

# Common verification and model intercomparison

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participants of the verification working meeting March 2007:

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Jose Antonio G. Moya (INM) Carlos Santos (INM)

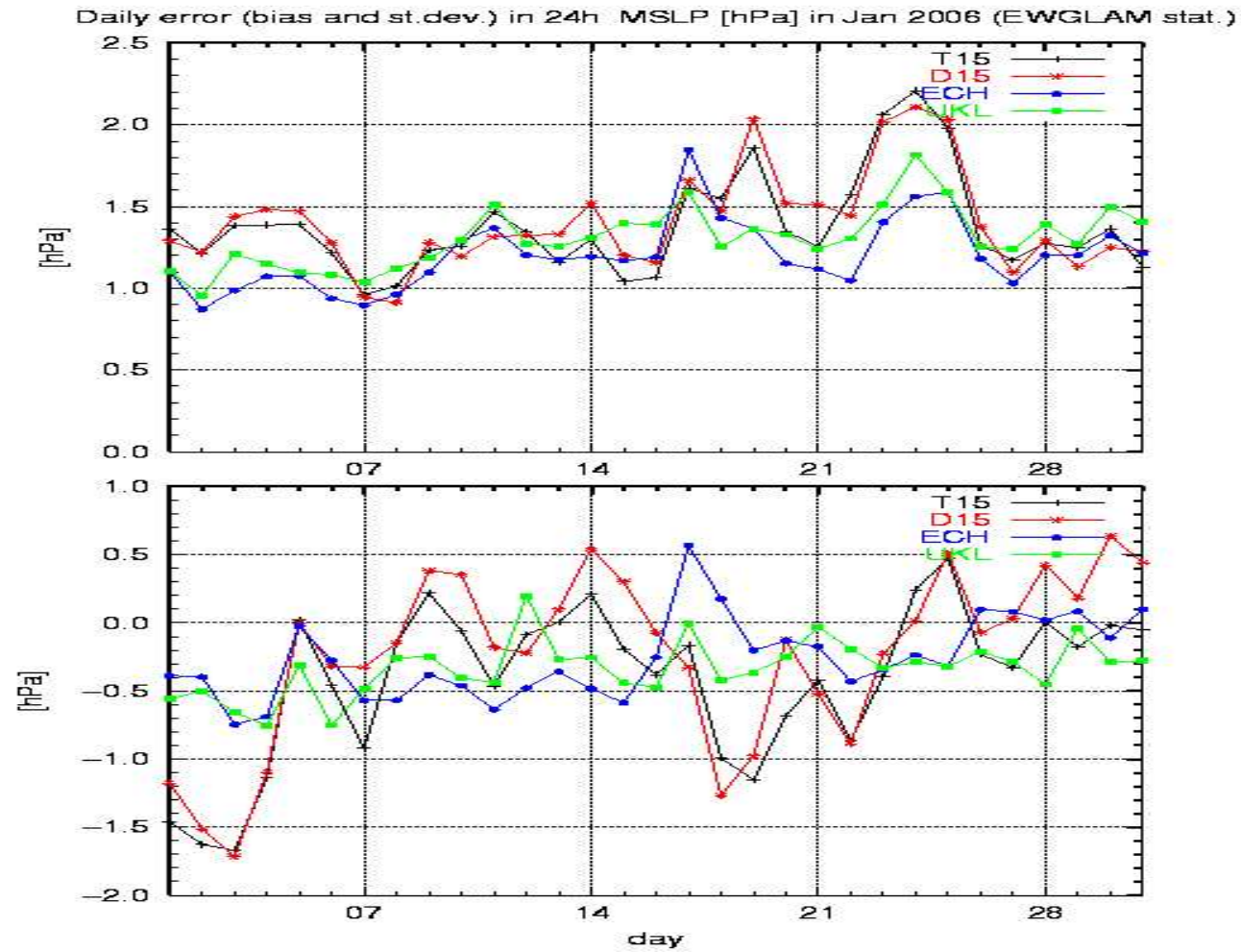
## Main areas of HIRLAM-A verification work

- for mesoscale verification
- verification for EPS initiatives (HIRLAM EPS, GLAMEPS, SRNWP )
- model intercomparison: Madrid & Copenhagen workshops
  - cross consortia & internal
  - regular, quasi-real time intercomparison
  - validation in impact studies (physics, DA, upgrades etc.)
- harmonisation on operational verification so far NOT a priority

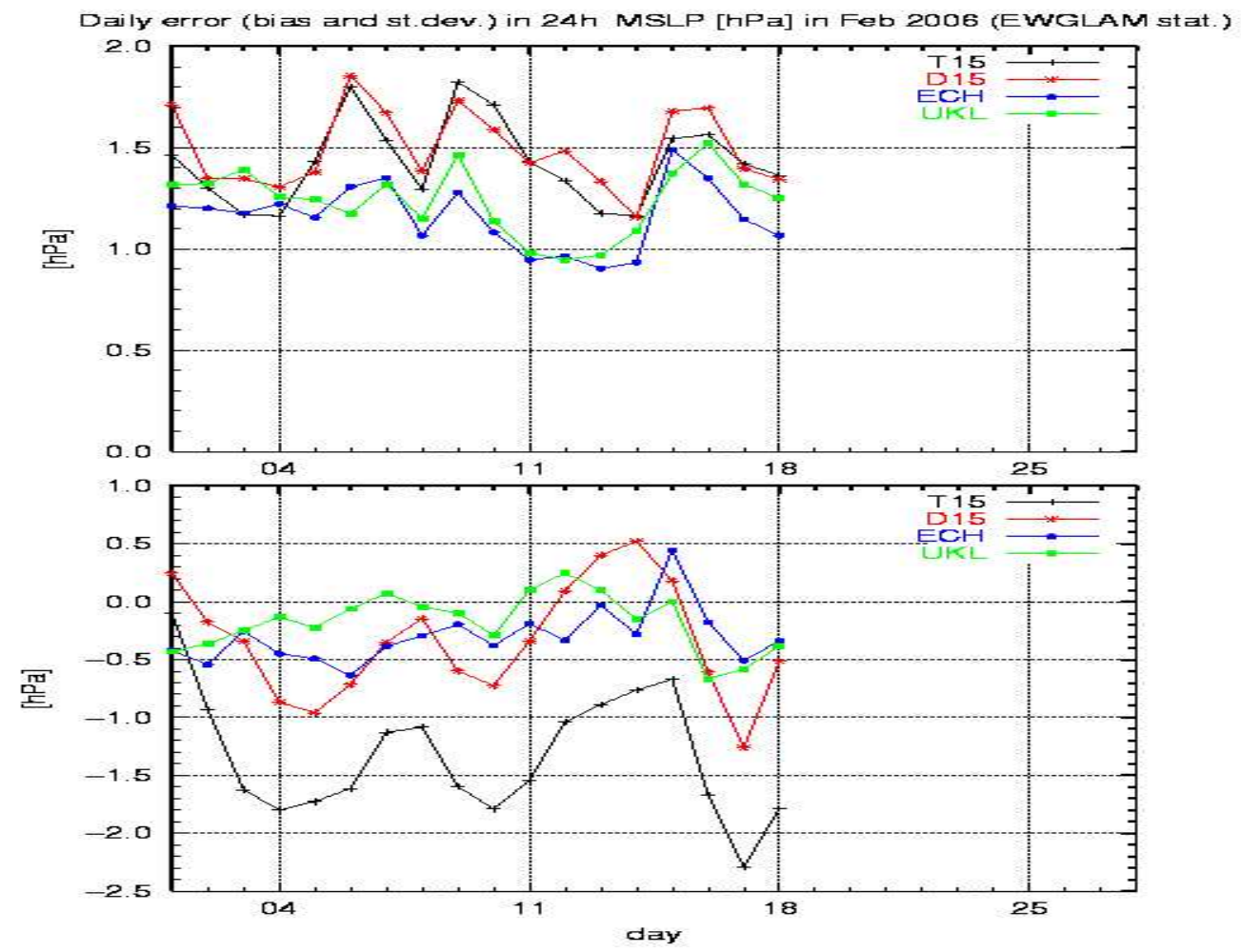
# Motivations

- 1 model intercomparison
- 2 regular and near real-time model intercomparison
- 3 common verification

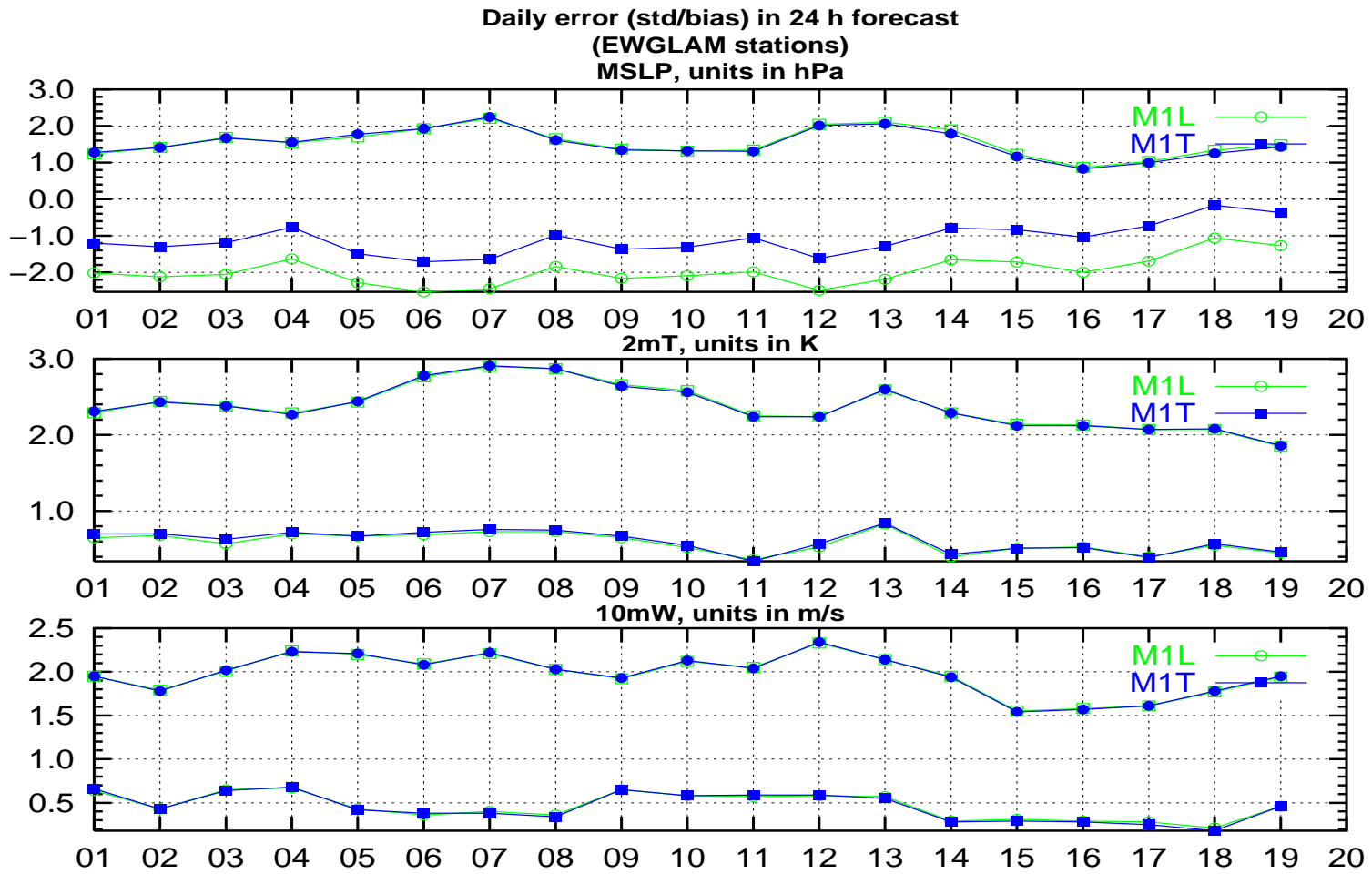
# DMI PMSL: EWGLAM scores Jan 2006



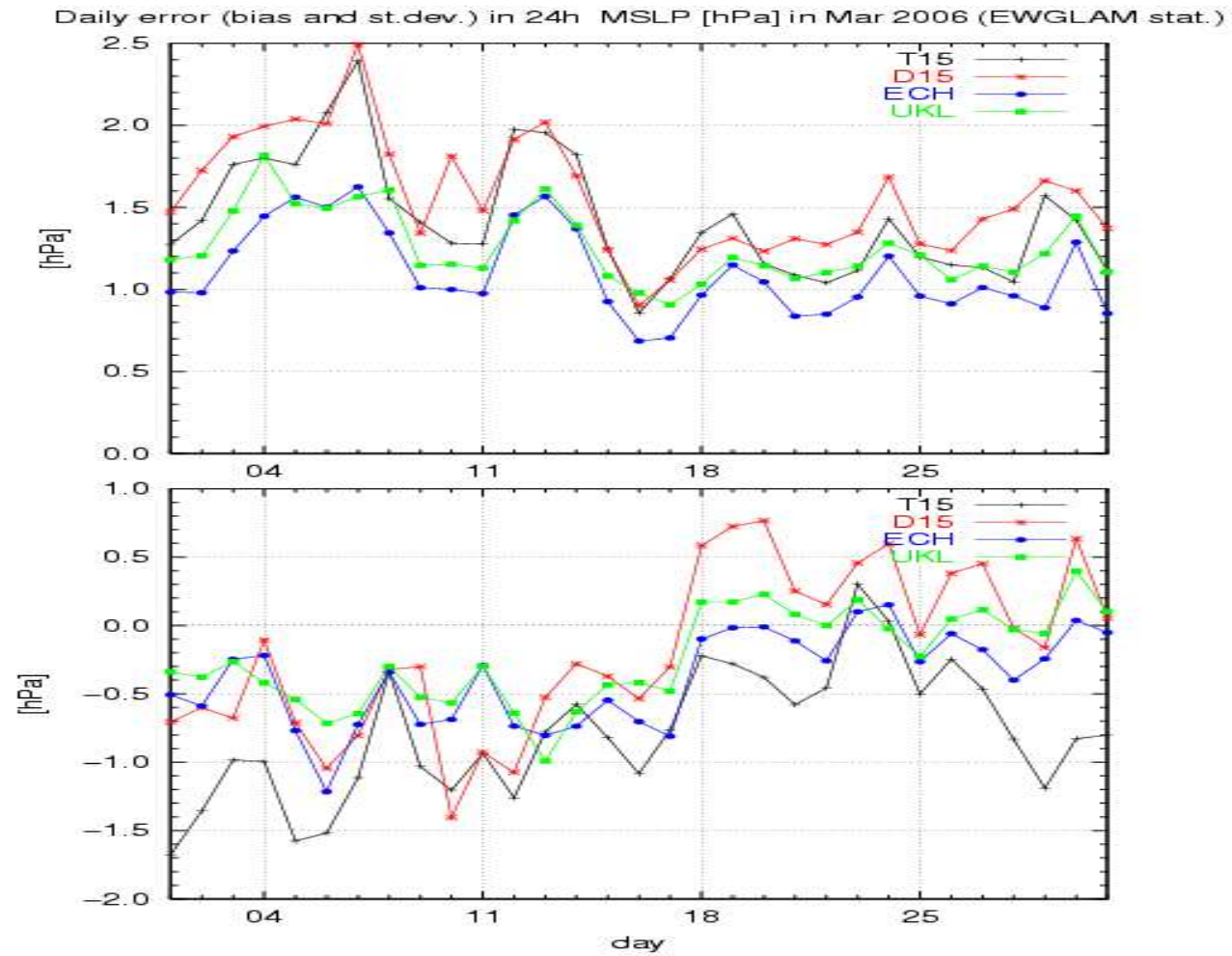
# DMI PMSL: EWGLAM scores Feb 2006



# Sensitivity test with vertical resolution of LBC

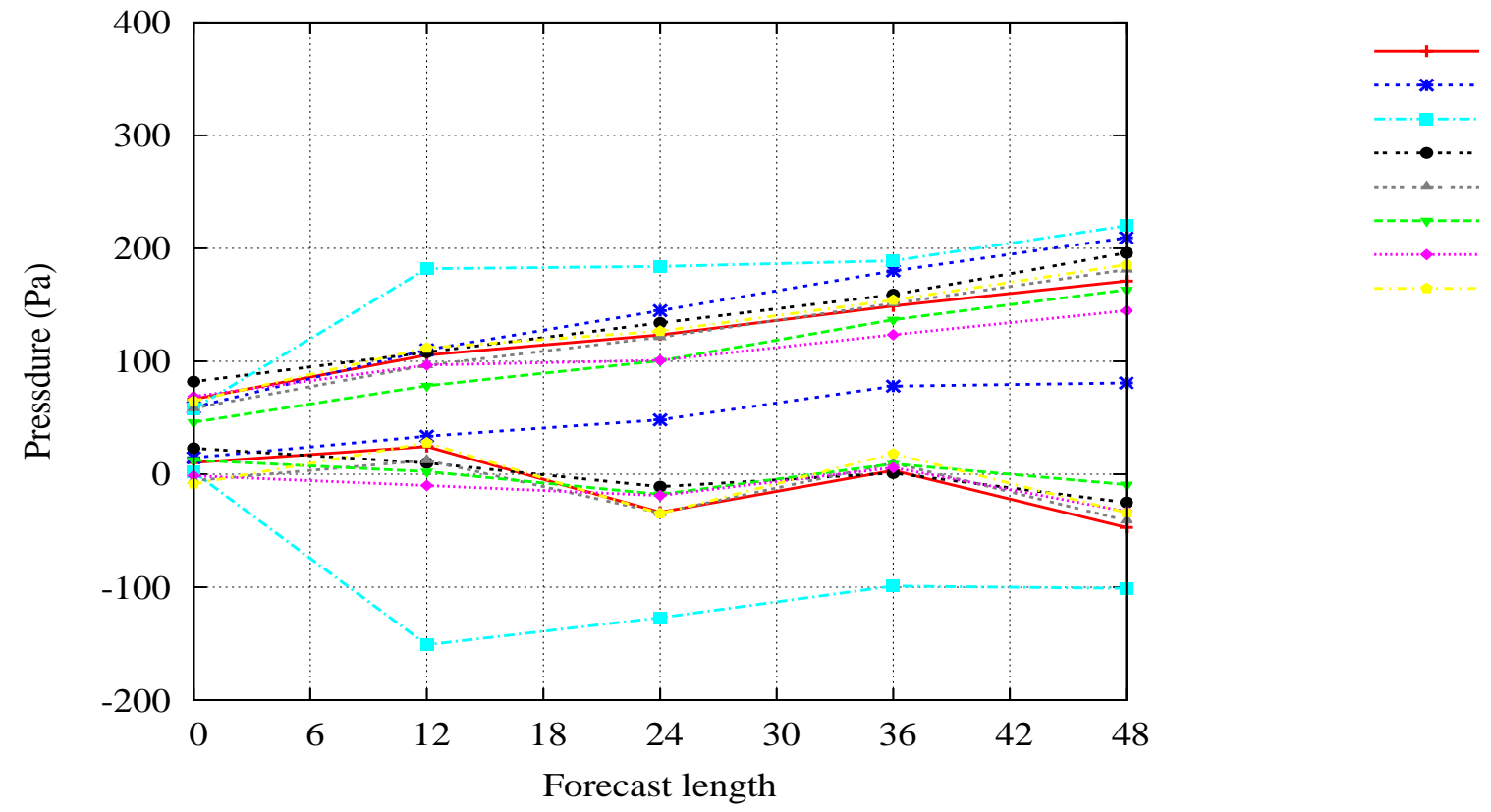


# DMI PMSL: EWGLAM scores March 2006



# EWGLAM verification of PMSL for June 2006

Monthly bias and rms of Mean Sea Level Pressure  
 Time: 2006 Jun Domain: EWG From 00 UTC runs



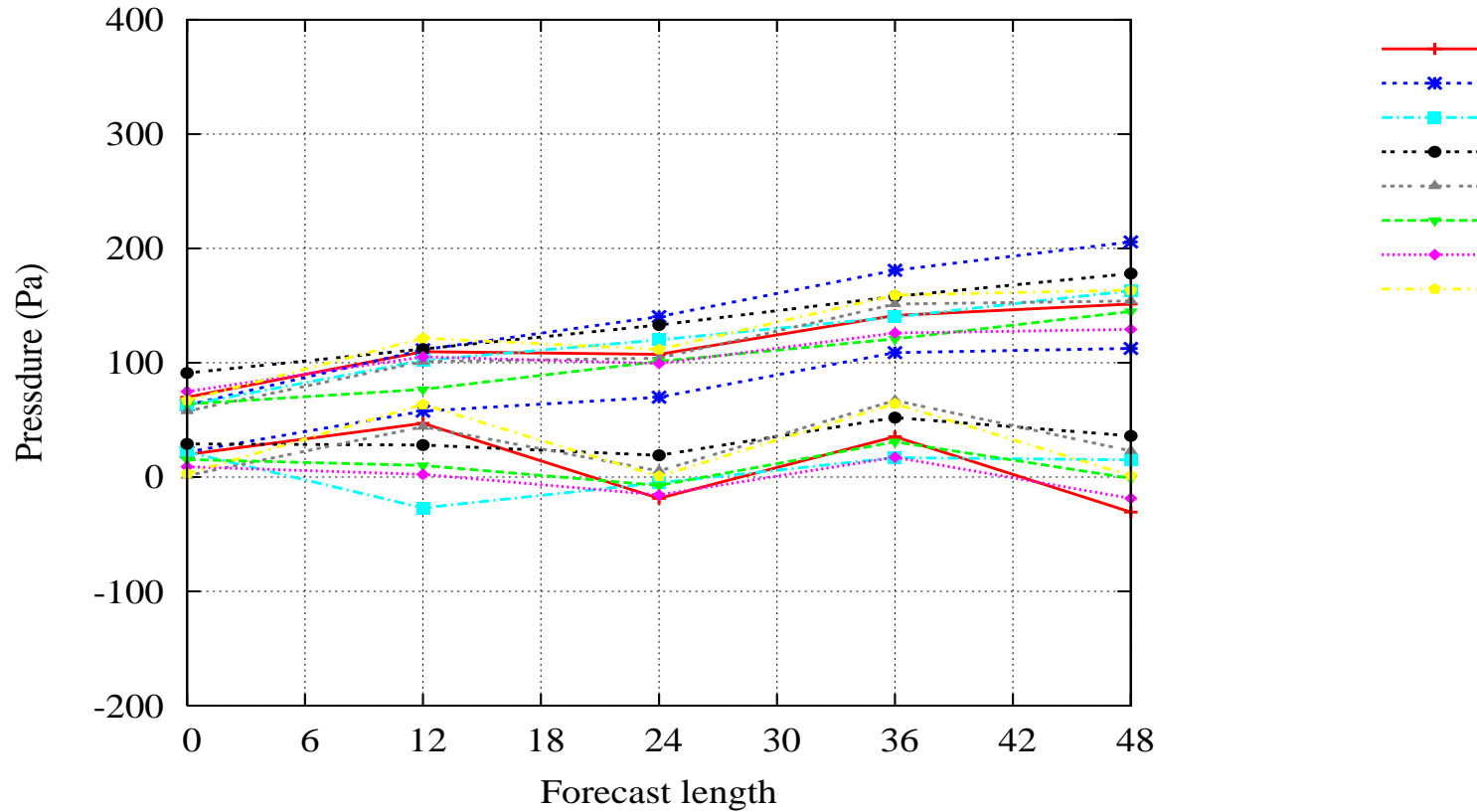
(from Kalle Eerola)



# EWGLAM verification of PMSL for July 2006

Monthly bias and rms of Mean Sea Level Pressure

Time: 2006 Jul Domain: EWG From 00 UTC runs



(from Kalle Eerola)

## Verification packages used in HIRLAM

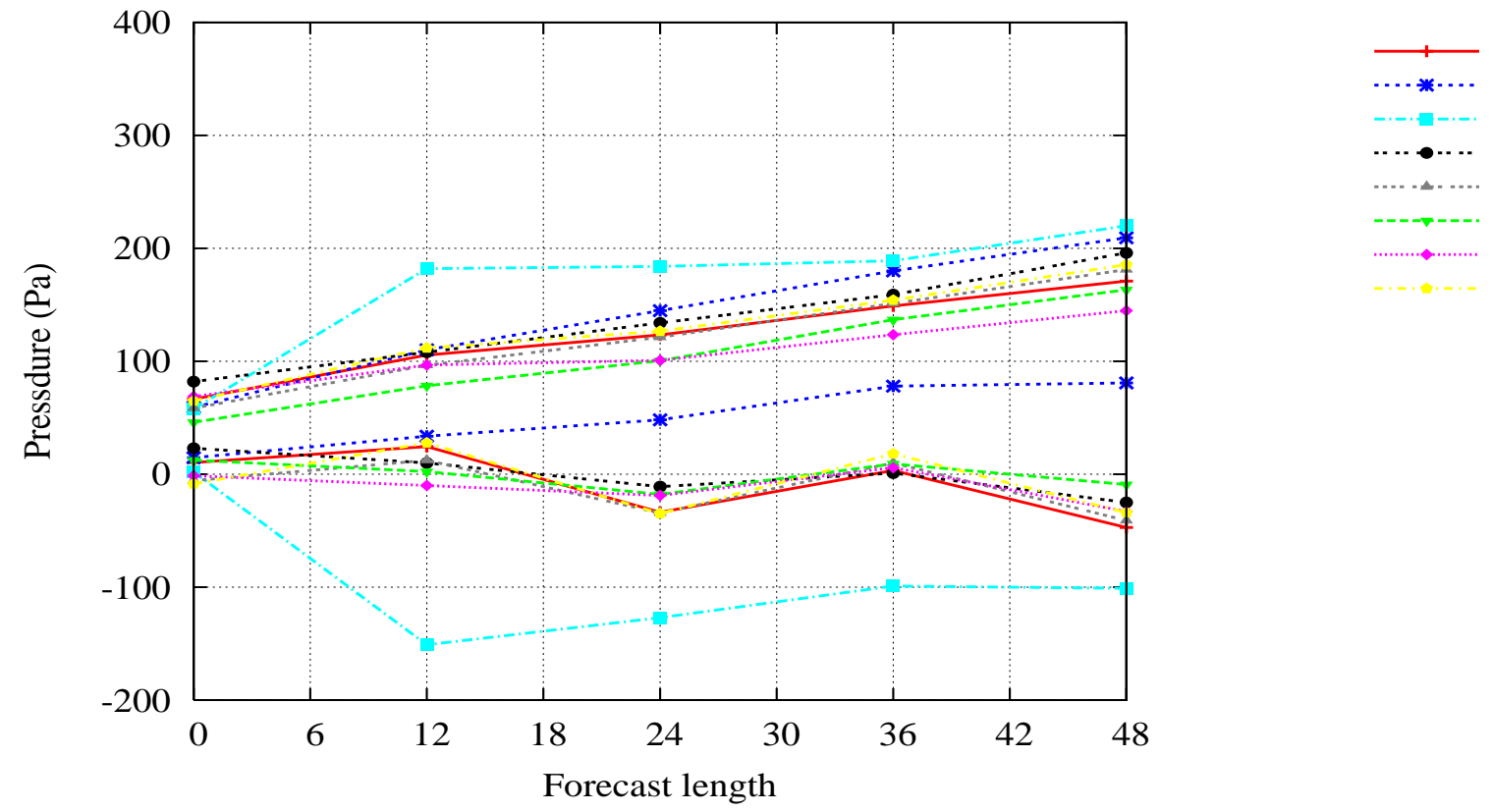
- There is a verification package in the reference system
  - The package is used for routine verification at KNMI, FMI and INM
- Other HIRLAM services use different verification packages
  - DMI, met.no, SMHI, Met.Eireann
- HIRVDA developers uses its own verification package
- HARMONIE monitoring utility includes a GL package for verification
- INM extends a metview based verification package for EPS

## Data flow in observation verifications

- Use model/pressure level data
- Interpolated model data to observation point against a station list
- Observation extracted against a station list
  - 1 scores calculated at each cycle and saved (reference)
  - 2 extracted model data saved (met.no, SMHI, DMI, HIRVDA, GL)
- Final aggregation using per-cycle data

# EWGLAM verification of PMSL for June 2006

Monthly bias and rms of Mean Sea Level Pressure  
 Time: 2006 Jun Domain: EWG From 00 UTC runs

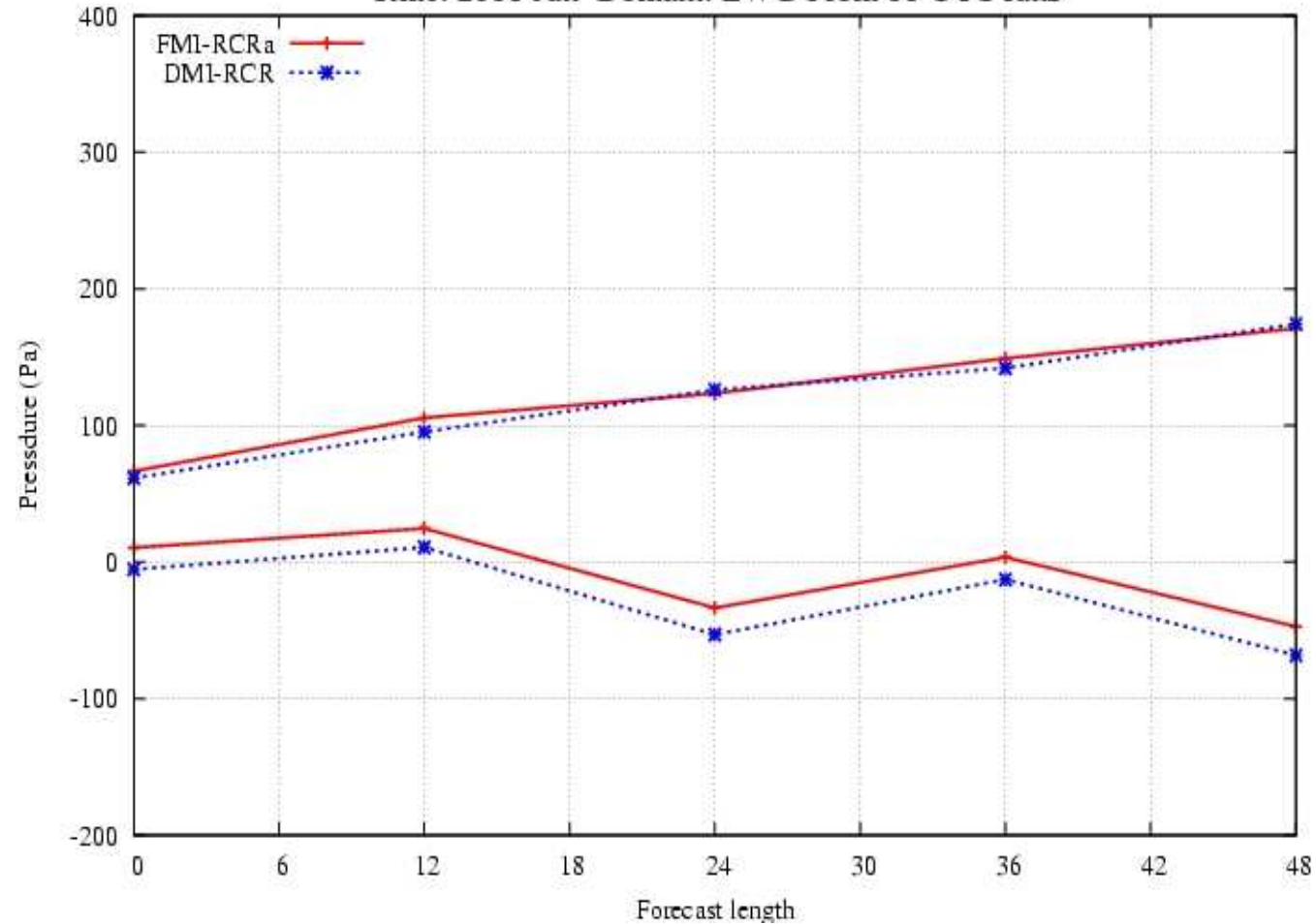


(from Kalle Eerola)

# EWGLAM verification of PMSL: alternative methods

Monthly bias and rms of Mean Sea Level Pressure

Time: 2006 Jun Domain: EWG From 00 UTC runs

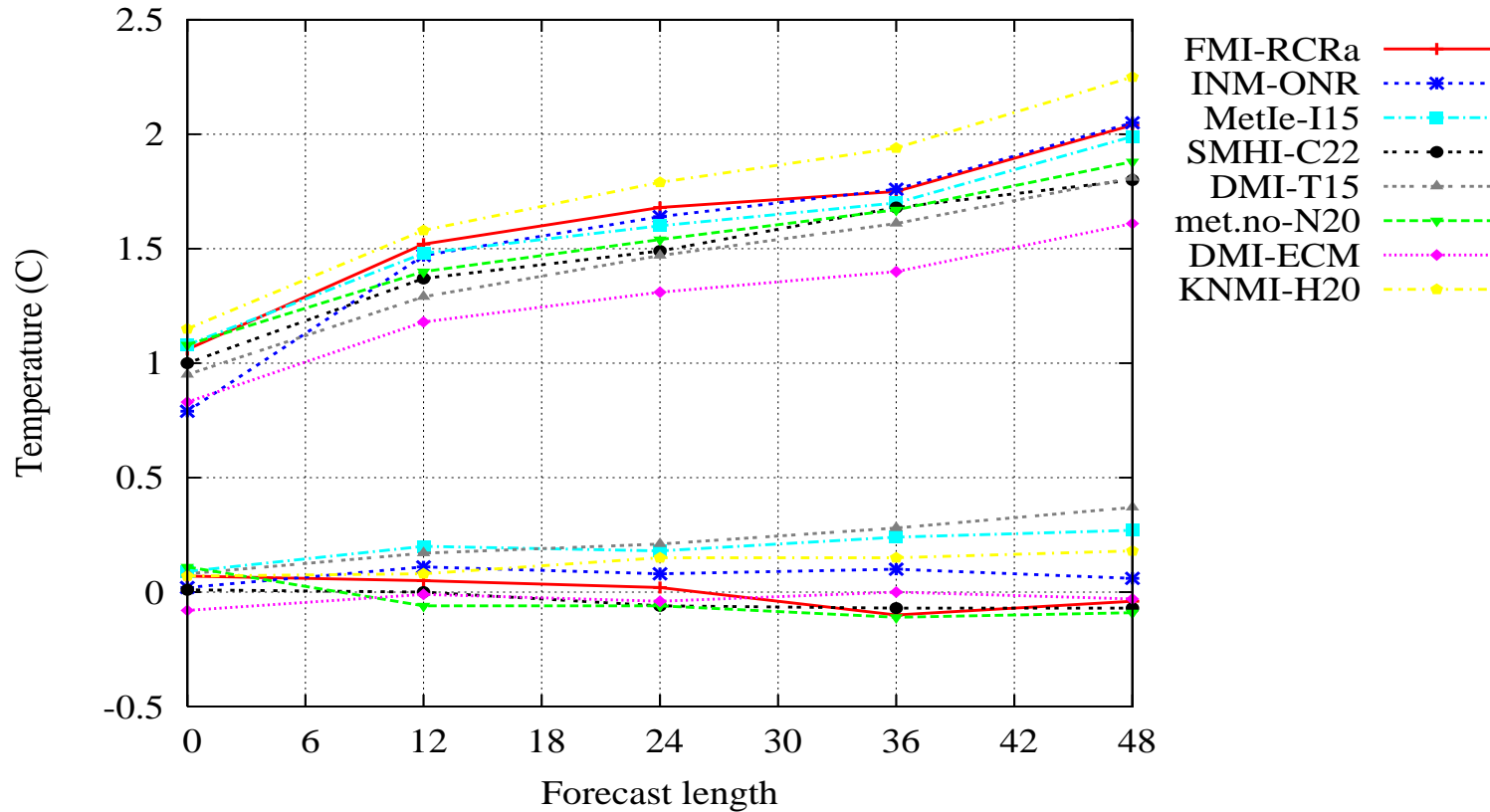


(from Kalle Eerola)

# EWGLAM verification of T850 for January 2006

Monthly bias and rms of Temperature at level 850 hPa

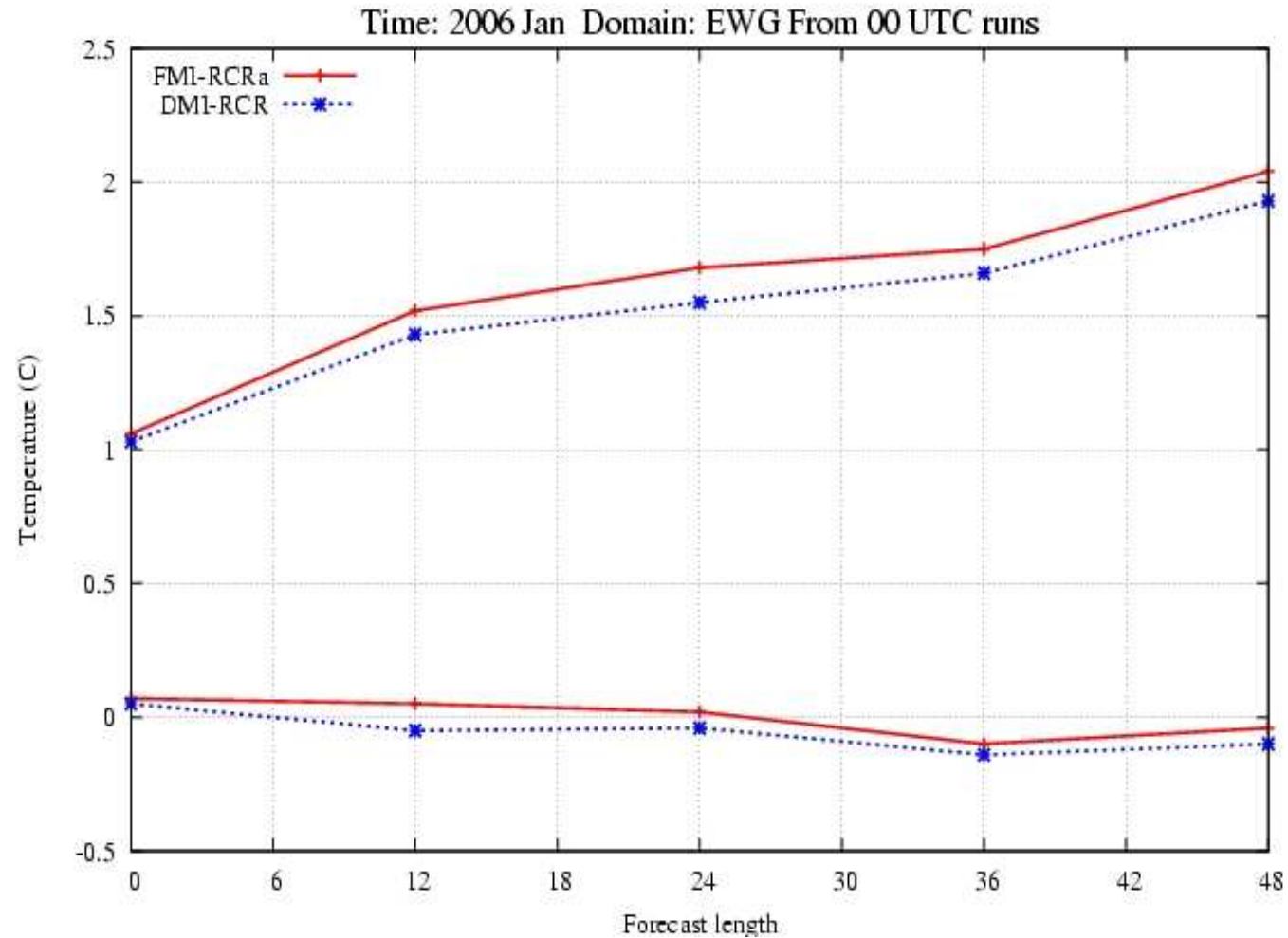
Time: 2006 Jan Domain: EWG From 00 UTC runs



(from Kalle Eerola)

# EWGLAM verification of T850: alternative methods

Monthly bias and rms of Temperature at level 850 hPa

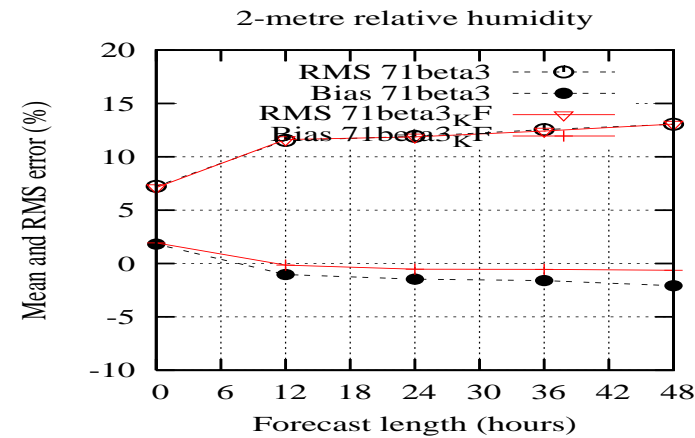
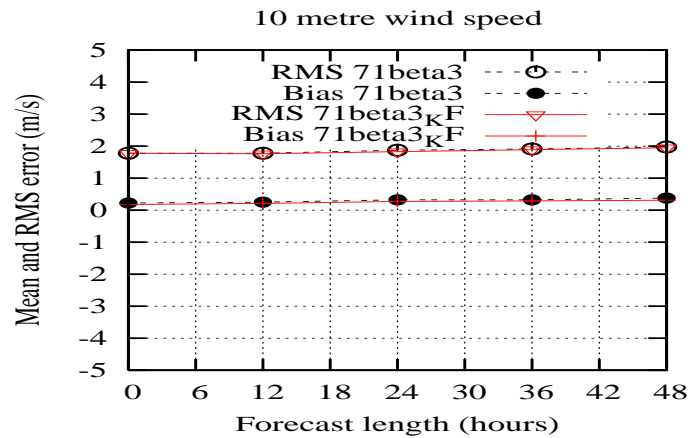
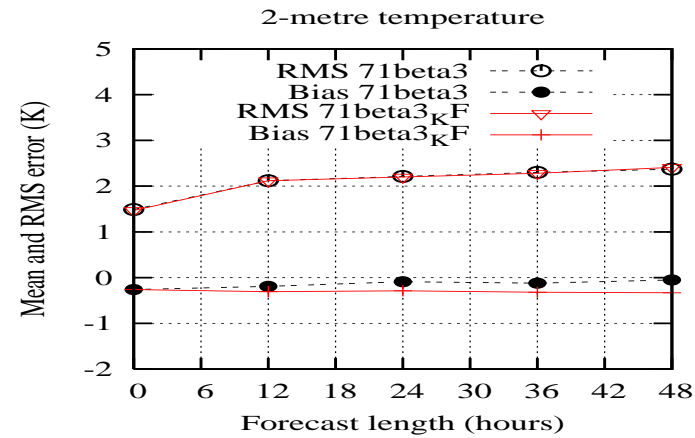
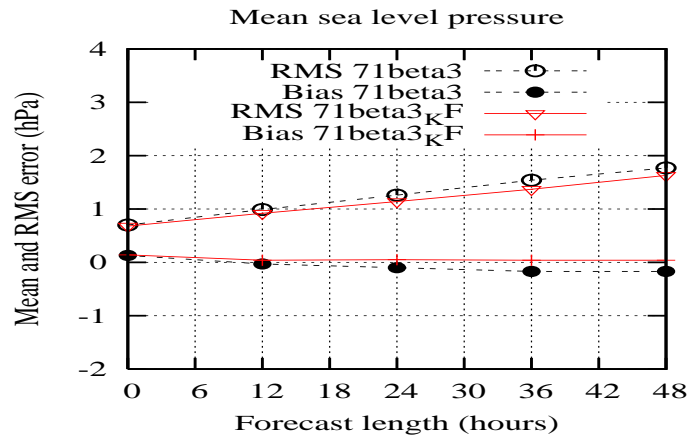


(from Kalle Eerola)

# Example of reference verification: average scores

Verification against observations EXP: 71beta3 71beta3<sub>K</sub>F

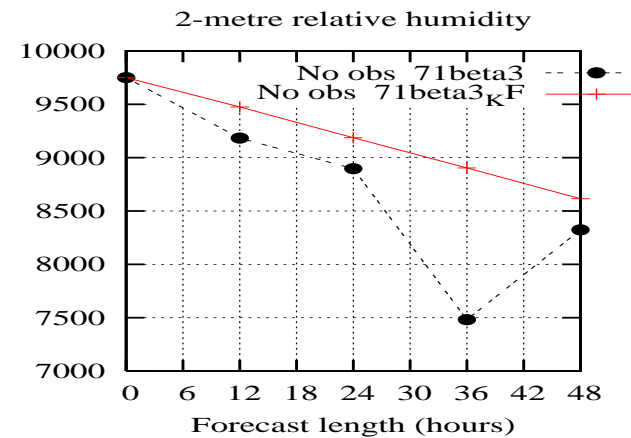
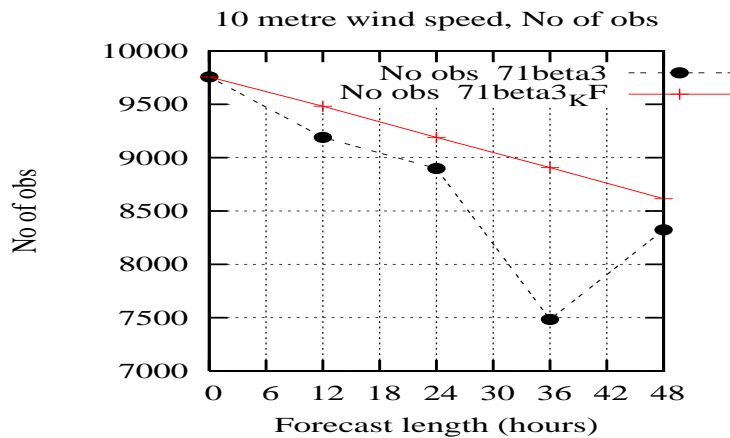
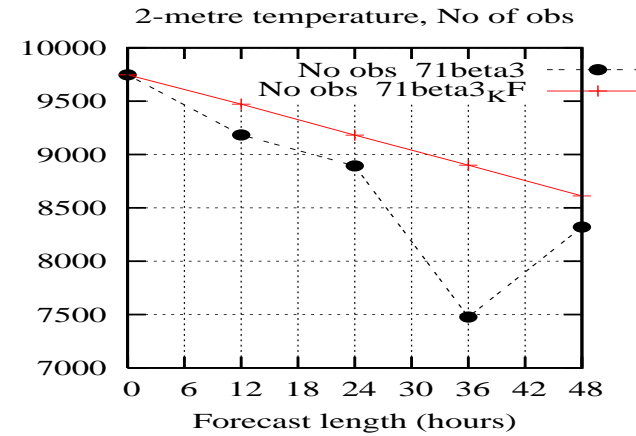
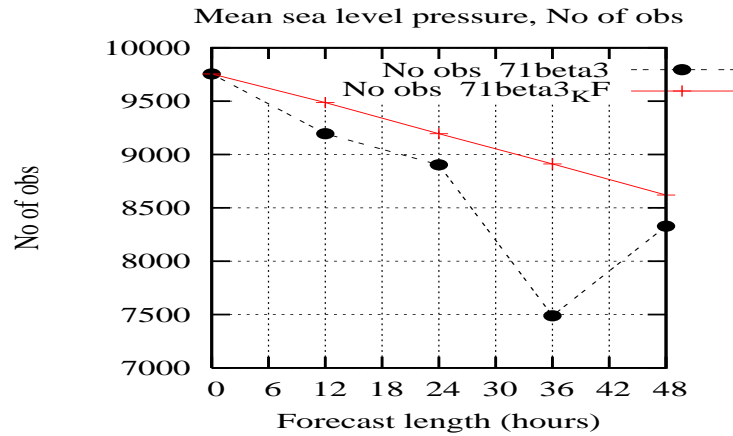
Time: 2006060100 - 2006061718 Domain: EWG Forecast from 00 12



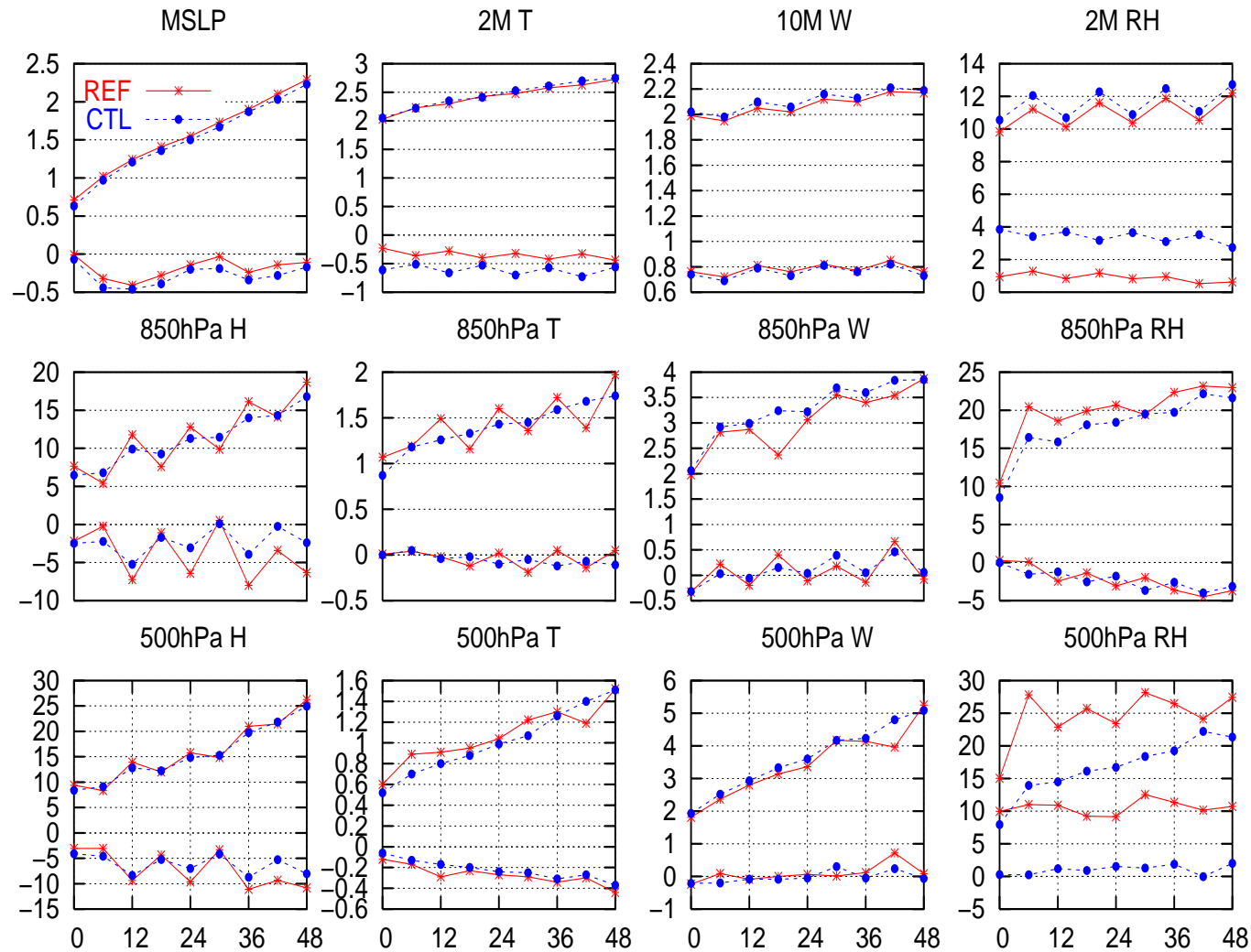


# Reference verification: nr of observation

No of obs in verif against obs. EXP: 71beta3 71beta3<sub>K</sub>F  
 Time: 2006060100 - 2006061718 Domain: EWG Forecast from 00 12



# More example of difference due to verification



## Contributing factors to differences in results

- difference in observation data (area/station-list, station characteristics)
- quality control
  - rejection limit
  - verifying analyses or forecast data
  - rejection (minimum or maximum fit)

## Consensus from the DMI verification meeting March 2007

- conduct future model intercomparison through centralised platform
  - near-real time exchange of operational field data
  - surface parameter: pmsl, W10m, T2m, RH2m, visibility, cloud, precip
  - H, T, W and RH at 850, 500 and 250 mb
  - near real time verification featured at hirlam data portal
  - same data used for meteogram, synoptic chart
  - collection of ACMA file for common observation monitoring
  - possibly also mastprofile data too
- modify verification package
  - stress the importance of ensuring equal data selection
  - adopt similar score aggregation algorithm as in other schemes: Q-files
  - retain current aggregation algorithm as an option; turn off online option