The GLAMEPS project for ensemble predictions for Europe: status and verification

Alex Deckmyn, Helsinki, 10 October 2012
On behalf of the GLAMEPS team.

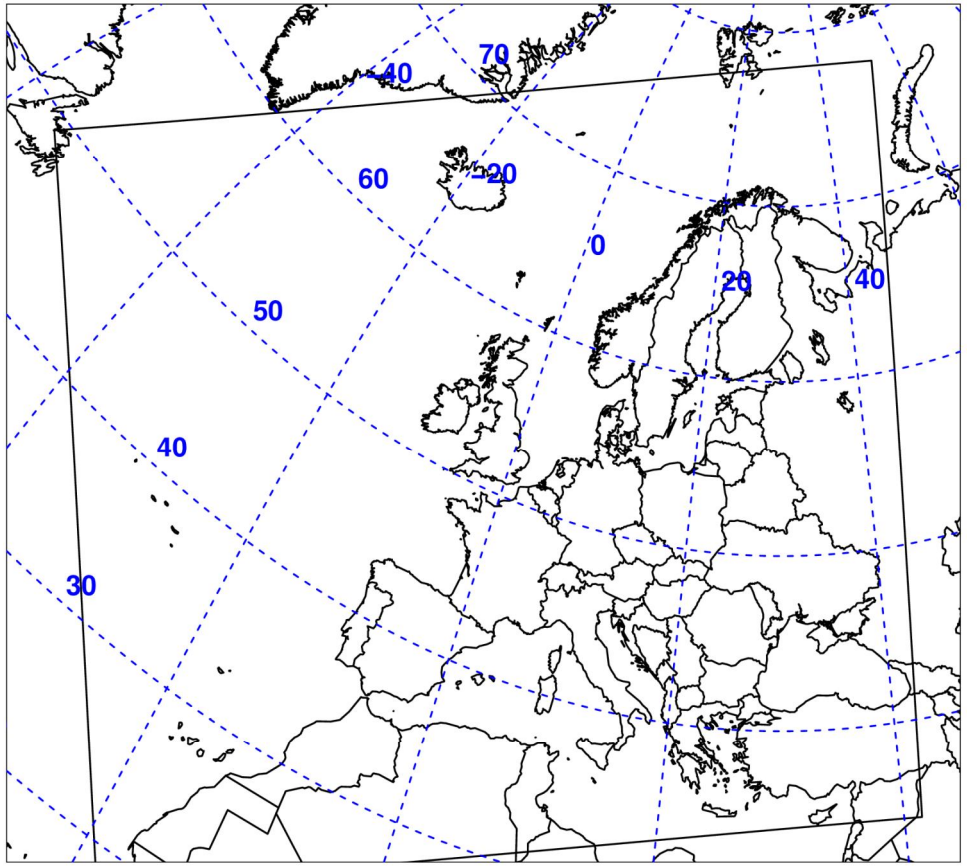
V1

Since end of December 2011

Overview

- Basic structure and setup of v1
- Some examples of results
- Verification
- SST problems
- Conclusions

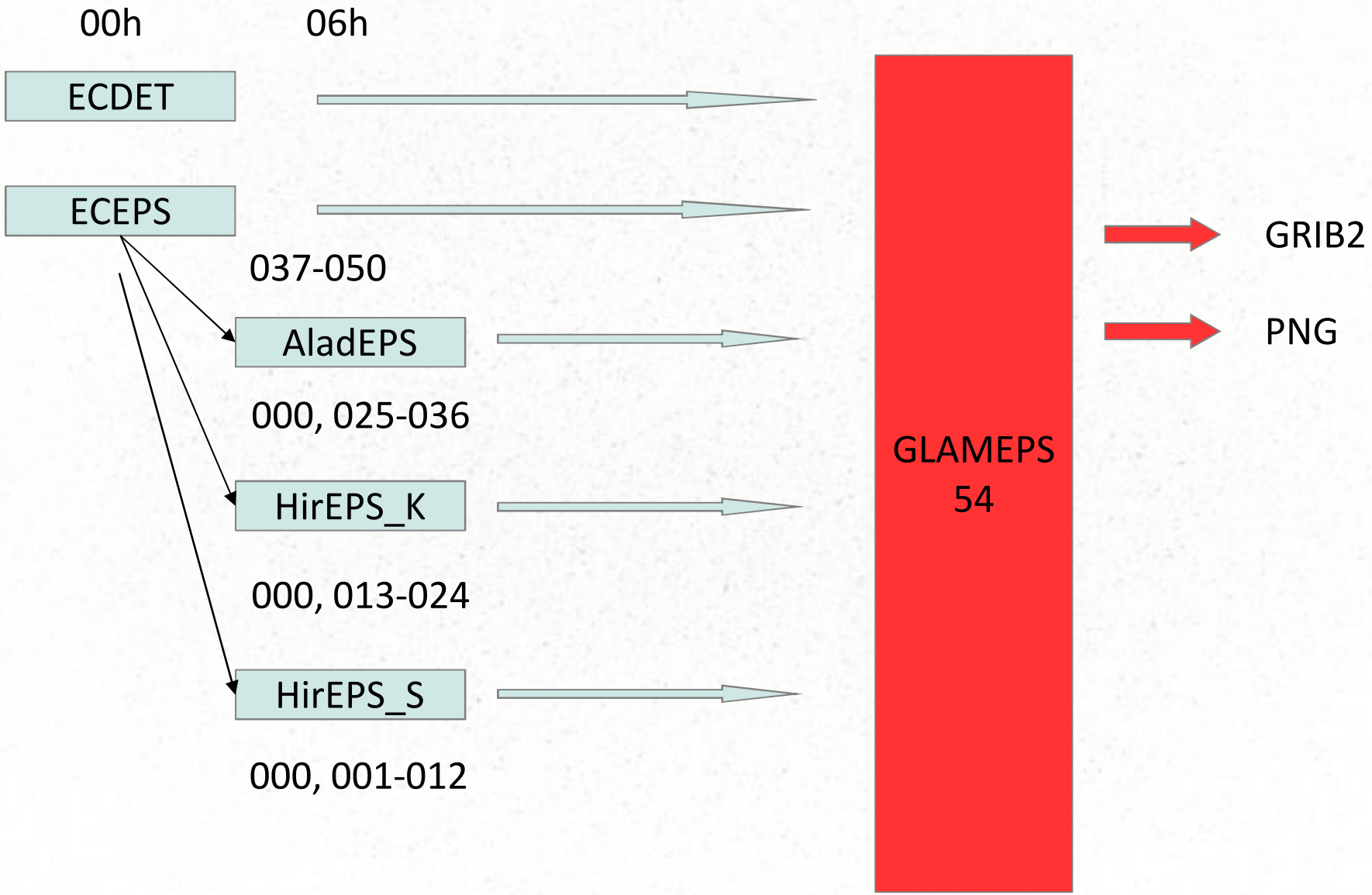
GLAMEPS v1 - v0



GLAMEPS: v0 versus v1

- Slightly larger domain, higher resolution.
- All members of EC-EPS are either used as LBC or directly.
- Alaro members have Surface data assimilation cycles. No longer use Arpège surface analysis.
- Daily runs at 06 and 18 (using IC and LBC from 6h before), 54h runs.

GLAMEPS members:



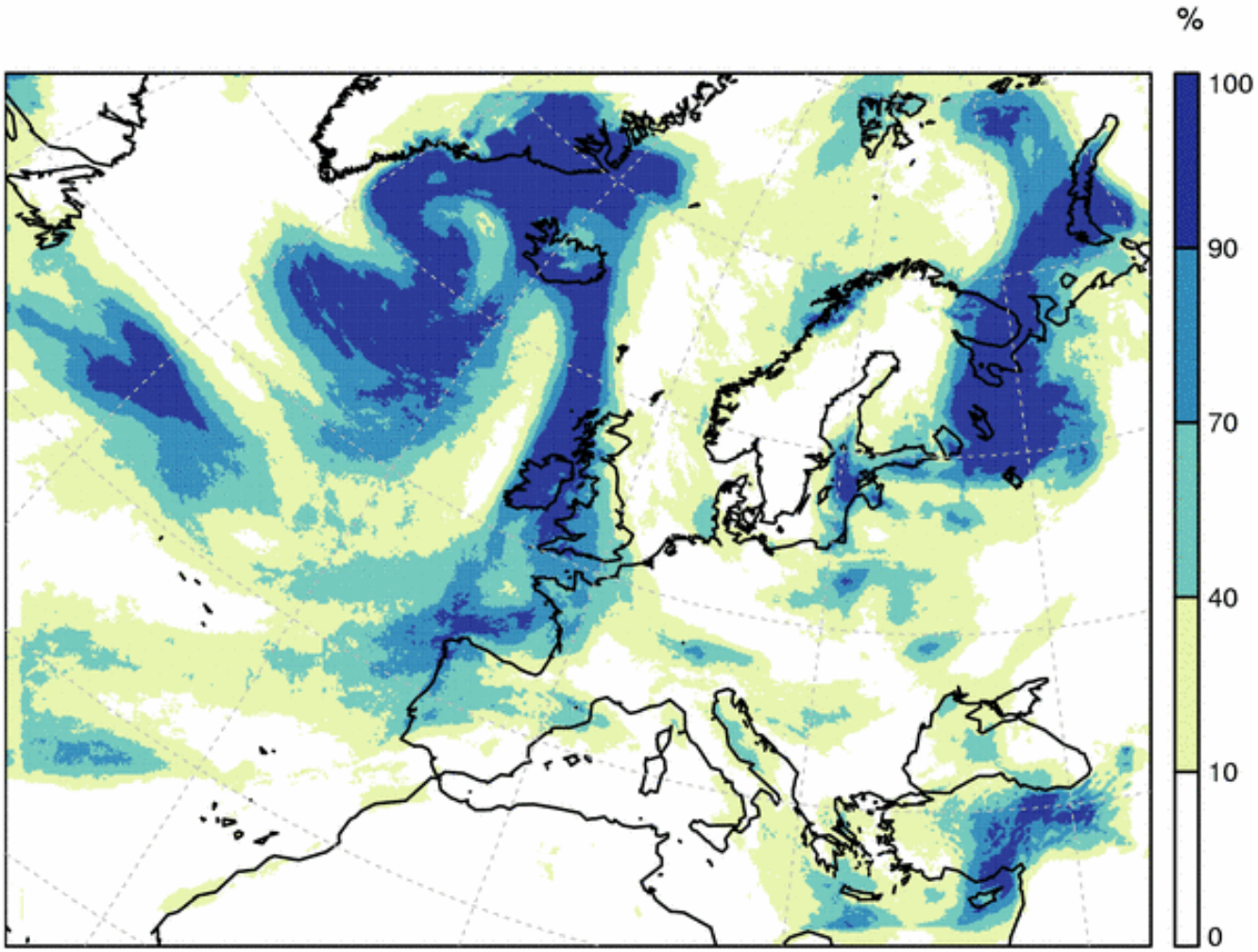
ALARO component

- 6h CANARI cycle (conventional data only).
- 3d fields updated at 00h and 12h from EPS.
- all ALARO members separately.

HIRLAM (_S and _K)

- Control members have 3d-Var
- Other members only surface assimilation cycle.
- Stochastic physics

GLAMEPS PROD (GI.PROD.m54 54/54 members)
Prob 3h Accumulated Rainfall over 0.1mm (Legend)
Analysis: 2012/10/09 18UTC T+036 VT: 2012/10/11 06UTC

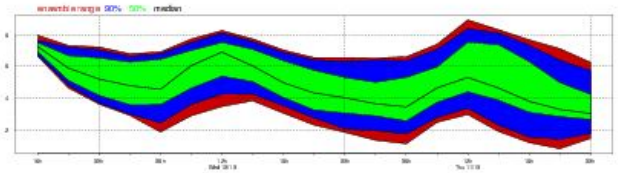


GLAMEPS-o-GRAM

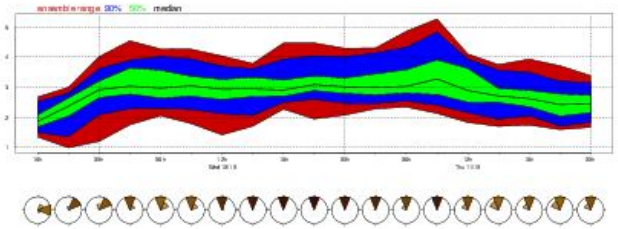
Helsinki

Forecast date: Tuesday 09 October 2012, 18h UTC

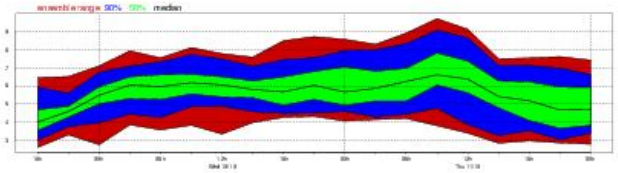
2m Temperature



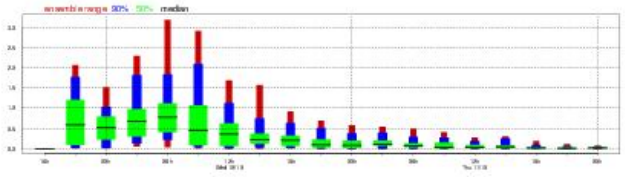
10m Wind



10m Wind Gusts



3h Precipitation



Technical implementation

- SMS suite developped and maintained by Kai Sattler (DMI)
- Running at ECMWF.
- Main output products: probability forecasts. Output in GRIB2 and as .png graphs
- Website: glameps.org

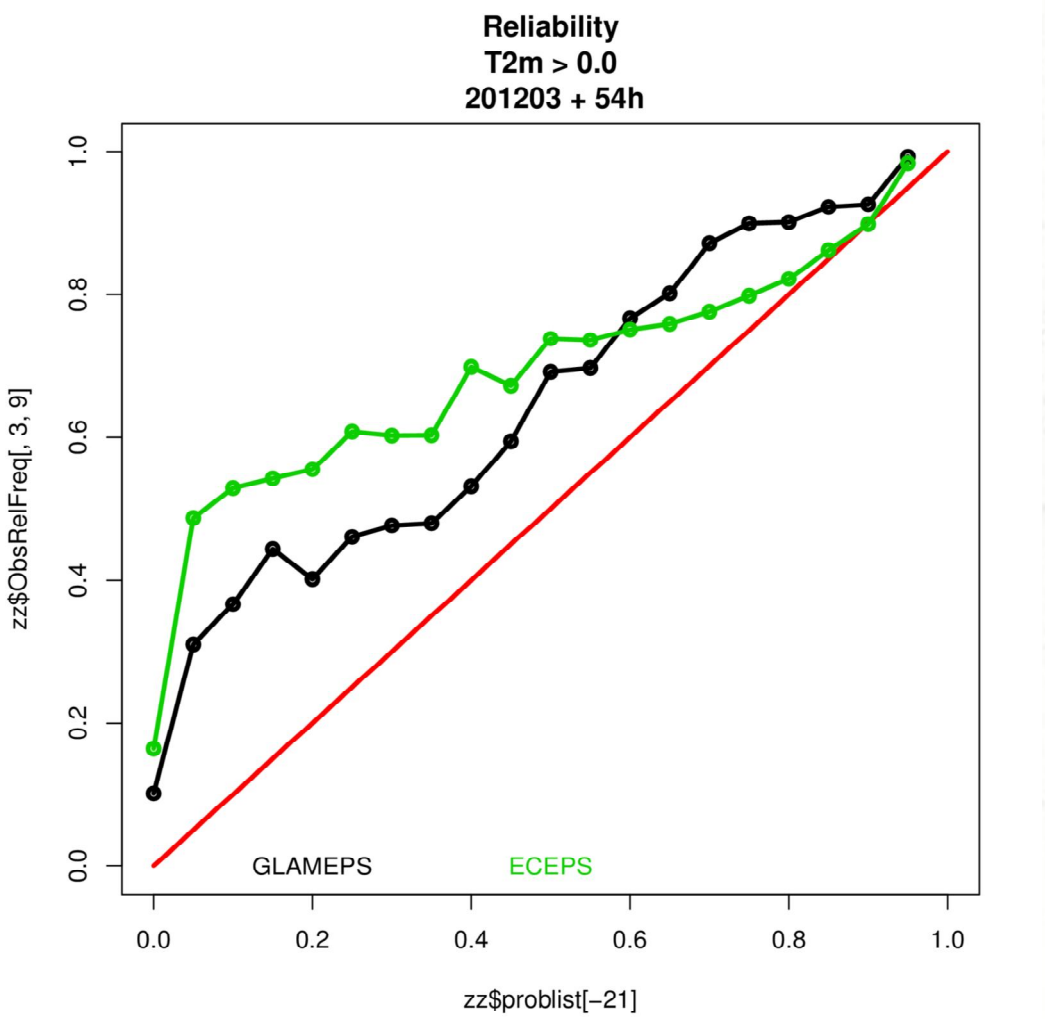
Cold start

- The CANARI surface assimilation in ALADIN has a long spin-up (>1 month). Cold starts must be avoided.
- If GLAMEPS is down, a single DA cycle will be continued (if at all possible).

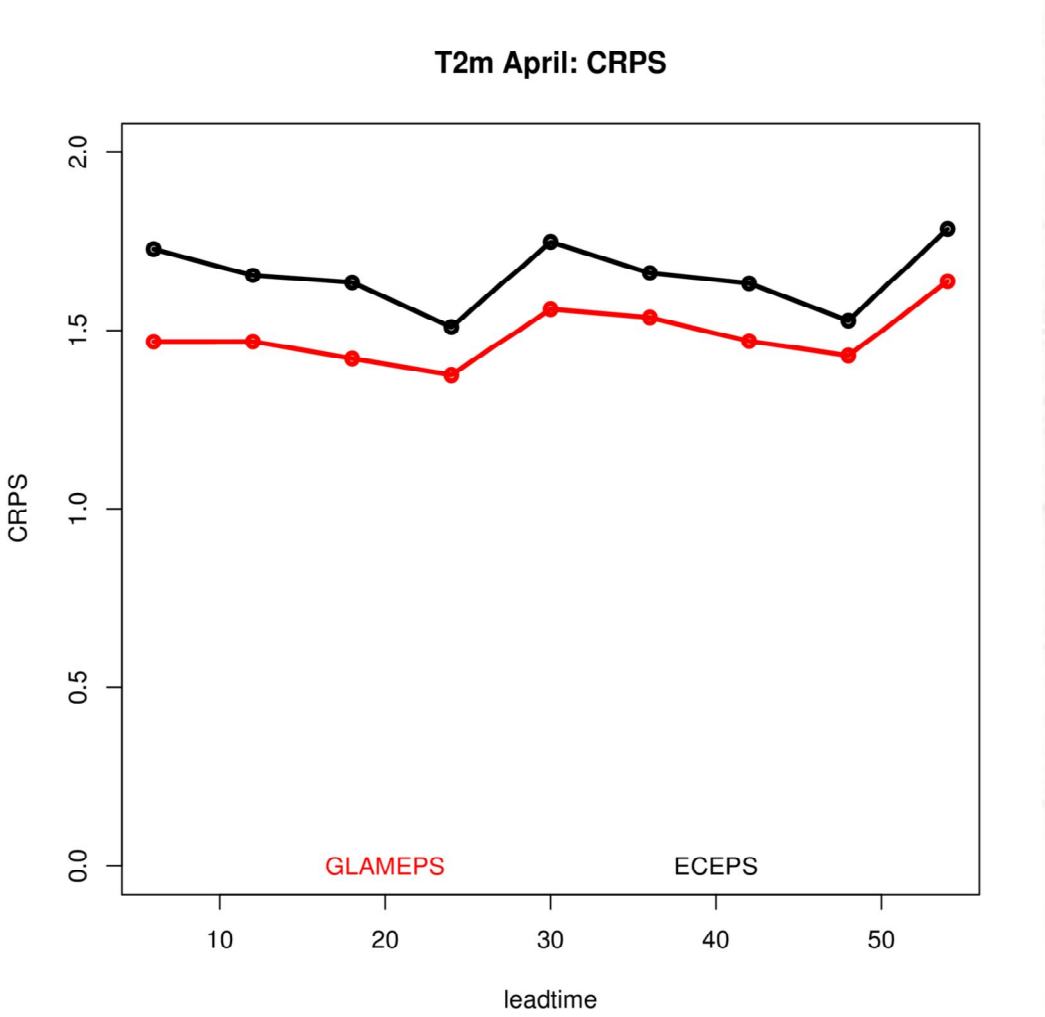
Verification

- V1 verification had to be re-written from scratch.
- Decision was made to use R, which is already used for the production of output products.
- 3 stage system:
    - Save a table output data for a fixed list of co-ordinates during main suite. ARCHIVE! (for verification & calibration)
    - Combine with observations & Produce verification statistics.
    - Make graphs.

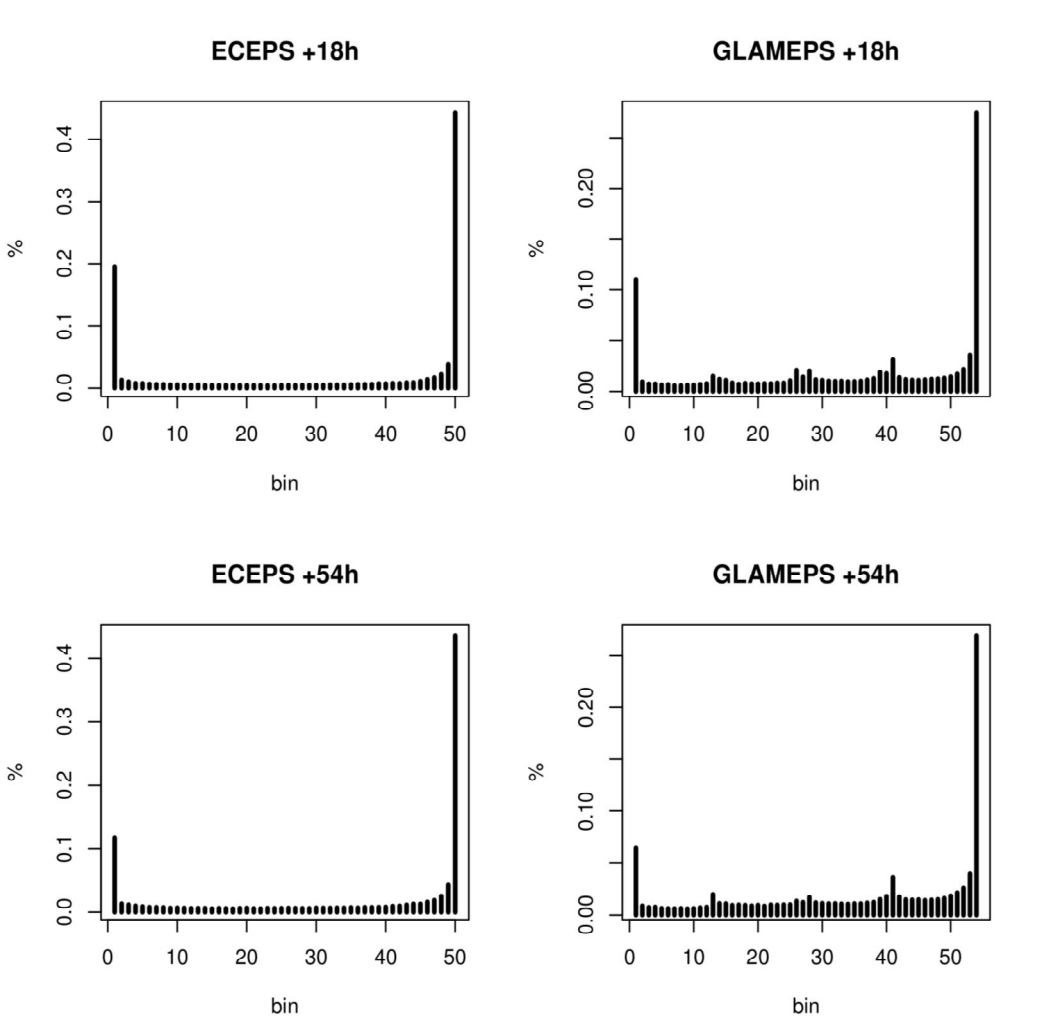
Reliability



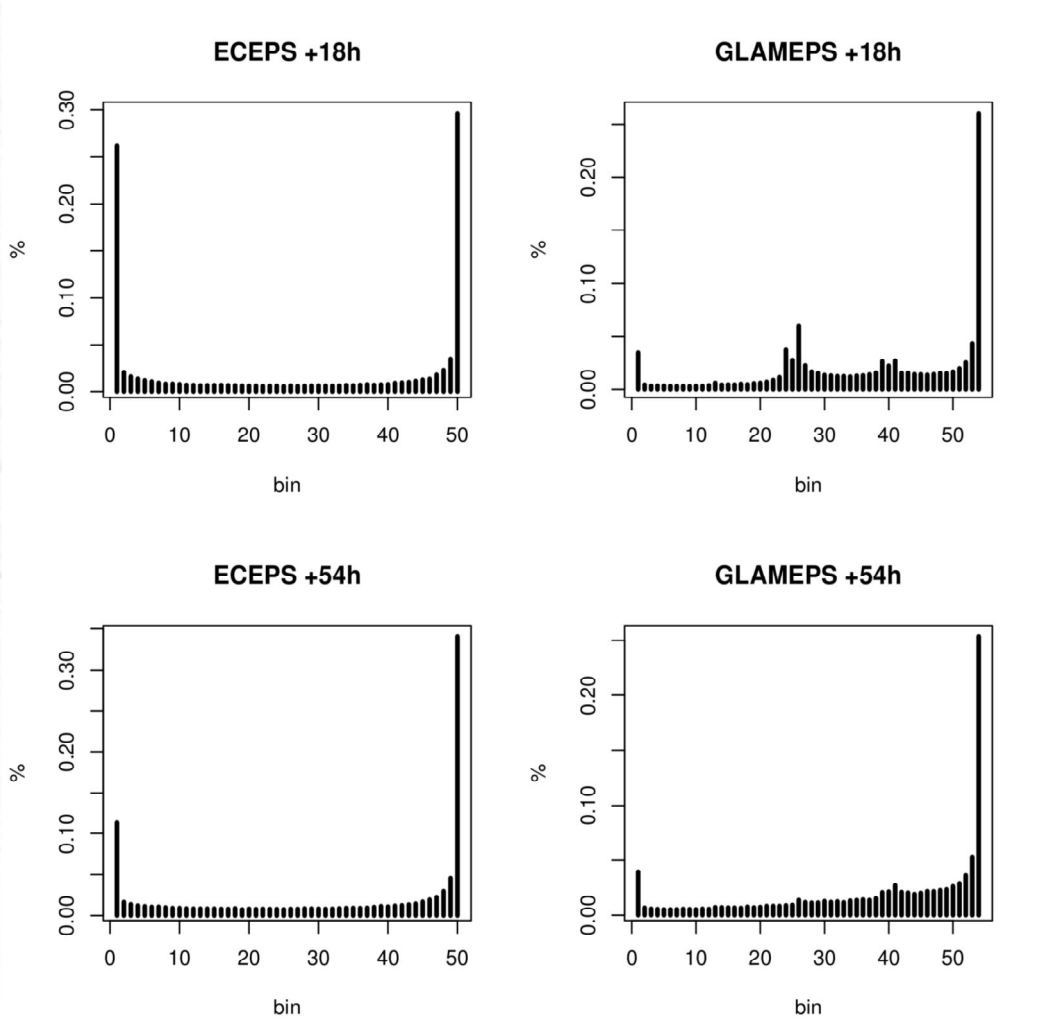
CRPS


T2m April: CRPS
CRPS
0.0
0.5
1.0
1.5
2.0
GLAMEPS
ECEPS
10
20
30
40
50
leadtime

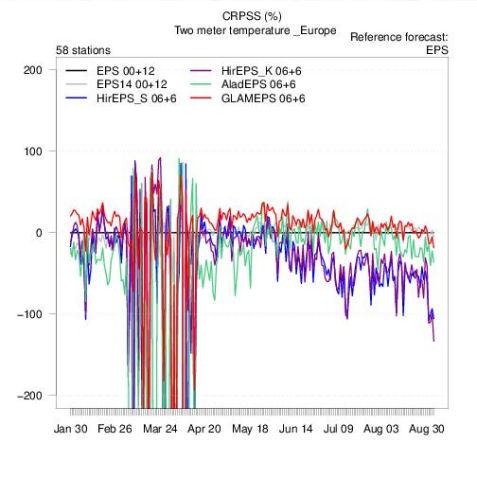
Rank histograms T2m, March

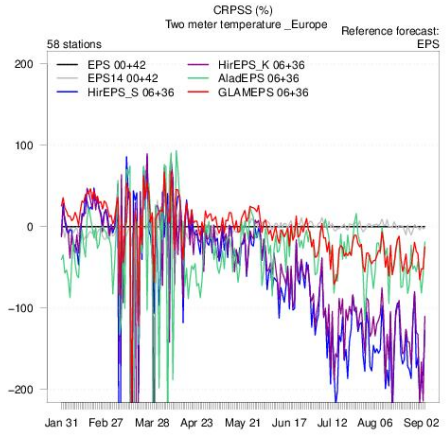


Rank histogram T2m, July



CRPSS for T2m



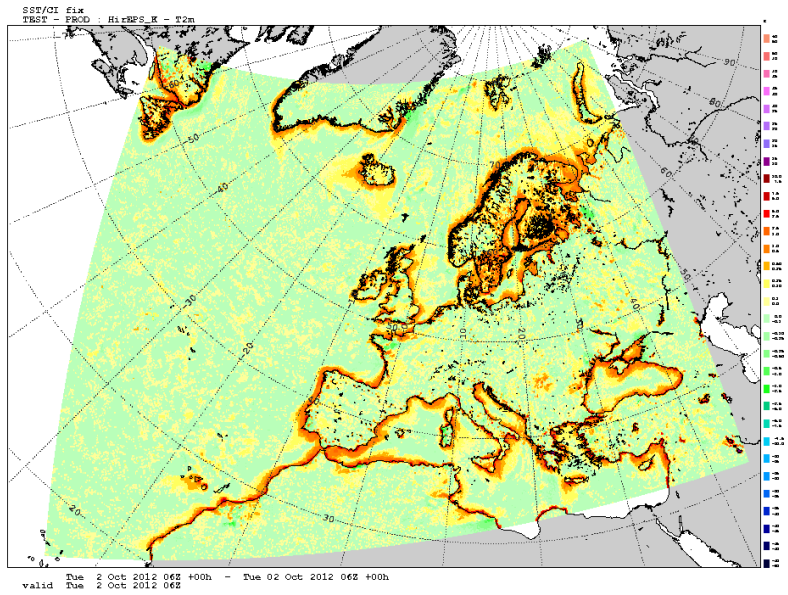


What's up with (mainly) the Hirlam members?

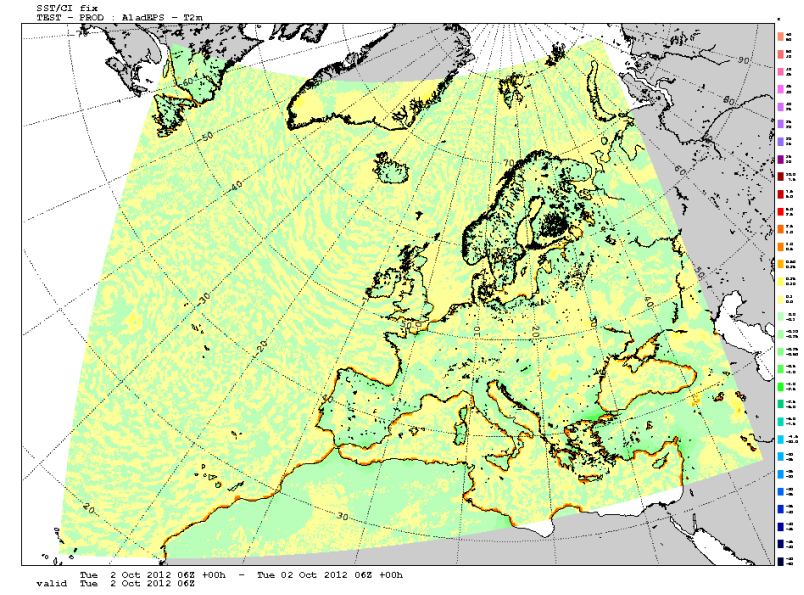
SST analysis vs 0h forecast

- ECMWF SST analysis has missing values over land.
- EPS 0h forecast SST field has 0°C over land.
- Interpolation routines got confused.

SST Correction



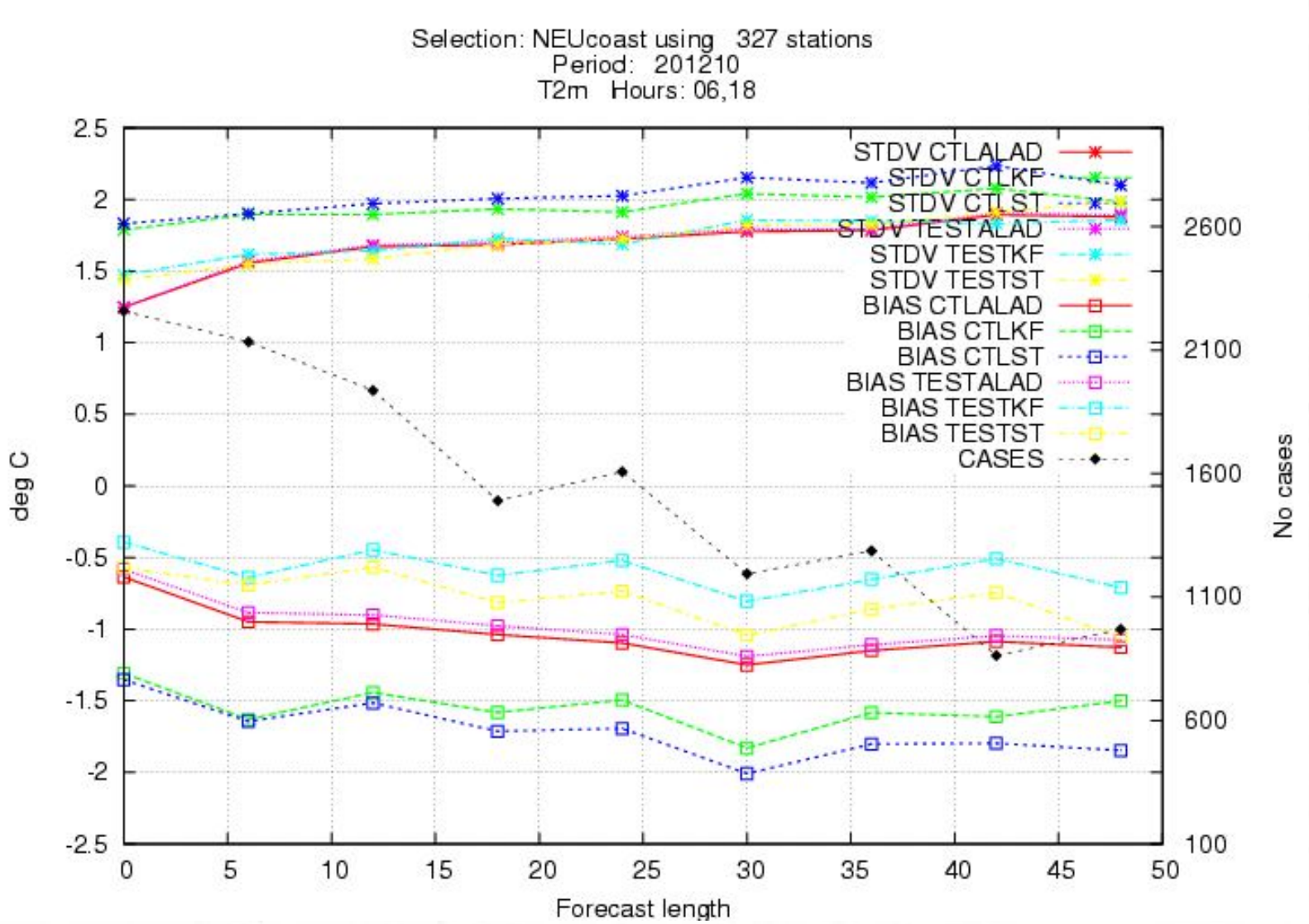
HirEPS_K



AladEPS

T2m(corrected) - T2m(original)

SST Correction



Conclusions

- GLAMEPS offers a valuable pan-European LAM-EPS.
- multi-model EPS is labyrinth with many pitfalls.
- ... and many specialists!

Thank you!