



# Technical overview

**9th Assembly of  
ALADIN Partners**

**Split, 29-30 October 2003**

# Operational ALADIN changes in 2004

- **We have still about 20 configurations**
- **some changes in 2004, as usual**
  - domain extension
  - resolution increase
    - **linked to higher computer capacity**
  - etc.
- **The most important is not the detailed list**

# A general good standard

- **Aladin/France is now "in the middle"**  
**and this is the first time**
  - in terms of horizontal resolution
    - **except of course ALA/NORAF**
  - in terms of vertical resolution
    - **some partners to L45**
      - with a different vertical repartition
    - **almost none left at L31**
  - domain sizes not so different
  - **but still more advanced in cycle number**

# A general good standard

- **2004: a good milestone for assessing further evolutions (towards AROME)**
  - for answering questions like "when will a large majority of partners be able to... ?"
  - assuming Moore's law
    - if you remember the Prague 2003 meeting
  - or remembering ALADIN history

# To be expected in 2005-2006

- **More versions with data assimilation**
  - for the time being only a few partners run DA
    - **Morocco, Hungary, but not France**
  - **MSG: a good trigger**
    - **real mesoscale information**
      - preliminary results shown last year
    - **a clear benefit at least until 12h lead time**
      - to be included in ALADIN/France early 2005
      - some partners may be interested to follow
  - **next step: work on radar data**
  
- **This goes in Arôme direction**

# To be expected in 2005-2006

- **Increased volume of coupling files**
  - to be taken into account for telecoms**
  - **increase of ARPEGE resolution**
    - **horizontal and vertical**
      - details not yet defined
      - a factor at least 2 all together
    - **around mid-2005**
  - **going to higher coupling frequency (1h ?)**
    - **to be tested**
    - **impact directly proportional**
  - **not mentioning the ensemble forecast**

# Telecommunications

## ● RETIM-2000

- No change in terms of use in the last 12 months
  - **RETIM-Europe used by LACEat 128 kBit/s**
    - cost effective because a common dataset simultaneously transmitted to several users
      - also a way to access other data
    - transfer quality better than at the beginning, but we are still working on it
  - **RETIM-Africa: no pressure from Morocco**  
ALADIN-NORAF still not disseminated
- Upgrades are becoming possible
  - **for meeting the volume increase requirements**

# ARPEGE schedule change

- **The options presented last year are still valid**

- \* a D2 forecast available at 3h30 local time
- \* a D4 forecast at 7h30 loc (D2 at approx 6h50)
- \* a D2 forecast at 13h30 loc
- \* a D4 forecast at 19h loc (D2 at approx 18h20)

**to replace the current scheme:**

- \* a D4 forecast at 0340 UTC (D2 at approx 0300 UTC)
- \* a D2 forecast at 1010 UTC
- \* a D3 forecast at 1520 UTC (D2 at approx 1500 UTC)
- \* a D2 forecast at 2210 UTC



# ARPEGE schedule change

- **But the implementation is slower than expected**
  - **a first technical solution failed**
    - **it was based on large 4D-Var windows**
      - cost/efficiency not proved
    - **there are other candidates**
  - **and our operational suite is not very flexible**

# ARPEGE schedule change

- **Current status: unchanged**
- **The 4 runs/day : help for transition**
  - **as already said last year**
    - recent request from LACE
    - other requests are welcome
- **The goal is now clearly 2005**
  - esp. when switching to summer time



# Arome and Alaro computer requirements

**In the same spirit as Prague 2003**

**With experience gained from prototyping**

**And based on the ALADIN operational level  
reached in 2004**

# ALARO computer requirements

- **ALARO = 2.5-3 x ALADIN@same resol.**
  - that's 2 years computing evolution
- easily available (almost as cheap as ALADIN)
  - it doesn't matter whether the final factor is 2.4 or 3.2
- better if justified by meteorological improvements
  - not only just a maintenance issue

# AROME computer requirements

- **Arome = 300x Aladin-10km**
  - for same lead time and domain
- that's 12 years of Moore's law
  - almost all partners by 2016
- this is not Meteo-France 2008 configuration
  - rather something for 2012 or later

# AROME computer requirements

- **based on Arome on a reduced domain**
  - **ex: LACE-type domain**
    - **1/10 domain is almost 900x800 km<sup>2</sup>**
      - 30 times more expensive than ALA-10 full domain
      - only 7 years of Moore's law -> 2011
  - **some domains may not be reduced so dramatically**
    - **1/4 domain leads to 300/4=75 factor**
      - 9 years of Moore's law -> 2013
  - **Meteo-France 2008 version between 1/4 and 1/10**

# Summary

- **1st version of AROME (reduced domain)**
  - available in 2008 for the first partners
  - for (almost) all partners: 2011-2013
- **AROME over a full domain**
  - shifted by 4-5 years
    - **if meteorological interest**
- **in line with the Prague 2003 estimates**
  - even slightly more optimistic now
    - **some partners may have been quicker than M. Moore**



# Addendum

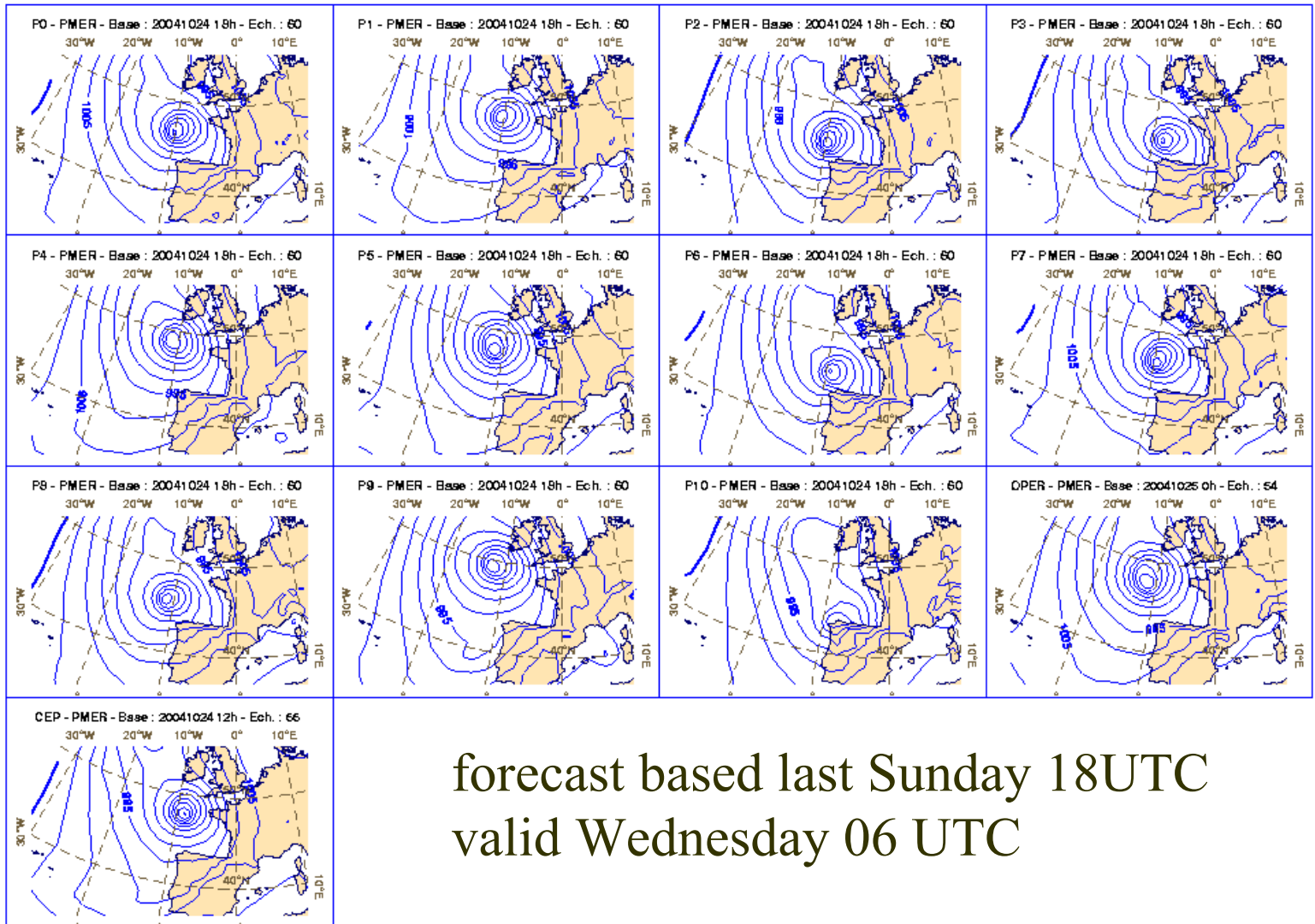
**Short range ensemble forecasting**



# Short range ensemble forecasting

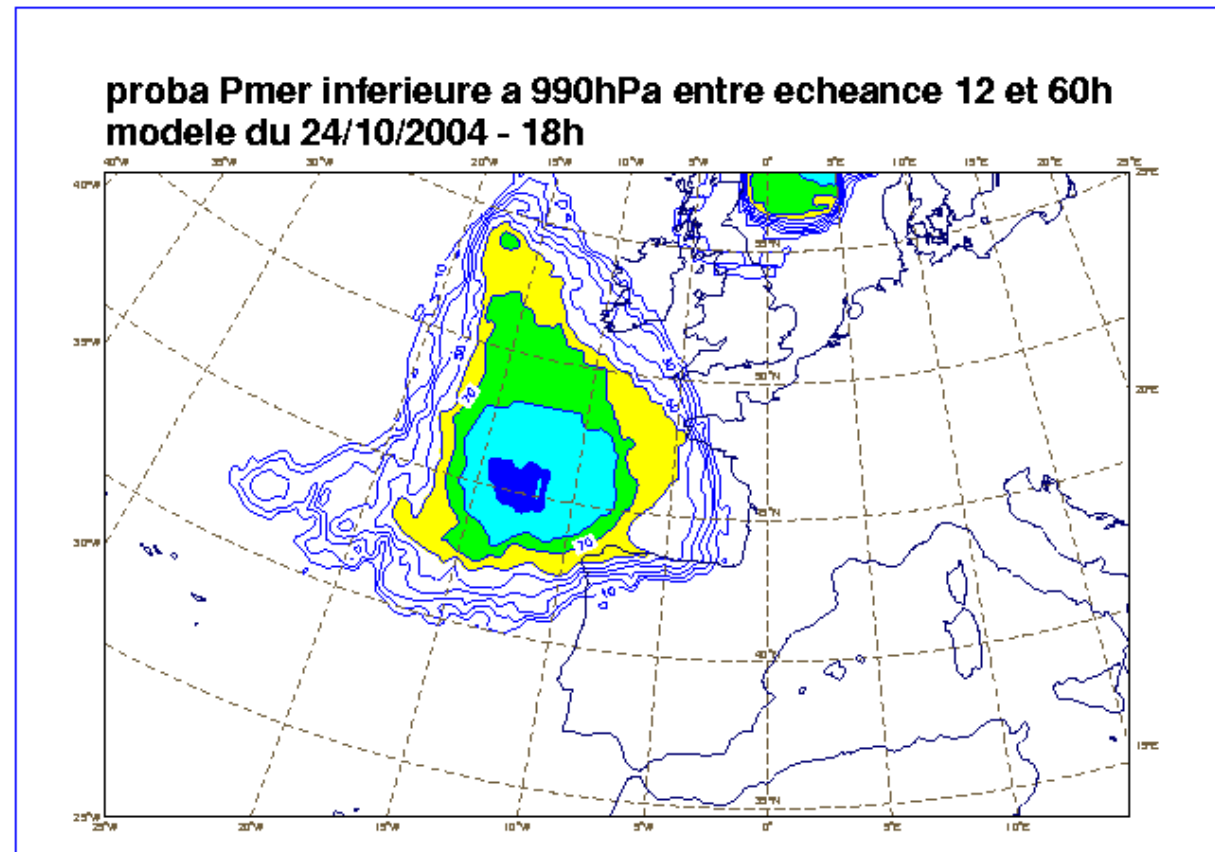
- **A first version run in Toulouse**
  - 10 perturbed members (using targeted SV)
  - 60h forecast based on 18UTC
    - only once a day for the moment
  - same resolution as the deterministic forecast
  
  - operationally run, not yet operationally used
    - work is going on (esp. @ Forecasting Lab)

# Short range ensemble forecasting



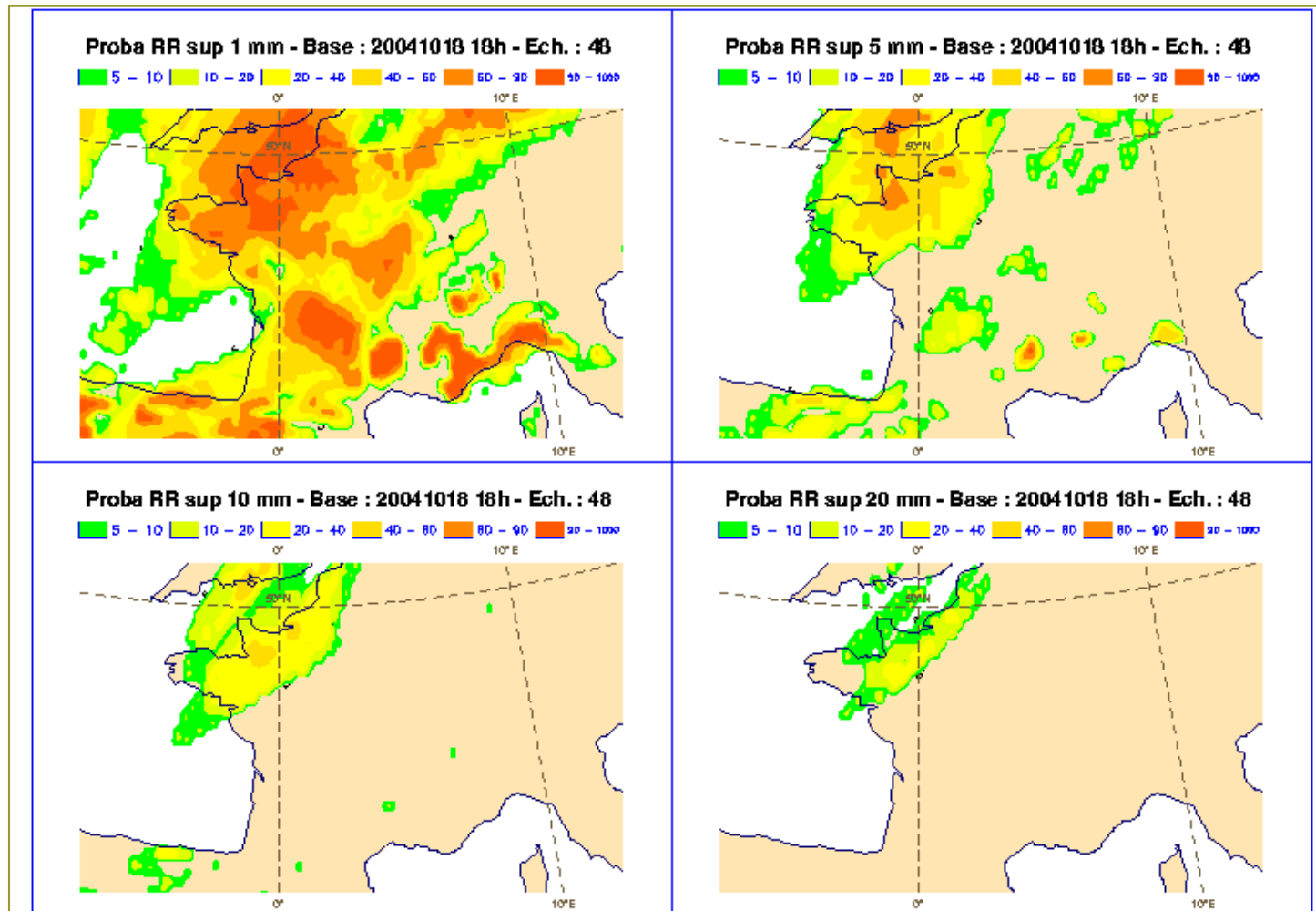
# Short range ensemble forecasting

- **Derived probabilities**



# Short range ensemble forecasting

- Another case, sensitive to precipitation



# Short range ensemble forecasting

- **Scientific link with ALADIN**
  - **contacts with Hungary for a long time**
  - **a first visitor (Hagel Edit, HU) Oct-Nov 2004**
    - **targeted SV over Central-Eastern Europe**
      - **computed in ARPEGE**
      - **to be "plugged" into ALADIN**

# Short range ensemble forecasting

- **Operational link with ALADIN**

- not yet, but...
- a huge potential increase of MBytes
  - coupling files from 11 ARPEGE runs at the same time
- main impact on telecoms
- but also possible networking
  - sharing the ALADIN runs between centres

**To be tested off-line first**