ALADIN related activities at SHMI

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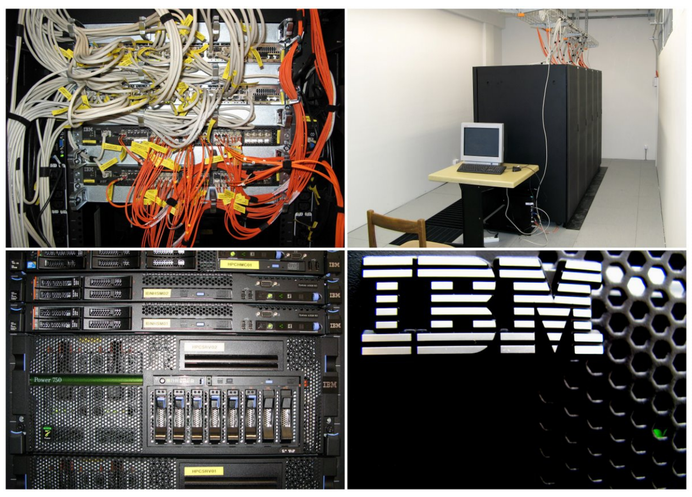
nwp@shmu.sk Martin Belluš Mária Derková Richard Habrovský Rastislav Bujňák Ján Kaňák Milan Káčer Ján Mašek Michal Neštiak Oldřich Španiel Jozef Vivoda

ALADIN/SHMU – operational computer

HPC IBM p690 Regatta, 32 CPUs POWER 4+ 1.7 GHz, 32 GB RAM, 1.5 TB IBM FAST Storage Server, OS AIX 5.2, Queueing system LoadLeveler

MODEL AL32T1, ALARO+3MT, SLHD, envelope orography, blending DOM: LACE, 9km dx, 37 vlev, 3h coupling, 72h forecast length



ALADIN/SHMU – new computer

HPC 10 nodes of IBM p755 with 4x 8-core 3.3 GHz POWER7, 256 GB RAM per node, 40 TB GPFS, OS AIX 6, Queueing system LoadLeveler

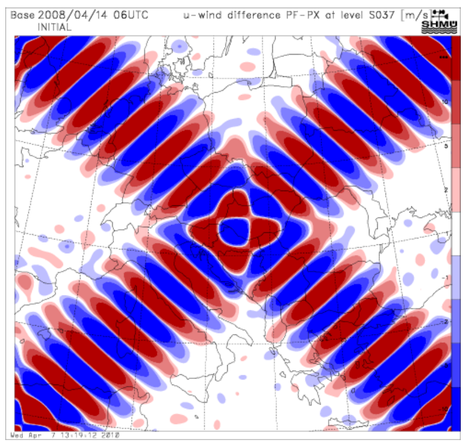
MODEL AL36T1bf8 , ALARO+3MT, SLHD, envelope orography, blending DOM: LACE, 9km dx, 37 vlev, 3h coupling, 72h forecast length

Main operational highlights since last workshop

24-03-2011 Full monitoring of pre-operational suite running on new HPC
24-02-2011 Perl modules to MySQL and GD graphic library installed on new HPC
21-02-2011 AIX 6.1.6.3, Load Leveler 4.1.1.2 and Parallel Env. 5.2.2.2 installed on new HPC
24-01-2011 Perl 5.12.2 installed on new HPC
30-11-2010 CY36T1 parsuite running on new HPC cluster (10xIBM p755) with blending cycle
28-05-2010 Time-lagged ensemble precipitation forecast in ALADIN epsgrams
11-05-2010 New horizontal resolution of ARPEGE telecom LBCs (15.4->10.6km)
23-03-2010 X-pattern bugfixed in local version of the code CY32T1+3MT
22-02-2010 E923 local orography based on SRTM mission data into CLIM files

Fixing bug in xrd library causing X-pattern, J. Mašek

From time to time, particular step of DFI blending (change from low to full spectral resolution via configuration EE927) produced spurious X-pattern for some spectral fields and model levels. R. Brožková detected that the bug was triggered by GRIB packing. Further debugging showed that the reason was wrongly formulated error criterion used in determining optimal Laplacian power for scaling of spectral coefficients before packing. Bug was fixed on cy35t1 and adapted by F. Váňa to cy36t1. It entered official code in 5th bugfix of cy36t1. It was backphased also to operational version of ALADIN/SHMU, which still uses cy32t1.
Detailed bug report can be found on RC LACE forum:http://www.rclace.eu/forum/ -> Bug and Problem Reports -> X-pattern produced by configuration ee927

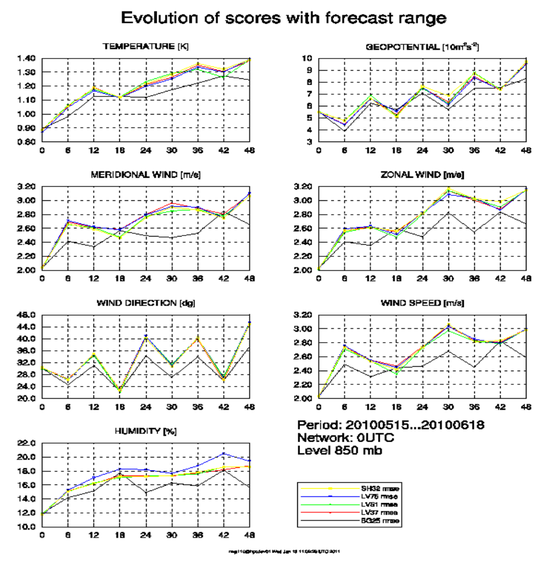


Implementation of VERAL - Testing of new model configuation, Habrovský, Vivoda, Španiel

The original VERAL program developed at CHMI was rewritten to Perl script language. One of the first test was implementation of VERAL for analysis of various model versions of ALADIN for period from 5.15.2010 to 18.06.2010 (see table). Figures 1,2 and 3 shows time evolution of BIAS,RMSE and STDE for ground level and Figures 5,6 and 7 are the same but for 850kPa level.

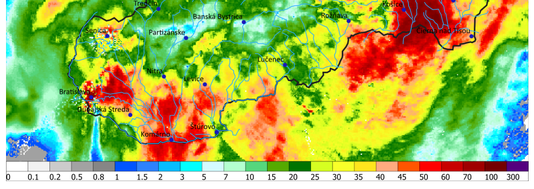
Color	cycle	Dx/km	levels
Yellow	32t1	9	37
Blue	36t1	9	75
Green	36t1	9	51
Red	36t1	9	37
Black	36t1	2.5	51

RMSE from 15 may to 20th jun 2010 for various Aladin models on LACE domain on 850hPa pressure level



05/2010 Precipitation probability in lagged-ensemble meteograms

Probabilistic precipitation forecast based on five subsequent integrations of ALADIN model valid within the same two days period (3rd diagram from above). Shown probabilities are for the thresholds 0.1mm/h (blue), 1mm/h (green), 3mm/h (yellow) and 5mm/h (red).

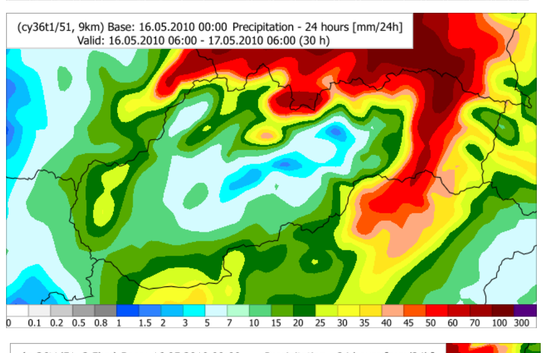


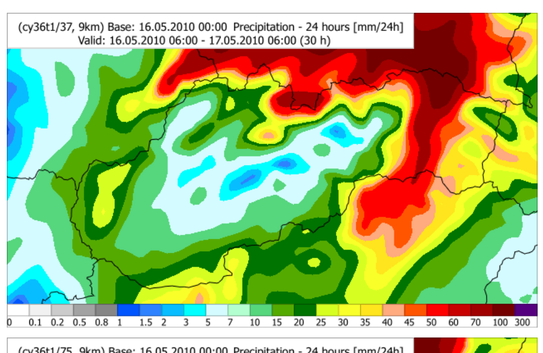
Precipitation 17.5.2010 06UTC 24h accum
Prediction from 16.5.2010 +6h - +30h
Model versions:
9km 37, 51, 75 levels
2.5km 51 levels

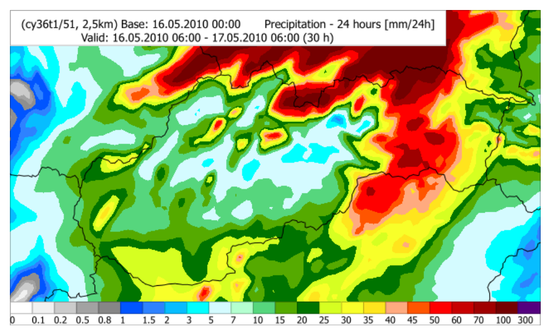
CANARI – implemetation and validation, M. Nestiak

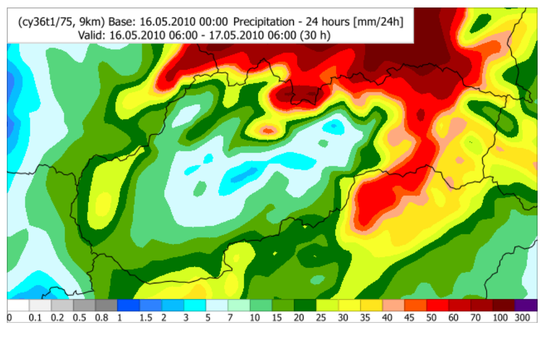
CANARI (35T1) was implemented and validated on new HPC. Canari on SHMI was validated vs CHMI (test data from A.Trojakova). We produce local SHMI OBSOUL file from MySQL and merge it with OPLACE file. Preparation on calculation of B-Matrix on SHMI was started.

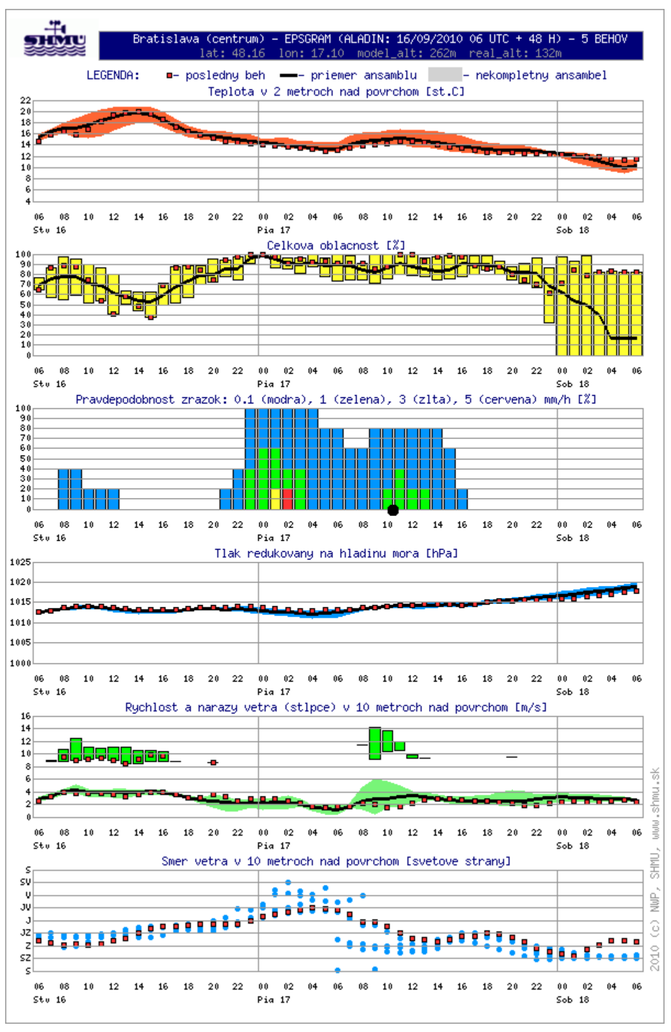
Single obs experiment from local implementation of INCA.

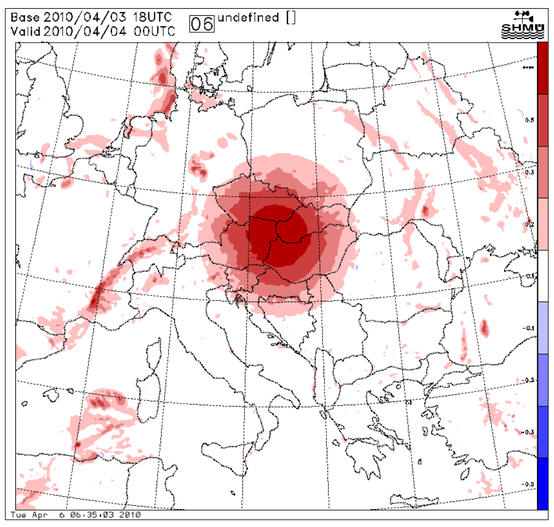












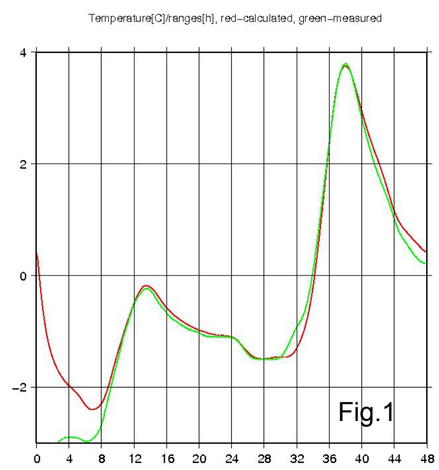


Fig.1

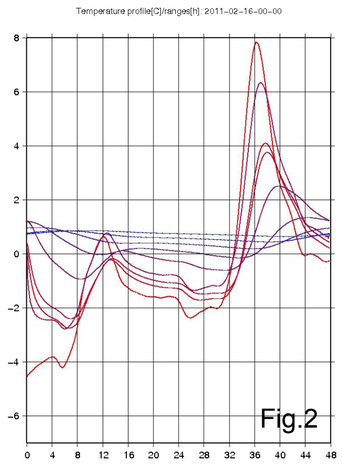
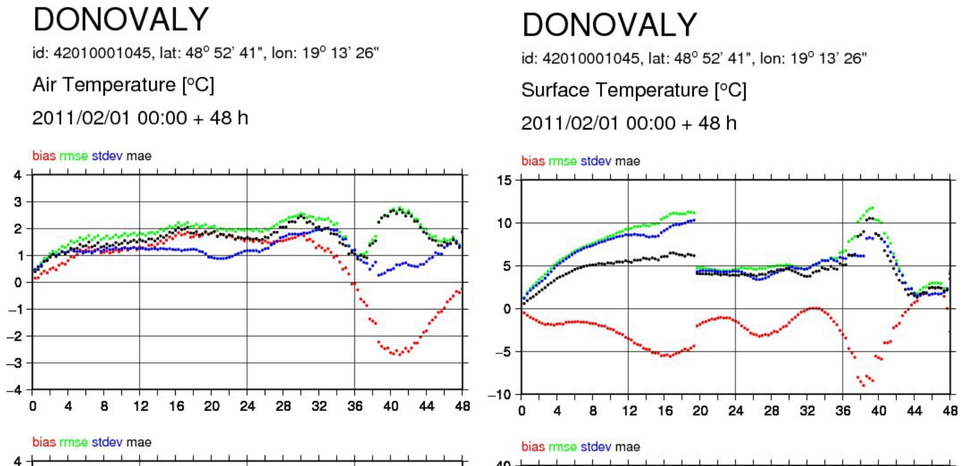


Fig.2

Road forecasting, Habrovsky, Bujnak, Vivoda

There was developed package for preparing various atmospheric parameters from model ALADIN for national road forecasting system. The core of the package is routine where data from ALADIN grid is interpolated to road stations points. The next step was implementation of road forecasting METRo model (3.2.6). One of the problem was lack of information of the road material parameters (heat capacities, heat conductivities and mainly the depths of road underlying layers). We solved this problem by using Fourier analysis for solution of heat conduction problem, where we find solution of our problem in form of series of the analytical functions. On . fig.1 we compare measured subsurface (in depth of 15cm) temperature(green line) with calculated one (red line). The figure 2 represent calculated time evolution of temperature profile from surface (red one) to the dept of 75cm (blue one).



Verification of prediction for location DONOVALY, left ALADIN input T2M, right road surface T from METRO