Evaluation of the added value of LAMEPS

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Essential questiones on LAMEPS

What is the more added value of LAMEPS to its counterpart global EPS?

Is a LAMEPS adding value to its existing high resolution deterministic Limited Area Model (LAM) forecast?

Performance has been verified:

ALADIN-LAEF and ECMWF EPS

ALADIN-LAEF and ALADIN-Austria

ALADIN-LAEF

LAEF: Limited Area Ensemble Forecasting

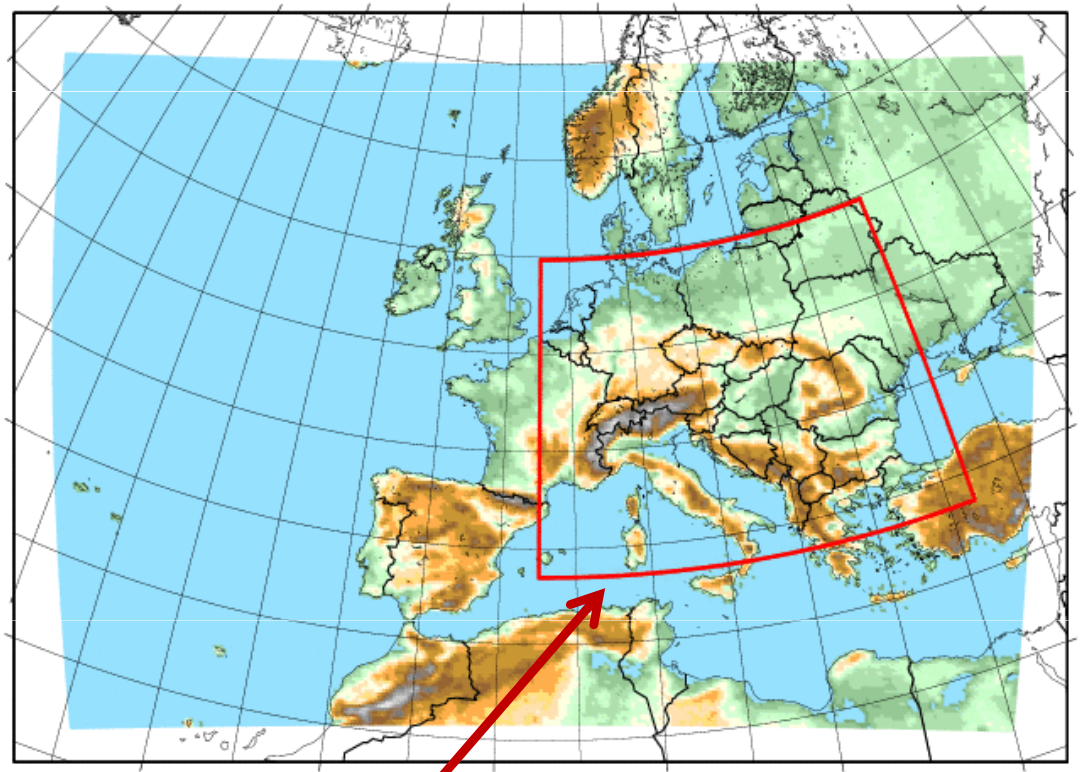
Ensemble Size	16 +1
horizontal resolution	18 km
Vertical resolution	37 levels
Runs/day	2 (00,12UTC)
Forecast range	60h
Time step	720s
Coupling-model	ECMWF SV EPS
Coupling-update	6h

Atmosphere perturbation: **Blending ALADIN Bred + ECMWF SV**

Surface perturbation: **Non-Cycling surface Breeding**

Model perturbation: **multi-physics**

LAEF vs. ECMWF EPS



Verification domain

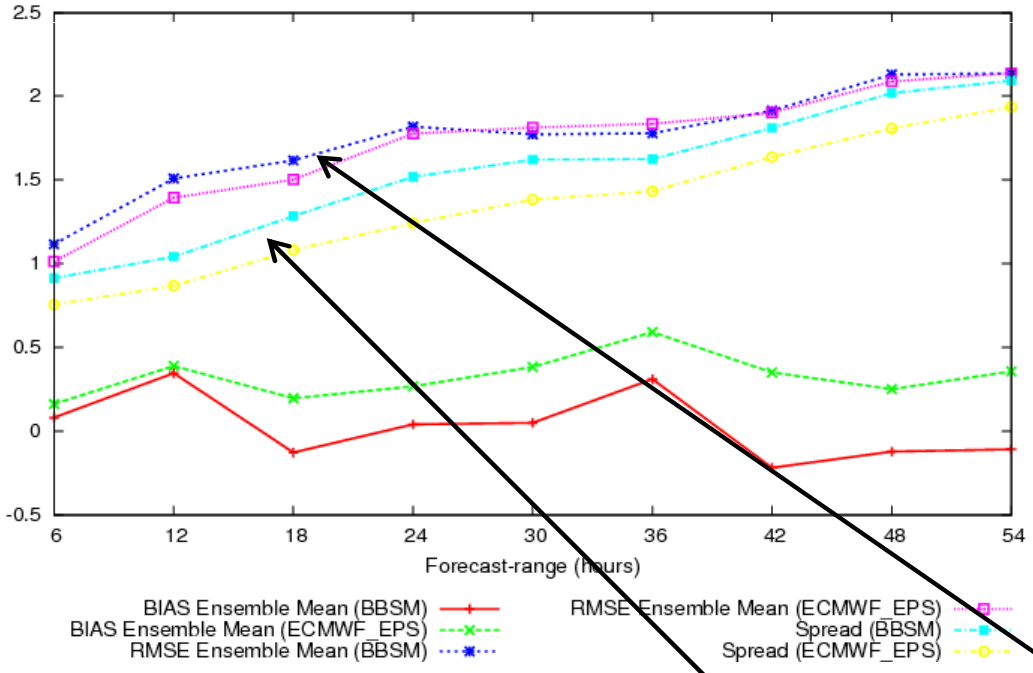
- LAEF, 16 ensemble members

Comparison

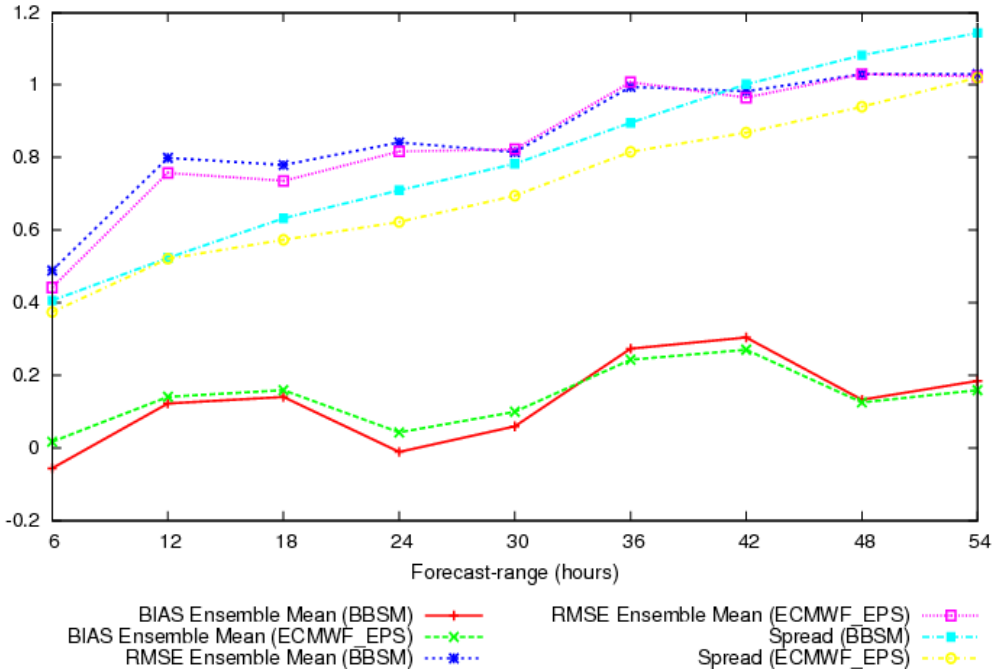
- ECMWF EPS, 50 ensemble members

LAEF vs. ECMWF EPS

V850

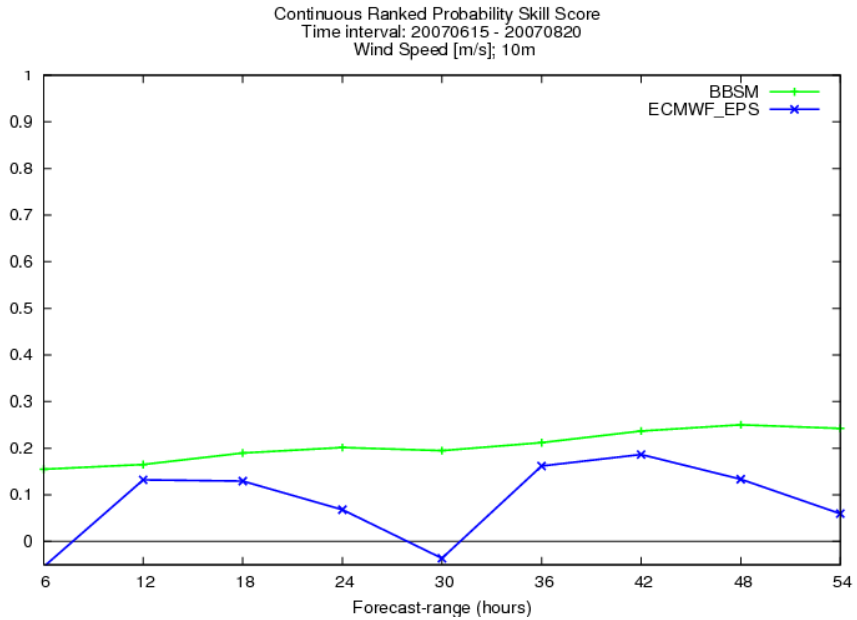


T850

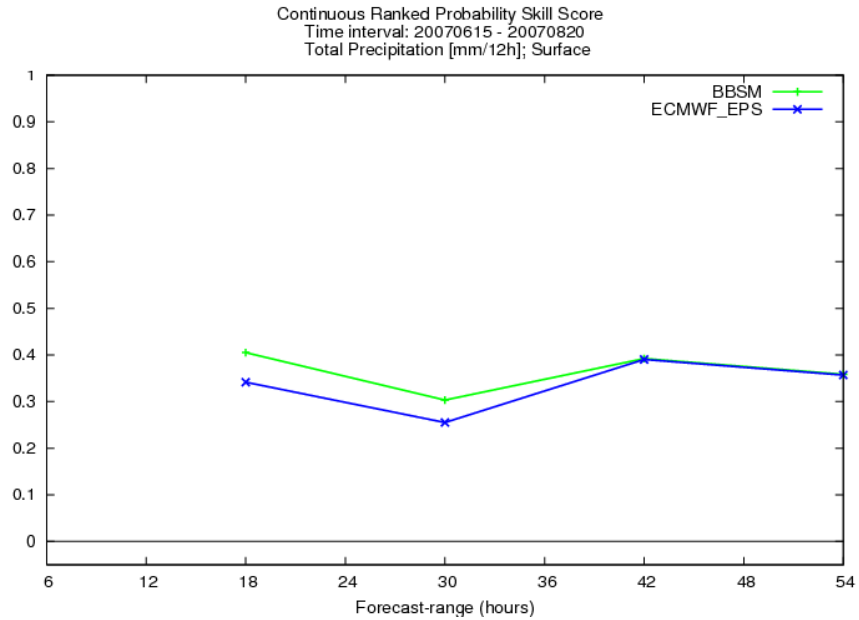


More spread, larger RMS error

LAEF vs. ECMWF EPS

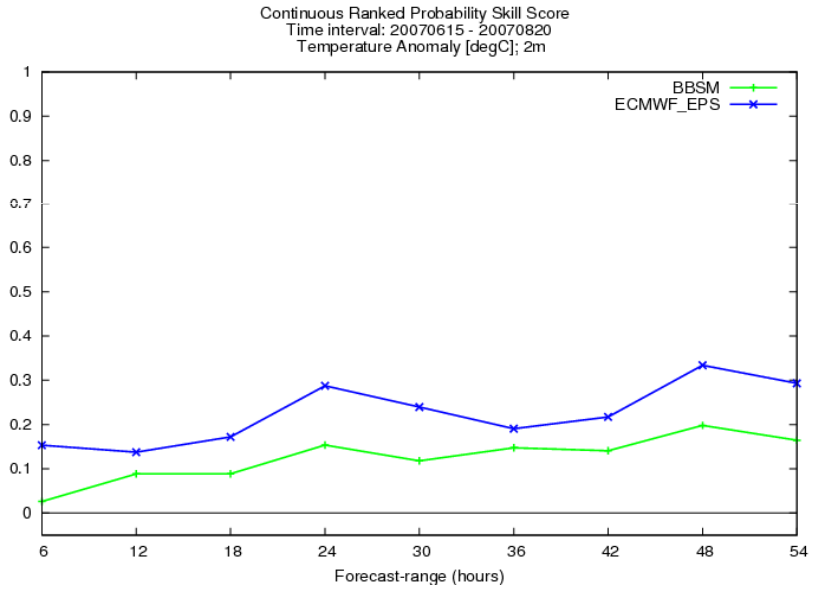


10m W

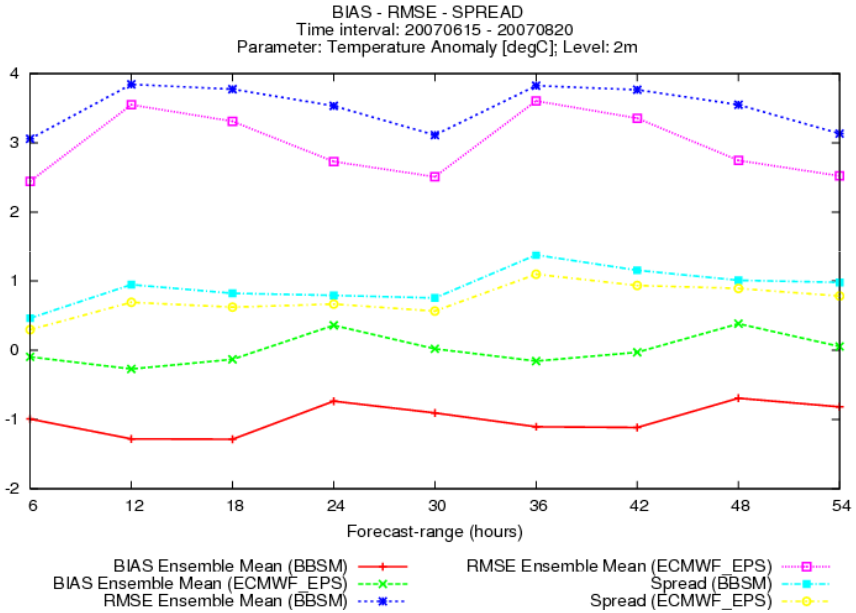


Precipitation

LAEF vs. ECMWF EPS



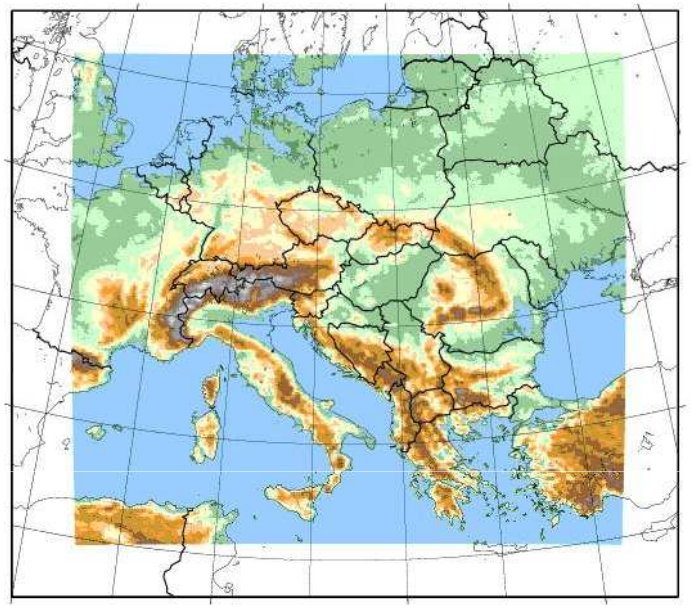
2m T



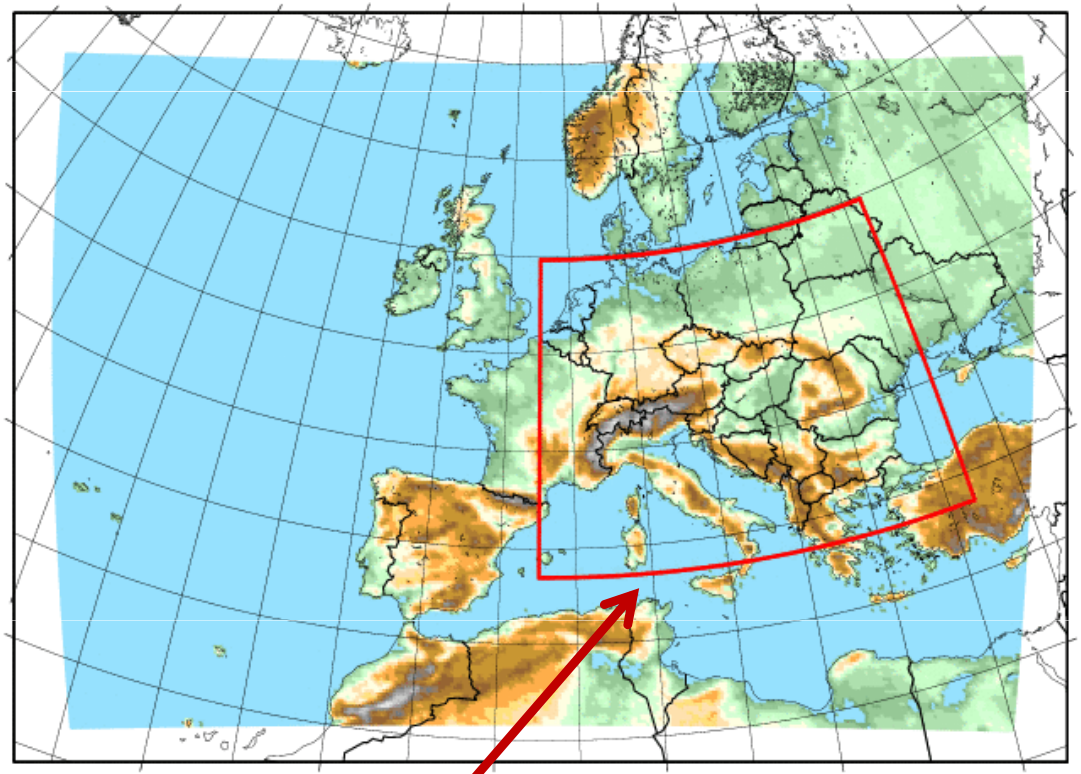
ALADIN-Austria: deterministic

Horizontal resolution	9.6 km (320x277)
Vertical resolution	60 Levels
Runs/day	00,06,12,18 UTC
Forecast range	72h / 60h
Output-Frequence	1h
Time step	415s
Coupling-Modell	ARPEGE
Coupling-Update	3h

ALADIN–AUSTRIA Domain & Topography



LAEF vs. ALADIN-Austria



ALADIN-Austria domain

- LAEF

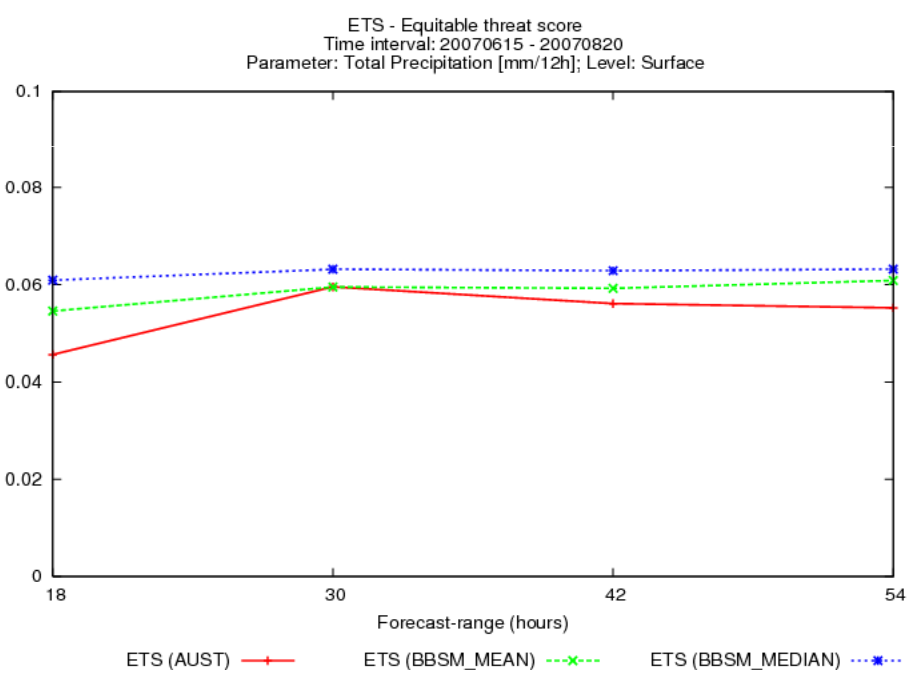
Deterministic verification

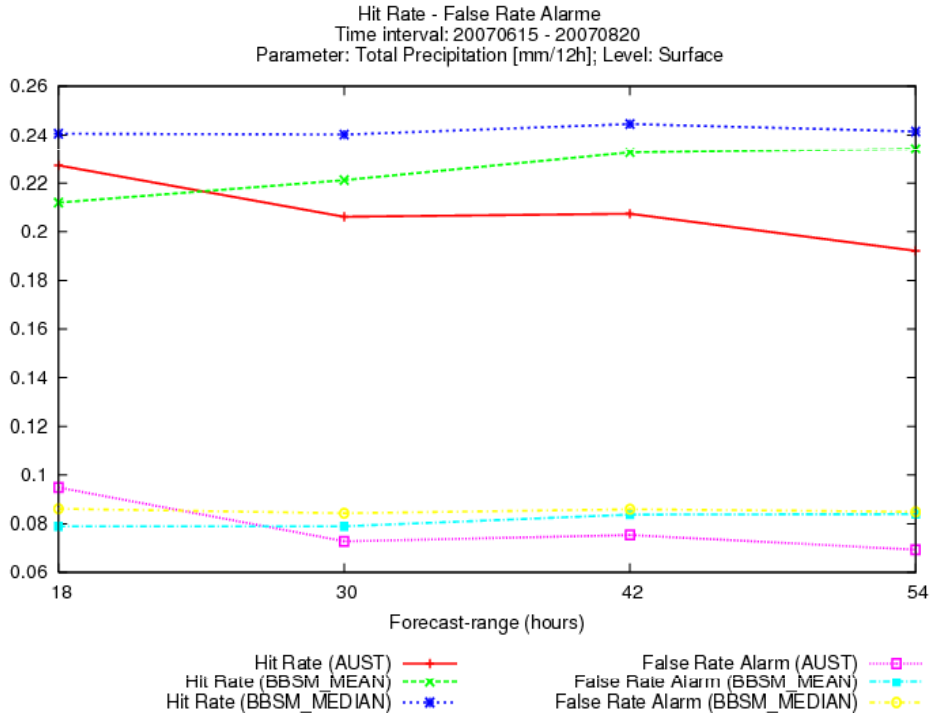
Time lagged vs. LAEF

As reference in skill score

- ALADIN-Austria

LAEF vs. ALADIN-Austria

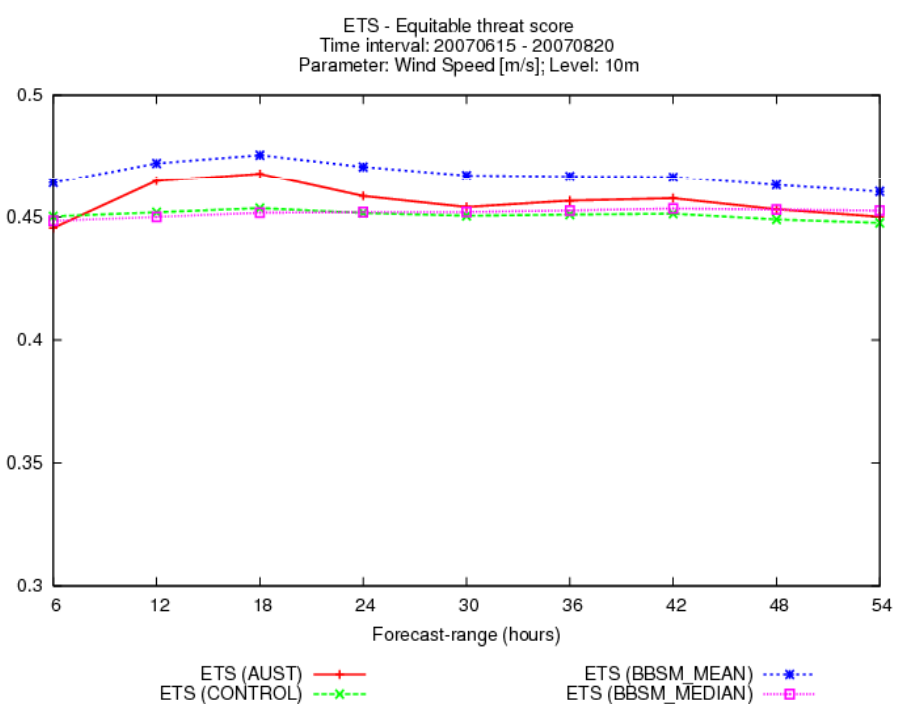


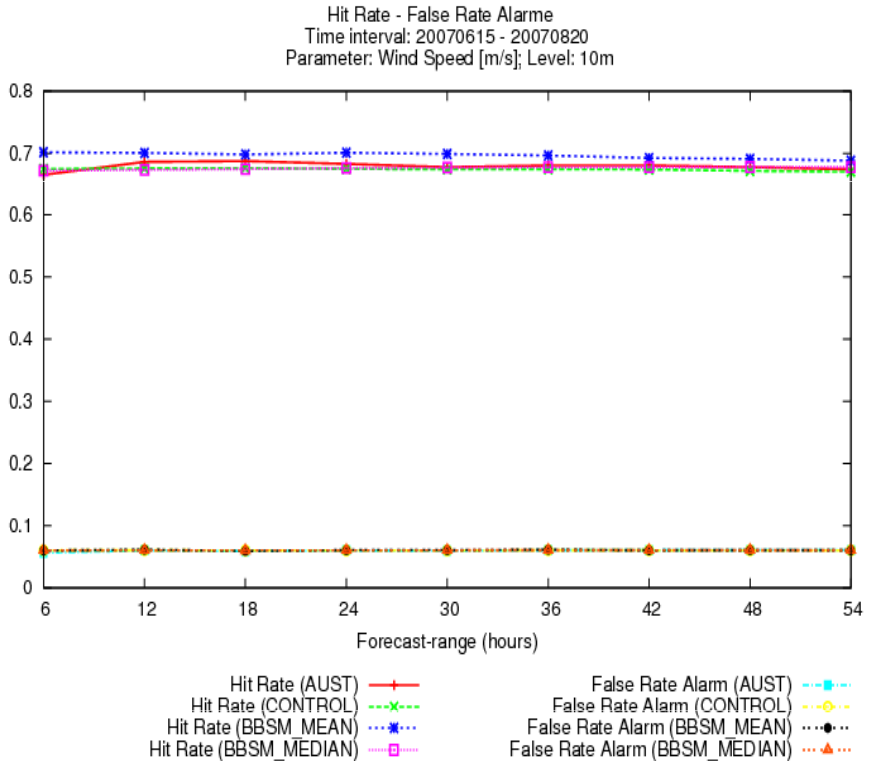


Precipitation

Deterministic verification, ensemble mean/median

LAEF vs. ALADIN-Austria

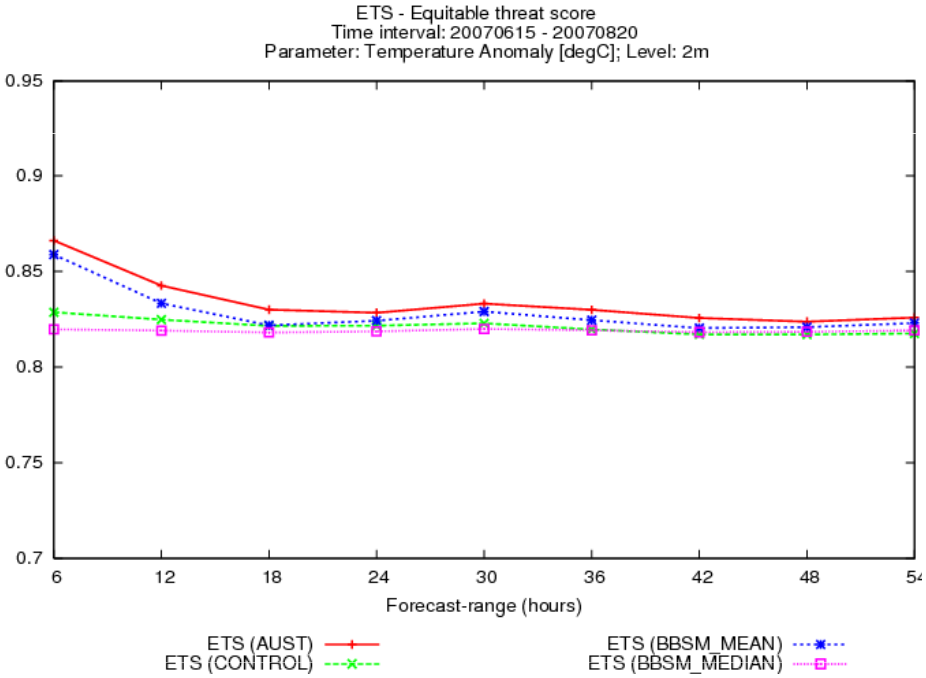


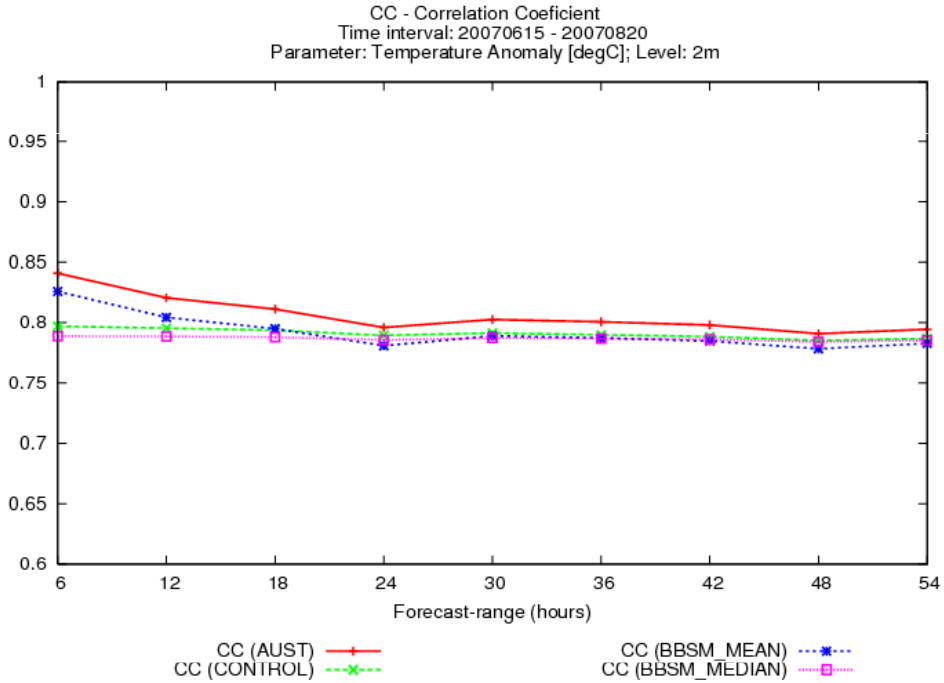


10 m wind

Deterministic verification, ensemble mean/median

LAEF vs. ALADIN-Austria





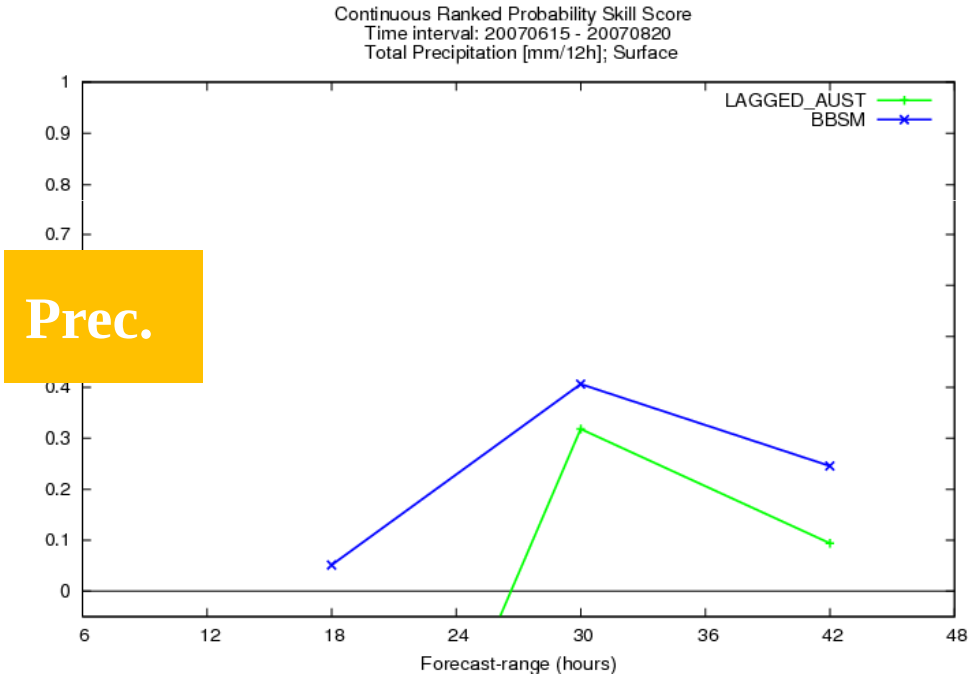
2 m Temperature

Deterministic verification, ensemble mean/median

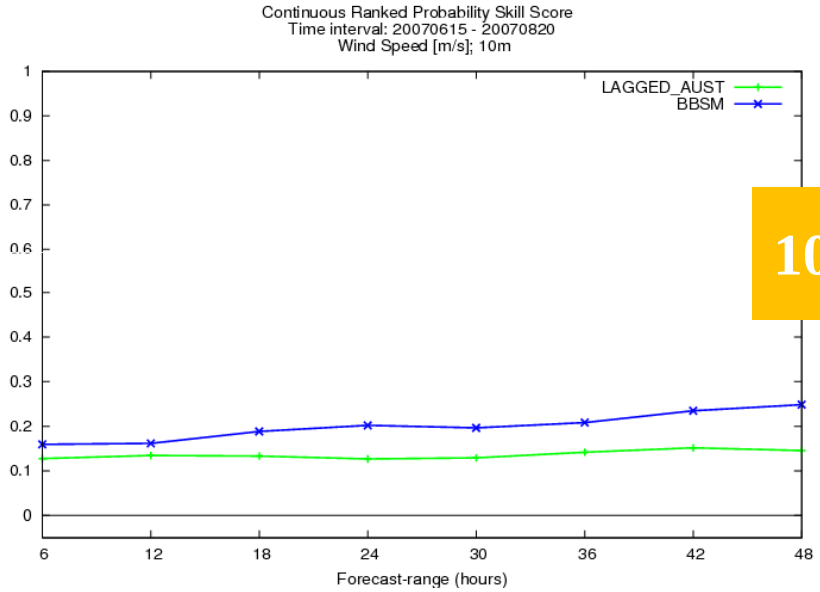
ALADIN-Austria: time lagged EPS

00 UTC:	00	06	12	18	24	30	36	42	48	54	60	66	72
06 UTC:		00	06	12	18	24	30	36	42	48	54	60	66
12 UTC:			00	06	12	18	24	30	36	42	48	54	60
18 UTC:				00	06	12	18	24	30	36	42	48	54
00 UTC:					00	06	12	18	24	30	36	42	48

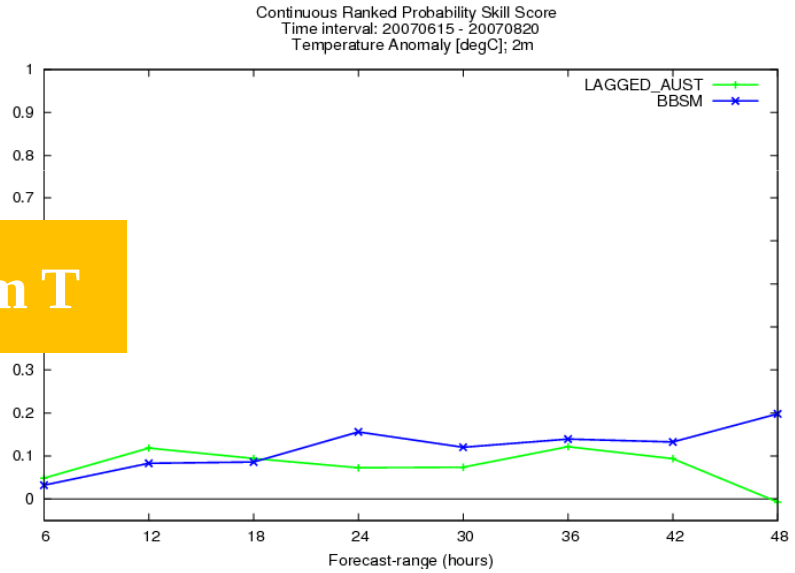
LAEF vs. Time lagged ALADIN-Austria



Prec.



10m W



2m T

ALADIN-Austria as Reference

ZAMG

Conclusions

The more added values of LAEF on ECMWF EPS and ALADIN-Austria have verified:

1. LAEF is more skillful than ECMWF EPS on surface parameters, except T 2m.
2. No clear advantage found for LAEF upper air parameters
3. LAEF is outperform to the time lagged ALADIN with higher resolution.
4. LAEF Ensemble mean is better than ALADIN with higher resolution, except 2m Temperature.

THANKS!