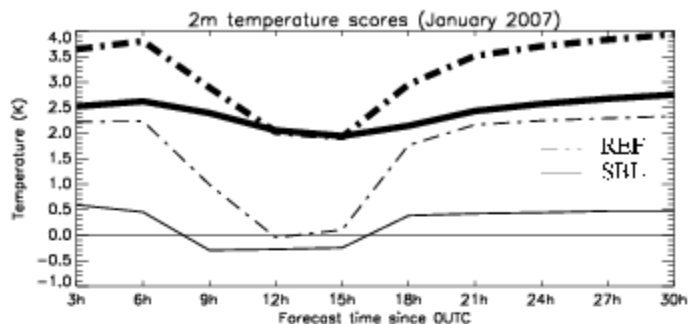
352 stations
SYNOP+RADOME

Scores on July and
January 2007

Evaluation de CANOPY dans AROME

January 2007

July 2007

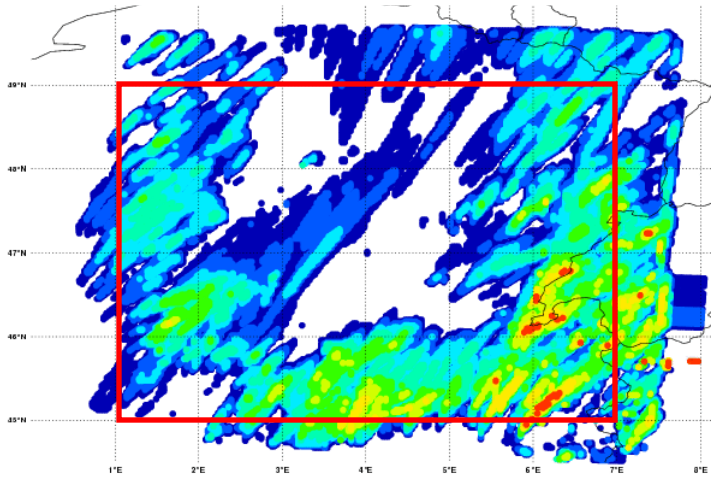


REF : diag
type
Surfex2

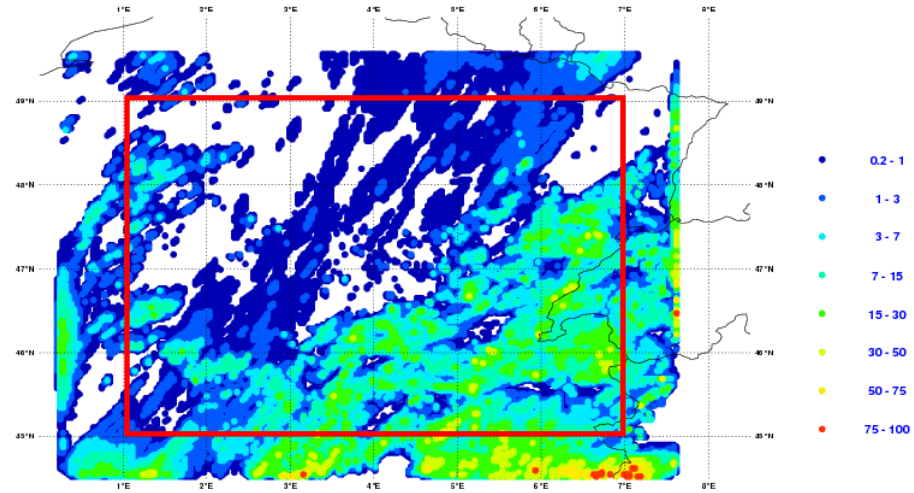
SBL :
Canopy
surfex3

06-20-2007 (RR 24h)

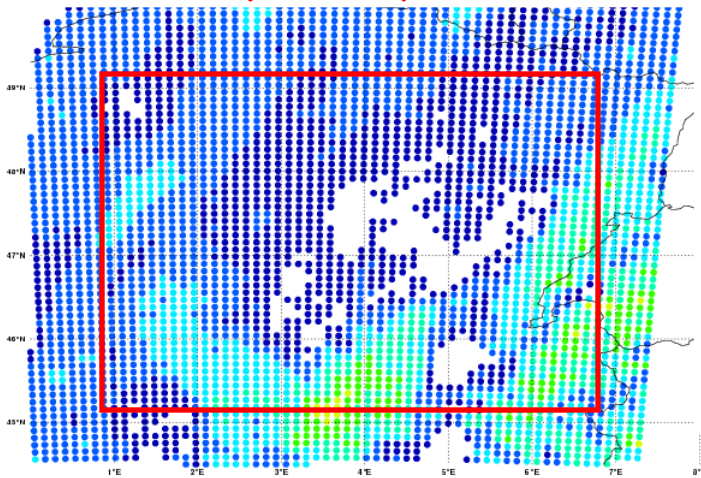
AROME-NH (dt=60s) moy=4.47



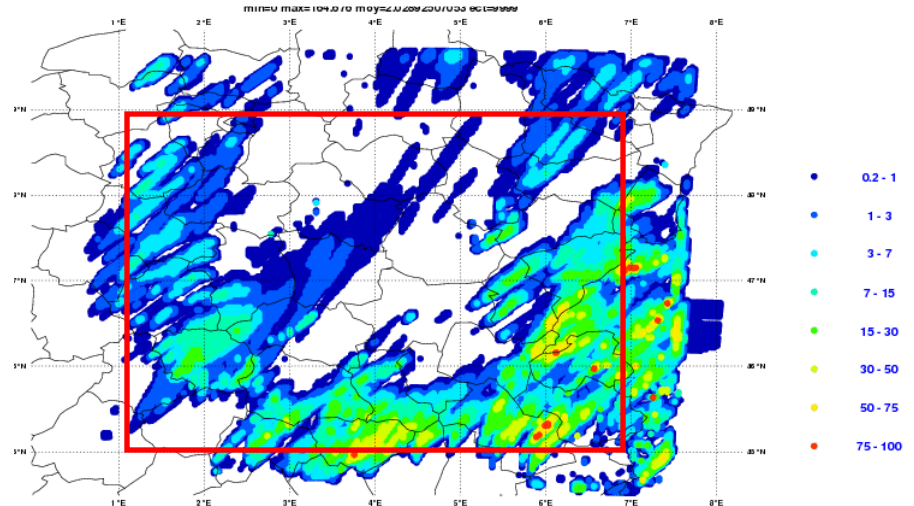
Meso-NH moy=2.40



ALADIN oper moy=3.31



AROME-NH (SLHD-QCRISG) moy=2.77



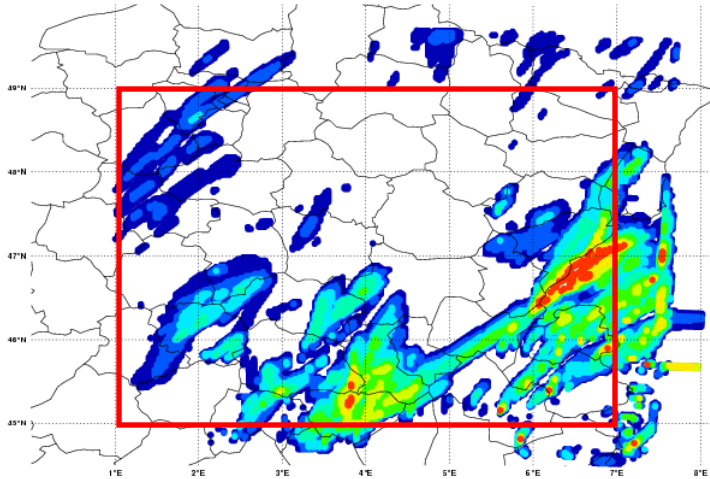
- 0.2 - 1
- 1 - 3
- 3 - 7
- 7 - 15
- 15 - 30
- 30 - 50
- 50 - 75
- 75 - 100

- 0.2 - 1
- 1 - 3
- 3 - 7
- 7 - 15
- 15 - 30
- 30 - 50
- 50 - 75
- 75 - 100

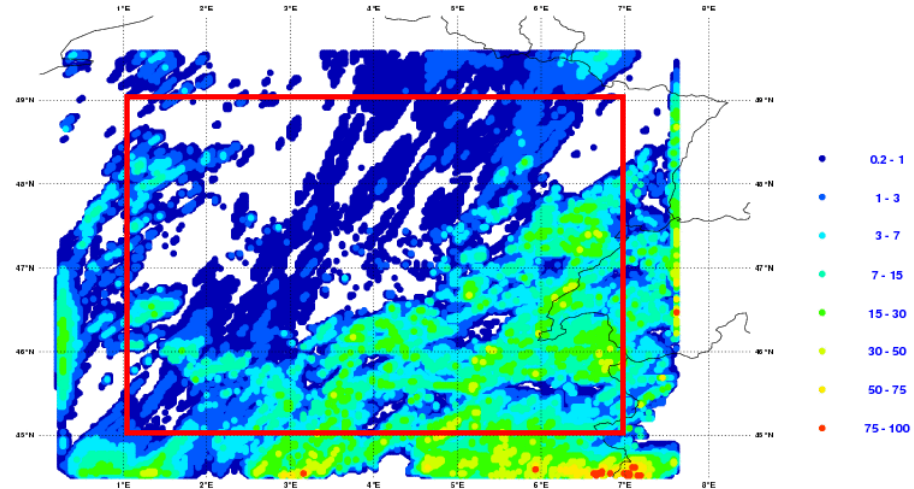
SLHD on qc,qr,qi,qs,qg gives more realistic amounts of rainfalls

06-20-2007 (RR 24h)

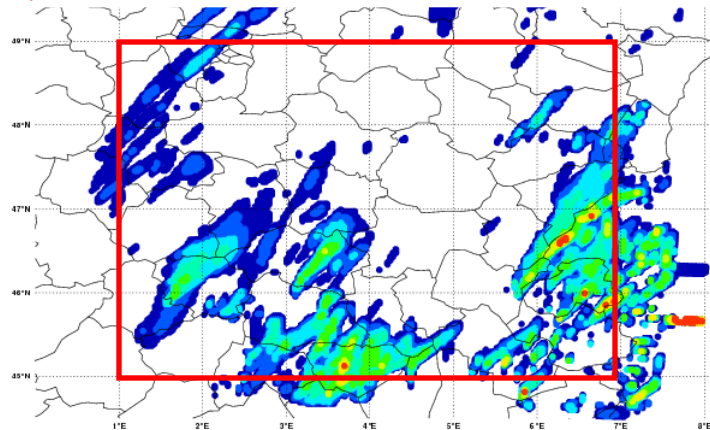
AROME (SLHD-QVCRISG) moy=3.05



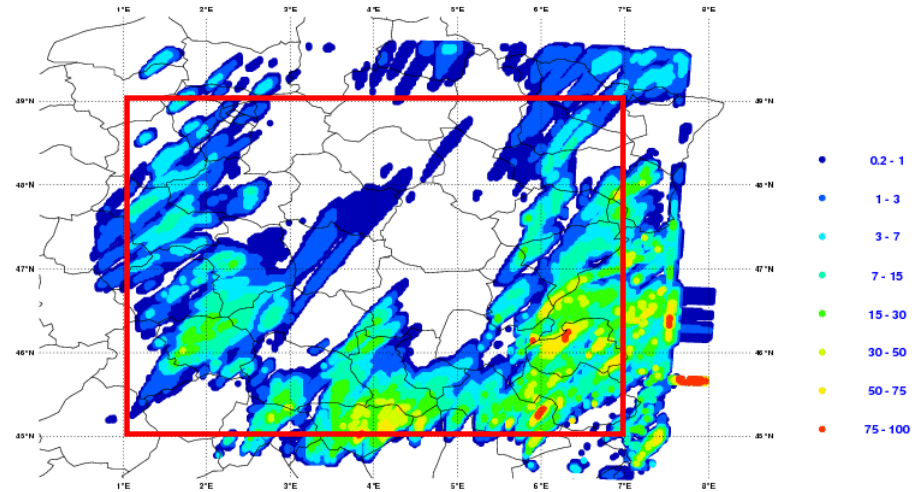
Meso-NH moy=2.40



AROME(SLHD qv if qc or qi > 1E-6, qcrisg moy=1.04

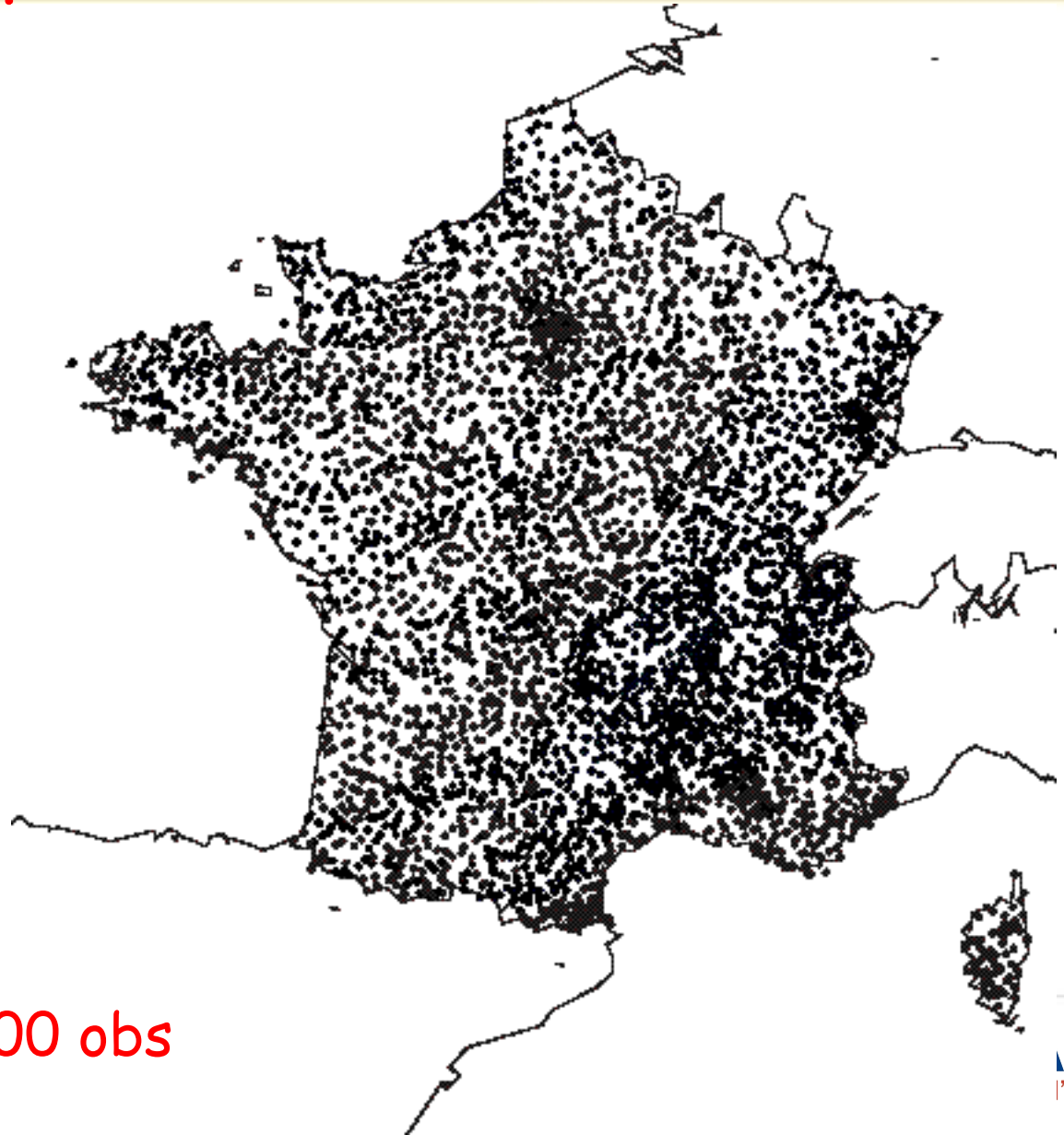


AROME (SLHD-QCRISG) moy=2.44



Activating SLHD on qv if qc or qi > 1E-6 gives bad results (light rain disappears)

Scores RR24 over France (FC30-FC6) : Impact of SLHD and EDKF



Obs RR 24 : 4000 obs

Scores FRAN June 2007

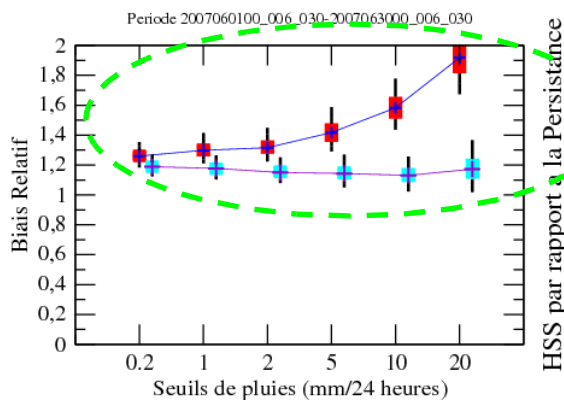
Reference : 62SR

test : SLHD crigs (62UB)

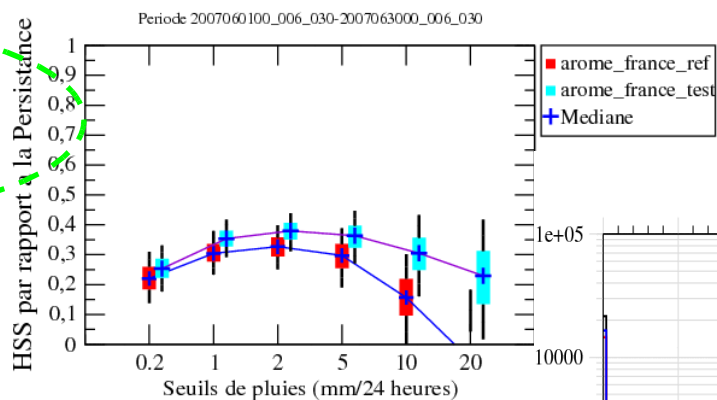
Strong impact on scores, especially for heavy rains

Experience: 62SR_62UB

Biais relatif arome_france_ref et arome_france_test

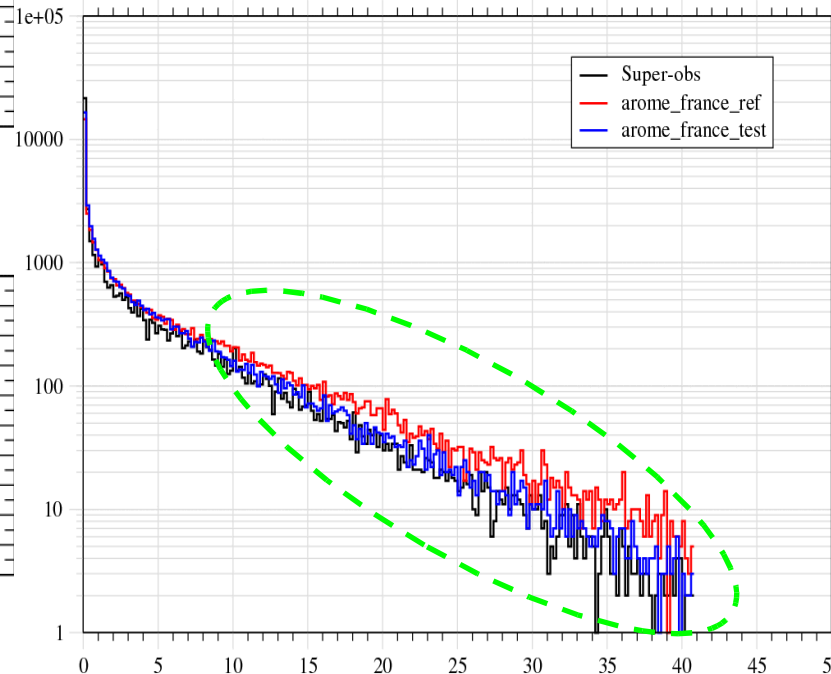


HSS arome_france_ref et arome_france_test

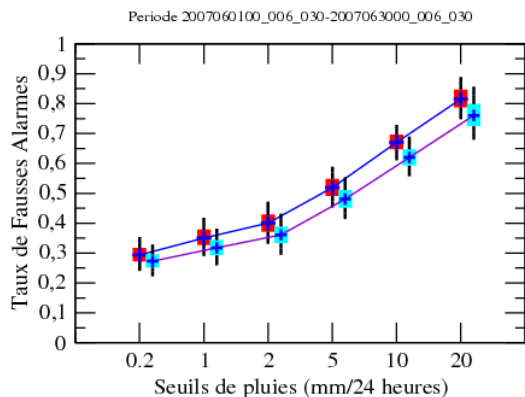


Nombre de valeurs par seuil de 0.2 mm/j

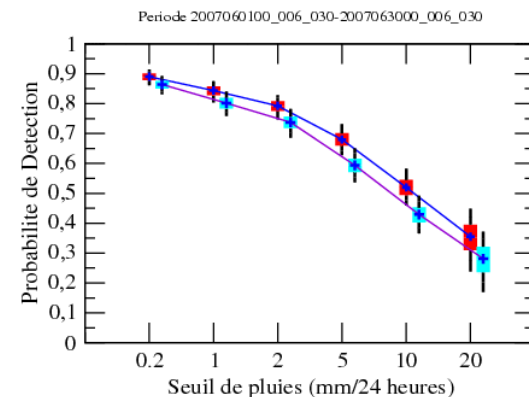
sur la periode 2007060100_2007063000.dat



FAR arome_france_ref et arome_france_test



POD arome_france_ref et arome_france_test



Scores Synops + RADOME, FRAN, Juin 2007

Ps

SLHD / Ref

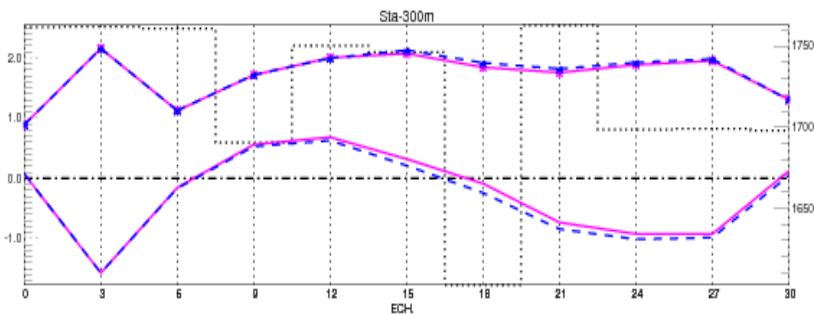
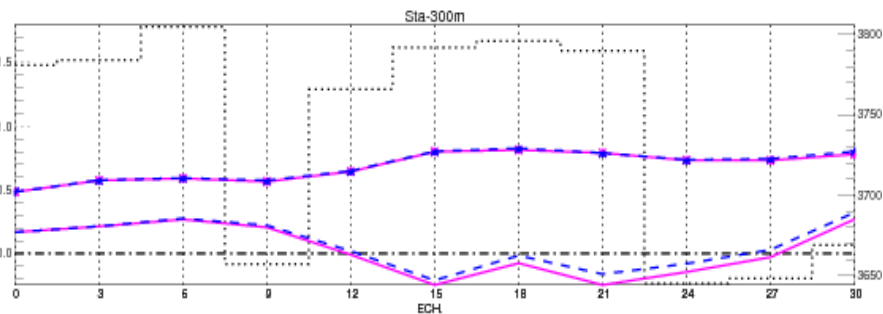
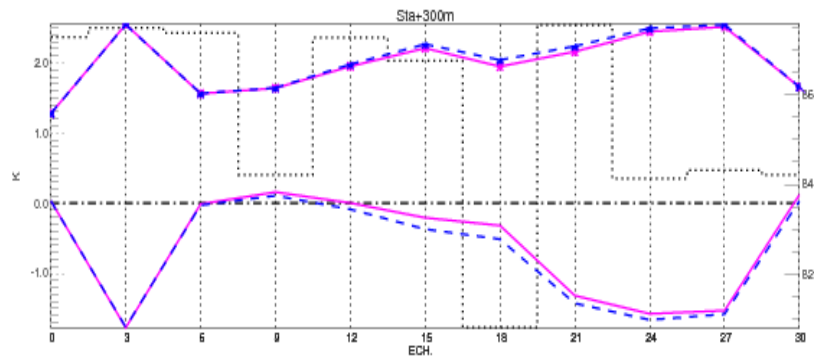
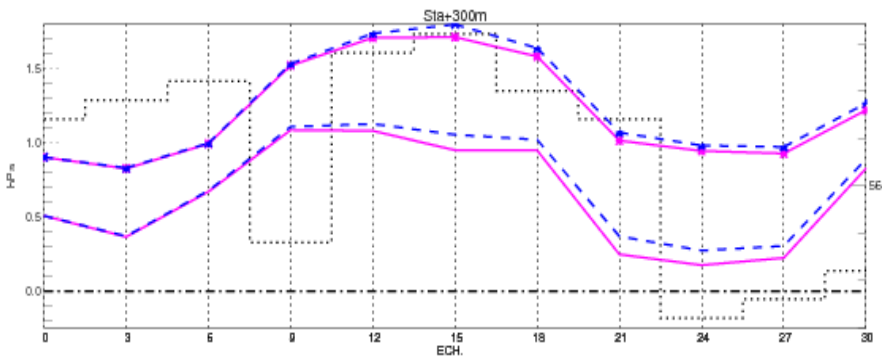
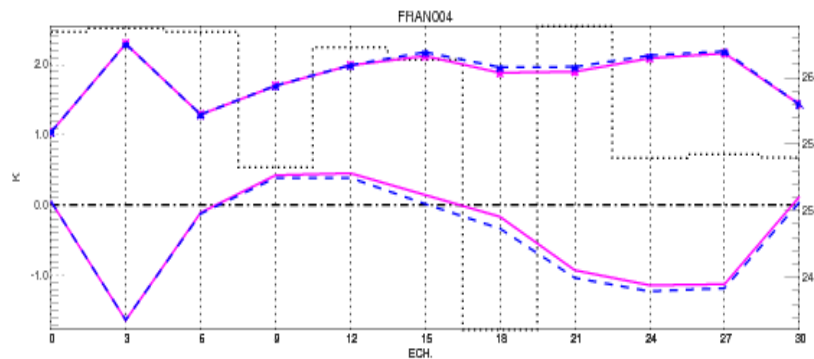
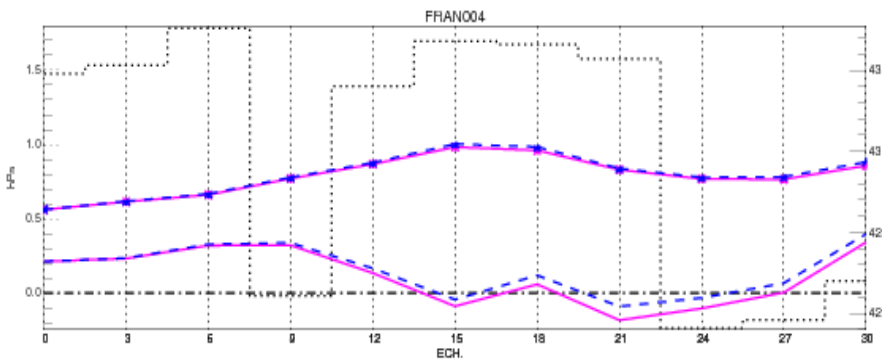
T2m

Ttes les stations

Ttes les stations > 500m

Ttes les stations < 500m

Z

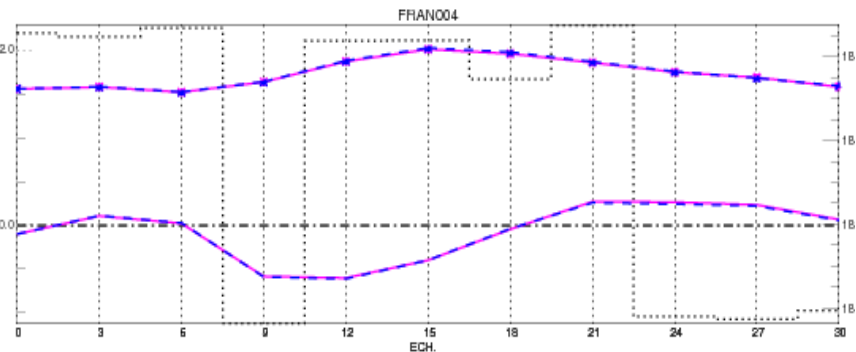


Scores Synops + RADOME, FRAN, Juin 2007-L60

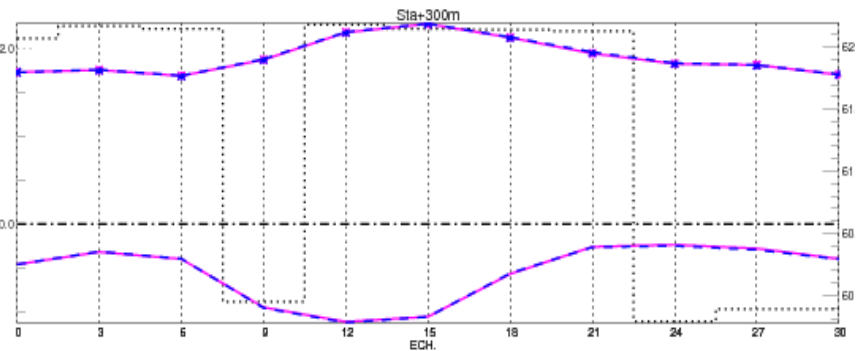
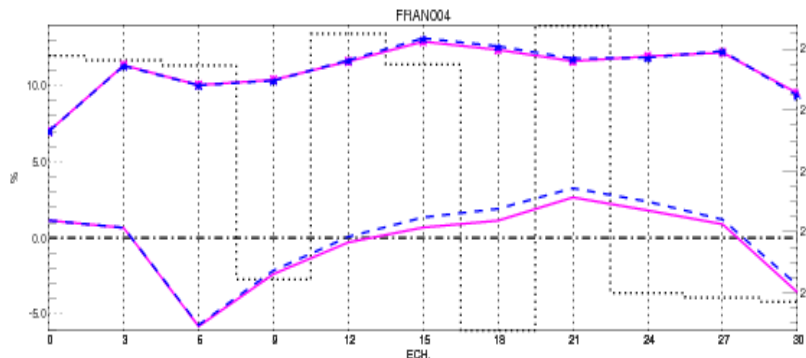
ff

SLHD / Ref

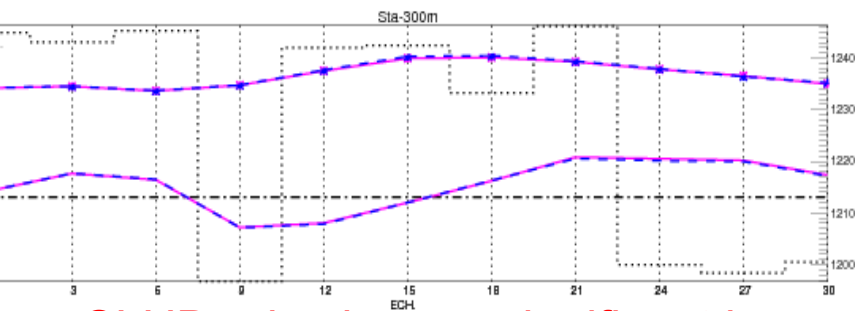
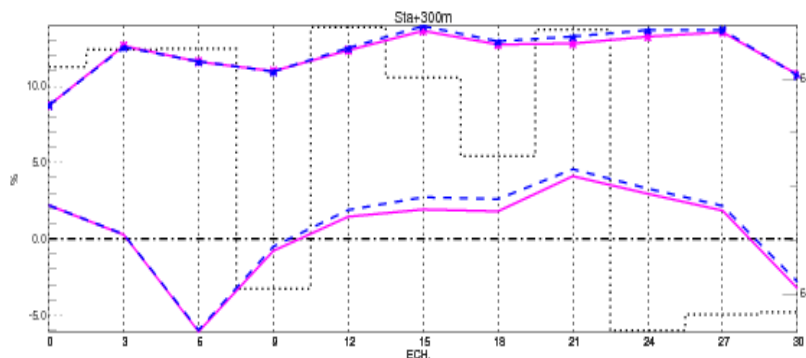
Hu2m



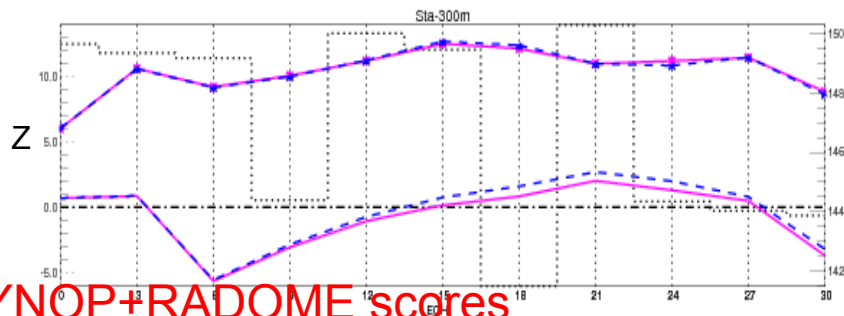
Ttes les stations



Ttes les stations > 500m



Ttes les stations < 500m



-> SLHD-crisg has no significant impact on SYNOP+RADOME scores

Scores TEMPs, FRAN, Juin 2007-L60

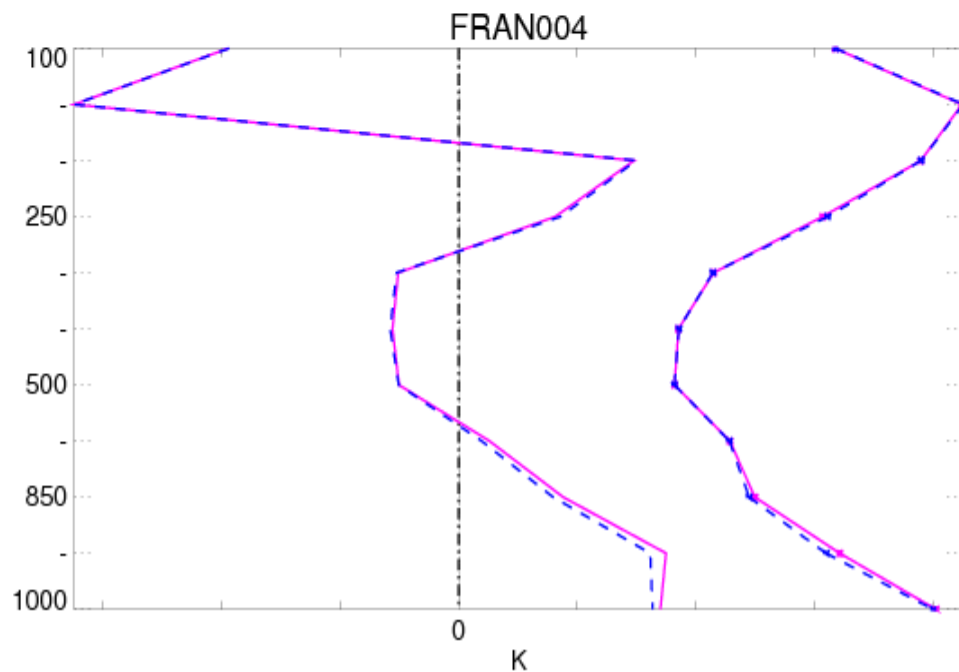
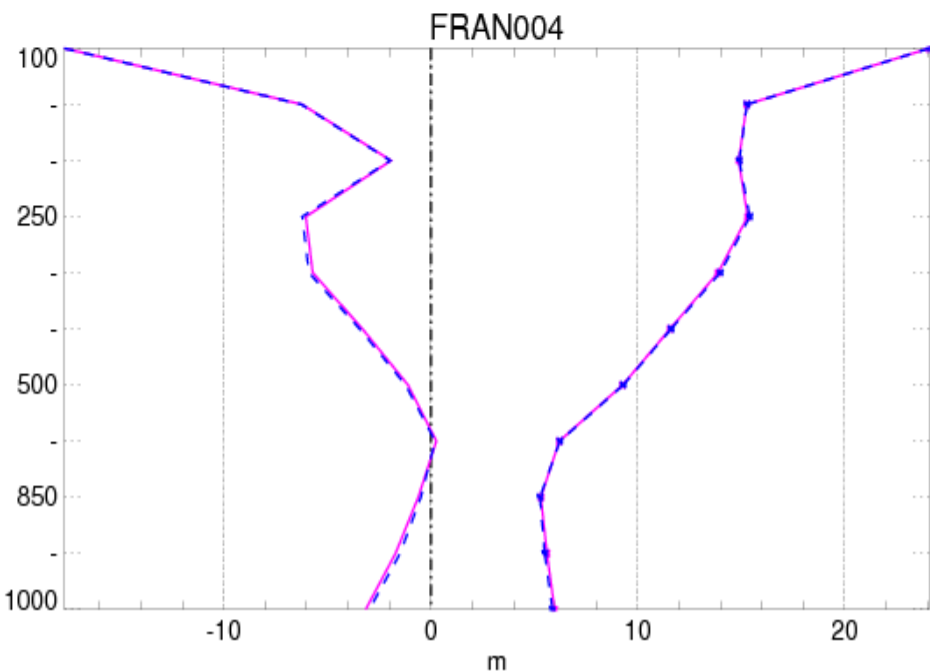
Géopotentiel

SLHD / Ref

Temperature

ECH.12

ECH.12



Scores TEMPs, FRAN, Juin 2007-L60

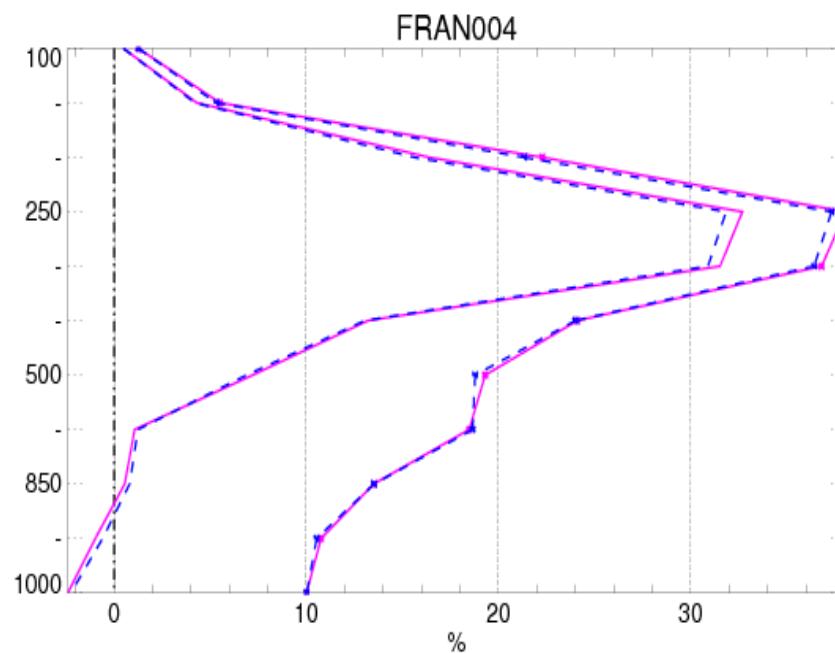
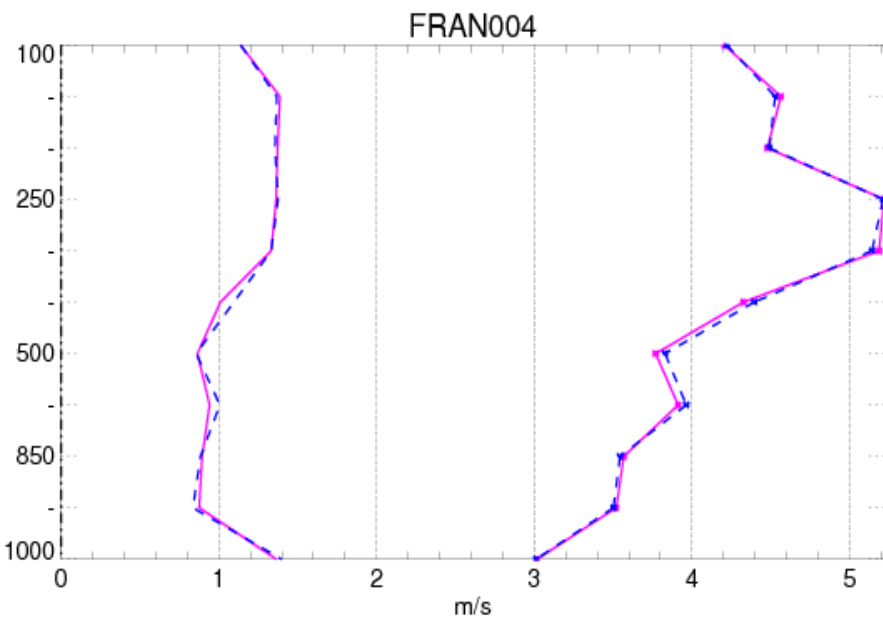
Vent

SLHD / Ref

Humidité

ECH.12

ECH.12



-> nor TEMPs



METEO FRANCE
Toujours un temps d'avance

Scores FRAN Juin 2007

AROME-SLHDcrisg+EDKF / AROME-SLHD crisg

EDKF still improve results
for light rains

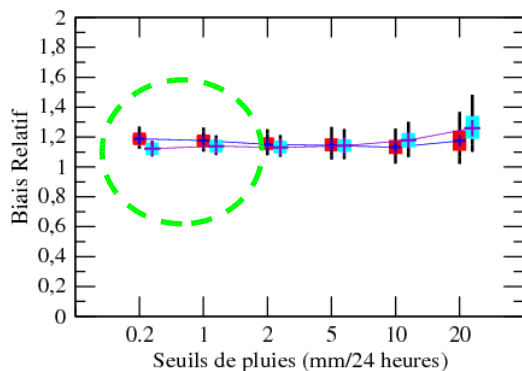
Experience: 62UB_62UY

Biais relatif arome_france_test et arome_france_62UY

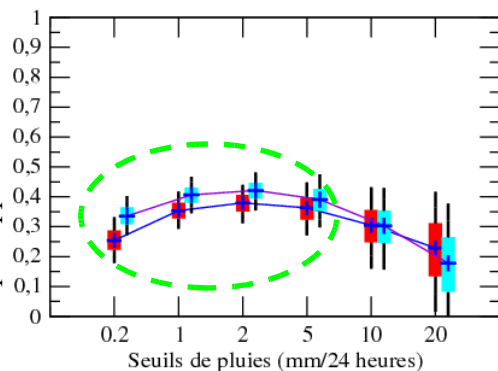
HSS arome_france_test et arome_france_62UY

Periode 2007060100_006_030-2007063000_006_030

Periode 2007060100_006_030-2007063000_006_030



HSS par rapport a la Persistence

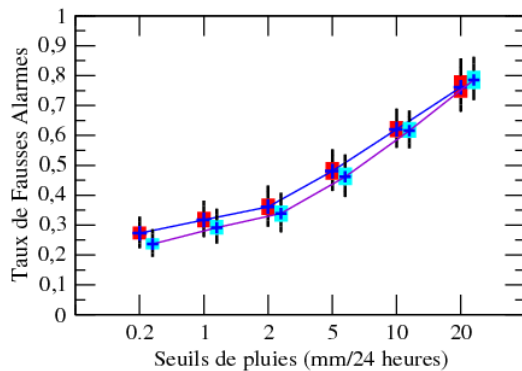


FAR arome_france_test et arome_france_62UY

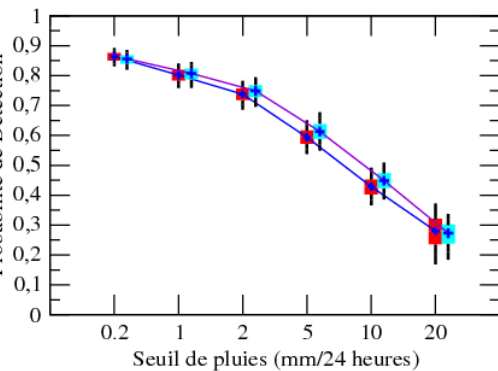
POD arome_france_test et arome_france_62UY

Periode 2007060100_006_030-2007063000_006_030

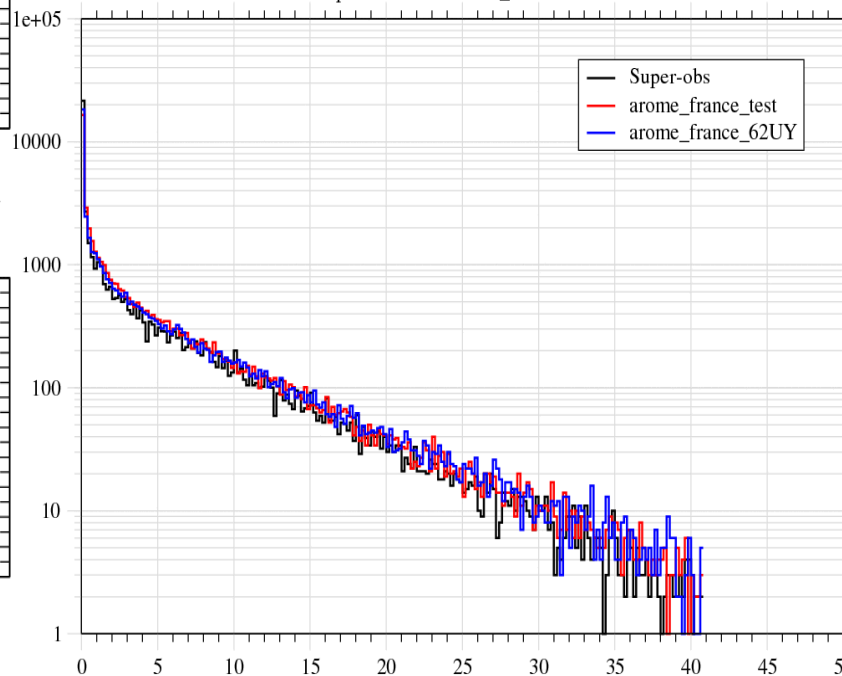
Periode 2007060100_006_030-2007063000_006_030



Probabilite de Detection



Nombre de valeurs par seuil de 0.2 mm/j
sur la periode 2007060100_2007063000.dat



Scores FRAN November 2007

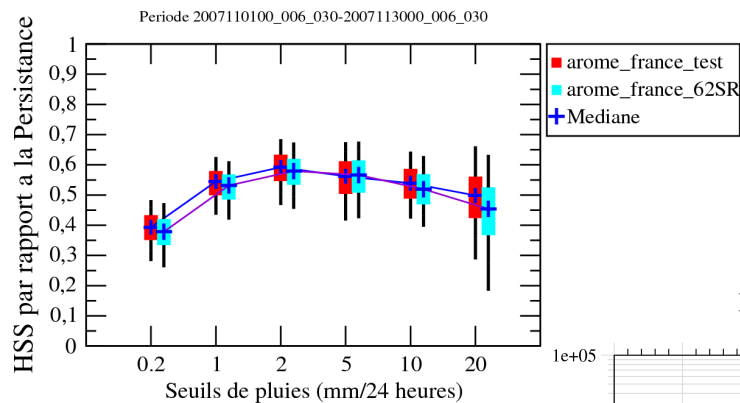
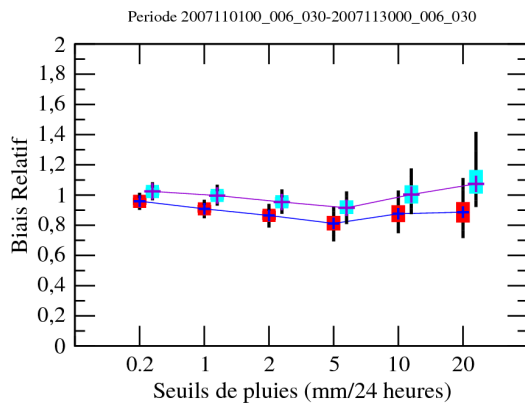
AROME-SLHDcrisg / AROME-Ref

The impact is not so big on November.

Experience: 62UB_62SR

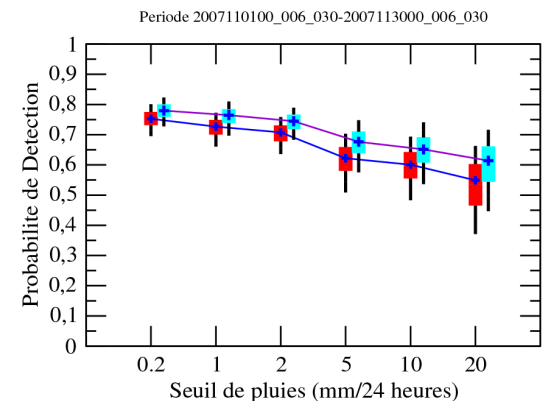
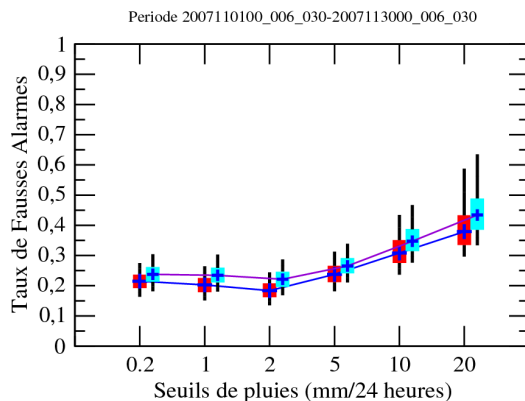
Biais relatif arome_france_test et arome_france_62SR

HSS arome_france_test et arome_france_62SR

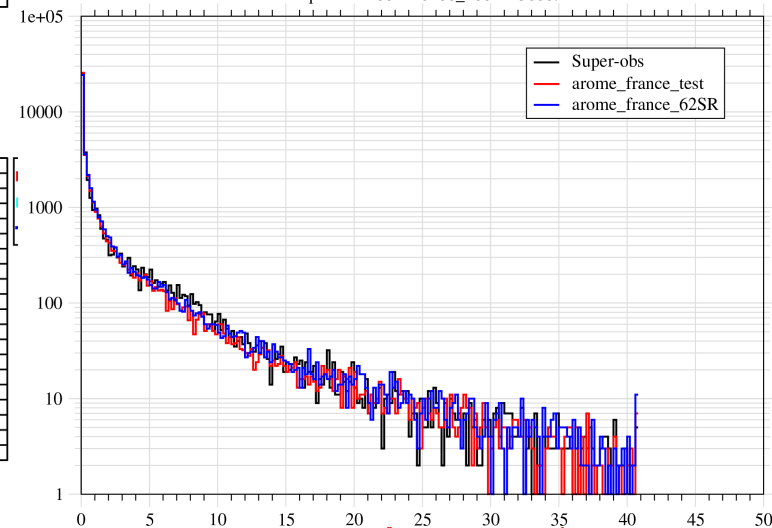


FAR arome_france_test et arome_france_62SR

POD arome_france_test et arome_france_62SR



Nombre de valeurs par seuil de 0.2 mm/j
sur la periode 2007110100_2007113000.dat



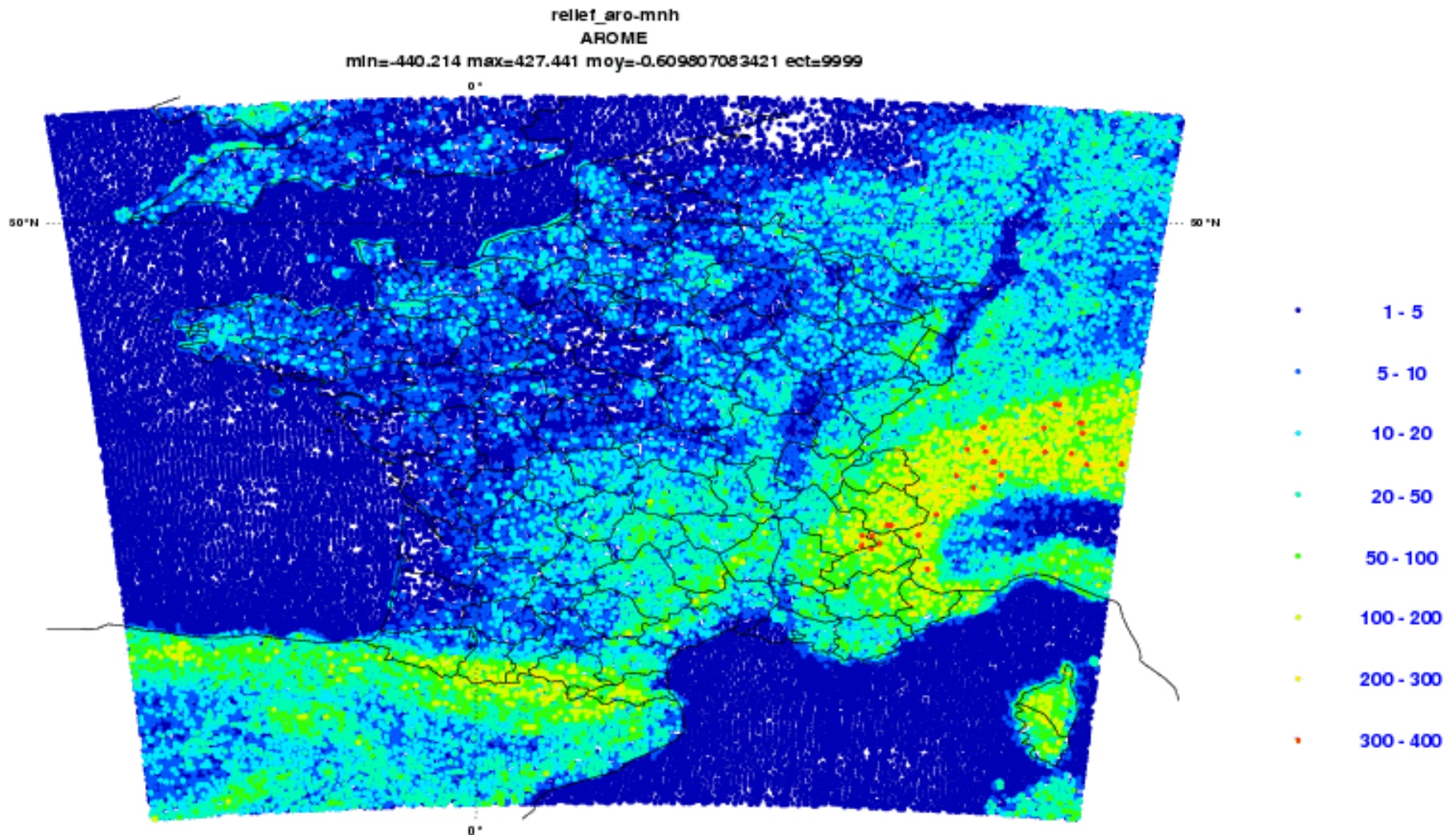
Recent changes in AROME :

- 1) Fireworks
- 2) SBL diagnostics
- 3) Rain distribution



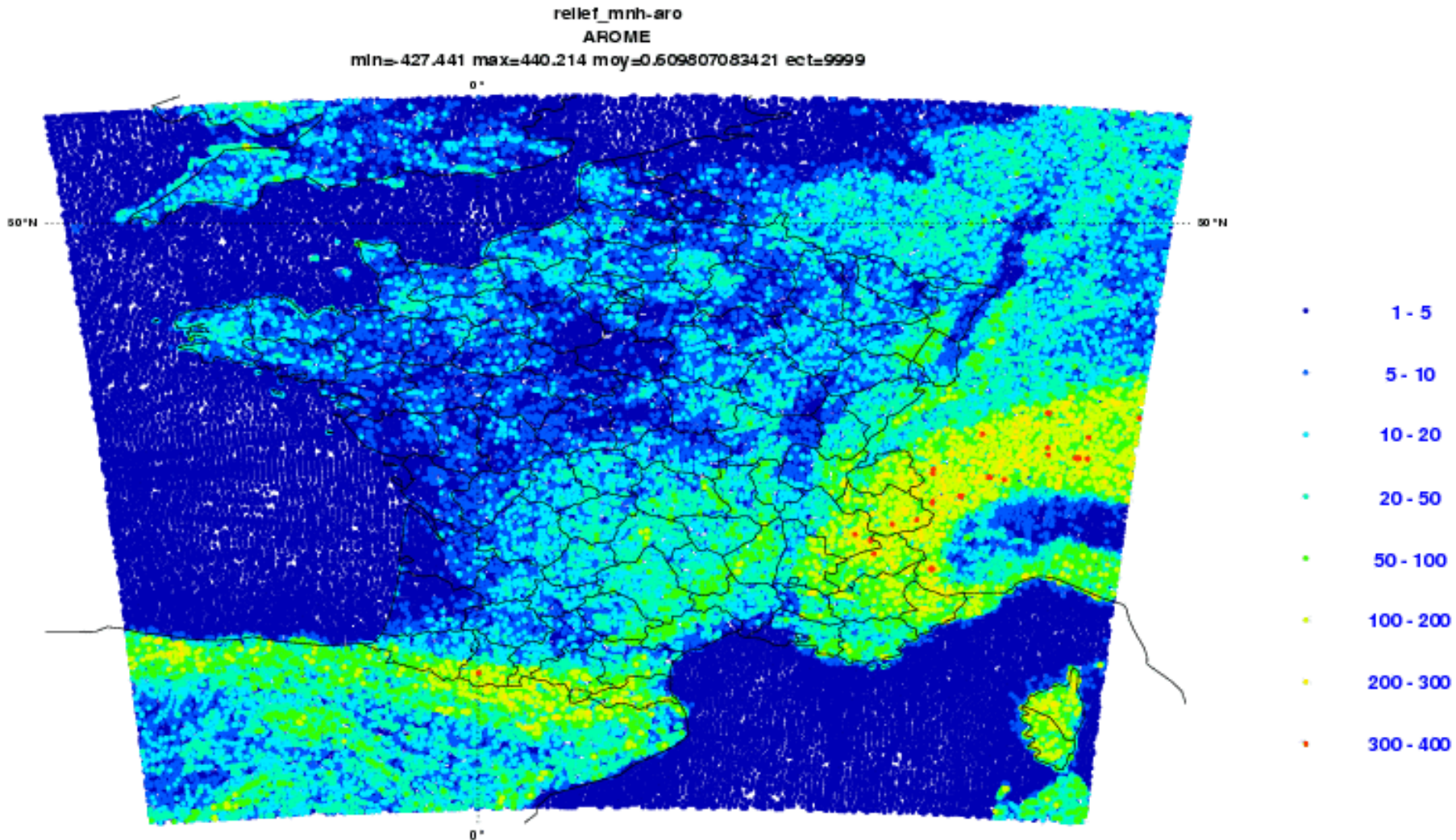
Relief SURFEX et relief atmosphérique

Où le relief modèle (923) est **plus** élevé que le relief surfex (PGD)



Relief SURFEX et relief atmosphère

Où le relief modèle (923) est **moins** élevé que le relief surfex (PGD)



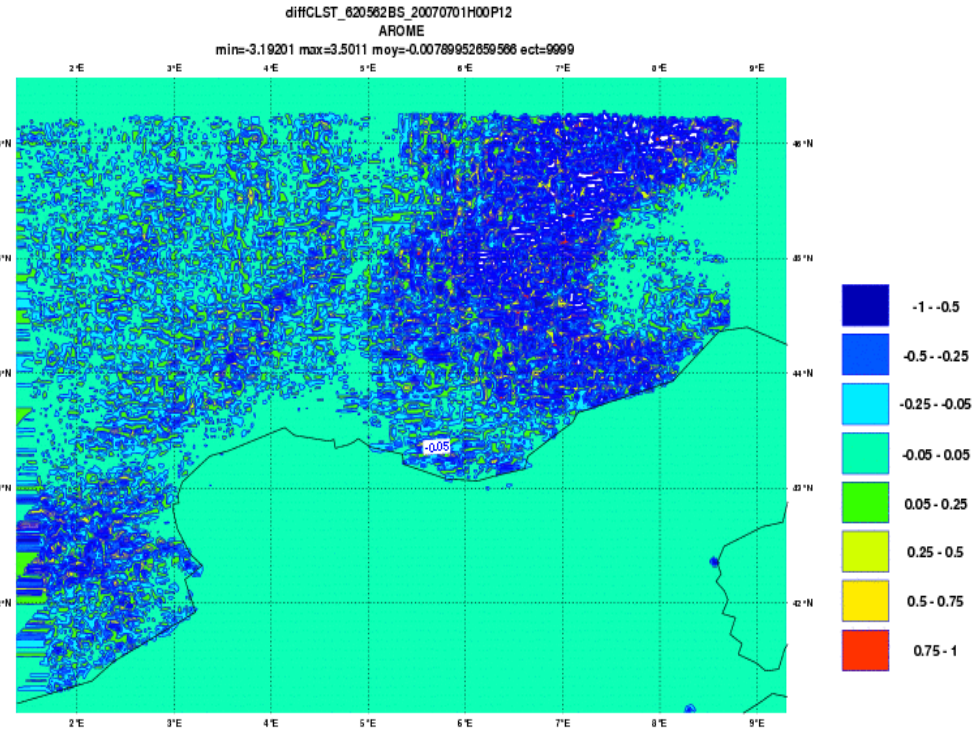
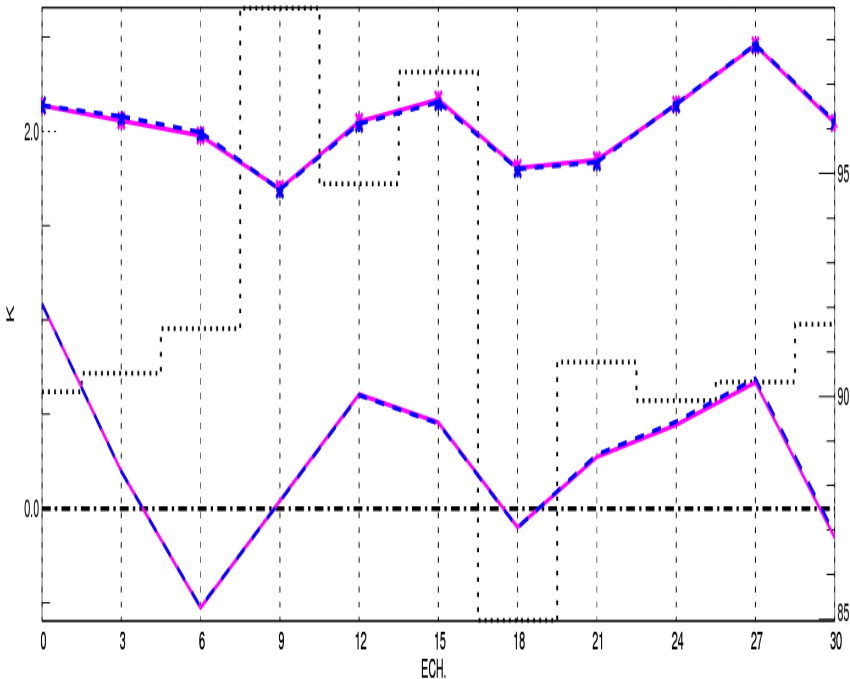
Impact sur les scores

On impose à surfex le relief atmosphérique :

Scores sur SUDE Juillet 2007 :

Exemple de différences de T2m le 1-07-2007 +12h :

SUDE005



Scores FRAN Juin 2007

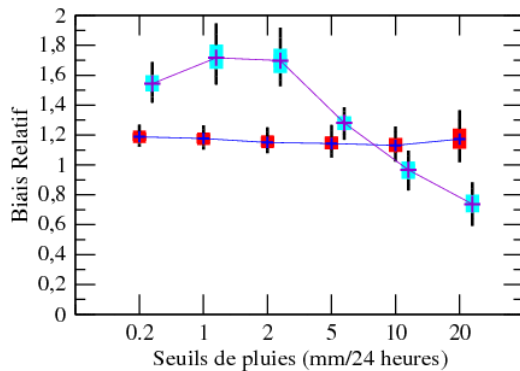
ALADIN-oper / AROME-SLHD crigs

On obtient de meilleurs scores qu'ALADIN (ALADIN sous estime l'occurrence des fortes pluies et sur-estime les faibles).

Experience: 62UB_PLAD1

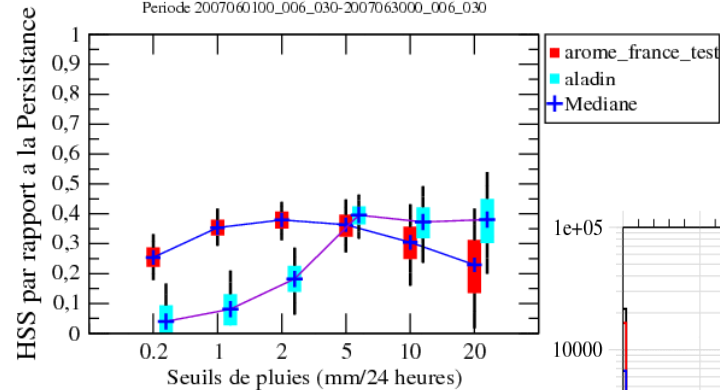
Biais relatif arome_france_test et aladin

Periode 2007060100_006_030-2007063000_006_030

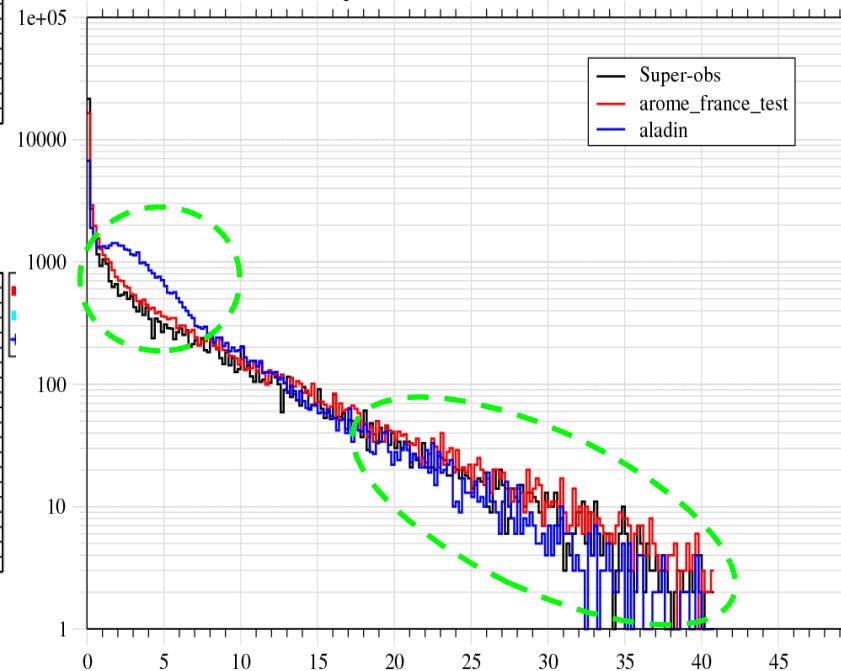


HSS arome_france_test et aladin

Periode 2007060100_006_030-2007063000_006_030

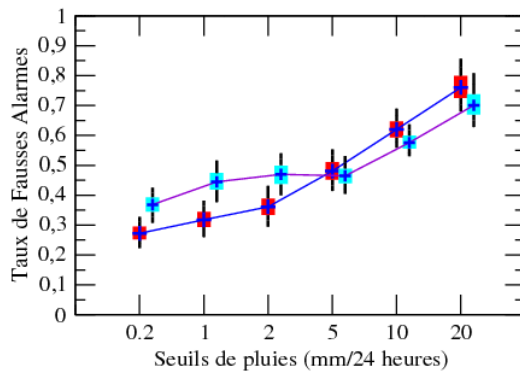


Nombre de valeurs par seuil de 0.2 mm/j
sur la periode 2007060100_2007063000.dat



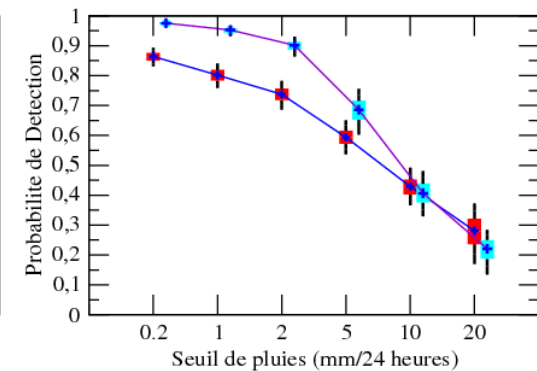
FAR arome_france_test et aladin

Periode 2007060100_006_030-2007063000_006_030



POD arome_france_test et aladin

Periode 2007060100_006_030-2007063000_006_030

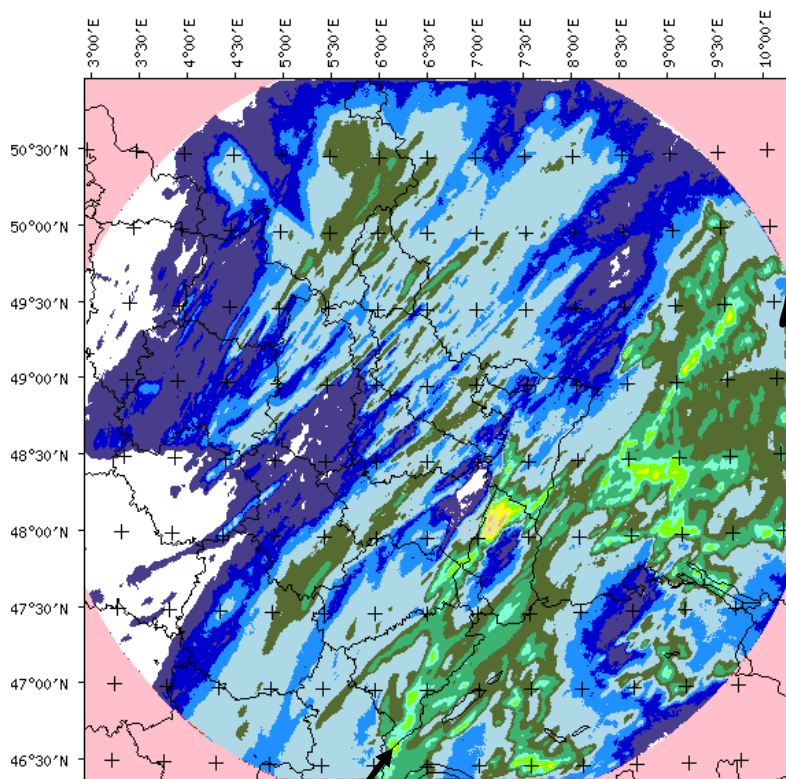
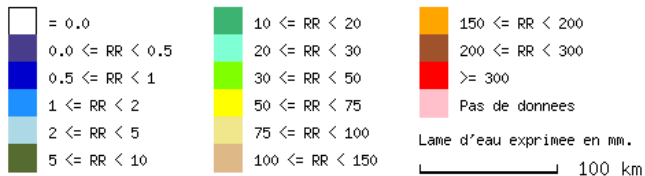


06-20-2007

Direction de la Production Climatologique



Radars de Nancy : cumul sur 1 jour
le 21 Juin 2007 a 00h 00' UTC



Max > 100mm

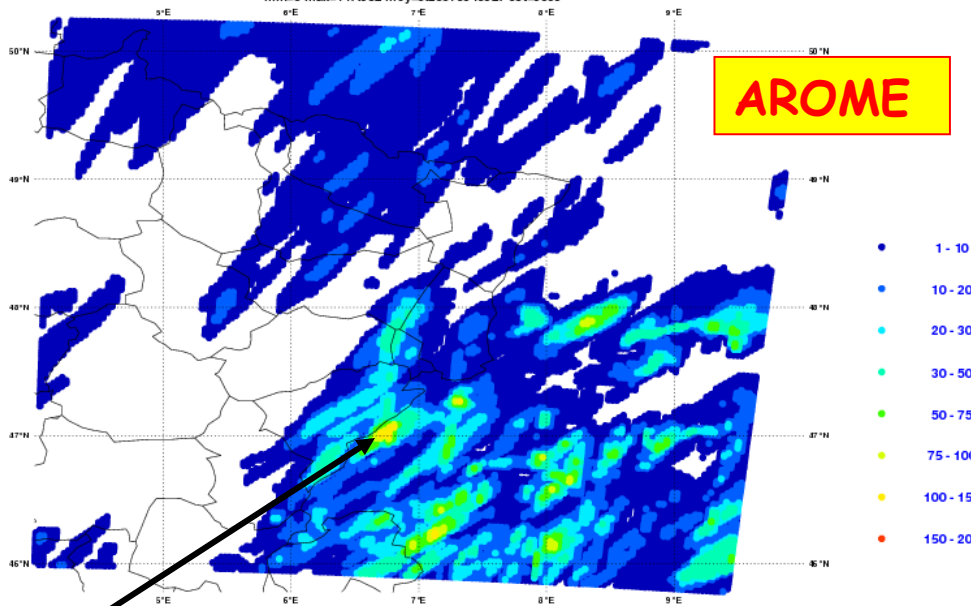
Max 70mm

Resolution : 512 x 512 points (de 1.0 x 1.0 km)
Projection conique

- LUNAIRS, version 2.4 Beta 2 pour Linux -

- Edition du 17/01/2008 -

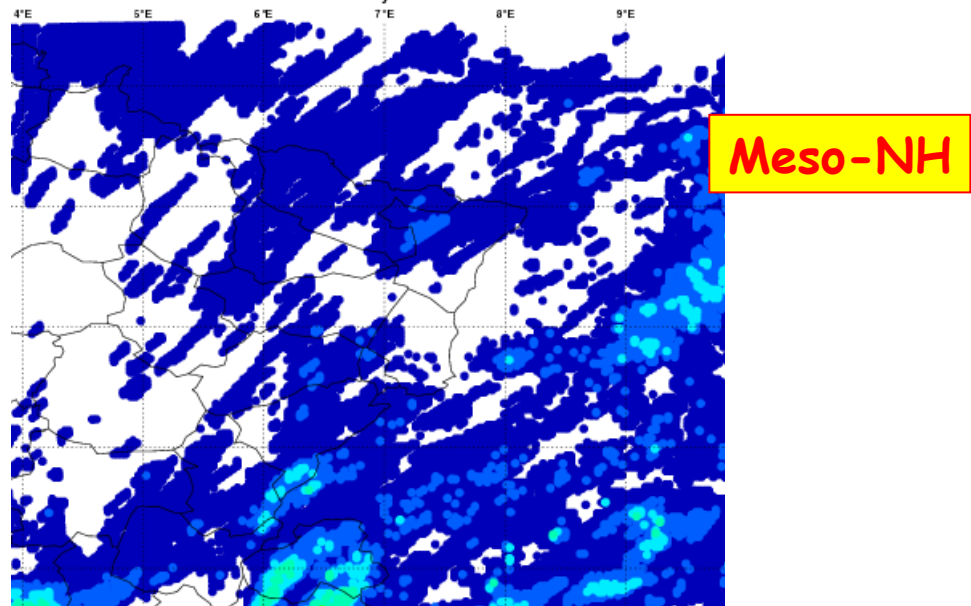
61ER_ACPRT24
ACPRT AROME ICE3
min=0 max=147.982 moy=5.20013943927 ect=9999



AROME

- 1 - 10
- 10 - 20
- 20 - 30
- 30 - 50
- 50 - 75
- 75 - 100
- 100 - 150
- 150 - 200

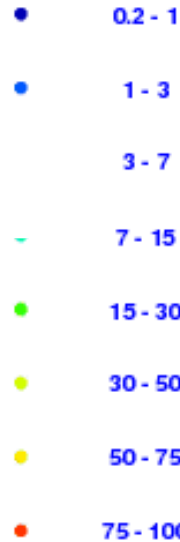
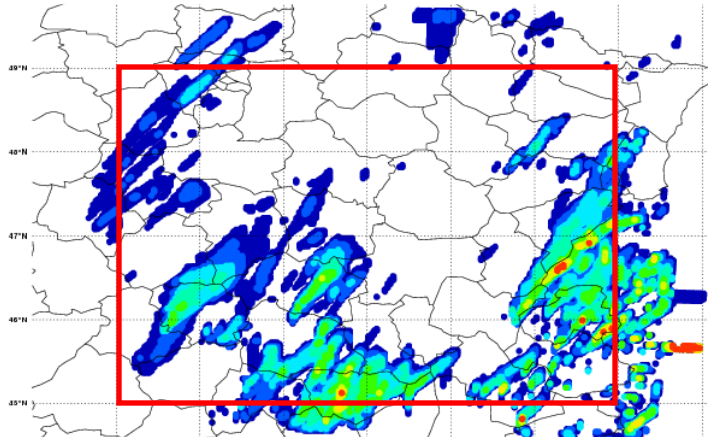
ACPRT MNH ICE3
min=0 max=212.999978 moy=3.10342073535 ect=9999



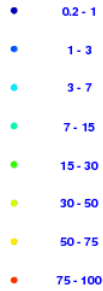
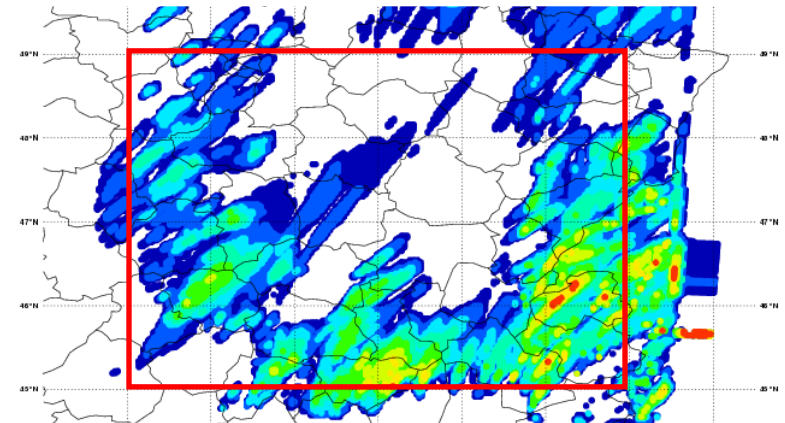
Meso-NH

Cas du 20-06-2007 (RR 24h)

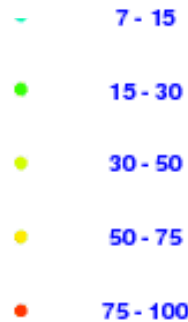
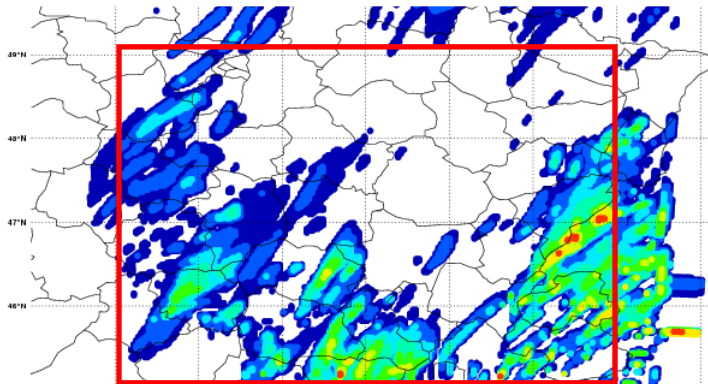
AROME-H(SLHD qv si qc ou qi > 1E-6, qcrisg moy=1.04



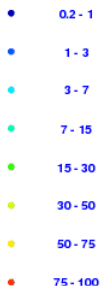
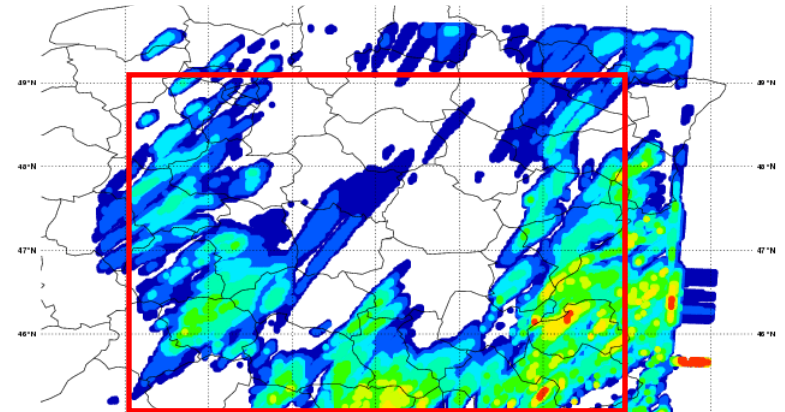
AROME-H(SLHD qv si qc ou qi > 1E-3, qcrisg moy=2.96



AROME-H(SLHD qv si qc ou qi > 1E-4, qcrisg moy=1.52



AROME-H (SLHD-QCRISG) moy=2.44



En augmentant le seuil, on se rapproche de quand SLHD n'est pas activé sur qv, mais à 10E-3, il ne joue quasiment plus. (Vérifier avec Karim la pertinence du codage)

-> Est ce pour de bonnes raisons qu'on a amélioré les scores avec SLHD-crisg ??

Impact of SLHD and EDKF on rainfall distribution in AROME

- Case Study :

a) 06-20-2007

b) 04-11-2007

c) GARD 2005

- Scores on June and November 2007

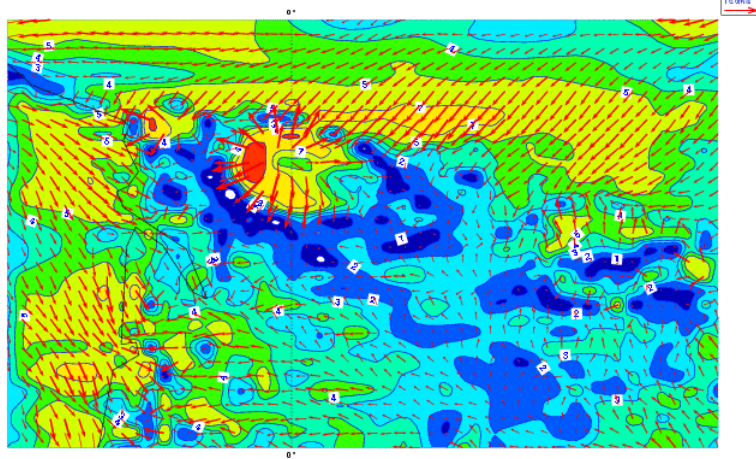
- Activation of SLHD on q_v in case q_c or q_i .

a) 06-20-2007

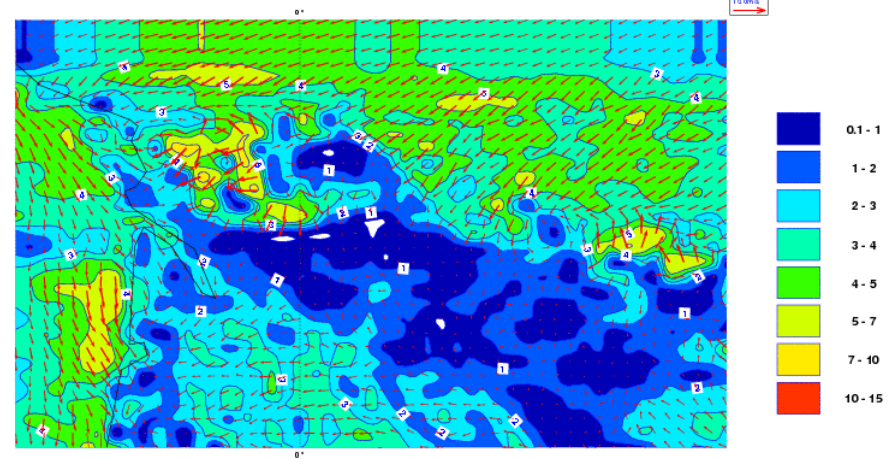


04-11-2007 (wind L41 at 15TU)

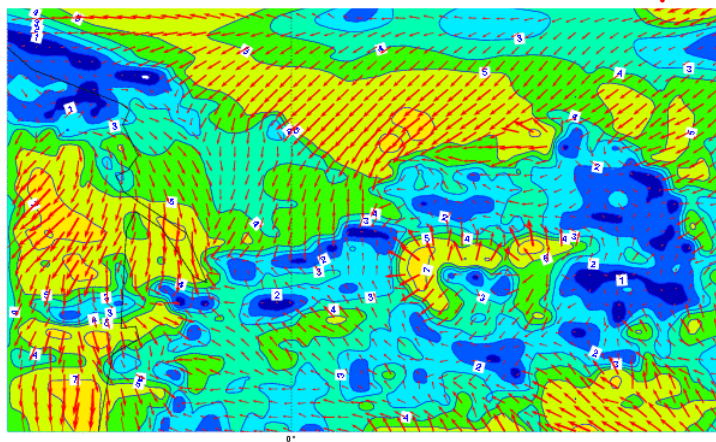
a) AROME-Reference



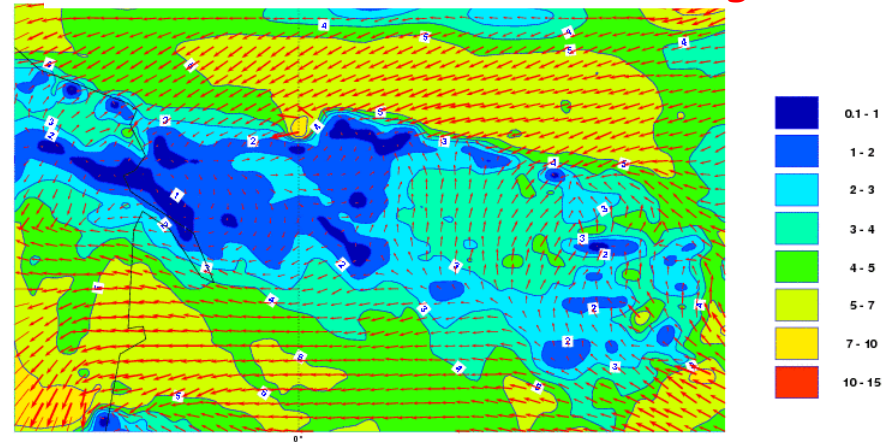
b) Meso-NH



d) AROME-NH nouveau setup



e) = d+AROME-NH SLHD crigs



SLHD on qc,qr,qi,qs,qg, do not create firework

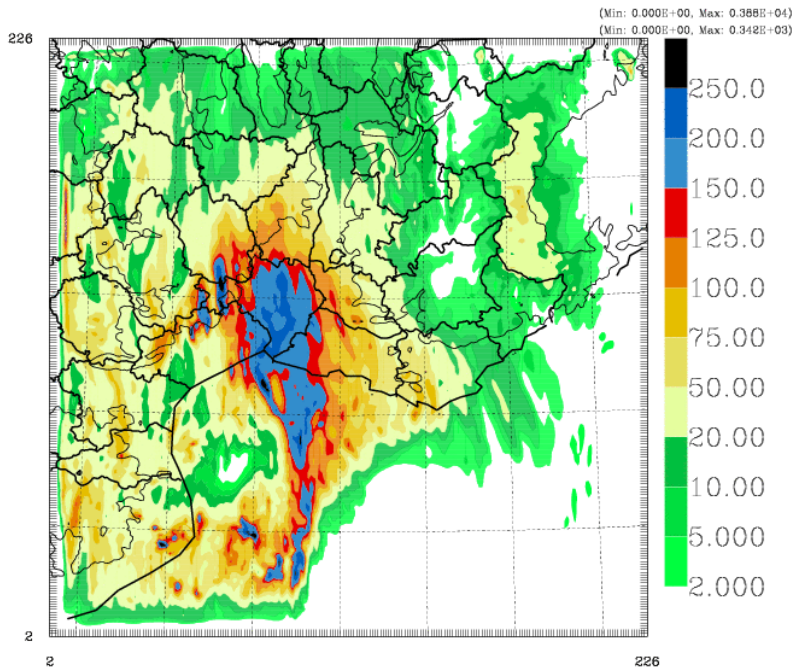
GARD 2005

a) AROME-Reference

date 24UTC

Acc. Rainfall (mm) Rel=500m

25/03/08 09H15
AROMOUT_024.dia

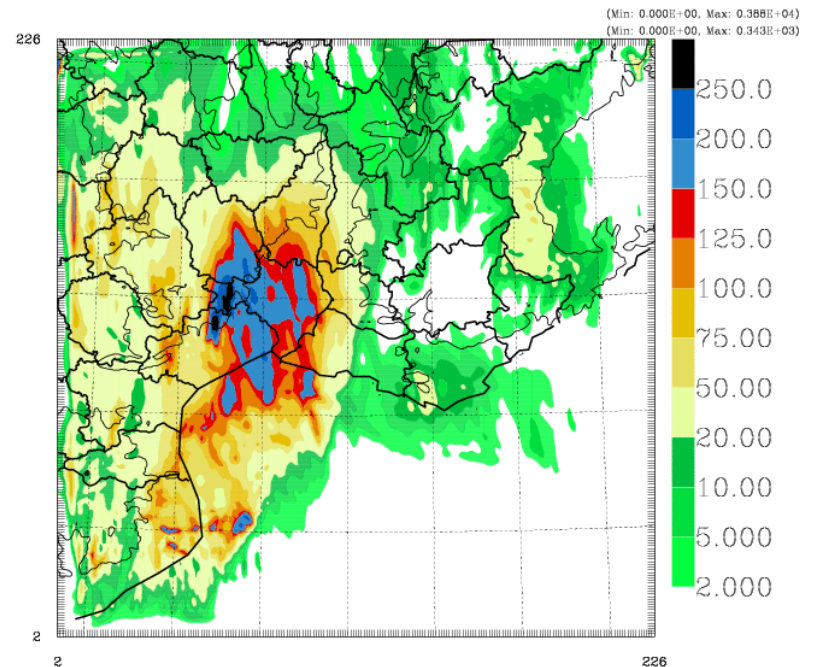


b) AROME-NH SLHD crigs + EDKF

date 24UTC

Acc. Rainfall (mm) Rel=500m

02/07/08 14H29M14
AROMOUT_024.dia



SLHD on qc,qr,qi,qj,qk, keep correct simulation of GARD2005 event