

Verification of ALADIN-FRANCE

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Météo-France

Operational verifications

- RMS error and Bias against european radiosoundings
- RMS error and Bias against french surface observations (real time measurements)
- Contingency tables for 6 hours accumulated rain over France

New verification

- QPF scores against climatological network
- Scores against Large Scale analysis (Arpège or ECMWF)
- Subjective verification of 3 hours rain forecasts against radar observations

QPF scores

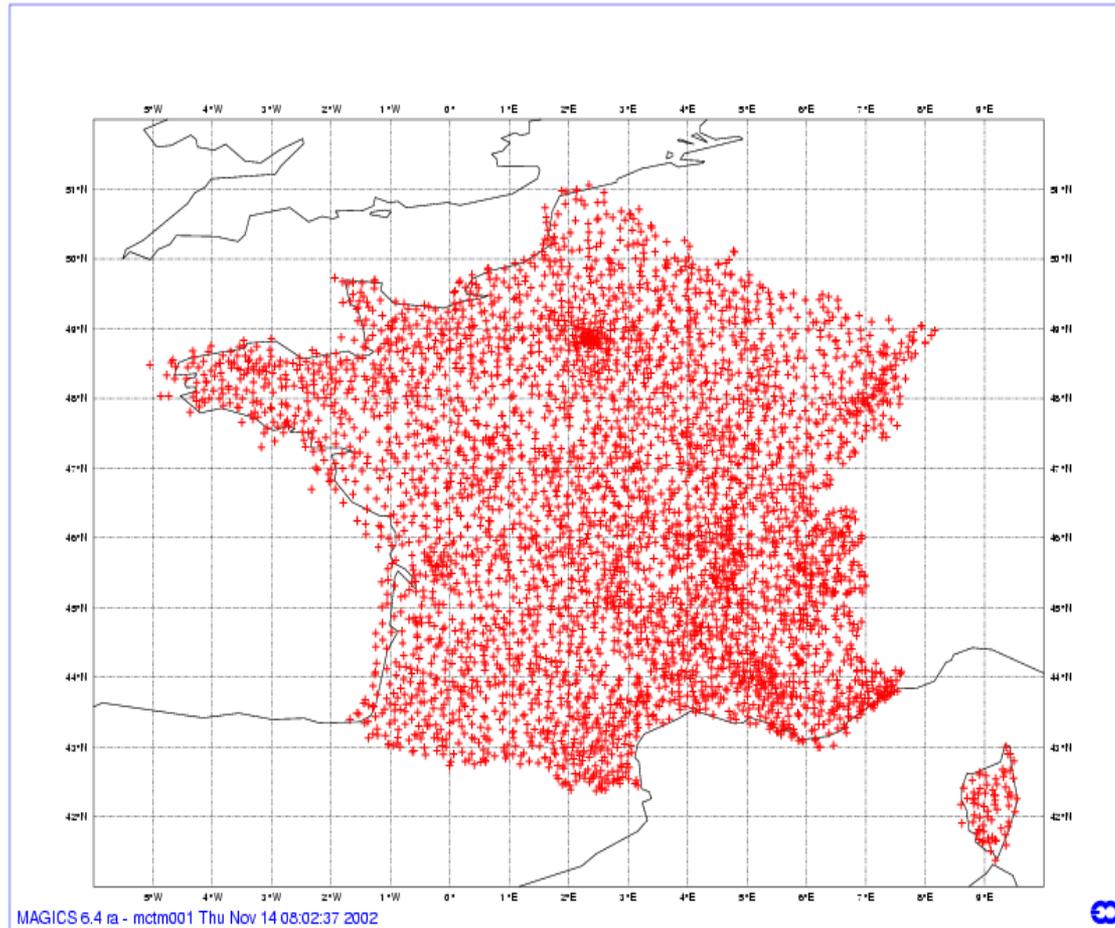
WGNE specifications made for global models

- 0.5 degree in lat-lon
- Temporal average during a 3 months period
- 24 hours accumulated rain
- Selected scores
- Maps of fields and scores

Illustrated for the operational version of ALADIN-
FRANCE

Observations description

- Rain gauges data measuring 24 hours cumuls from day 6 UTC to day+1 6 UTC
- More than 4000 observations per day (available ~ 90 days after)
- Average density of **1 obs/(12 km)²**

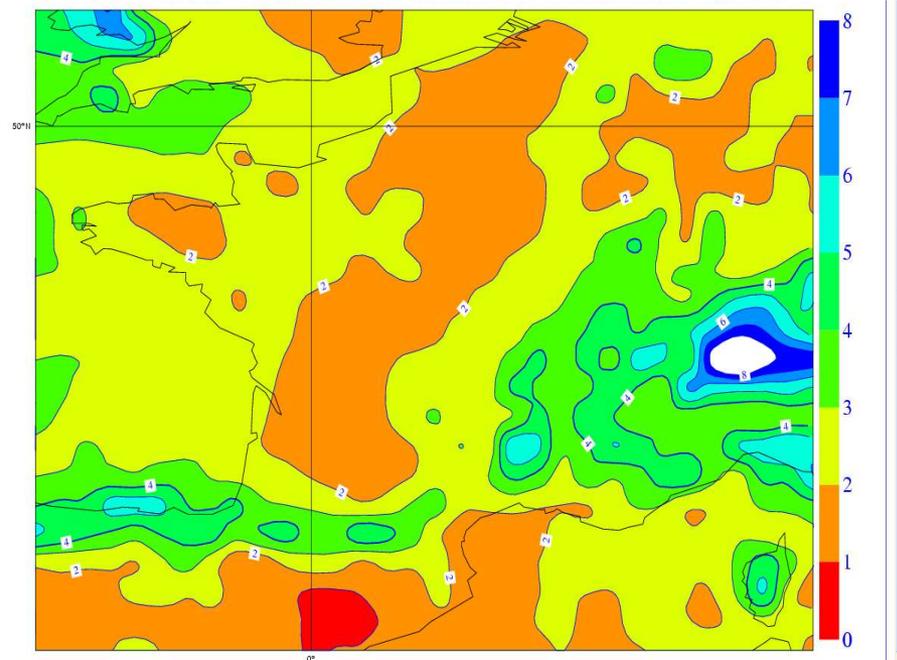
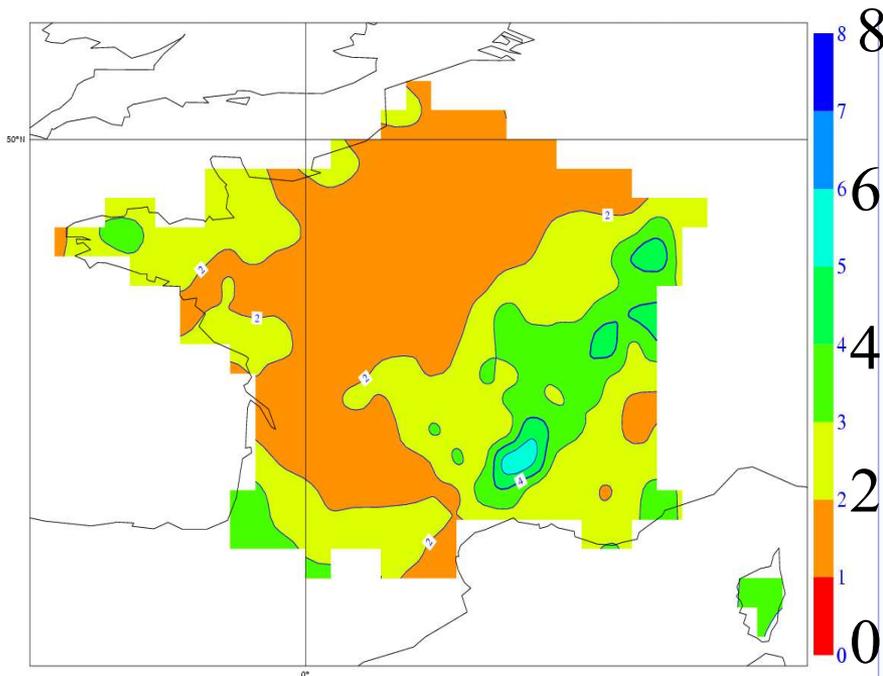


Observed and Aladin forecast of 24 hours accumulated rain from 01 09 to 30 11 2004

Observations

mm/day

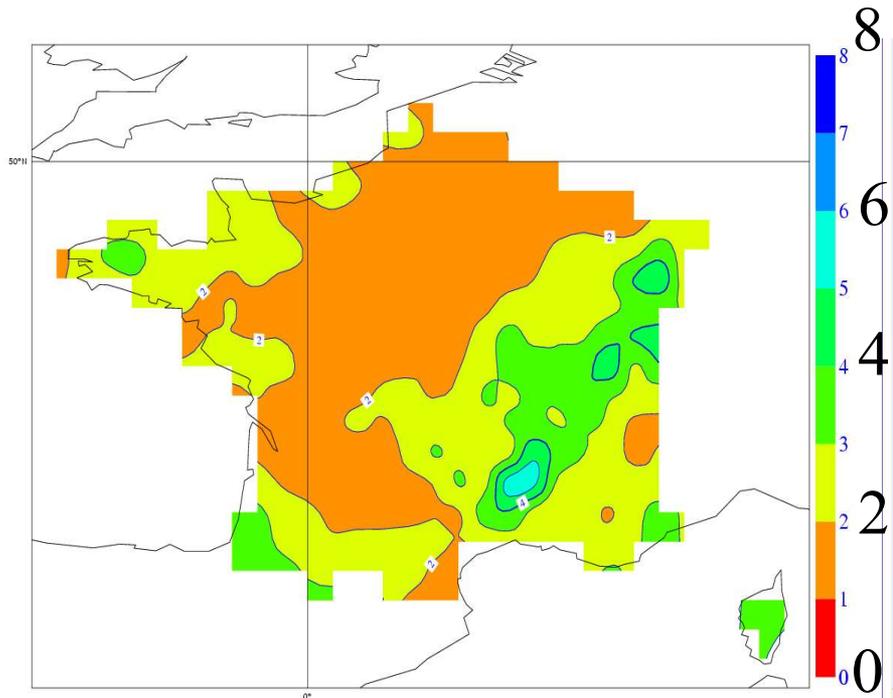
Aladin forecasts



Observed rain and Bias for ALADIN FRANCE

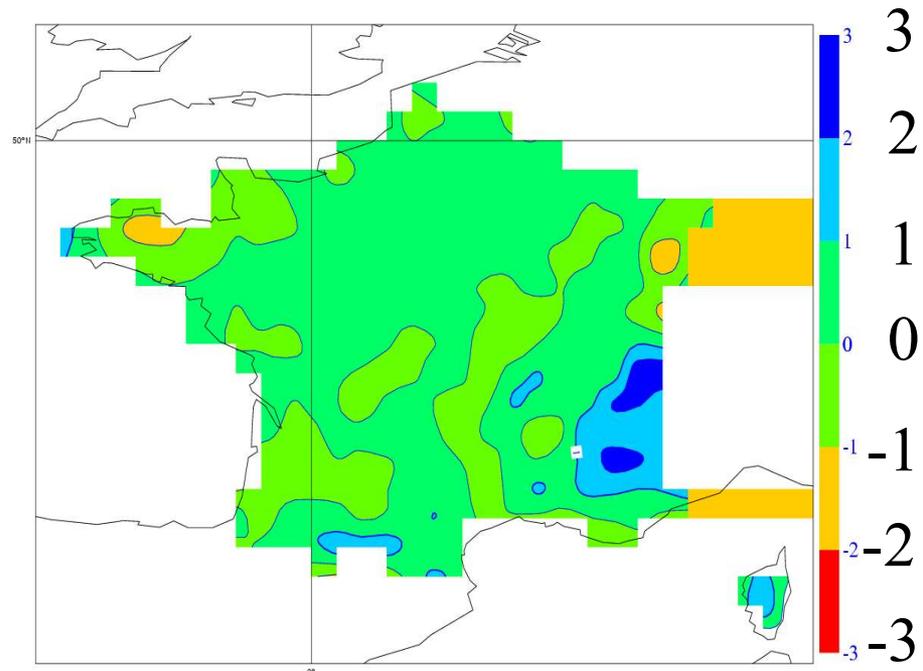
Observations

mm/day

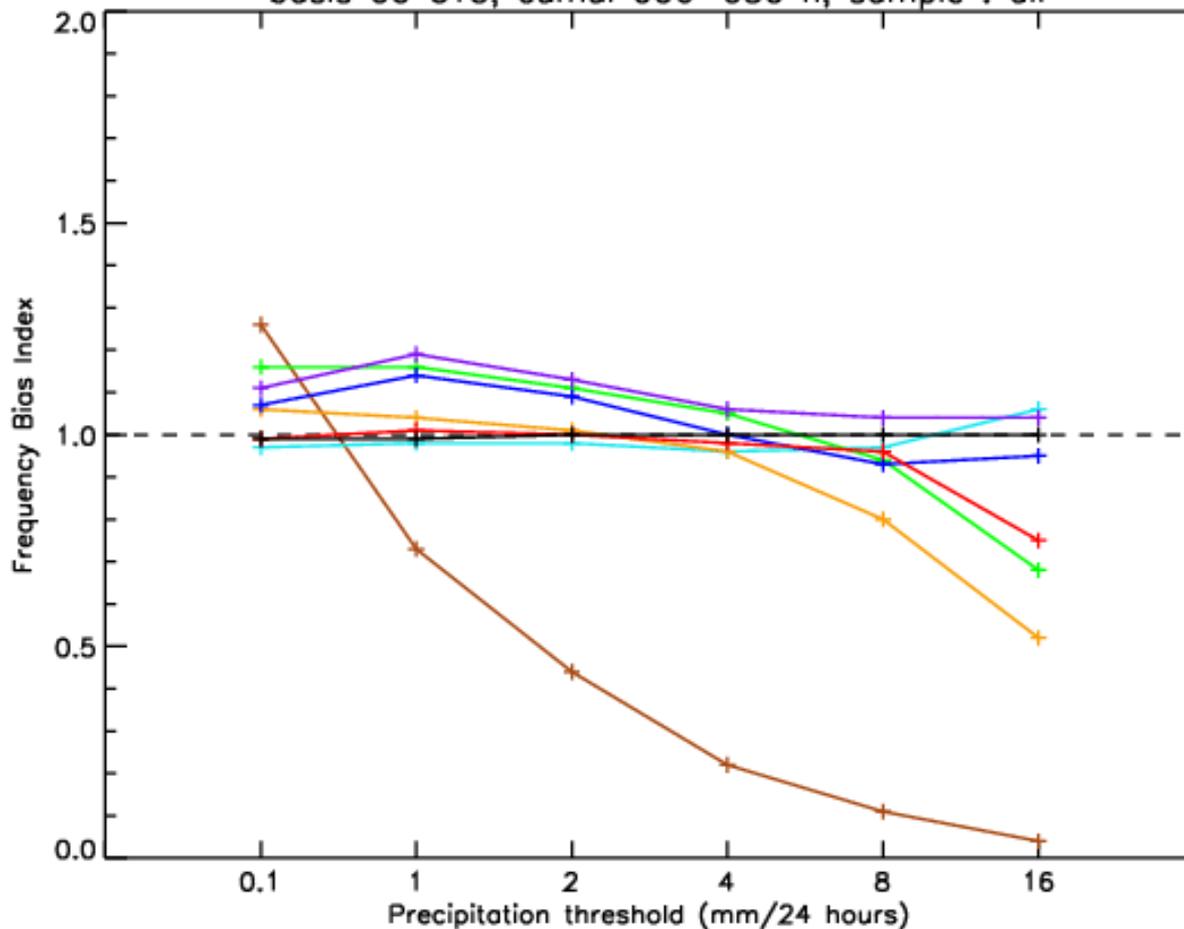


Bias for Aladin
forecasts

mm/day



Frequency Bias Index over France
 over 2004090106–2004113006,
 basis 00 UTC, cumul 006–030 h, sample : all



- | | | |
|-----|-------------|--------------|
| —+— | CMC | + 0.1 mm/24h |
| — — | DWD | * 1 mm/24h |
| —+— | ECMWF | ◇ 2 mm/24h |
| —+— | JMA | △ 4 mm/24h |
| —+— | MF | × 8 mm/24h |
| —+— | NCEP | □ 16 mm/24h |
| —+— | UKMO | |
| —+— | persistence | |
| —+— | MFALA | |

New verifications

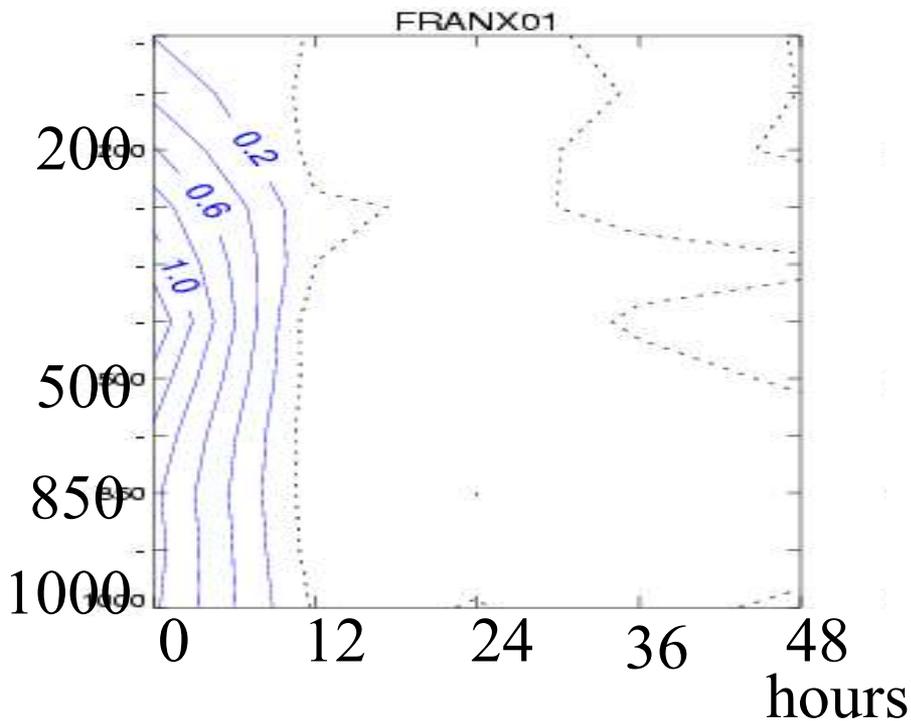
- QPF scores against climatological network
- Scores against Large Scale analysis (Arpège or ECMWF)
- Subjective verification of 3 hours accumulated rain forecasts against radar observations

Verification of the 3DVAR Aladin against radio-soundings and Large scale analysis

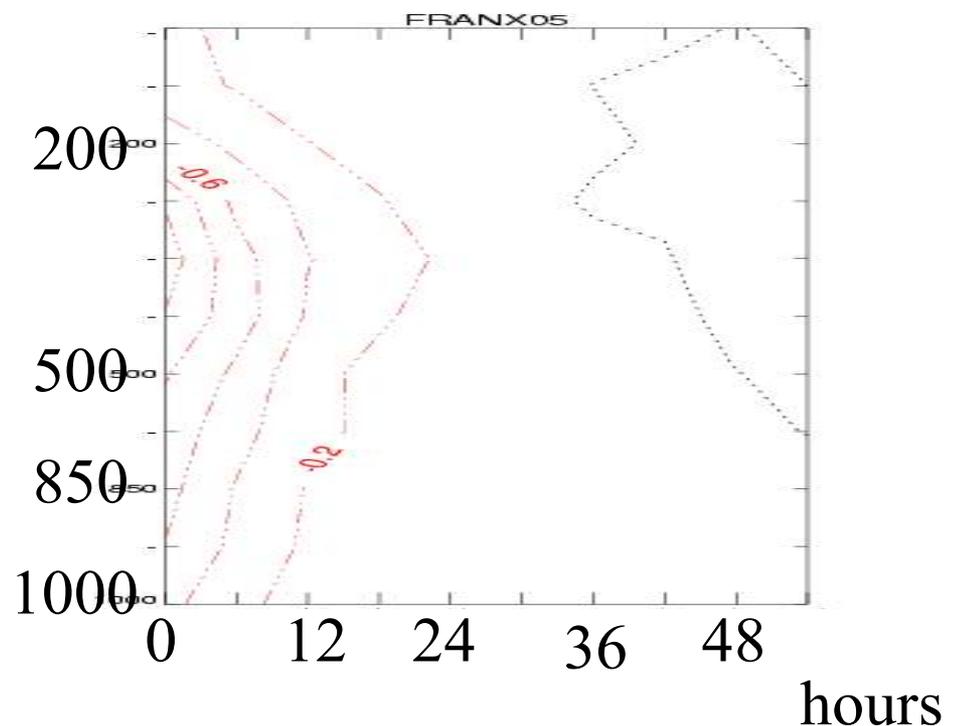
RMS of the wind for the period :22/03 \longrightarrow 10/05/2005

 3DVAR better

 3DVAR worse

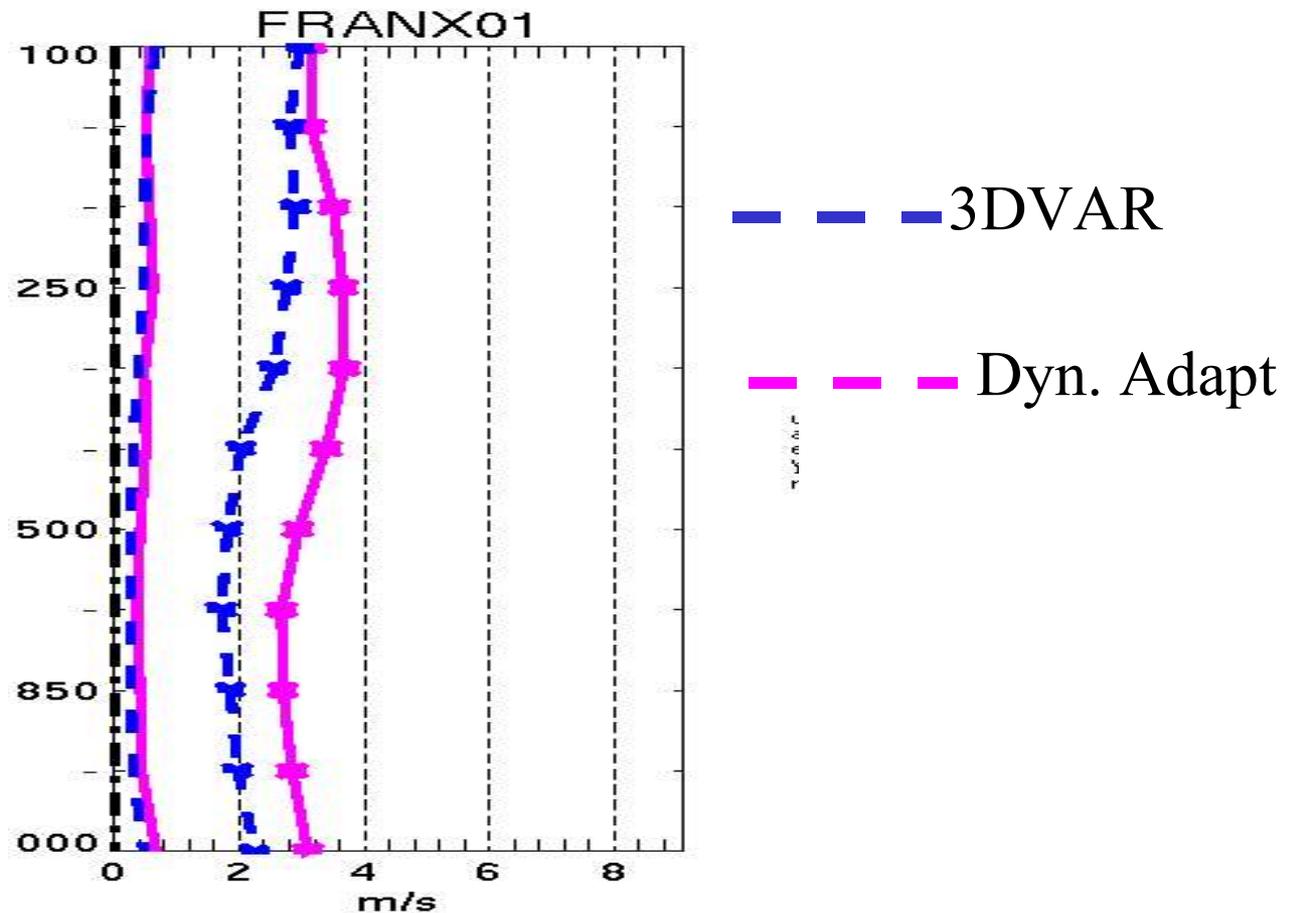


Radio-soundings



ECMWF analysis

Bias and rms of the t=0 analysis against radio-sounding for wind



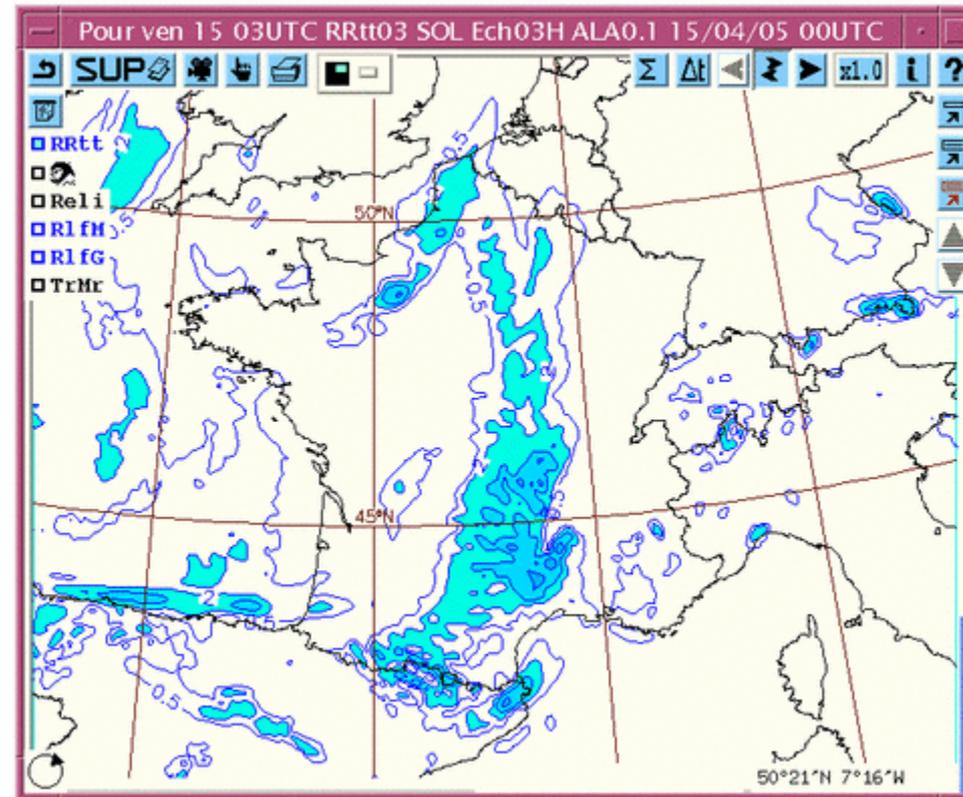
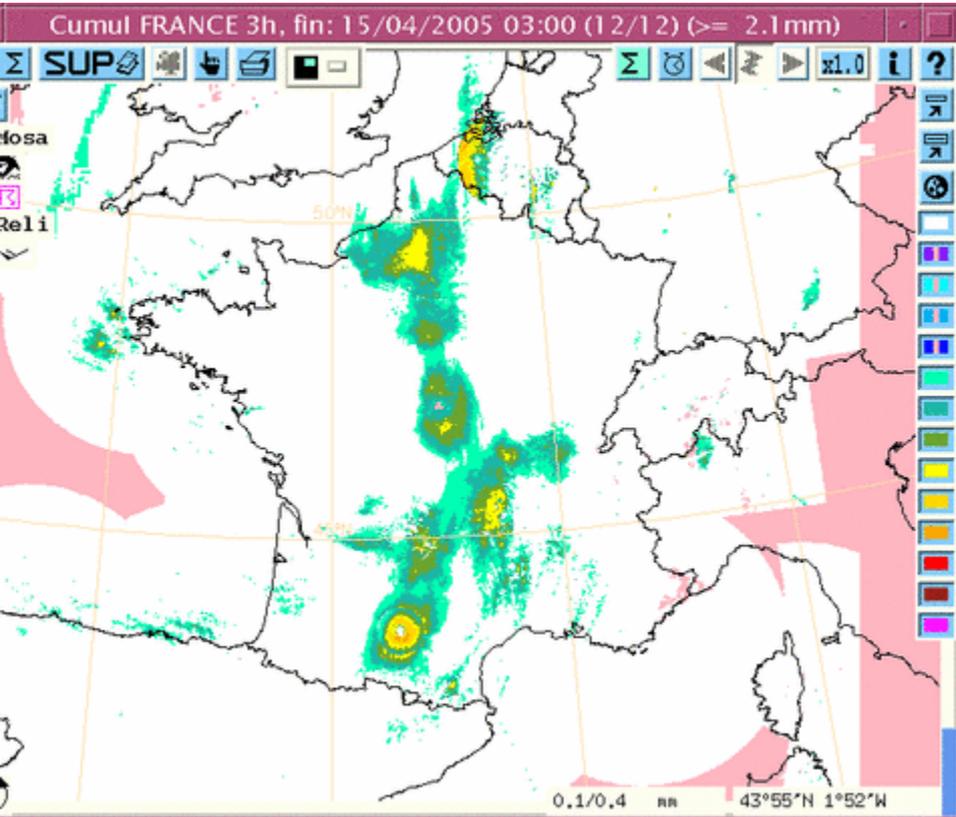
New verification

- QPF scores against climatological network
- Scores against Large Scale analysis (Arpège or ECMWF)
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Subjective verification: 38 cases

- One case of relative improvement of the forecast starting from the 3DVAR analysis
- one spurious phenomena

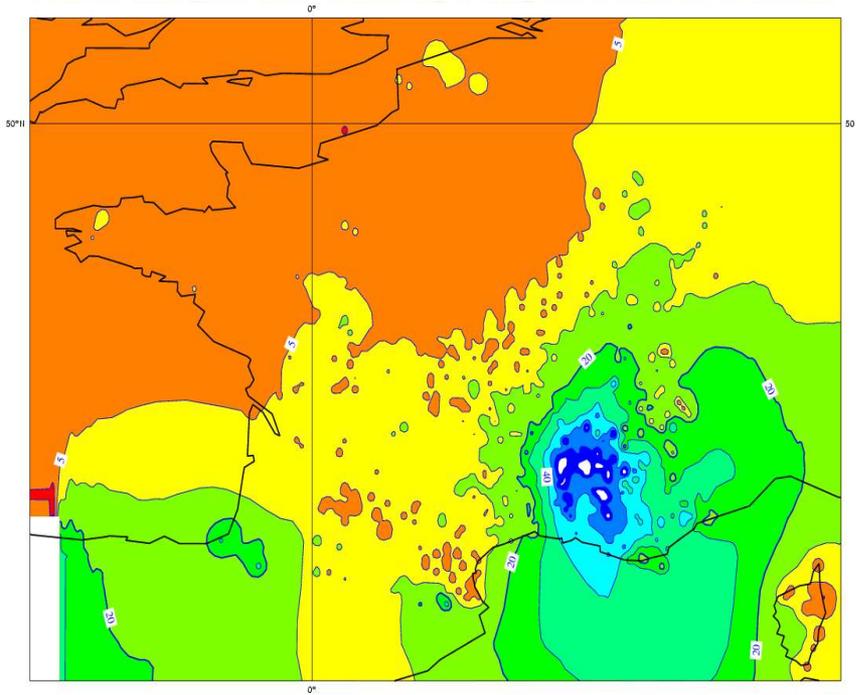
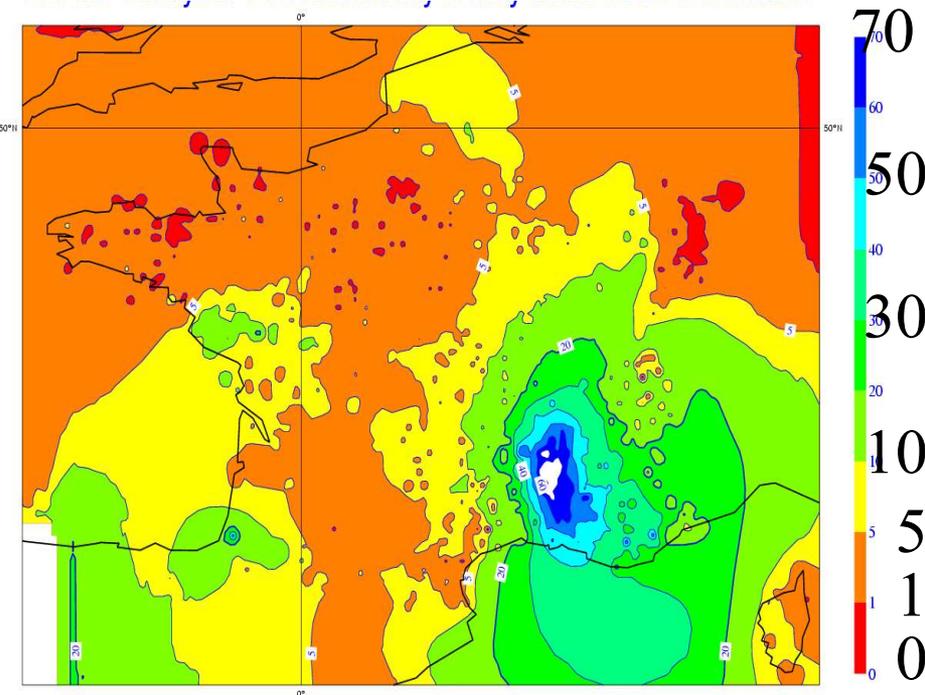
15 April 2005: radar 3 hours accumulated rain and dyn. adapt.



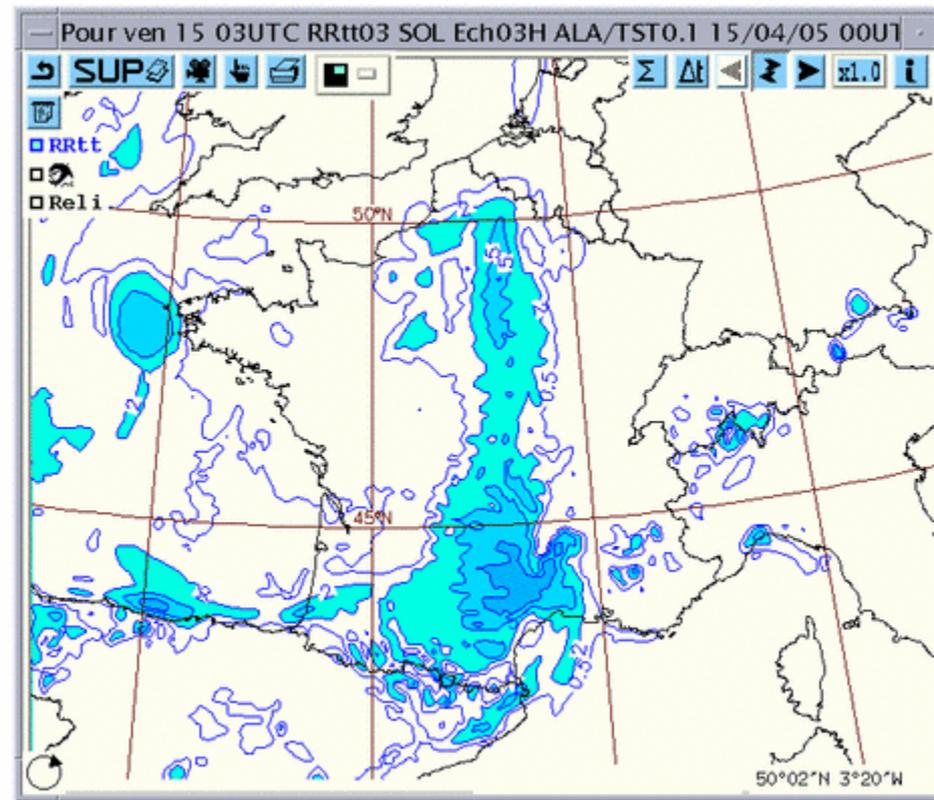
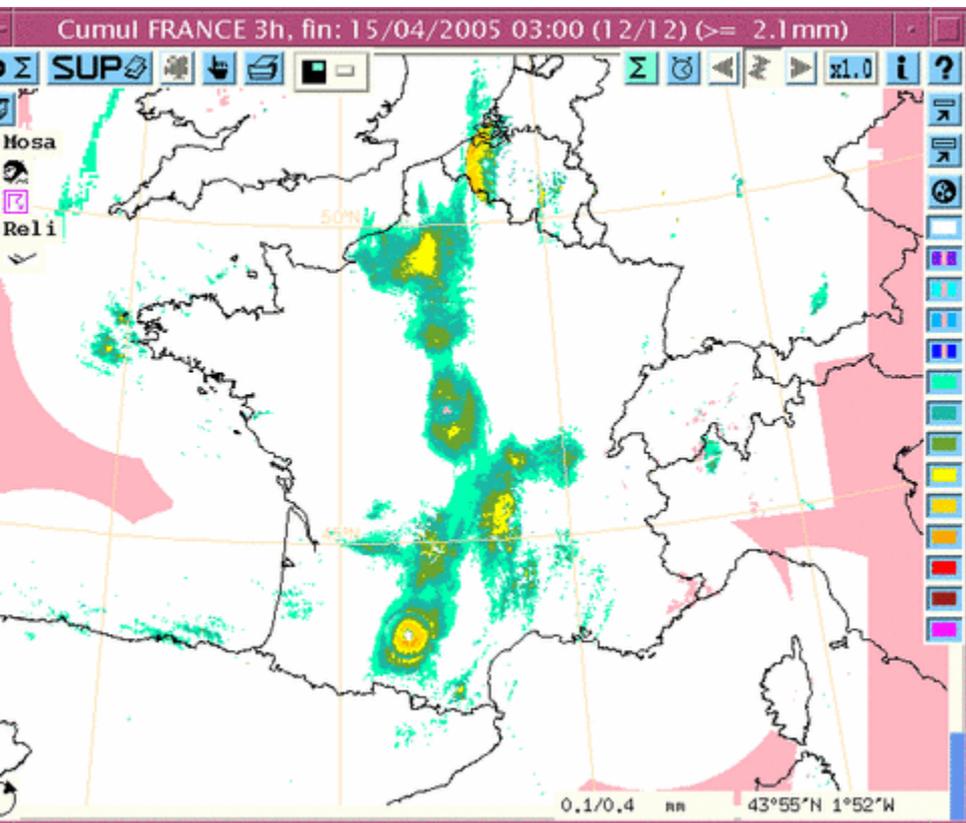
15 April 2005:24 hours accumulated rain

French observations

Dynamical adaptation

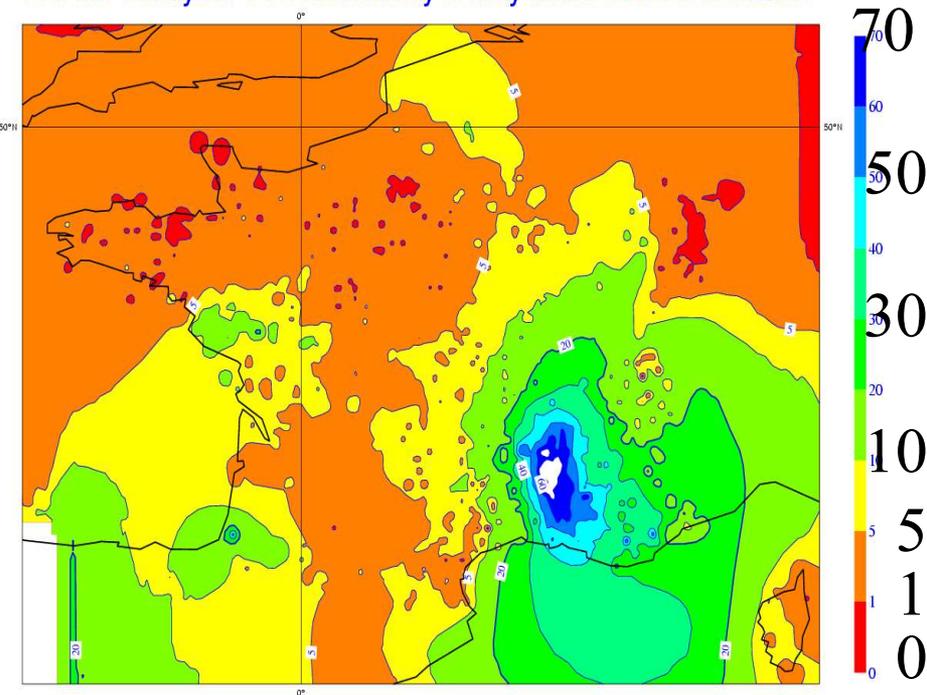


15 April 2005: radar 3 hours accumulated rain and 3DVAR

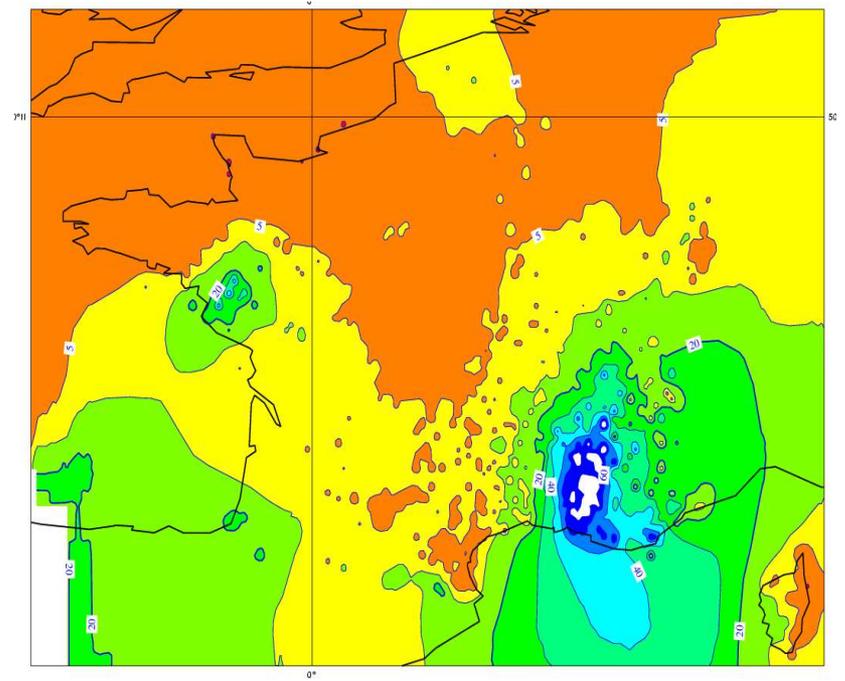


15 April 2005:24 hours accumulated rain

French observations



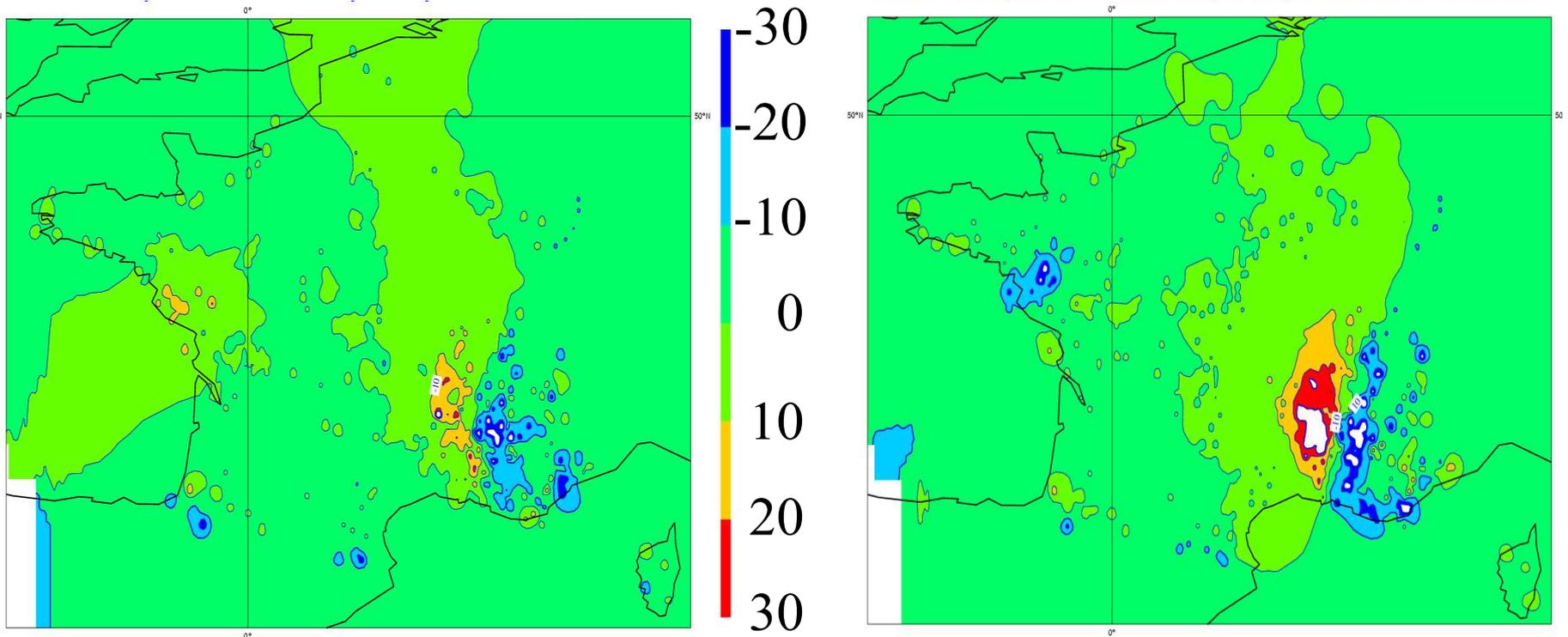
3DVAR forecast



15 April 2005: bias for the 24 hours accumulated rain

Dynamical adaptation

3DVAR forecast



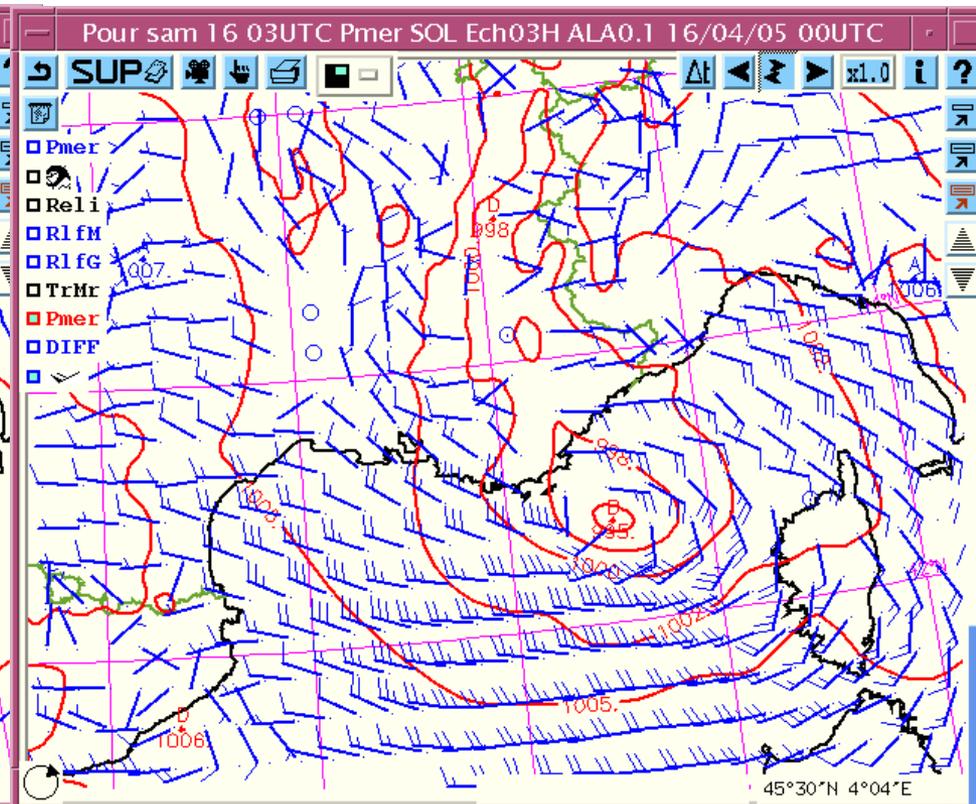
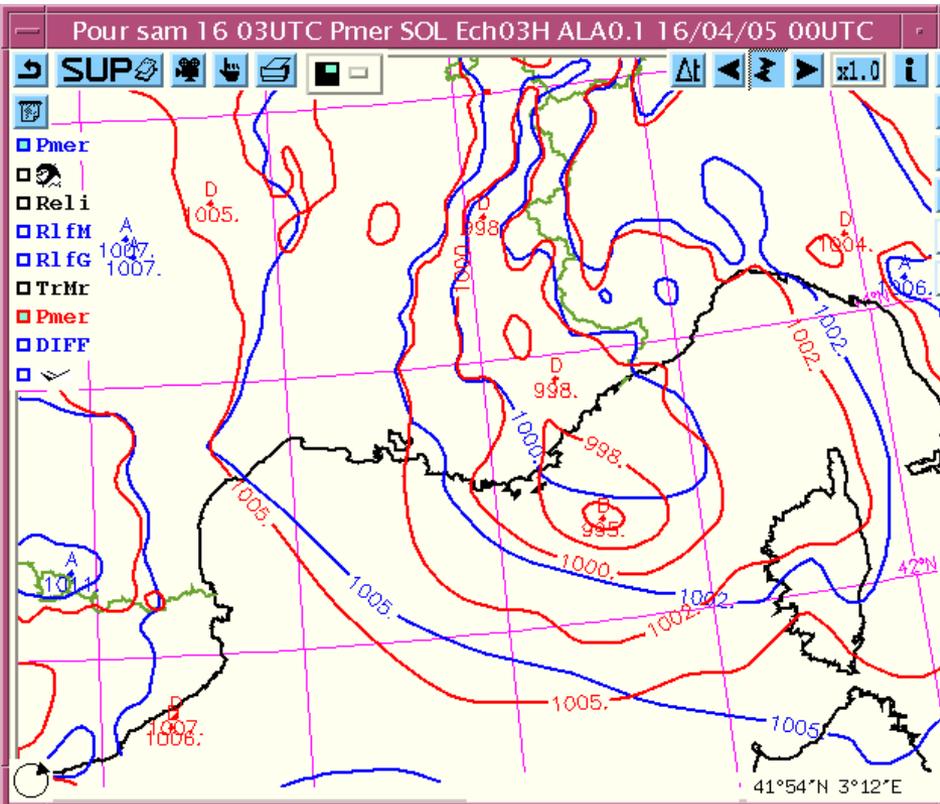
Some spurious phenomena

Mean Sea Level pressure

- Dyn. Adapt.
- 3DVAR

Mean Sea Level pressure

- +
- Wind at 10 m AGL
- (Only 3DVAR forecast)



Subjective verification: 38 cases

3DVAR better	Neutral cases	3DVAR worse
5+4	18	11
13 % + 11 %	47 %	29%

Conclusion

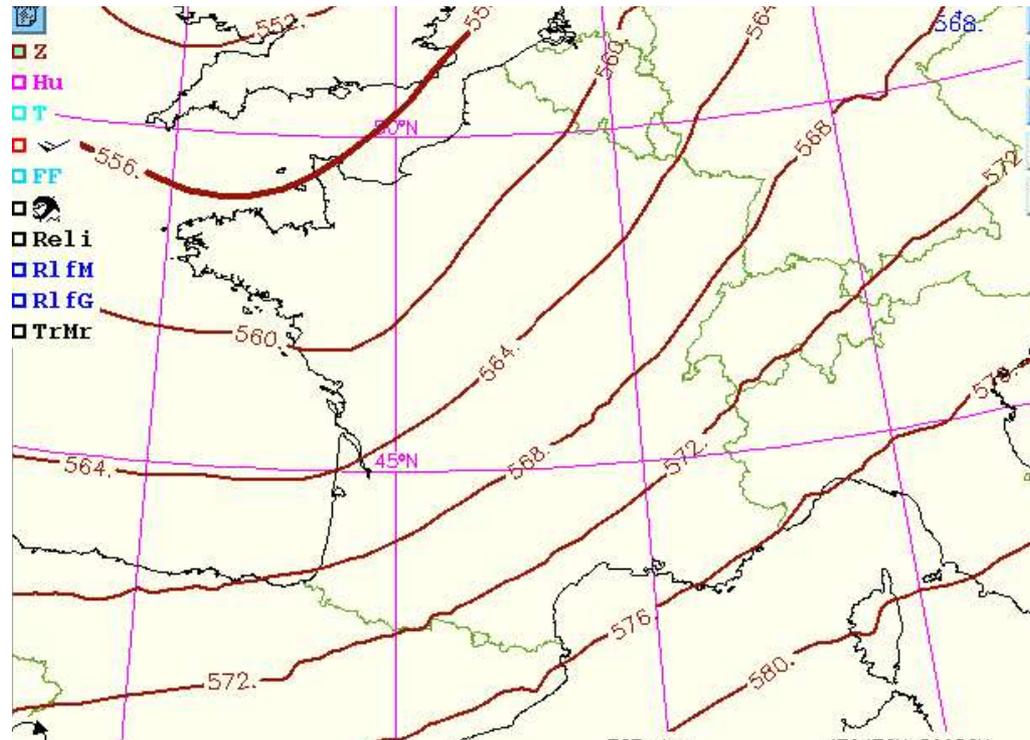
- New diagnostic development to clarify the improvement of Aladin in comparison to arpège for the rain forecast
- Regional scores for Global model and LAM
- Chronology of convective events monitored every 3 hours
- First use for the verification of the 3DVAR version of Aladin France

Future work

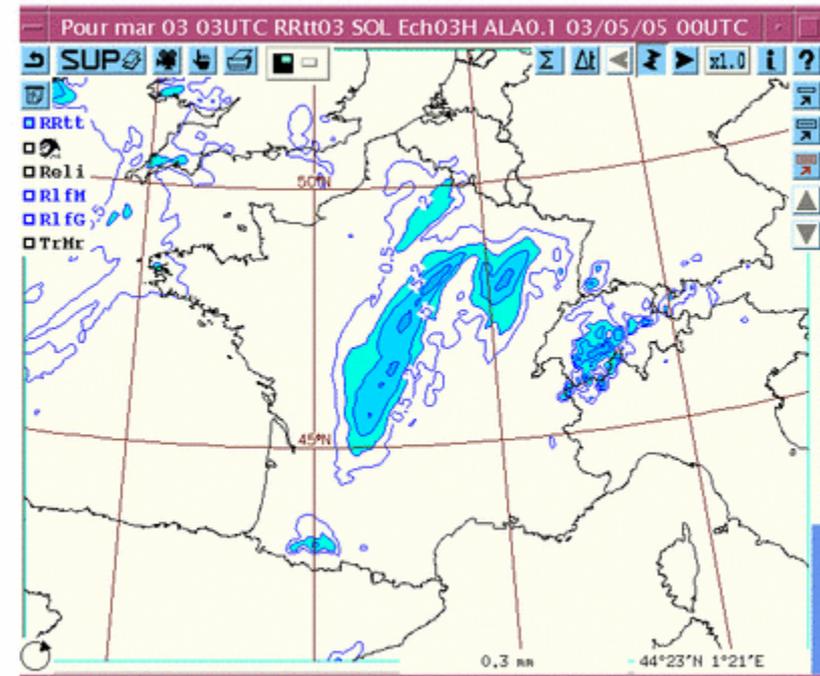
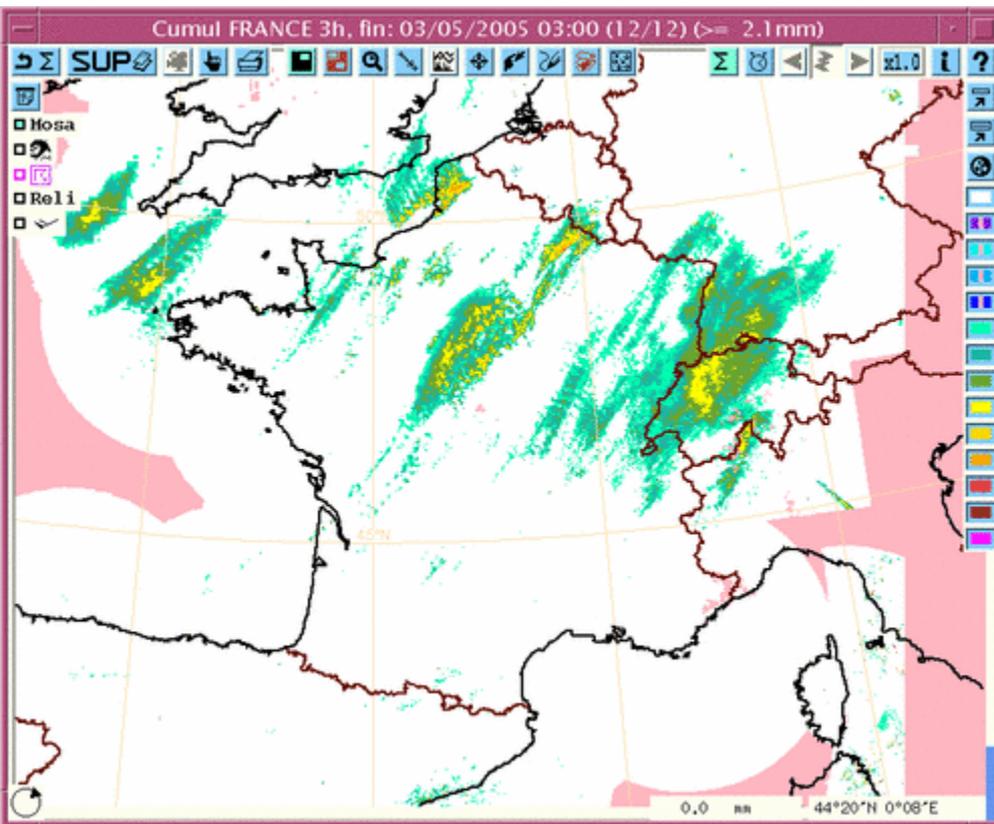
- New version of the 3DVAR ALADIN to be verified
- Use of the WGNE framework to quantify the added value of the ALADIN model
- Use of synthetic satellite images to compute verification scores

The End

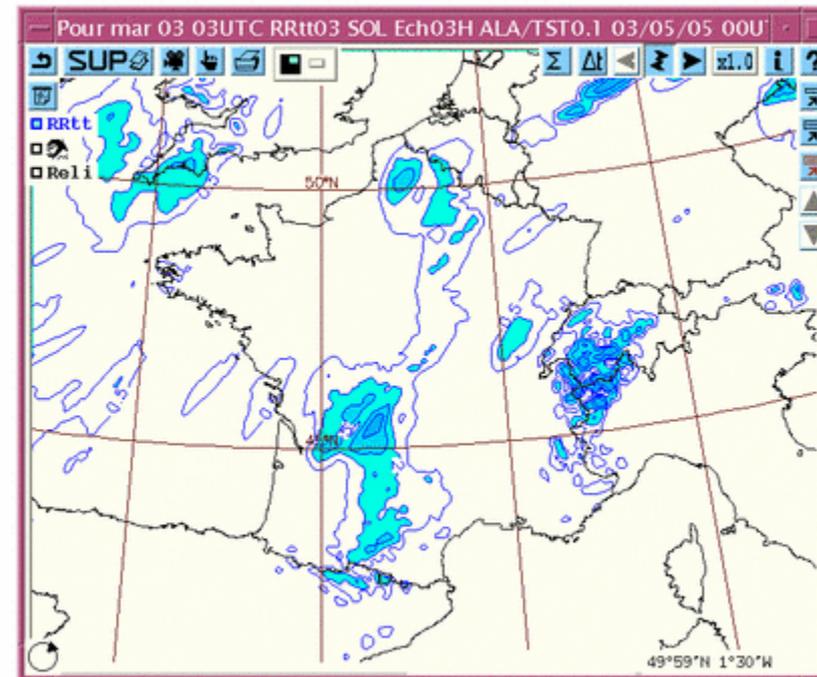
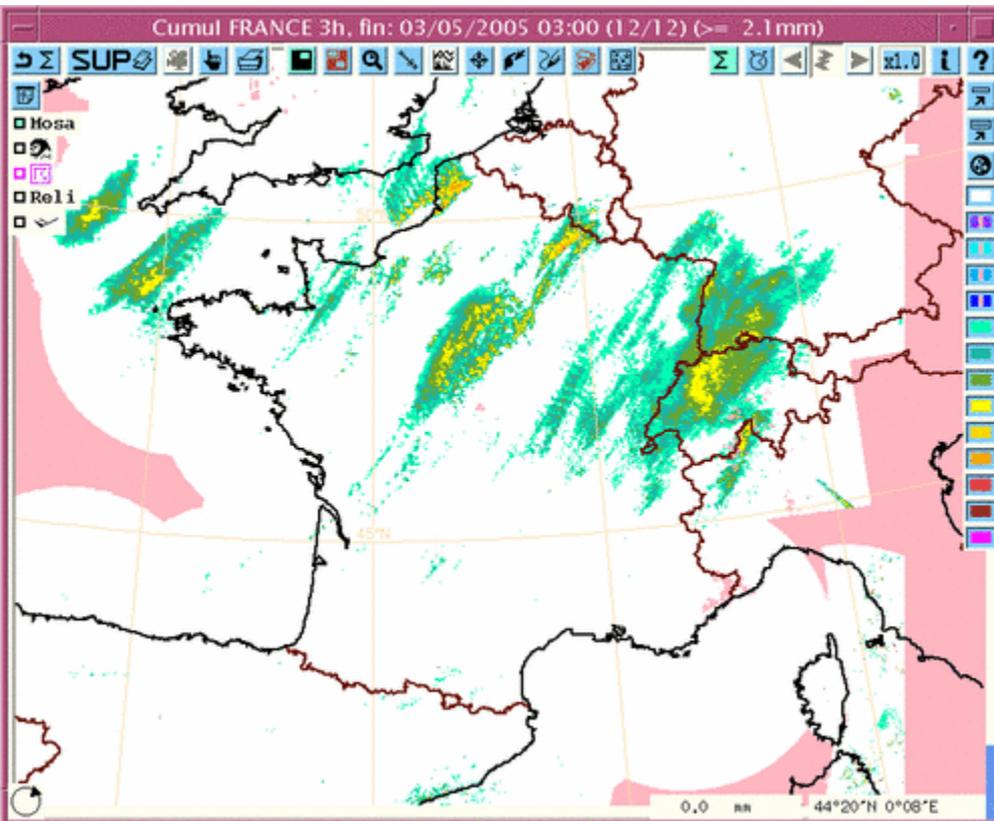
03 May 2005: Z500



03 May 2005: radar 3 hours accumulated rain and dyn. adapt.



03 May 2005: radar 3 hours accumulated rain and 3DVAR



03 May 2005: 24 hours accumulated rain

Observations

mm

Dynamical adaptation

