35th EWGLAM and 20th SRNWP meeting, 30 September – 3 October 2013, Antalya, Turkey

ALADIN in Poland

Małgorzata Szczęch-Gajewska, Bogdan Bochenek, Marek Jerczyński, Marcin Kolonko, Jadwiga Woyciechowska
Institute of Meteorology and Water Management, Poland

OPERATIONAL SUITE

Operational Domains:

POLs domain: **7.4** km horizontal resolution, 309x309 grid points, 60 vertical model levels on a Lambert projection with 3h coupling frequency and 3h output. Covers the same area as POLb.

POLb domain: **13.5**km horizontal resolution, 169x169 grid points, 31 vertical model levels on a Lambert projection with 3h coupling frequency and 3h output.

POLo domain: **7.7**km horizontal resolution, 133x133 grid points, 31 vertical model levels on a Lambert projection with 3h coupling frequency and 1 hour output

Operational runs:

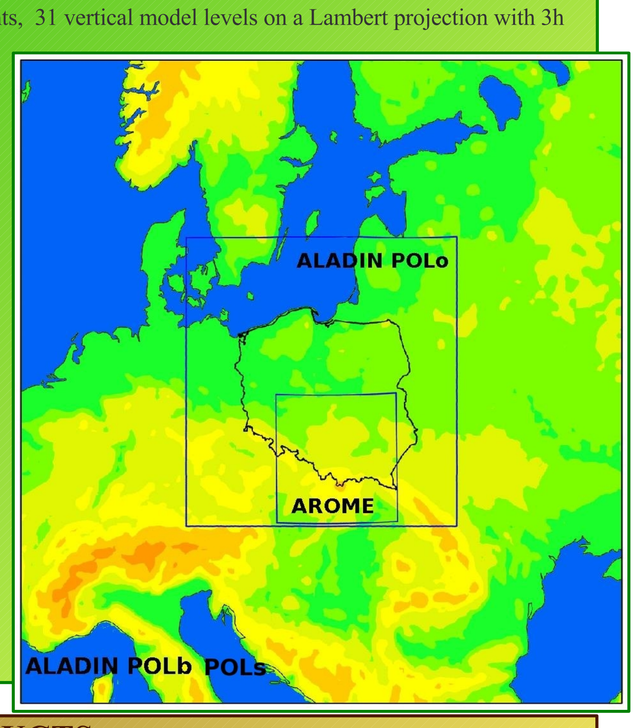
POLs domain: 2 runs 2 runs per day (00 and 12UTC)
with 54 hours forecast range; LBC from ARPEGE;

POLb domain: off-line Fpos to this domain on model grid,
every 3h – for operational database;
off-line Fpos on geographical regular grid,
GRIB format, every 3h – for LEADS system;

POLo domain: 2 runs per day (00 and 12UTC)
with 36 hours forecast range; LBC from ARPEGE;
on-line Fpos on model grid, every 1h;
off-line Fpos on geographical regular grid,
GRIB format, every 1h – for INCA model;

Computational resources

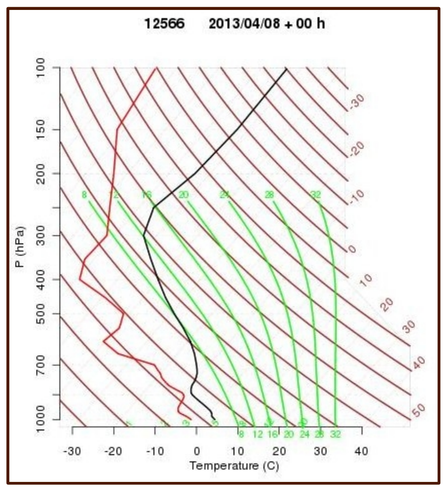
8 x HP BL2x220c servers, 96 x Intel Xeon cores ,
128 GB RAM, Infiniband, OS SL 5

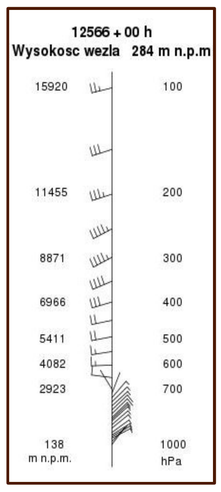


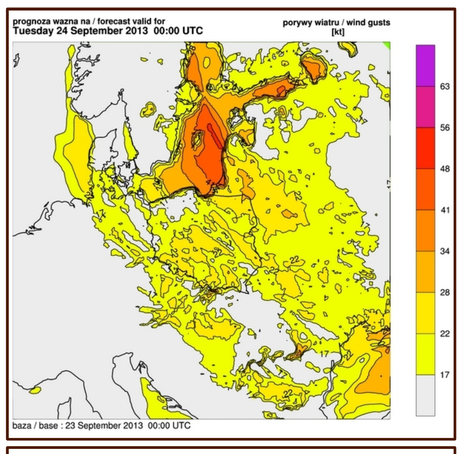
PRODUCTS

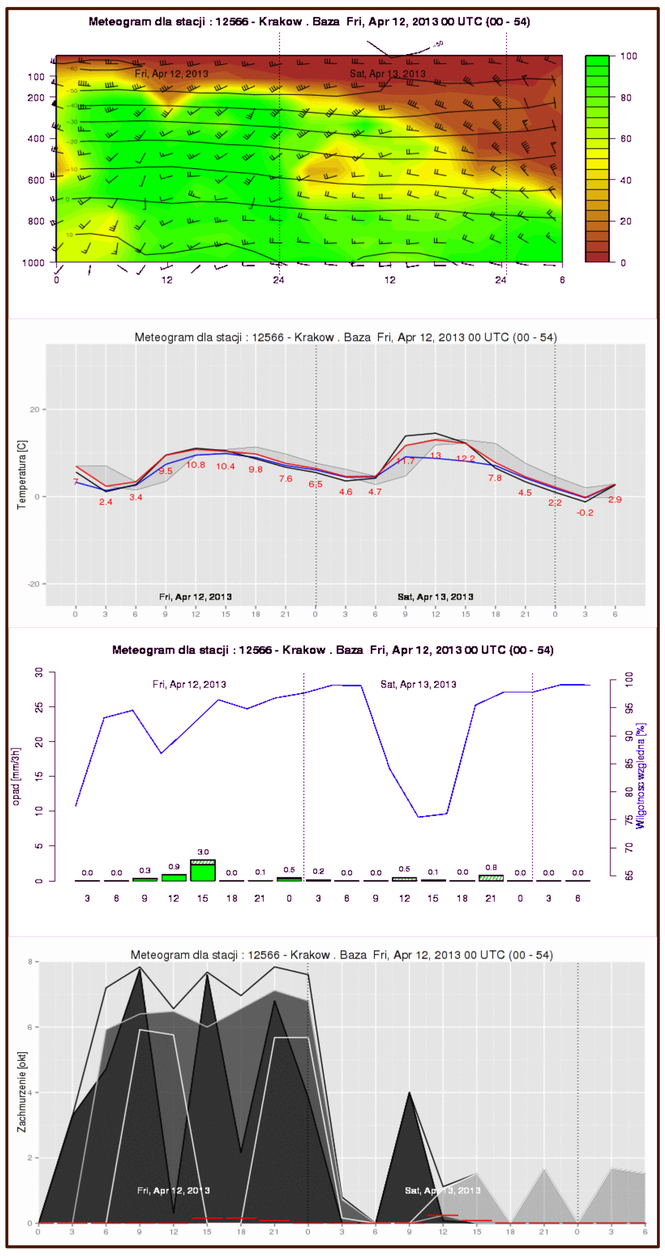
Graphical prediction products for standard levels (maps), for surface (maps, meteograms, tables) are presented at the Aladin intranet website. New presentation of meteograms, vertical profiles and maps of temperature and wind for aviation, all of them based on R-package. New visualization for severe weather indexes: SWEAT, Total Totals, wind gusts, wind shear (for layers 0-1km, 0-3km and 0-6km). Some examples of these maps are presented below and are based on NCARG/NCL package.

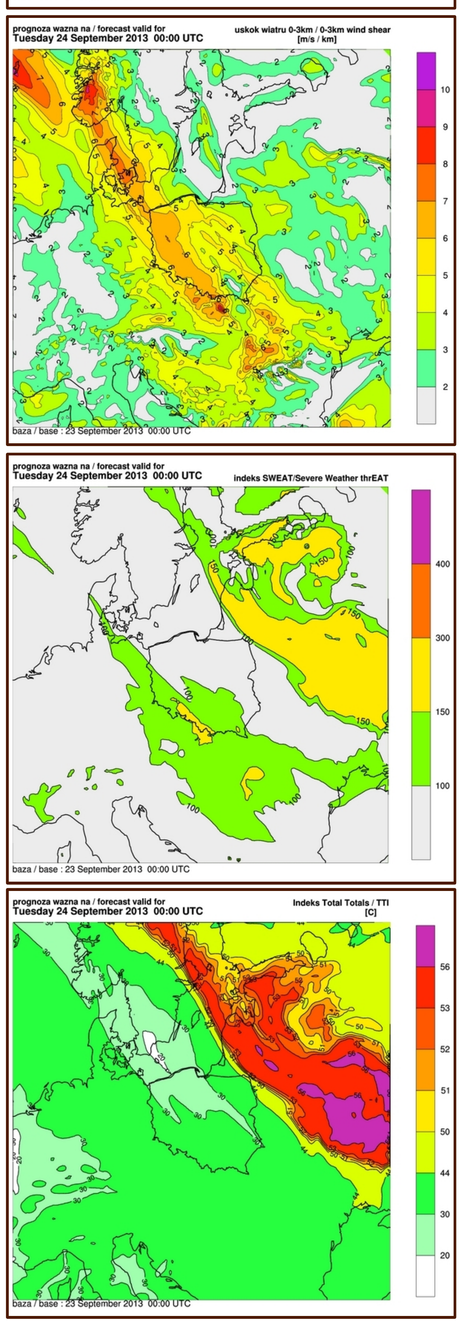
Data for feeding nowcasting system INCA and data sets for Areology Department, Satellite Department and others.







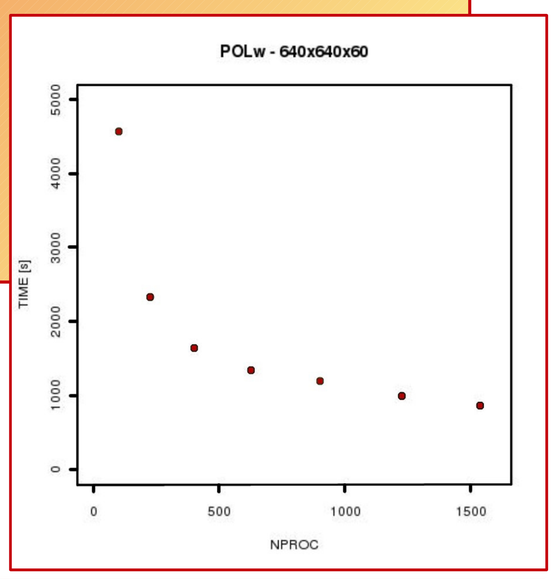


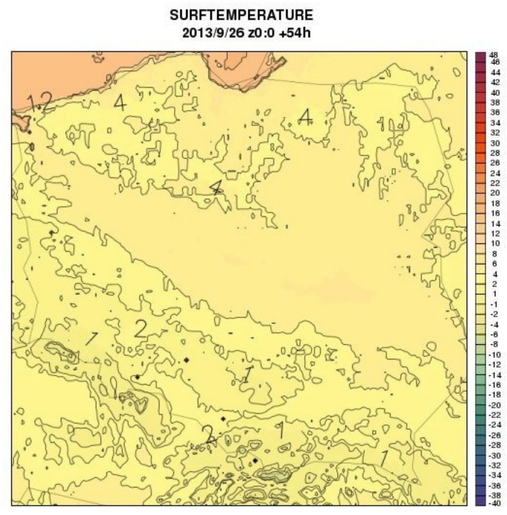


TESTS OF NEW LINUX CLUSTER FOR ALADIN

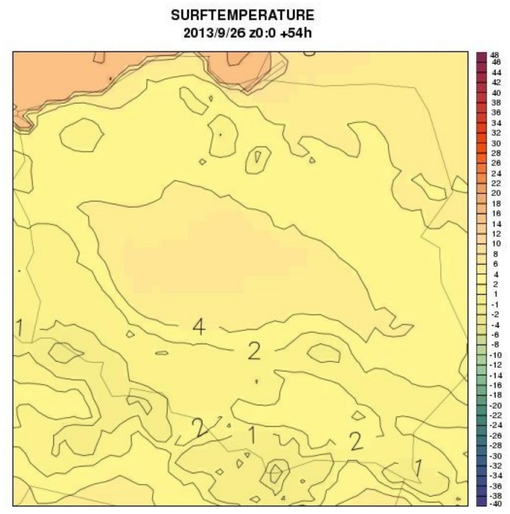
New IMWM cluster configuration: 96 nodes - 2 x Intel Xeon E5 2690 CPU's , 32 GB RAM each, connected with Infiniband, OS Scientific Linux 6, software: Intel compilators version 13, openmpi 1.6.4, queuing system Torque/Moab. Installed model version CY36T1 with bugfixes.

Performance and scalability were tested for varoius domains. At left scalability for POLw domain – 640x640x60 grid points. Below comparison of surface temperature forecasts for POLb and POLw domains – 13.5 km vs. .3.6 km resolution





POLw



POLb

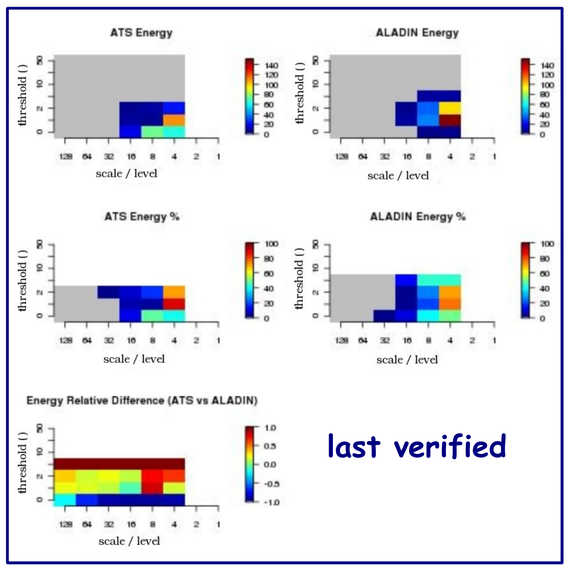
WAVELET ANALYSIS OF FORECAST

Wavelet analysis is used to investigate space-time aspects of physical fields, among them precipitation.

Its results cover energy diagrams (describing the fraction of total amount of precipitaion which is contained in a given cell), MSE diagrams (absolute or percentical) which gives the deviation between forecast and observations (here, ALADIN forecast vs. ATS data) and IS Skill Score – one of quantitative indicators of forecast precision in relation to observations.

The results are presented in monthly (last 30 days) and daily manner, both for 06-30h and 30-54h window. Its domains are limited to the range of thresholds (ordinate) and spatial scales in km (abscissa). The non-existing ranges are marked in grey. Warm colors denote high contribution to total intensity of field. So, for daily measure the MSE contribution is more-or-less uniform. The energy difference shows the relative difference between energies of ALADIN and ATS.

The wavelet analysis helps to establish some quantitative (in contrast with less precise, qualitative „by-eye" analysis) measures supporting the process of verification of ALADIN forecasts in everyday practice.



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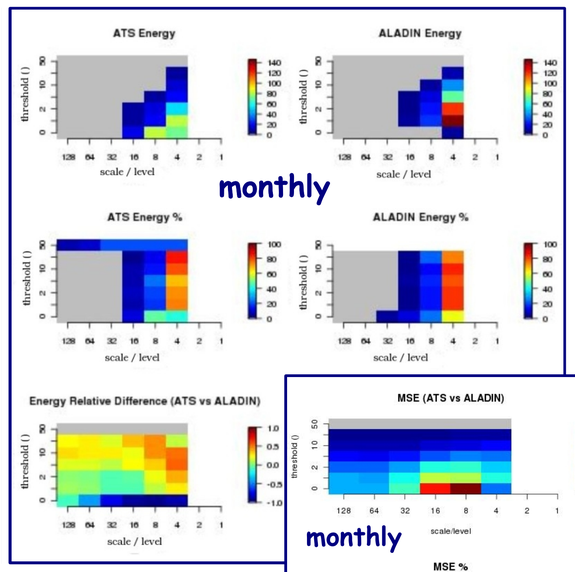
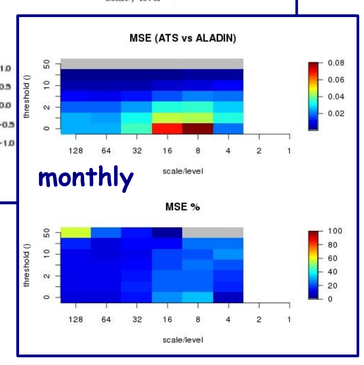


monthly



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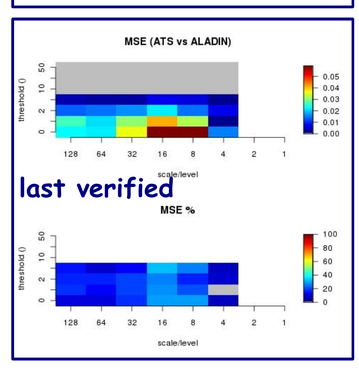

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