

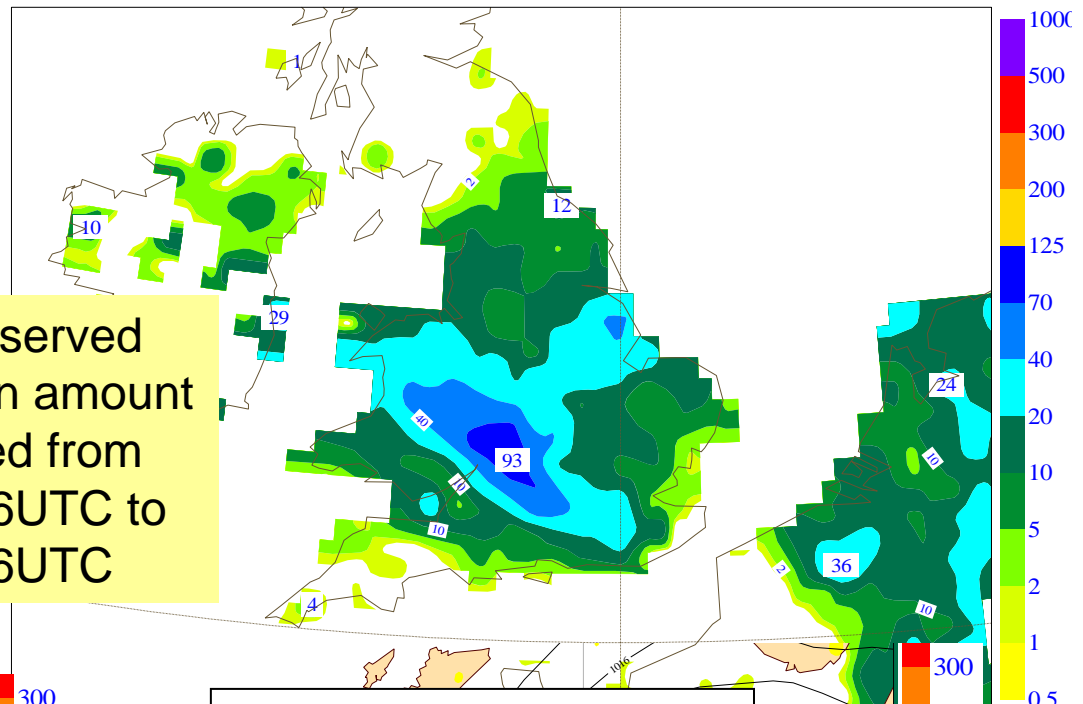
# **Weather Parameters:**

## ECMWF models performance and comparison with other centres

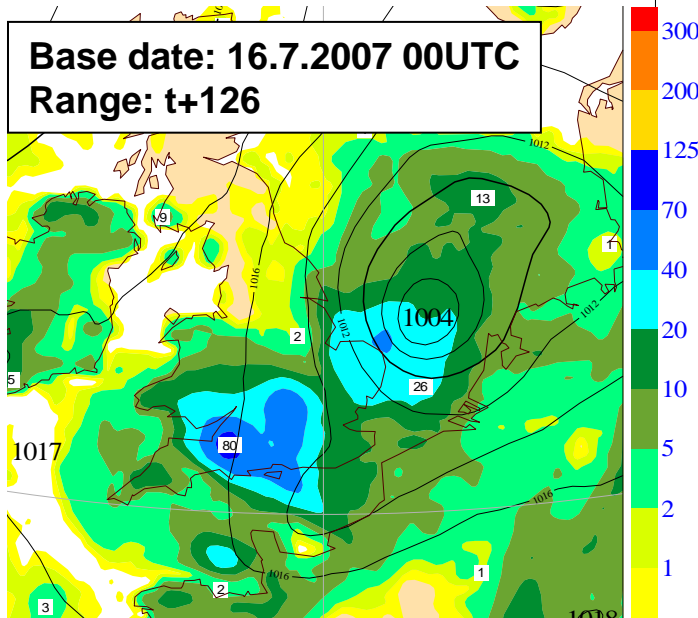
Anna Ghelli

# Model performance: a snap shot

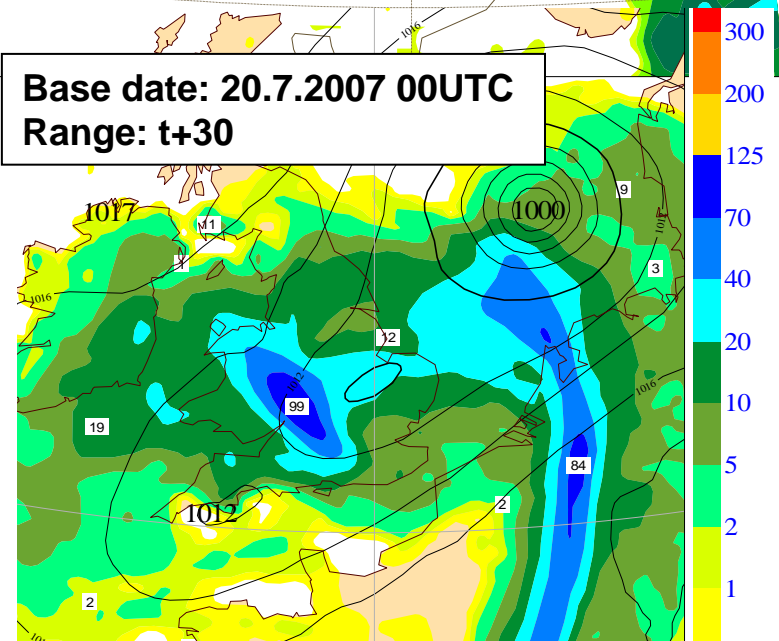
Gridded observed precipitation amount accumulated from 20.7.2007 6UTC to 21.7.2007 6UTC



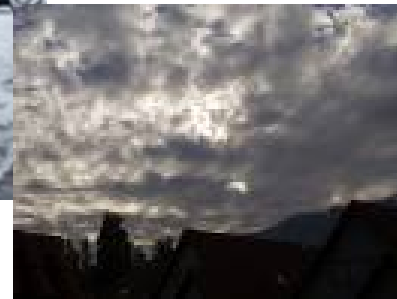
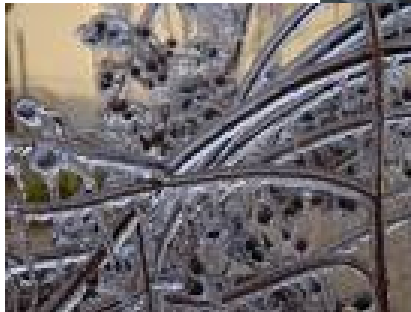
Base date: 16.7.2007 00UTC  
Range: t+126



Base date: 20.7.2007 00UTC  
Range: t+30



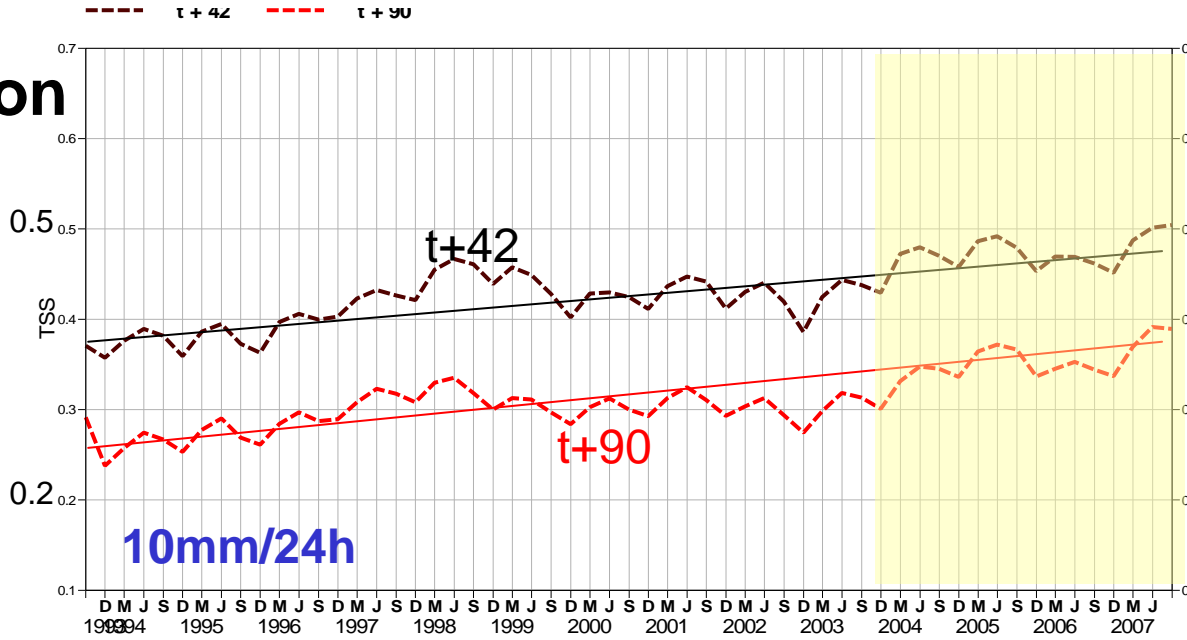
# The Weather



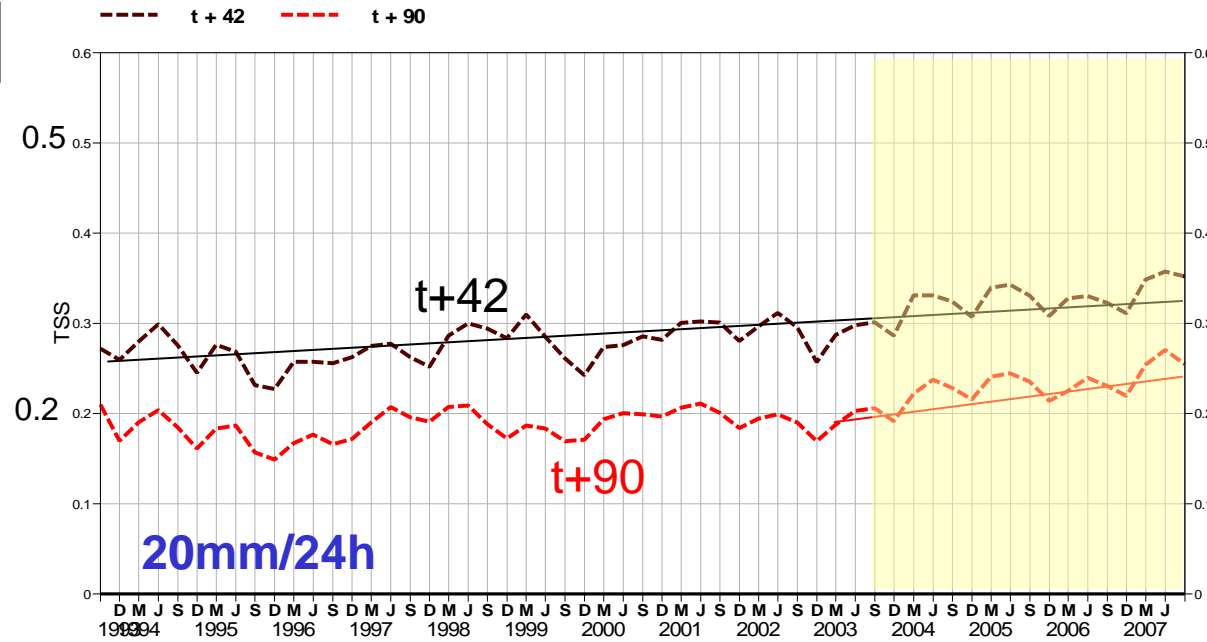
# Outline

- Precipitation, 10 m wind, 2mT and clouds
- Precipitation verification using precipitation analysis
- Precipitation forecast: comparisons with other centres
- Conclusions

# Precipitation verification Europe

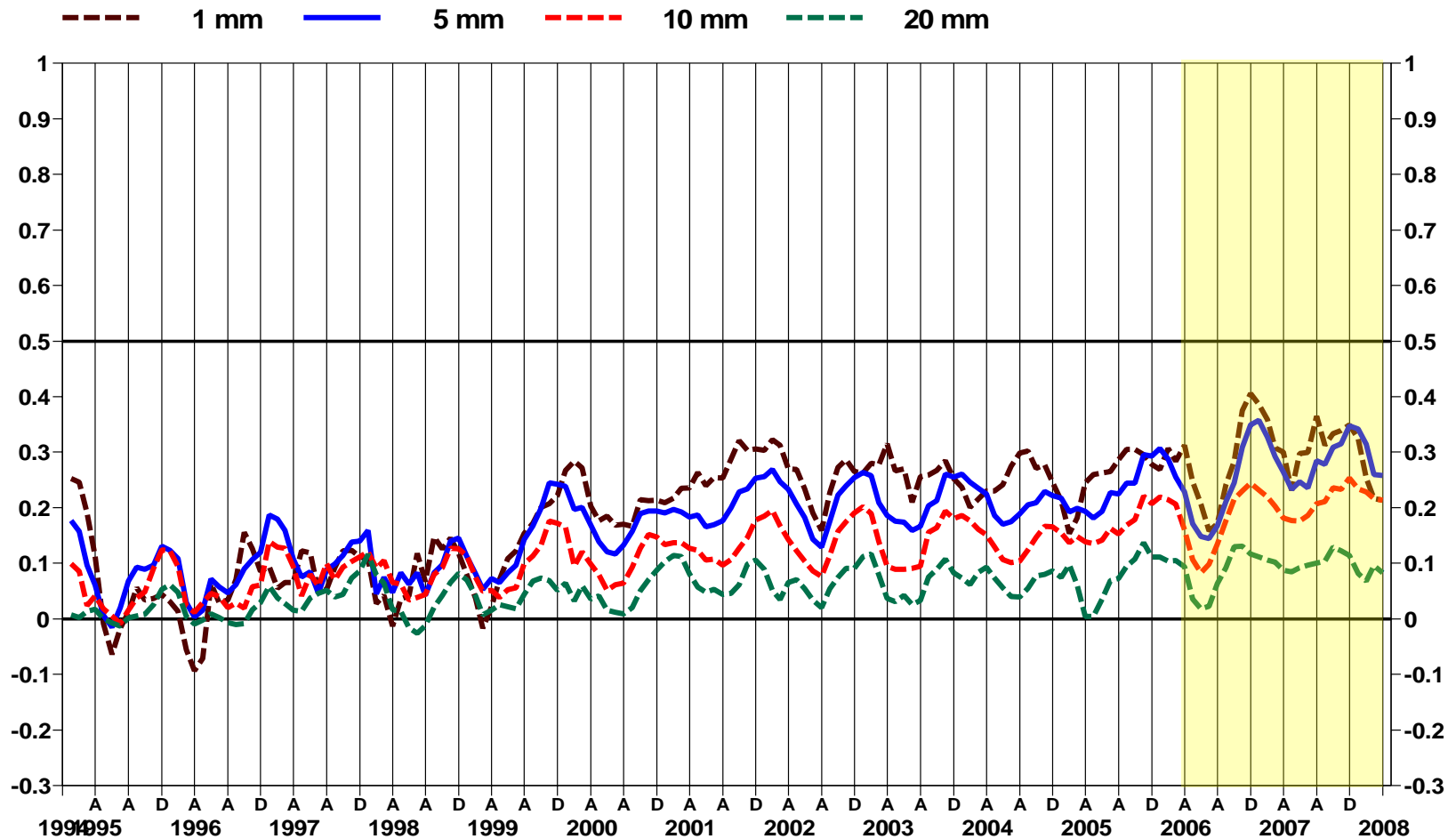


TSS=hit rate – false alarm rate



# EPS – Europe

Probability forecast verification against obs ( 3-M. moving sample)  
Brier skill score (sample clim) fc step 96 24h-precipitation exceeding  
Verification area: Europe

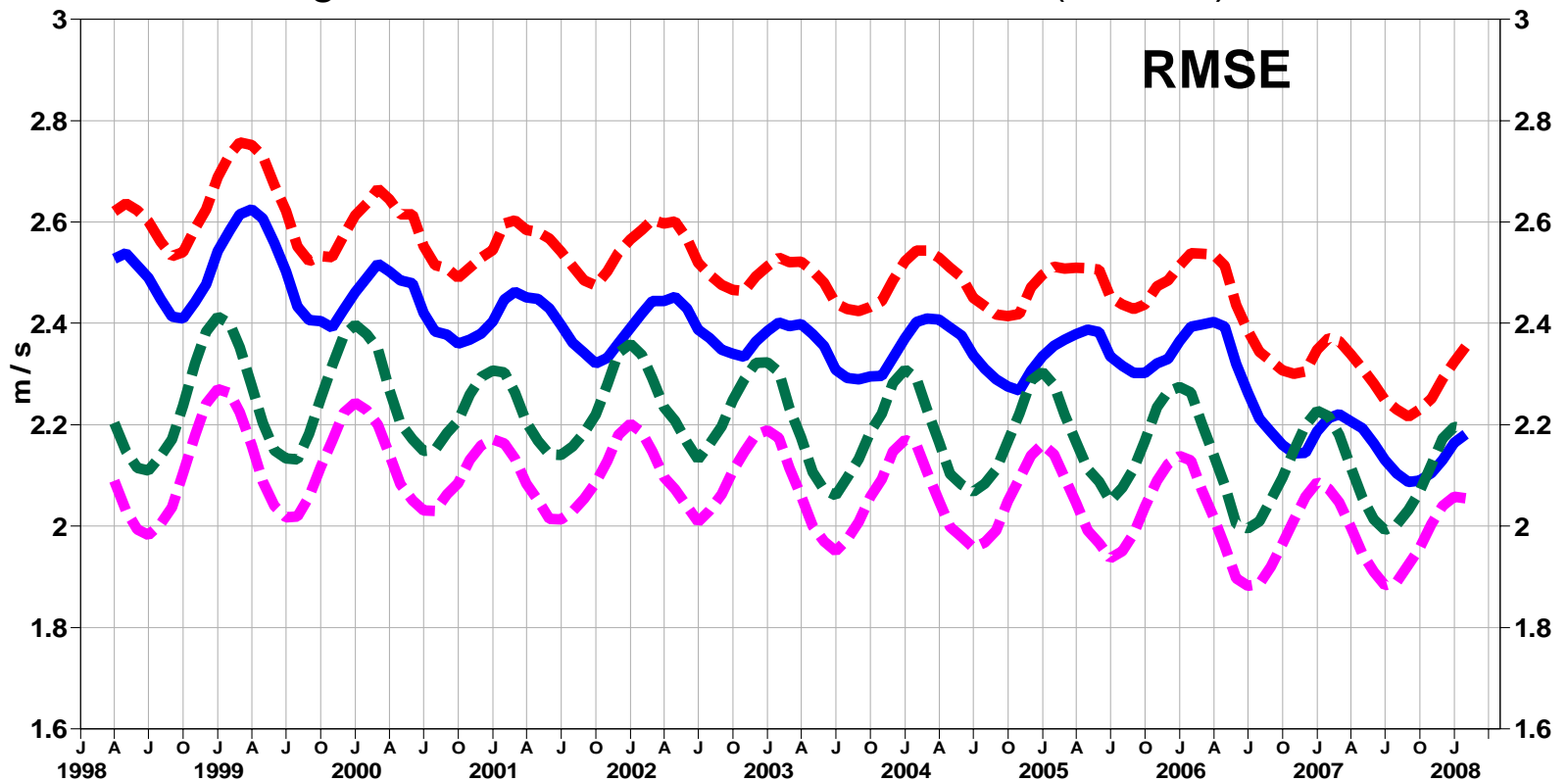




# 10m wind – North America

t+48      t+72  
t+60      t+84

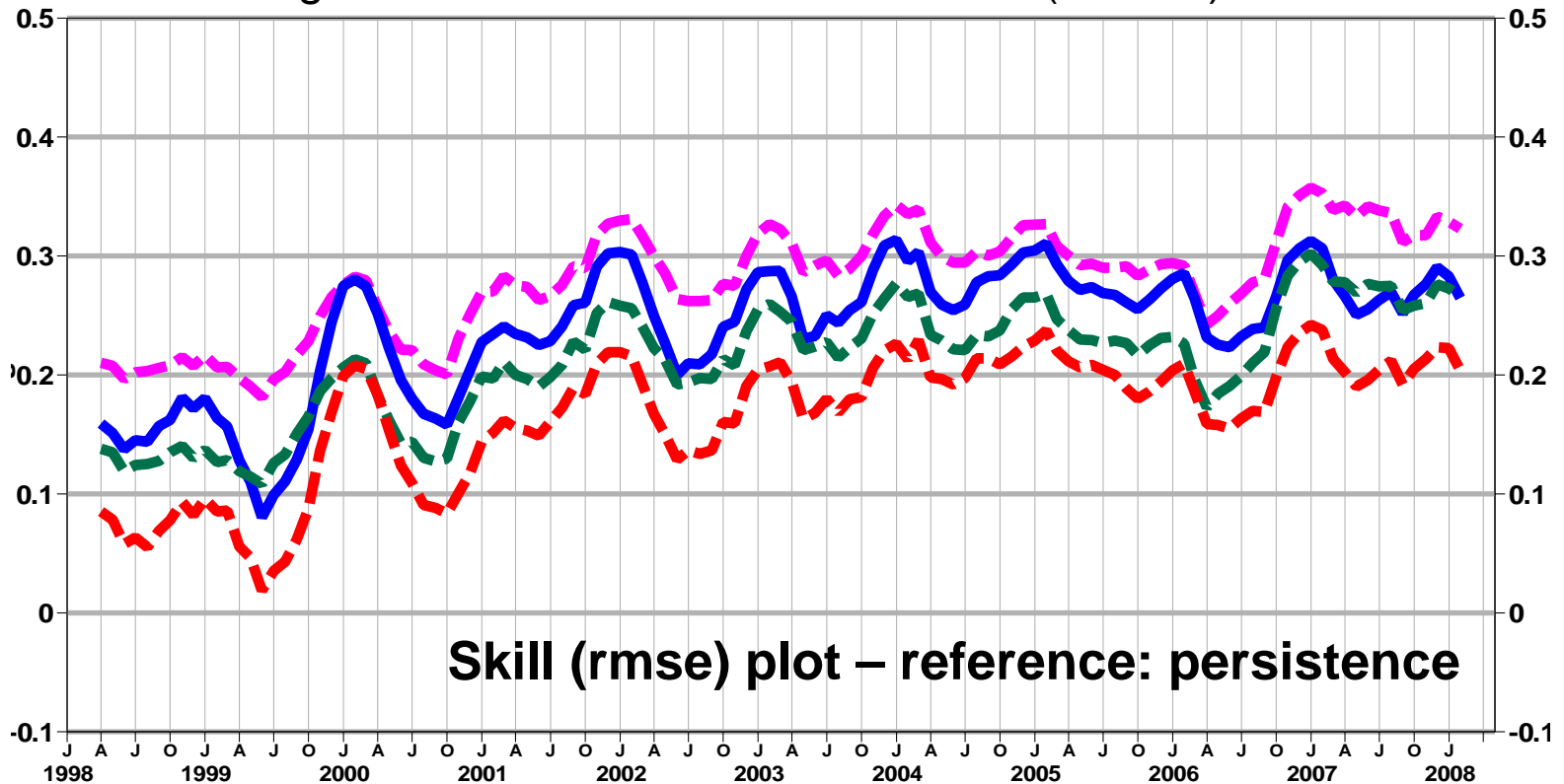
High resolution deterministic forecast (12UTC)



# Temperature at 2m – Europe

t+48      t+72  
t+60      t+84

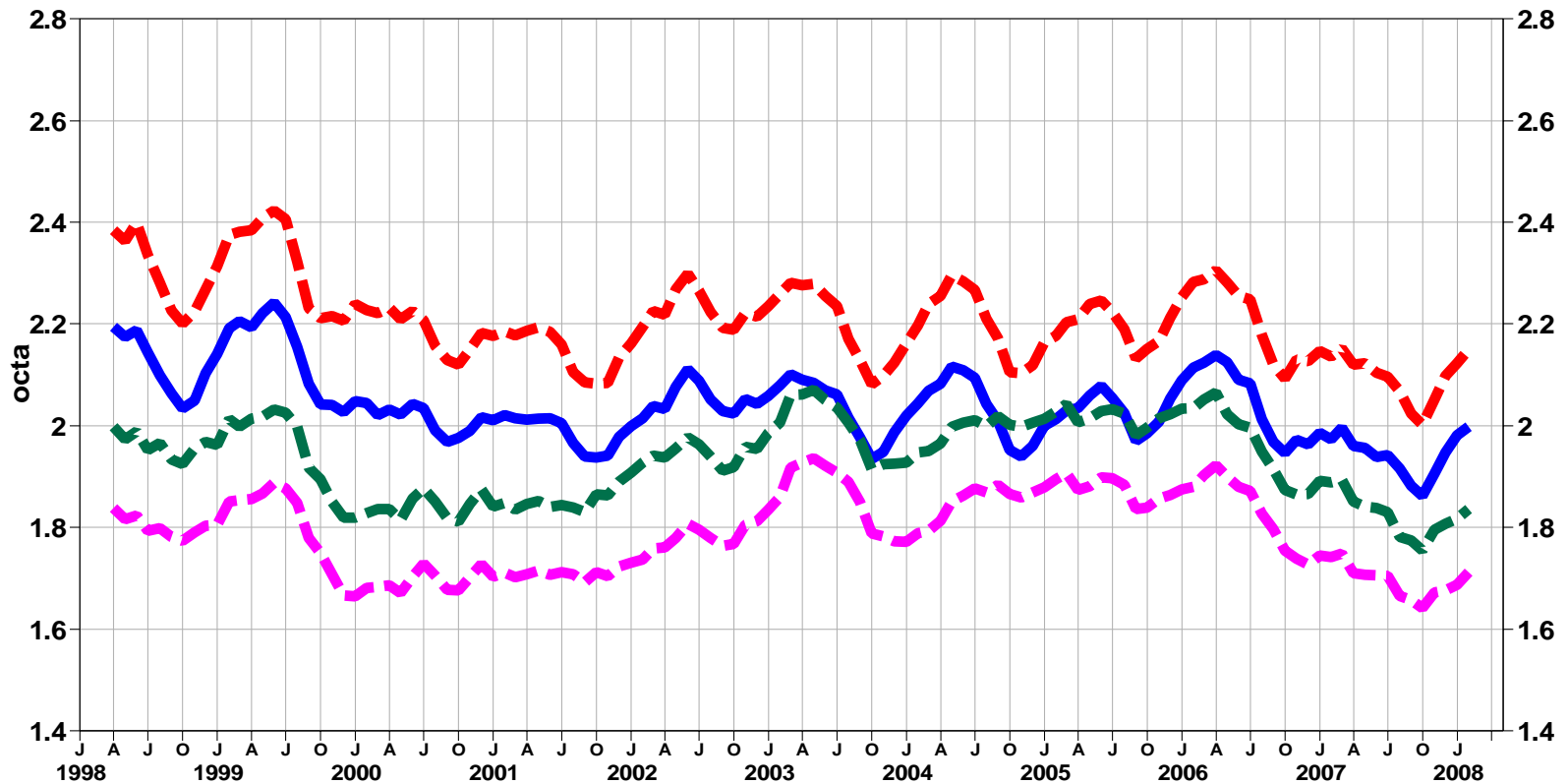
High resolution deterministic forecast (12UTC)



# Cloud verification -- MAE Europe

t+48      t+72  
t+60      t+84

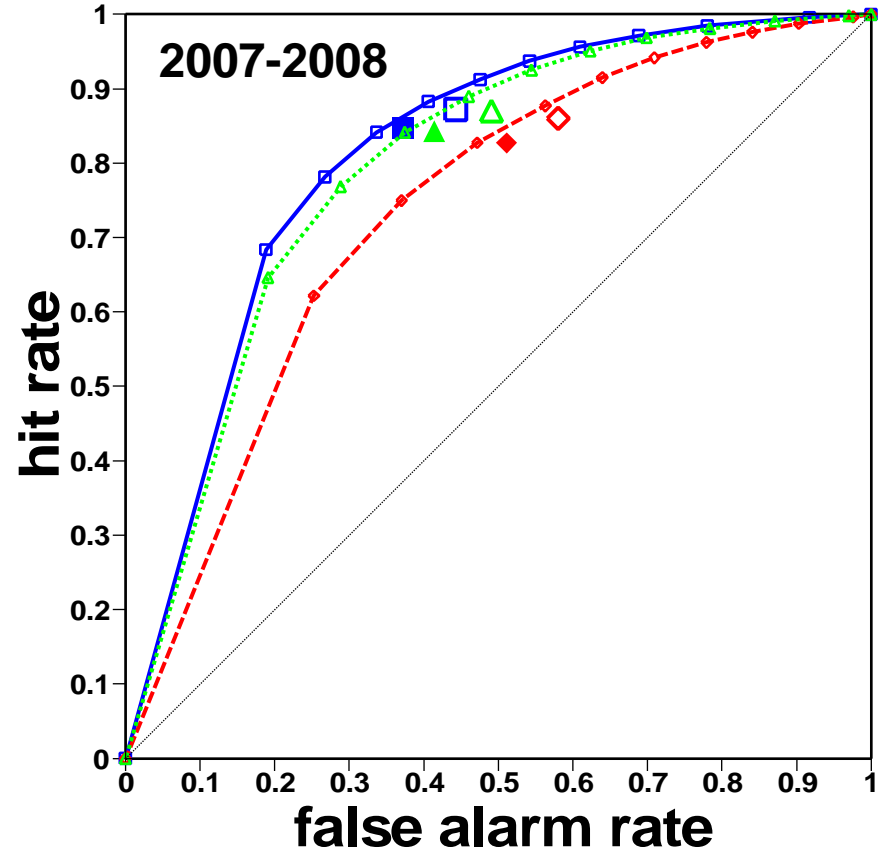
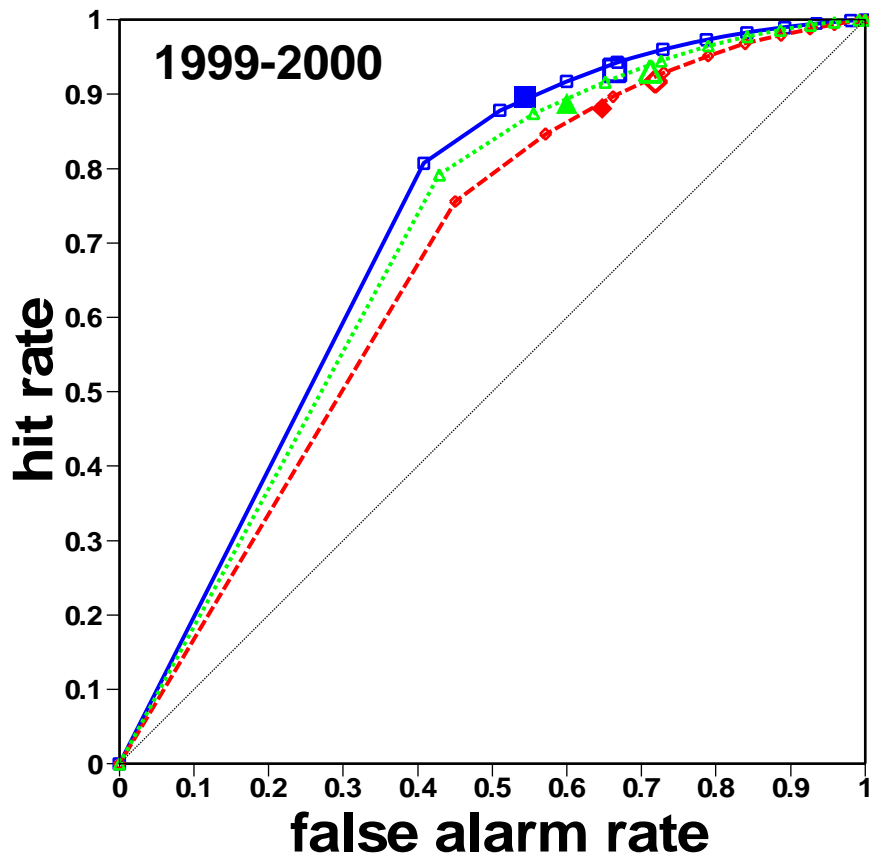
High resolution deterministic forecast (12UTC)



# Cloud verification (EPS) – Europe

Period: October to April

Range: t+96    Threshold: > 1 octave

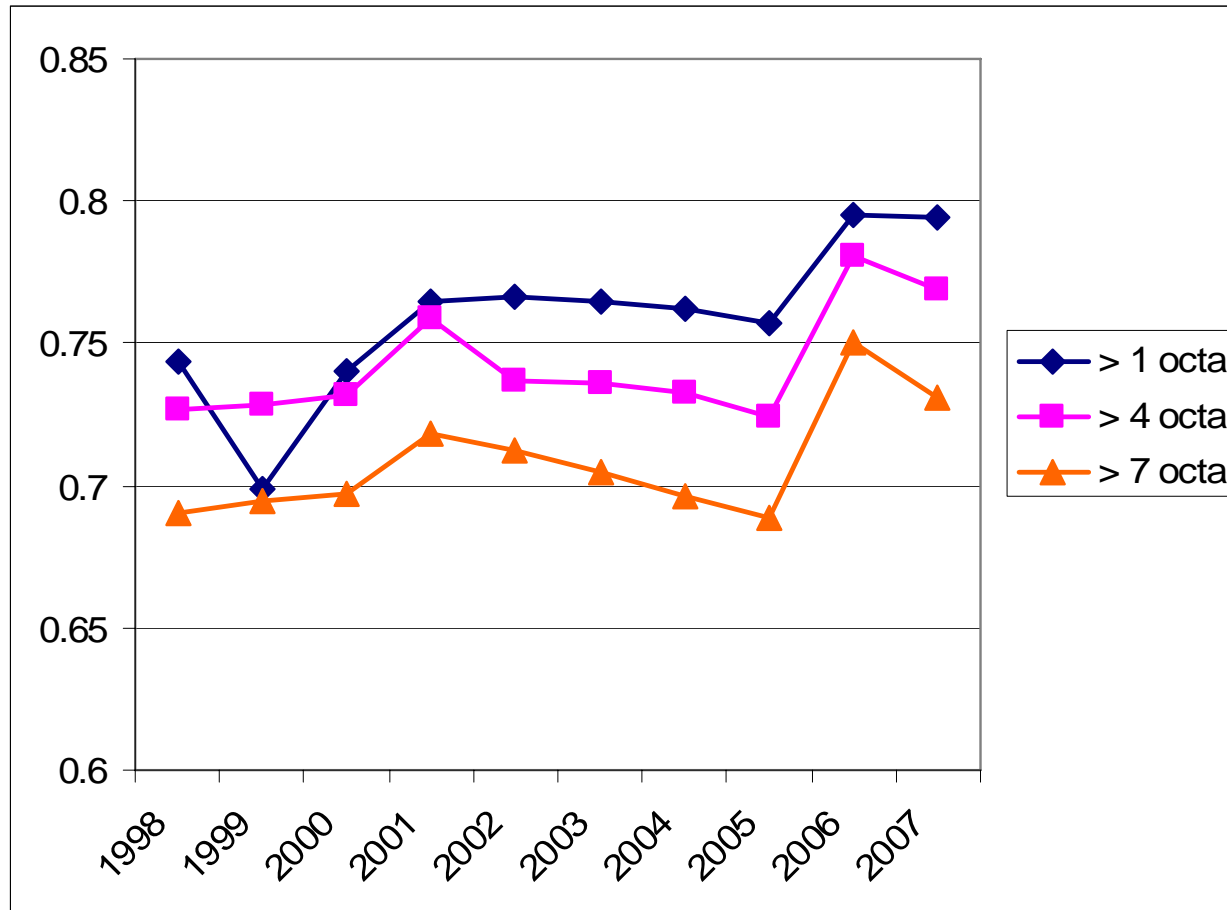


# Cloud verification (EPS) – Europe

Period: October to April

Range: t+96

## ROCA

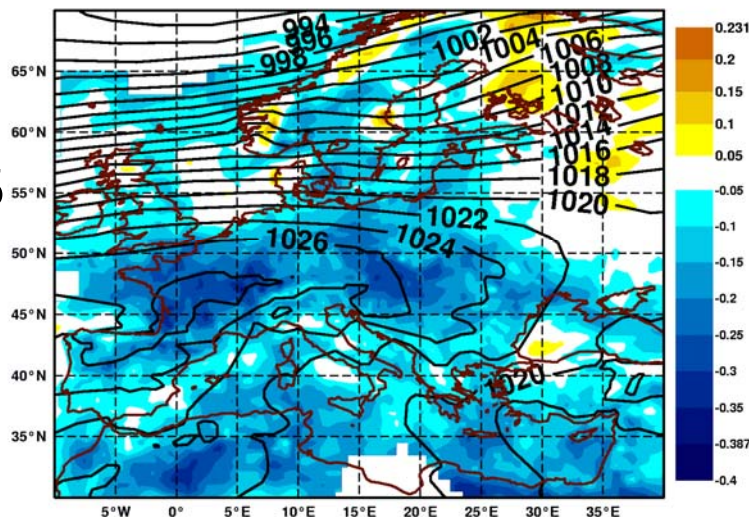


# Winter Cloud Cover: 36h forecast versus SYNOP

(high pressure days over central Europe)

(Martin Koehler)

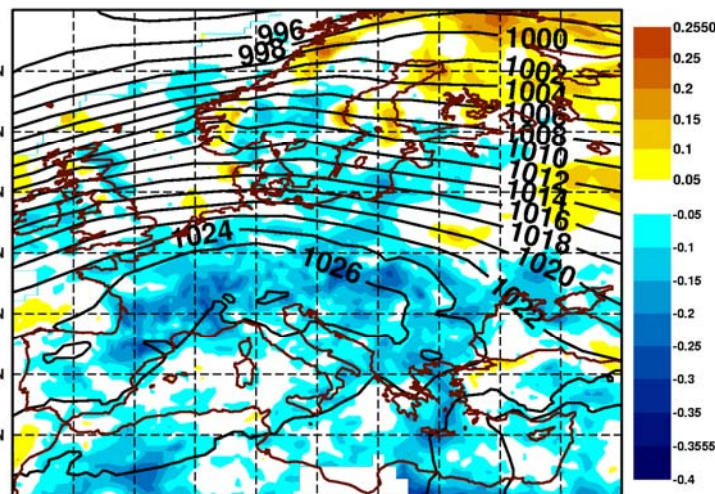
Diff Fc-Obs mean TCC 20041201-20050228 12 UTC  
Mean= -0.106 RMS= 0.0823 Cases= 58



DJF  
2004/5  
58 cases

EDMF PBL  
↓

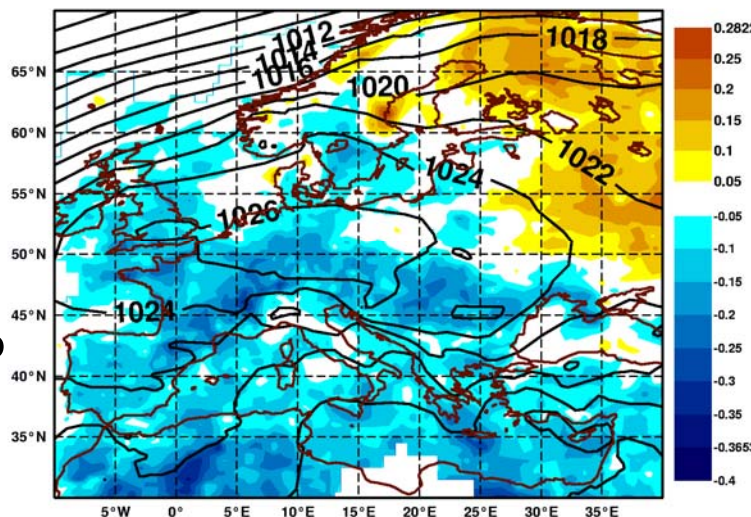
Diff Fc-Obs mean TCC 20061201-20070228 12 UTC  
Mean= -0.047 RMS= 0.0734 Cases= 52



DJF  
2006/7  
52 cases

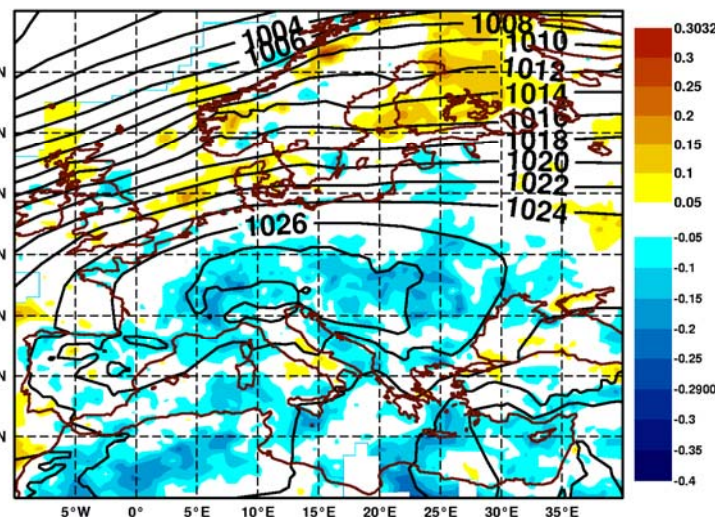
M-O diffusion  
↓

Diff Fc-Obs mean TCC 20051201-20060228 12 UTC  
Mean= -0.064 RMS= 0.0964 Cases= 60



DJF  
2005/6  
60 cases

Diff Fc-Obs mean TCC 20071201-20080228 12 UTC  
Mean= -0.027 RMS= 0.0644 Cases= 69

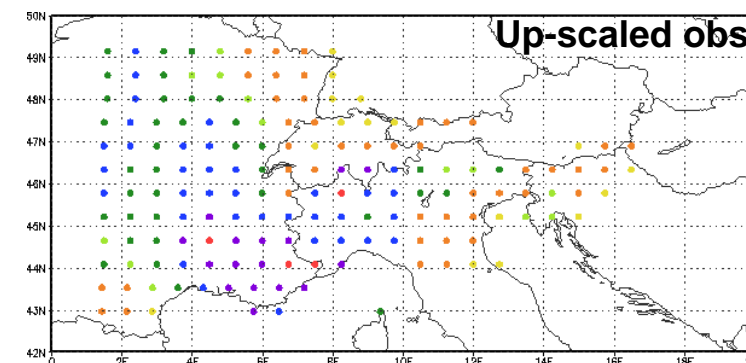
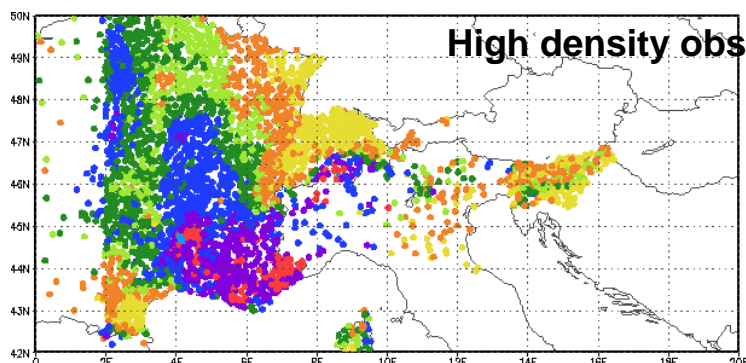
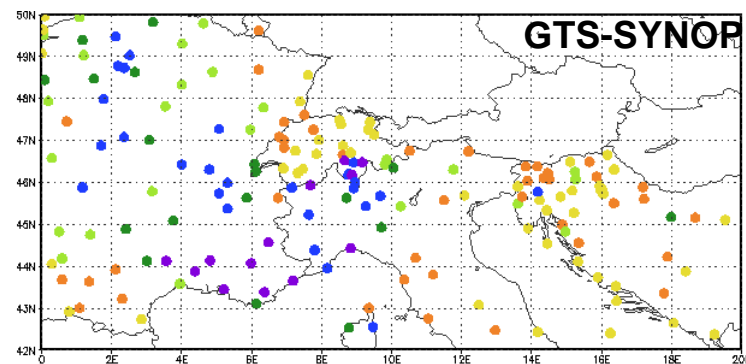


DJF  
2007/8  
69 cases

# Precipitation verification – a different perspective

## The Up-scaling technique

- There are many methods available to up-scale observations to the model resolution
- We have used a simple averaging procedure of all the observations contained in a model gridbox
- Alps: SYNOP coverage, high-density observations and up-scaled observed values for Sept. 20, 1999



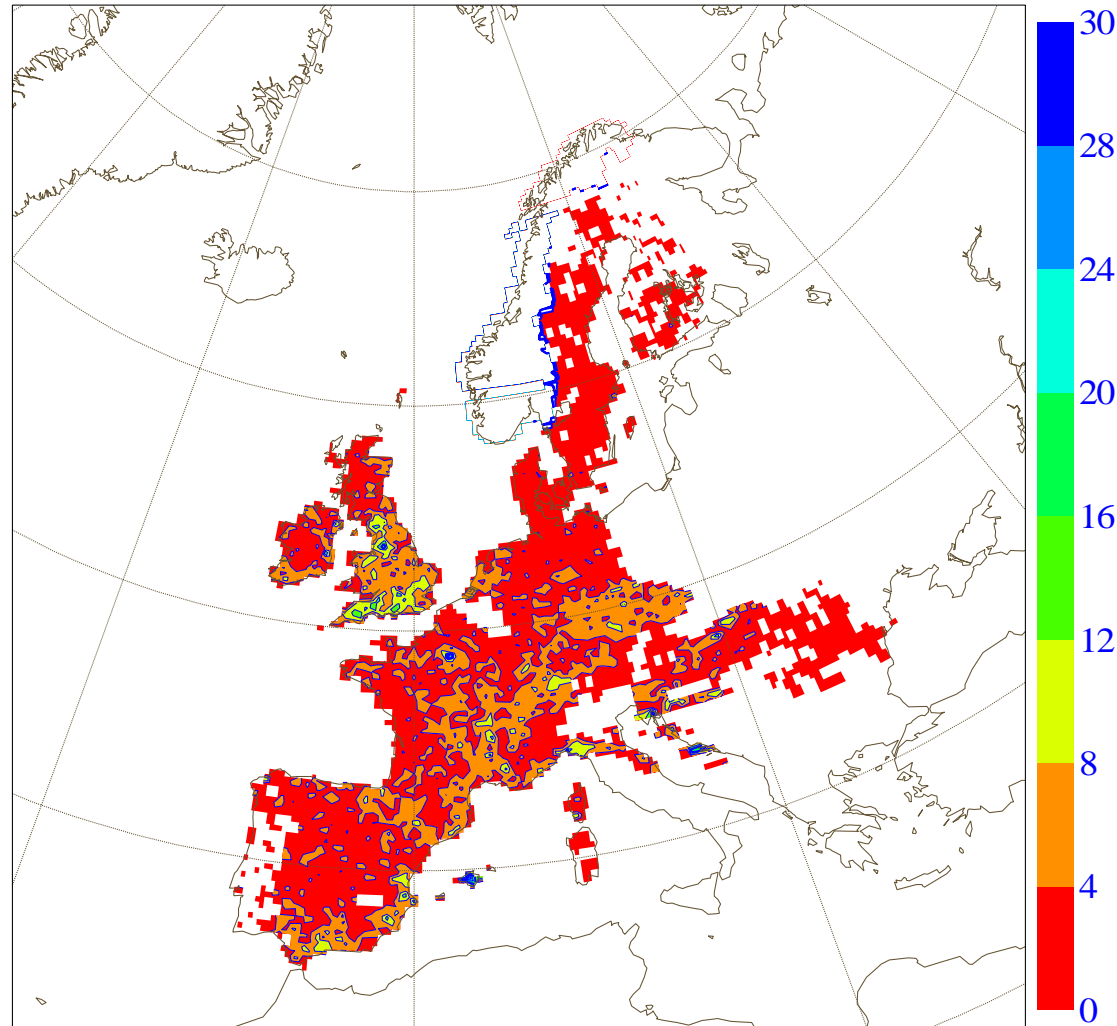
# Precipitation verification – a different perspective

## The coverage

Available in MARS at different reduced gaussian grids for the period 200201 to 200712 (2007 is not complete, yet)

Precipitation analysis and information on the number of stations per grid box can be retrieved

Norway, Iceland and Belgium are also available



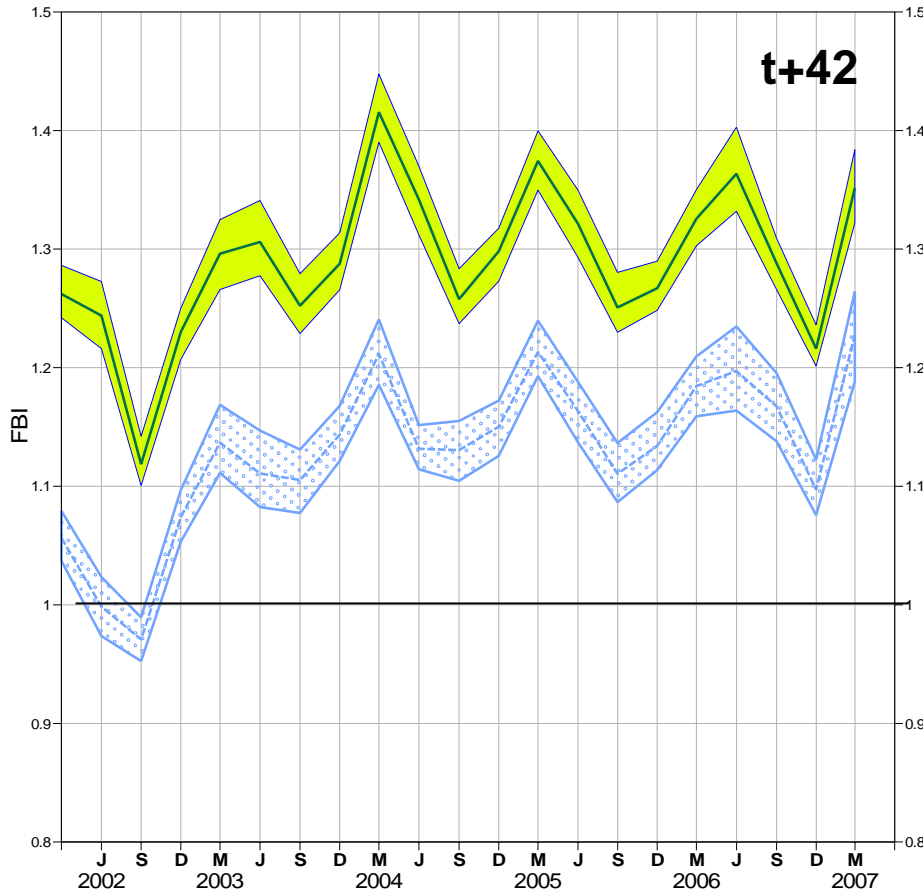
# Precipitation verification – a different perspective

Green: verification against synops on GTS

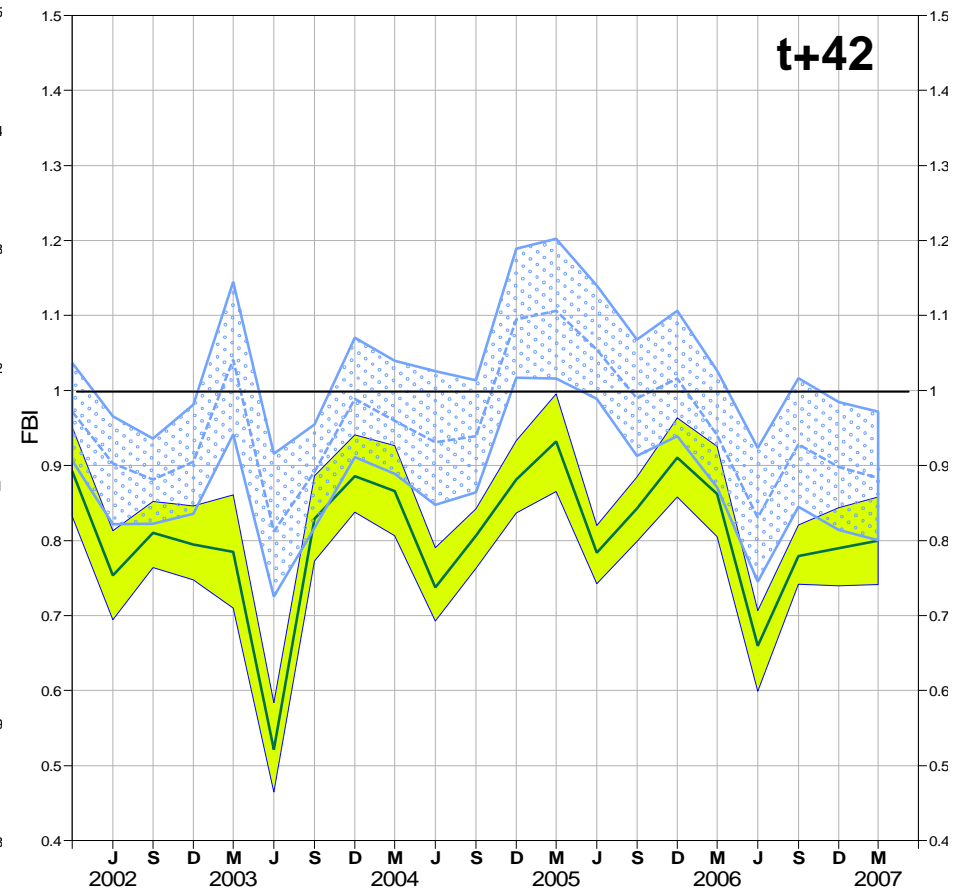
Light Blue: verification against precipitation analysis

FBI=no fc events/no obs events

> 1mm/24h



> 15 mm/24h



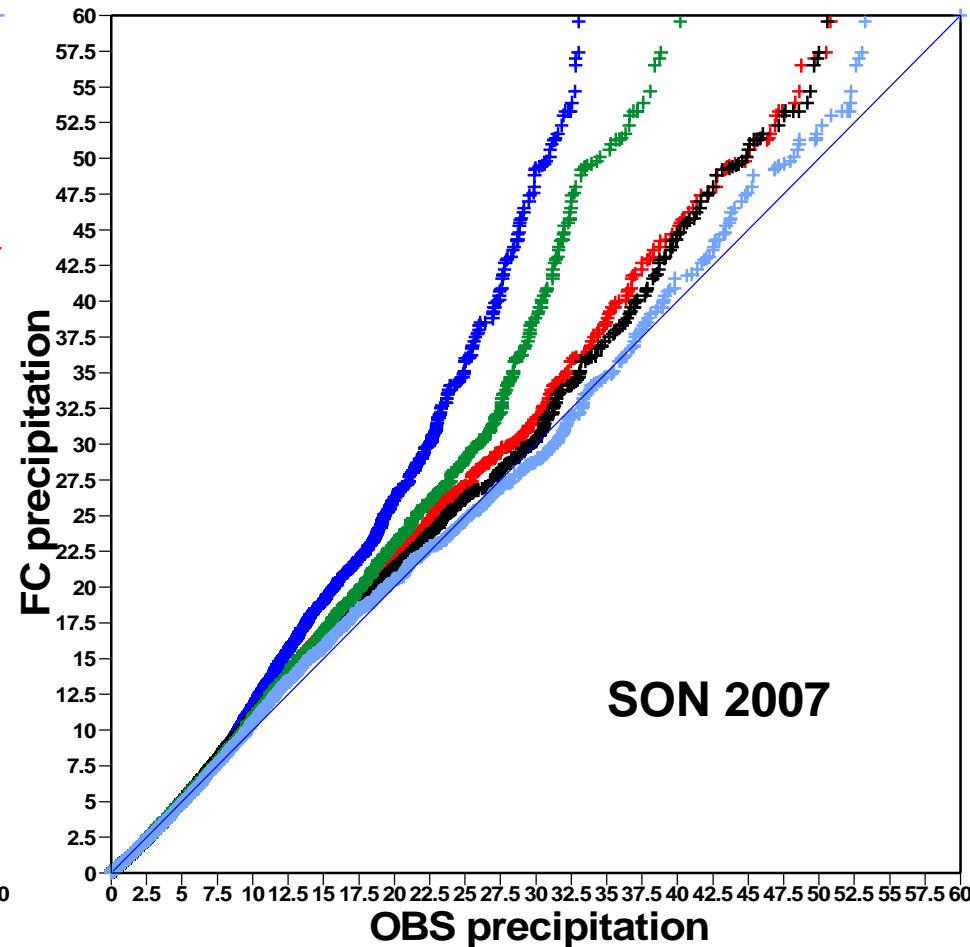
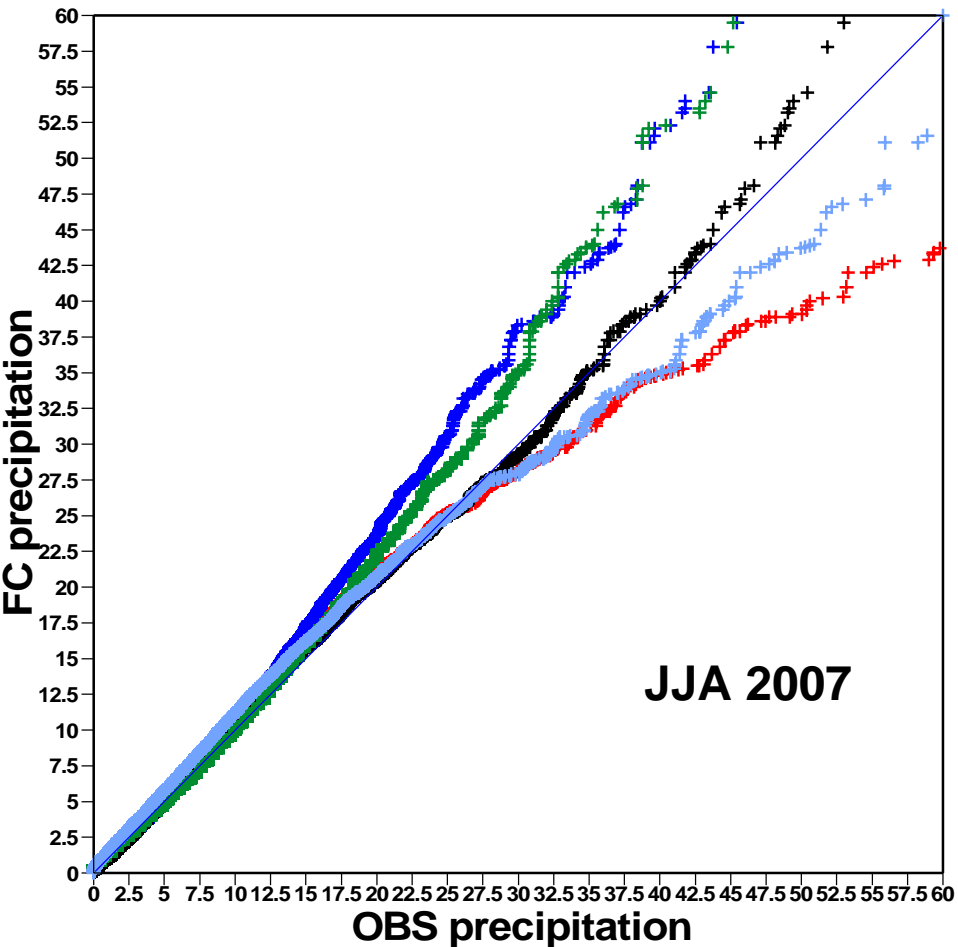
# Comparison with other centres

Tigge control forecasts on a 1x1 lat/lon grid

QUANTILE-QUANTILE plot

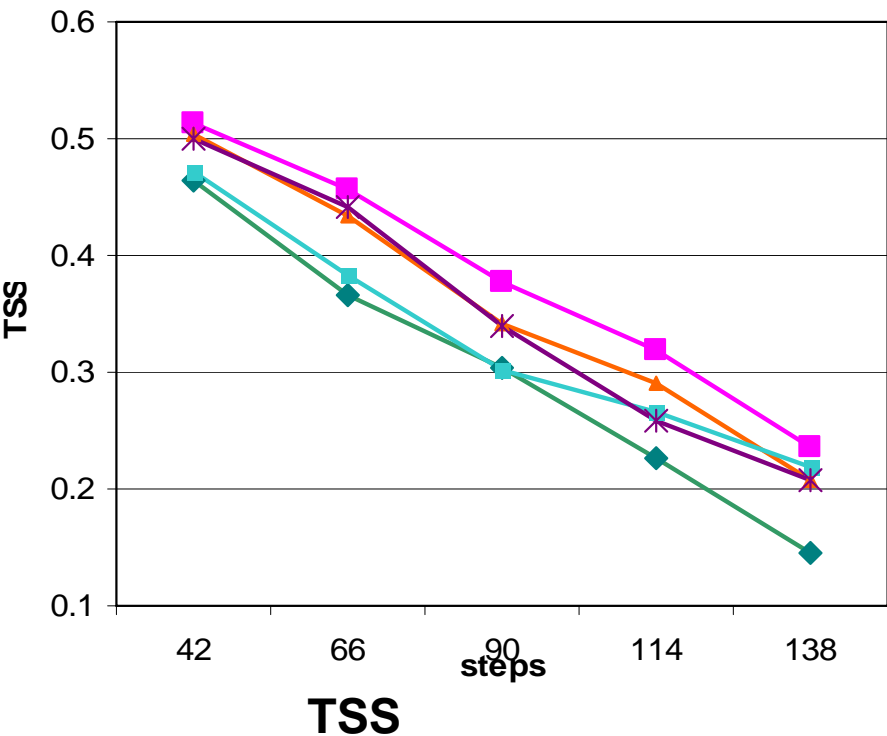
Range: t+42

Observations: precipitation analysis



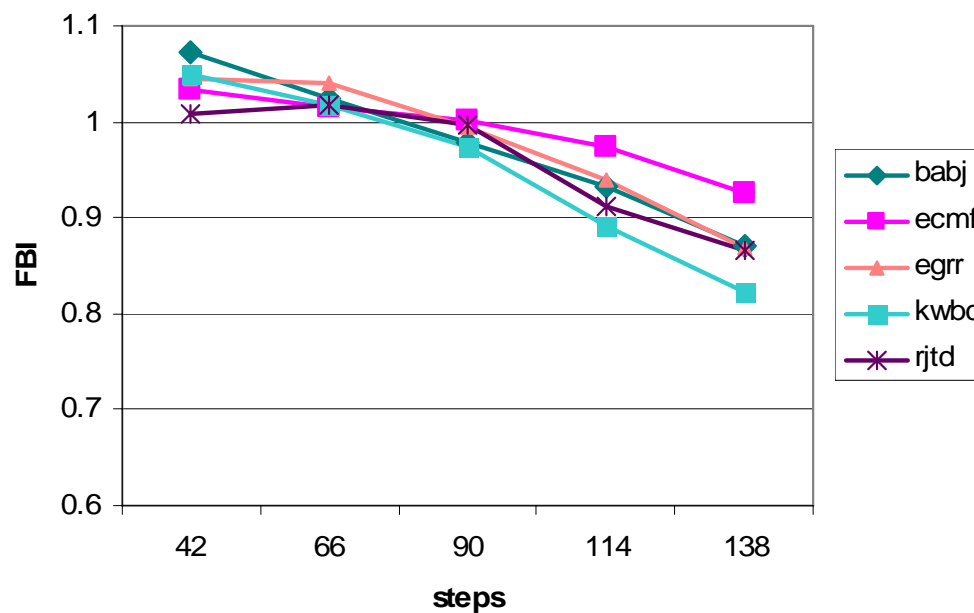
# Comparison with other centres

5mm/24h – SON 2007



Tigge control forecasts on a 1x1 lat/lon grid

1mm/24h – SON 2007 FBI



# Summary

Have ECMWF forecasts for weather parameters improved?

**YES!**

Scores show that the changes to the model are going in the right direction  
Precipitation analysis shows that the over-forecast of small rainy events is not as dramatic, as it may be gathered when verifying against synops on the GTS

Comparisons of the deterministic low resolution run with other Centres shows ECMWF in a good position

*..... the scores presented mostly address the needs of the scientific community. Therefore, it would be interesting to know how forecasters/ other users would reply to the above question! -- → **relevance of scores***