LONG RANGE FORECASTING SYSTEM OF THE HYDROMETCENTRE OF RUSSIA

Part 2

5th NEACOF, Moscow, 29 October 2013

WMO RA VI RCC Network

North EurAsia Climate Centre

neacc.meteoinfo.ru/forecast/season-precip-lead0

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- Long-Range Forecasting products issued by NEACC
- Seasonal Outlook
- Forecast model description
- Standardised Verification System for Long-Range Forecasts
- On communicating forecast uncertainty
- WCRP Seasonal Prediction Position Paper (.pdf-format, 0.95Mb)
- Seasonal forecast of T2m anomalies with zero lead time
- **Seasonal forecast of Precipitation anomalies with zero lead time**
- Seasonal forecast of T2m anomalies with 1-month lead time
- Seasonal forecast of Precipitation anomalies with 1-month lead time
- 1-month forecast of T2m anomalies with zero lead time
- 1-month forecast of Precipitation anomalies with zero lead time
- Individual seasonal forecasts of various Global Producing Centres for Europe
- Individual seasonal forecasts of various Global Producing Centres for the Globe

Long-Range Forecasts › Seasonal forecast of Precipitation anomalies with zero lead time

Precipitation. Season. Lead time: 0

Forecast maps of tercile probabilities for 4 regions: North Eurasia, Europe, North Asia, Globe.
Producer: Hydrometcentre of Russia, Main Geophysical Observatory.

Region: Europe. Model: Hydrometcentre of Russia + Main Geophysical Laborat

Precipitation. Season. Lead time: 0

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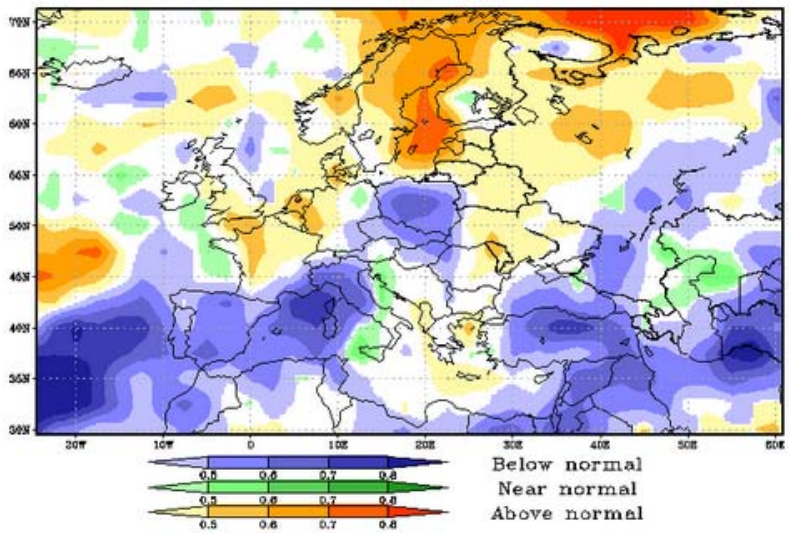
Composite probabilities of categorical forecast outcomes for
Precipitation seasonal anomalies. Producer: HMC+MGO
Forecast period: October_November_December_2013



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/forecast/season-t2m-lead0

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Long-Range Forecasts › Seasonal forecast of T2m anomalies with zero lead time

Temperature at 2 meters. Season. Lead time: 0

Forecast maps of tercile probabilities for 4 regions: North Eurasia, Europe, North Asia, Globe.
Producers: Hydrometcentre of Russia, Main Geophysical Observatory.

Region: Europe. T2m. Model: HMC+MGO

Temperature at 2 meters. Season. Lead time: 0

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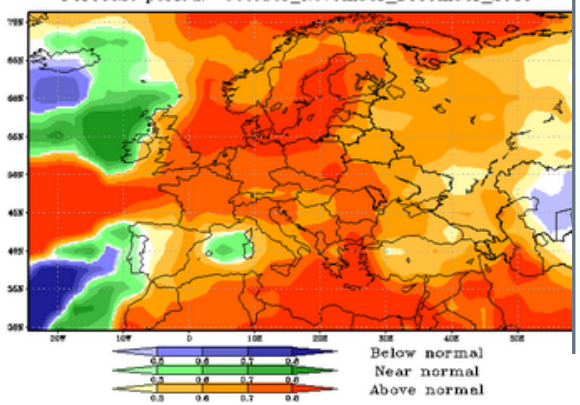
Composite probabilities of categorical forecast outcomes fo
T2m seasonal anomalies. Producer: HMC+MGO
Forecast period: October_November_December_2013



Region: Europe. T2m. Model: HMC

Temperature at 2 meters. Season. Lead time: 0

Composite probabilities of categorical forecast outcomes for

Multi-model seasonal probabilistic forecasts of NEACC

Calibration: 1981-2010

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Operational Forecast Verification

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« Skill scores of seasonal forecast

Forecast Verifications › Skill scores of seasonal forecast

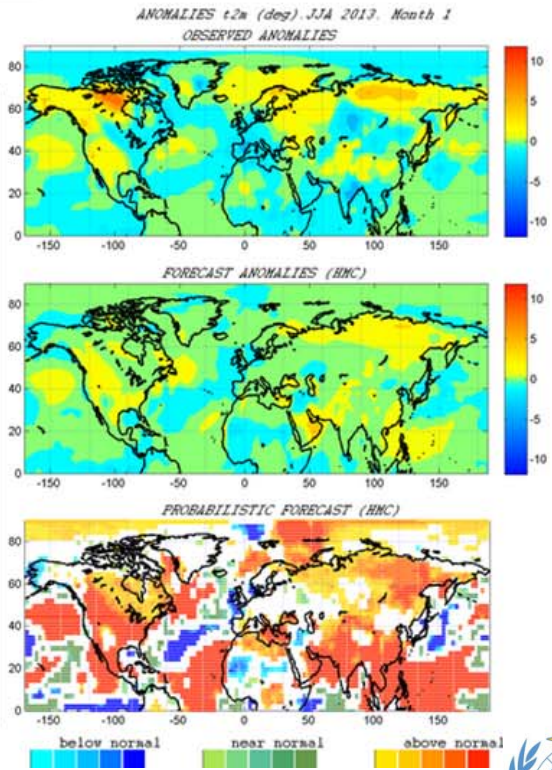
Skill scores of seasonal forecast

Date: 2013-06-01 | Region: GLOBUS | Parameter: T2m | Upload

Parameter: T2m
Region: GLOBUS (90S - 90N; 0 - 360)
Date: 2013-06-01

Model	Verifications						Maps
	ROC_A	ROC_N	ROC_B	RO	ACC	RMSE	
June 2013							
PLAV	0.6	0.53	0.6	0.27	0.23	1.51	Open
MGO	0.64	0.56	0.65	0.34	0.28	1.47	Open
PLAV+MGO	0.65	0.56	0.65	0.32	0.29	1.45	Open
July 2013							
PLAV	0.53	0.53	0.56	0.2	0.16	1.27	Open
MGO	0.6	0.55	0.63	0.27	0.31	1.17	Open
PLAV+MGO	0.59	0.54	0.62	0.25	0.27	1.19	Open
August 2013							
PLAV	0.49	0.51	0.49	0.15	0.25	1.24	Open
MGO	0.56	0.51	0.54	0.19	0.2	1.23	Open
PLAV+MGO	0.54	0.51	0.53	0.18	0.26	1.2	Open
Season							
PLAV	0.54	0.54	0.58	0.28	0.29	1.06	Open
MGO	0.6	0.56	0.63	0.3	0.34	1.01	Open
PLAV+MGO	0.6	0.56	0.62	0.31	0.34	1.01	Open

Skill scores:



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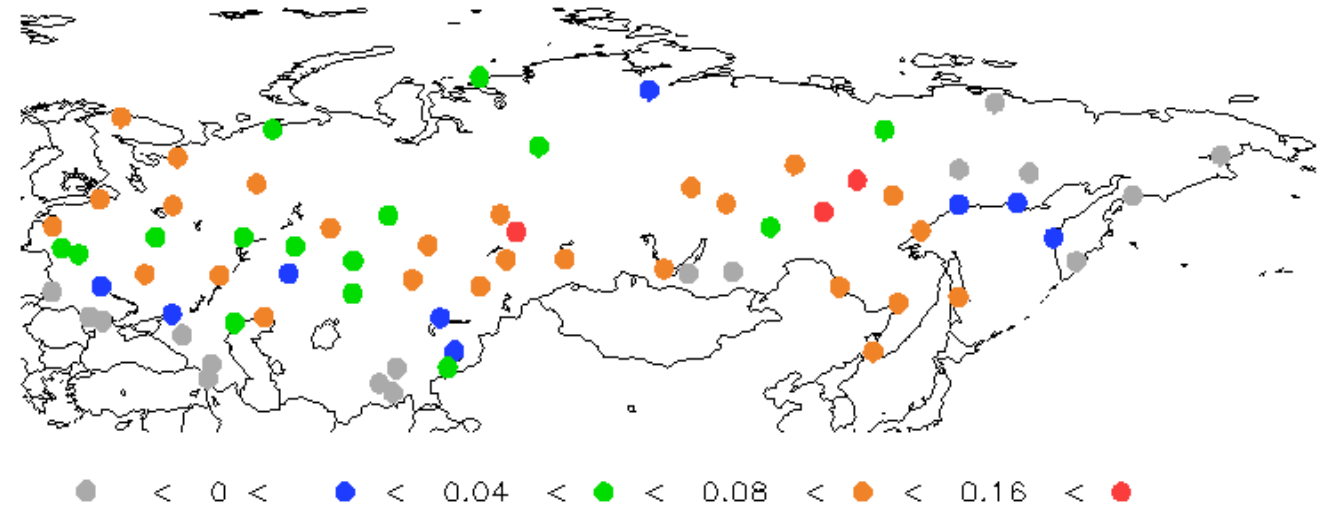
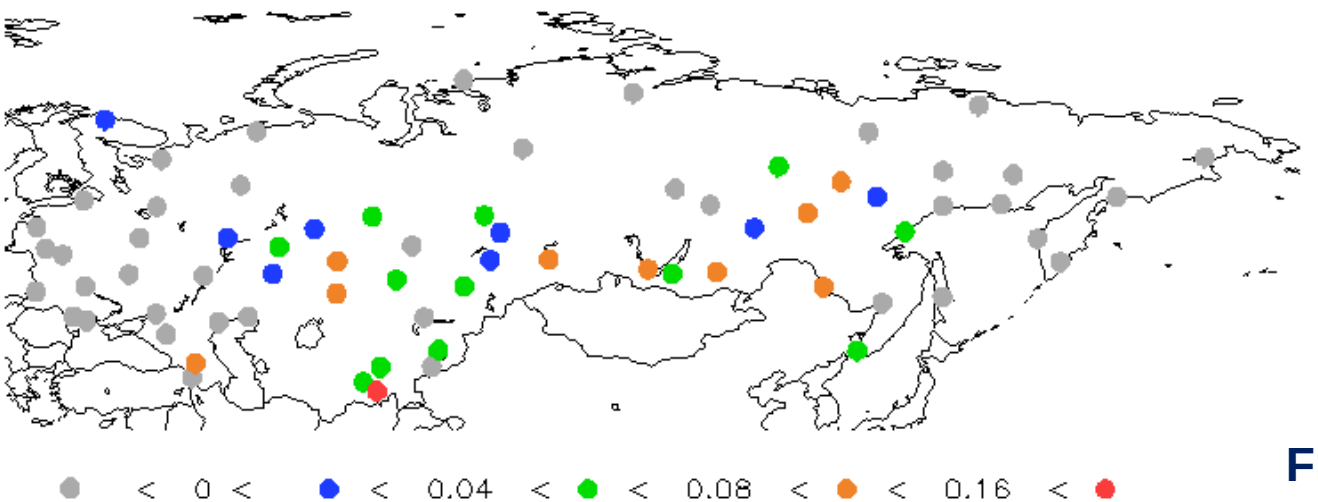
Foreseen product: Statistical Downscaling

RPSS of historical seasonal forecasts of DJF mean temperature with 1 month lead time (25 years, crossvalidation with 5 years withheld)



Downscaled forecast

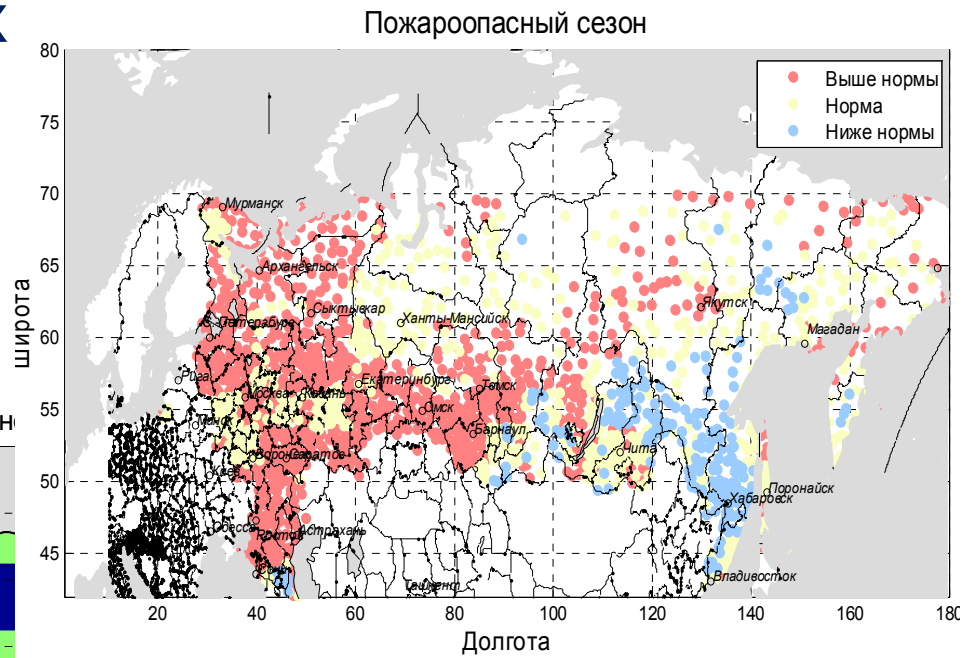


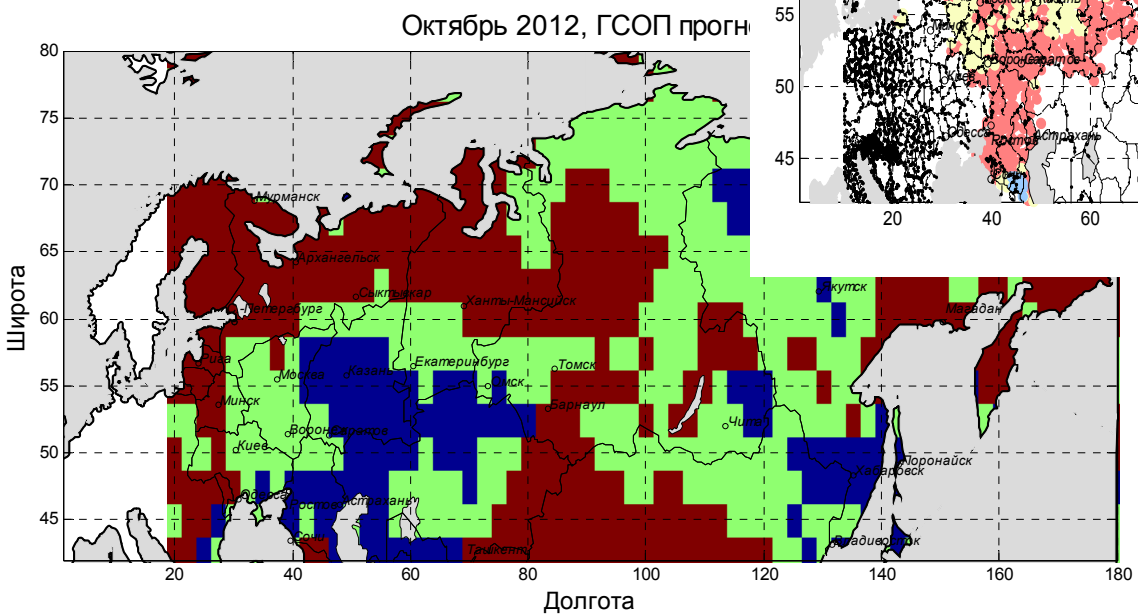
Interpolation from raw model gridpoint forecasts

From Kryjov, ERL, 2012

Products derived from daily data of seasonal forecast series

- **Fire Danger Degree Index**
- **Heating Degrees Days**





EFI for LRF?

Hopes for long-range weather prediction are largely related to the influence of slowly varying external forcings. These forcings may have a significant impact on the statistical characteristics of atmospheric circulation.

It can be expected that the effect of slowly varying external forcings may be manifested in the statistics of extreme events on the long-term time scales beyond the range of deterministic predictability of individual synoptic structures.

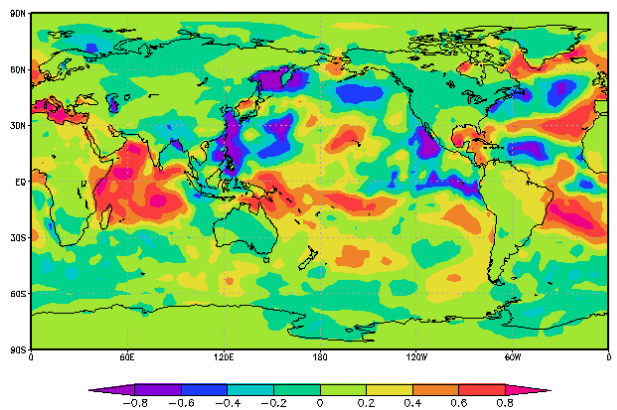
Modification of *EFI* for LRF:

• Instead of forecasting for a particular time moment we calculate a derived index for each daily forecast time series from seasonal ensemble.

• *PDF*s are calculated on the basis of the ensemble of derived indices.

• To avoid the temporal inhomogeneity in the forecast daily series (due to seasonal cycle) each series is preliminary transformed into standardized series of forecast daily anomalies.

An example forecast map of EFI_1 modified for the purposes of LRF on the basis of SL-AV model output. Parameter – T2m. Period - JJA2003.



Foreseen product: 45-days forecasts with weekly update

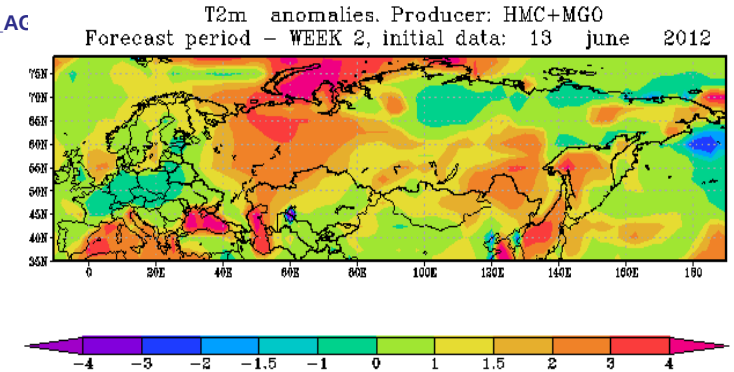
(Hydrometcentre of Russia and Main Geophisical Observatory)

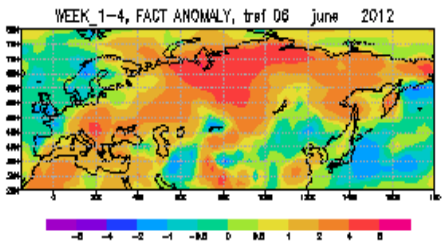
Verifications for forecast from 20120613

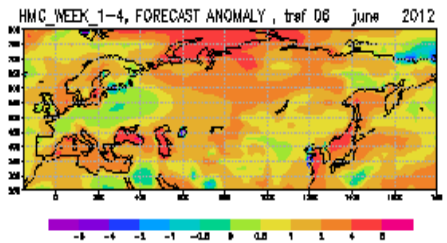
ELEMENT trsf

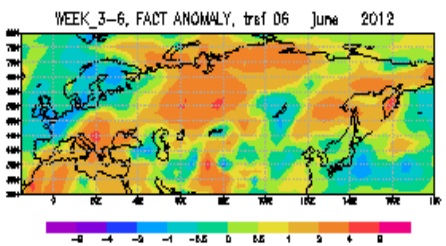
EUROPE (10-60, 35 - 70)

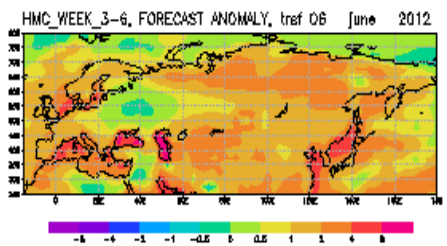
	RO	Q	MSE	MSSS	AC	RMS	ROC_BN	ROC_NO	ROC_AN	ROC_AC
week1_HMC	0.79	2.40	8.52	-0.15	0.58	2.92	0.83	0.62	0.73	0.73
week1_MGO	0.78	0.79	3.71	0.50	0.71	1.93	0.60	0.68	0.74	0.67
week2_HMC	0.05	2.68	8.80	-1.66	0.32	2.97	0.53	0.47	0.53	0.51
week2_MGO	0.34	0.65	3.47	-0.05	0.34	1.86	0.73	0.60	0.75	0.69
week3_HMC	0.32	4.97	11.85	-0.95	0.28	3.44	0.34	0.49	0.51	0.45
week3_MGO	0.16	1.63	5.83	0.04	0.27	2.41	0.37	0.58	0.61	0.52
week4_HMC	0.58	4.27	10.76	-0.78	0.41	3.28	0.41	0.48	0.50	0.46
week4_MGO	0.20	1.46	5.97	0.01	0.22	2.44	0.48	0.54	0.54	0.52
month1_HMC	0.60	4.84	5.96	-0.82	0.58	2.44	0.49	0.49	0.48	0.49
month1_MGO	0.56	1.18	2.12	0.35	0.60	1.46	0.71	0.61	0.69	0.67
month2_HMC	0.51	7.42	8.88	-2.70	0.48	2.98	0.45	0.51	0.45	0.47
month2_MGO	0.46	0.93	1.62	0.33	0.61	1.27	0.62	0.57	0.68	

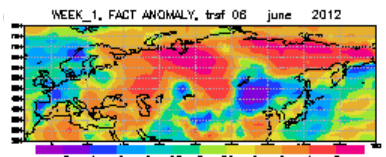


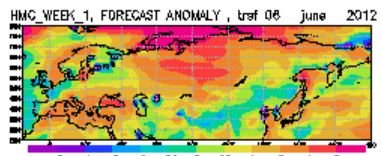


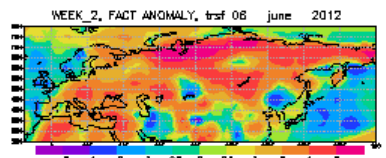


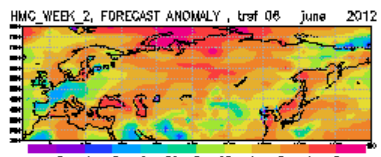


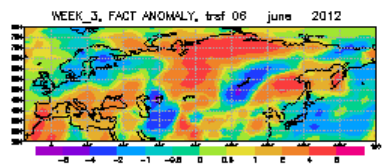


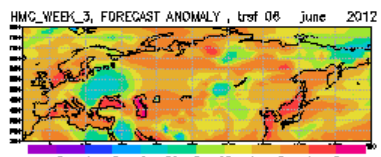


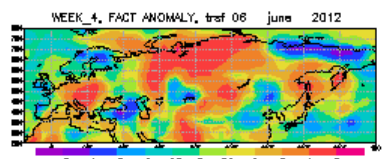


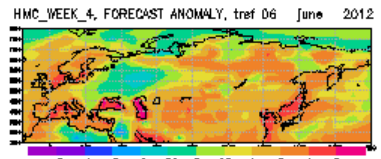












Thank you !

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