

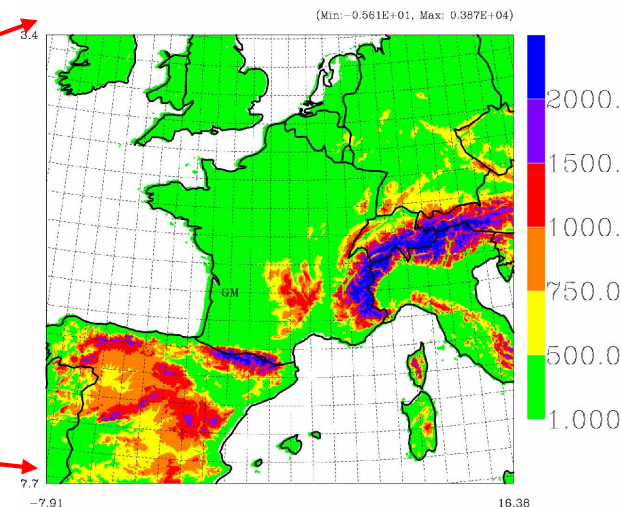
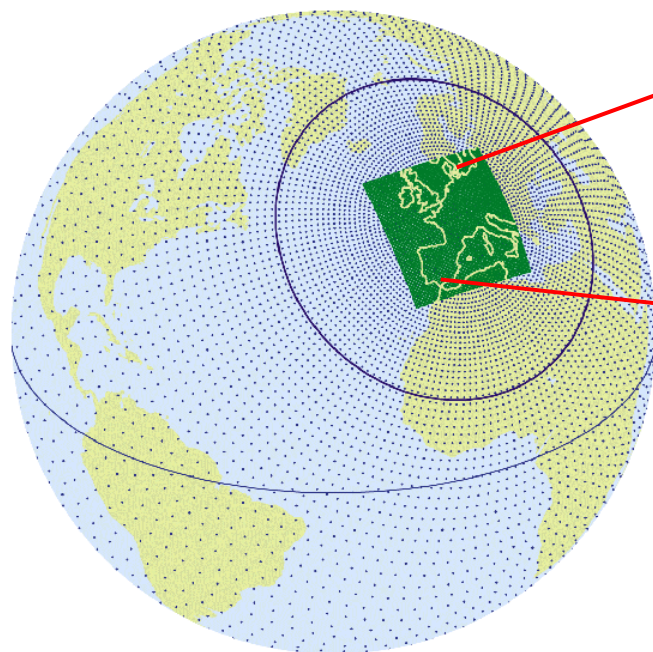
Meteorological forecast during BLLAST Field experiment

Forecasting Tools:

- the available models: AROME & ARPEGE (characteristics, outputs, diagnostics) -> Y. Seity
- Potentially two calls per day to the local meteorological center in Tarbes (7/7, open time, phone call, email ?)
- Eventually a call to the regional meteorological center in Bordeaux (contact?)
- Other needs to decide to go or no go?
- How to combine the different information ?

Operational models production during BLLAST :

ARPEGE and AROME



Cloud Resolving Model AROME

30 h forecasts every 6h

$dx=2.5$ km, $750 \times 720 \times 60$ levels, $dt=1mn$,

SL-SI Non-Hydrostatic model

3DVar Data Assimilation system (RUC3h)
with meso-scale data assimilation (Doppler
radar reflectivities and winds)

Global ARPEGE-IFS

4-day forecasts every 6 hours $dx=10$ km on

France, $55km$ on Australia $dt=10mn$

Stretching factor $c=2.4$ and turning of the pole
over the zone of interest

Stretched vertical grid with 70 levels

4DVar Inc Data Assimilation system

(T107 25iter and T323 30iter $dx=60km$)



METEO FRANCE
Toujours un temps d'avance

PHYSICS in ARPEGE/ALADIN/AROME

	ARPEGE (10km to 55km)	AROME 2.5km
Surface	ISBA (Noilhan, Planton (89), Giard Bazile (2000))	SURFEX With ISBA, TEB, Ecume, etc
Turbulence	TKE (Cuxart et al 2000)	
Mixing length	Bougeault Lacarrere (89)	
	Modified by the shallow cloud thickness and deep convection	
Shallow Convection	KFB (Bechtold et al 2001)	PMMC09 (Pergaud et al 2009)
Deep Convection	Moisture Convergence (Bougeault 85)	Explicitly resolved
Clouds (PDF)	Smith (90)	Bougeault (82)
GWD	Described in annexe of Catry et al. 2008	no
Microphysics	Ql, Qi, Qr, Qs Lopez(2002) Bouteloup et al (2005)	Ql, Qi, Qr, Qs, Qg Pinty and Jabouille 1998
Radiation	RRTM for LW (Mlawer et al. 1997) and Morcrette et al. 2001 for SW (6b)	

Real time model products for Quick Looks

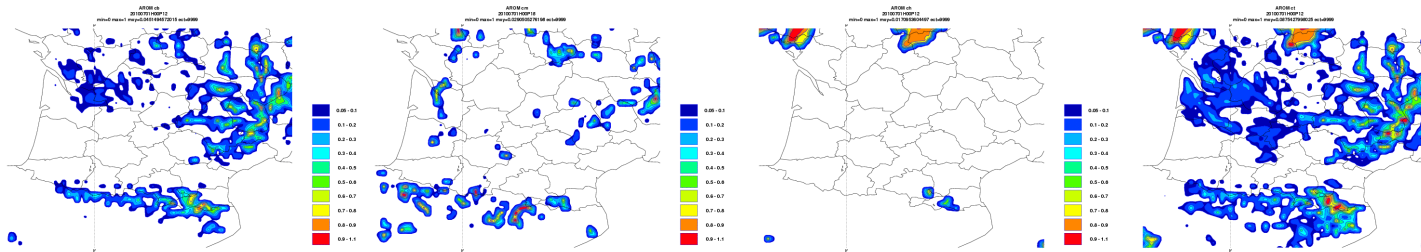
AROME (r0, 0-30-1) and ARPEGE (r0, 0-30-1,33,36) :

Low (>700hPa),

Medium (700<<300hPa),

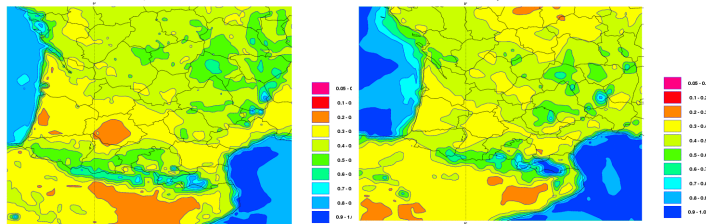
High (<300hPa),

total cloud cover



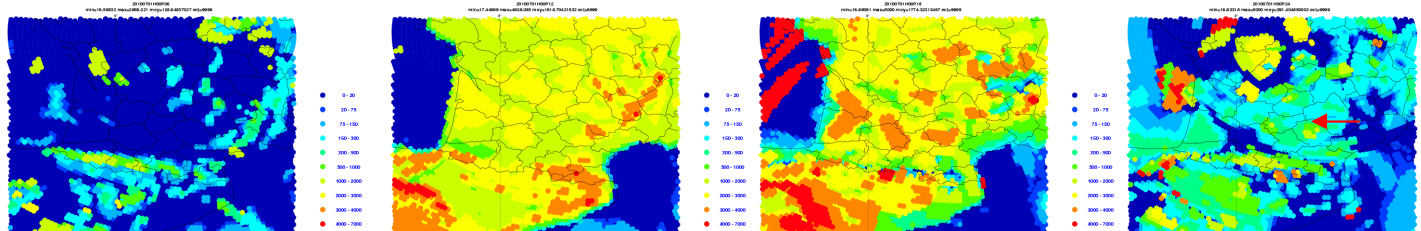
AROME
← 1st July 2010
r0+12

Wind, Temperature, hu at 2m (10m for wind), 100 m, 500 m, 1000 m et 4000 m.



AROME and ARPEGE
← 1st July 2010 r0+12
Hu2m

Zi (1st level where $\tau_{ke} < 1E^{-2} m^2 s^{-2}$)



ARPEGE
← 1st July 2010
r0+6,12,18,24
Zi

Hourly cumulated rainfall

-> a bigger zoom (50x50km²)?, breeze circulation?

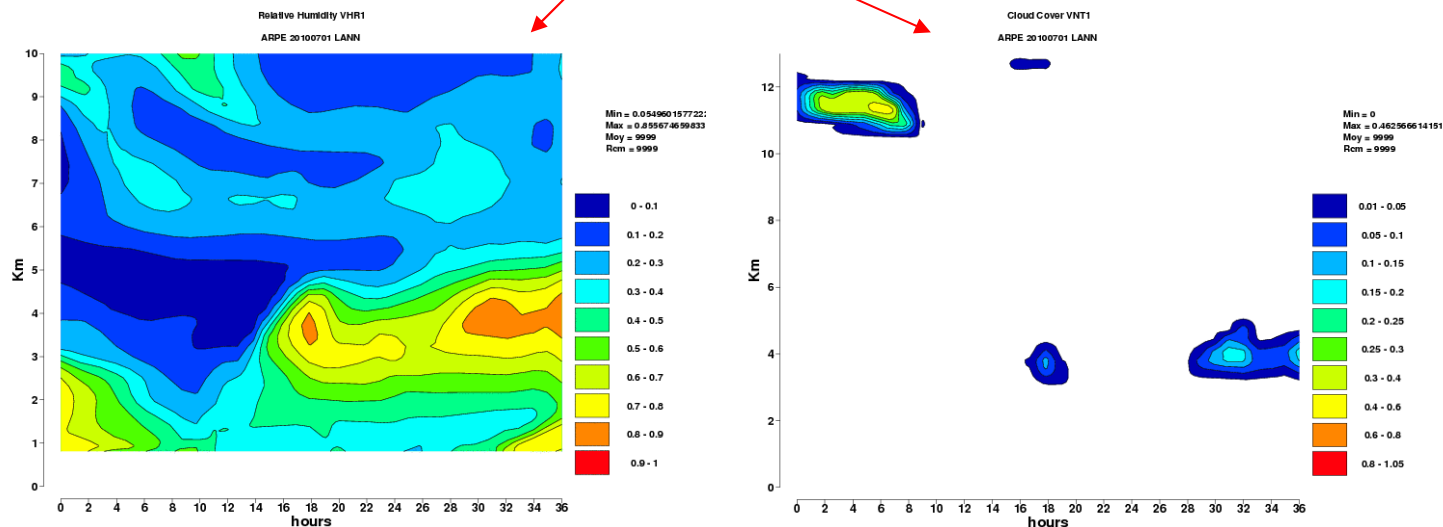


METEO FRANCE
Toujours un temps d'avance

Real time model products for Quick Looks

ARPEGE (r0):

Vertical profiles of u, v, t, Hu, cloud cover over Campistrous



ARPEGE
1st July 2010 r0

r0 available at 2TU for ARPEGE, 3TU for AROME -> plots could be available at 4TU

Total volume of plots (1300 files per day) -> 130 Mb per day

Time delayed model products

Supplementary products available after the field campaign:

ARPEGE and AROME DDH profiles (r0):

Vertical profiles of u , v , t , Hu , TKE, cloud cover over Campistrous (and neighbouring points for AROME) and their budgets

More frequent (each timestep?) outputs

Horizontal cross section of TKE

Latent and sensible heat fluxes

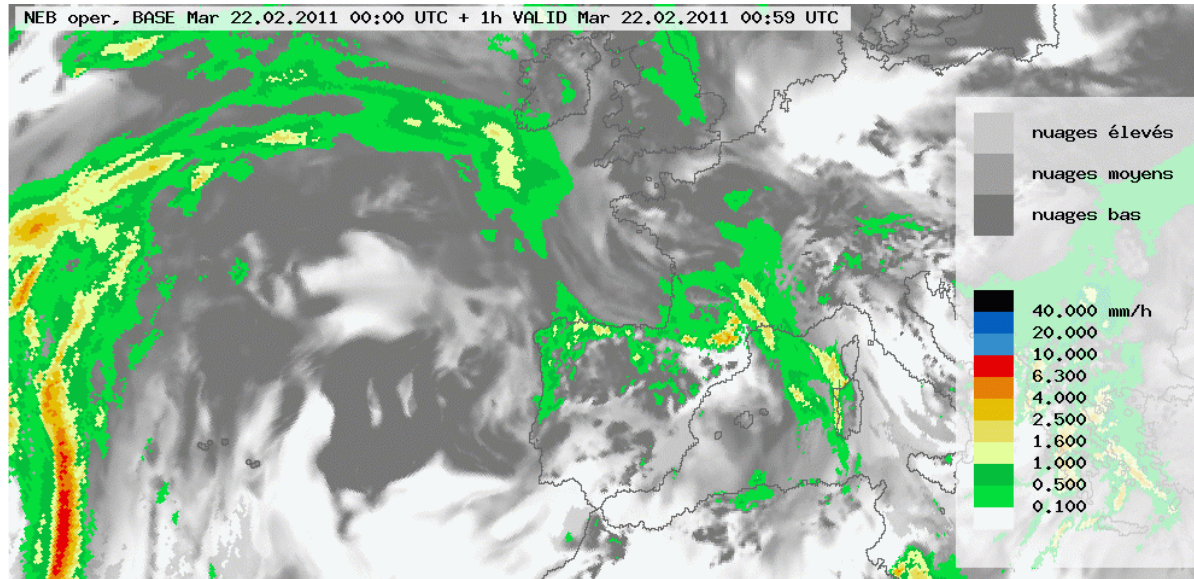
u^* , w^*

Surface fluxes, surface variables and soil variables

Horizontal variability on a box of $10 \times 10 \text{ km}^2$ (for AROME)

Others ...

Meteorological forecast during BLLAST Field experiment



Clouds/precipitation (J.M. Piriou)

A need for larger scale plots ?

- > satellite data available? -> visible, ISIS (tracking?)
- > forecast from ARPEGE (up to 54h?) ?
- > zoom on a smaller domain?

Meteorological forecast during BLLAST Field experiment

- What information are missing for the decision of IOP ?
- How to proceed for the forecast briefing?
- Who is in charge of this briefing ?
- A need for SYNERGY (software that gather observations/model outputs) ?
- Will the model outputs be saved?