**ALADIN related activities @SHMU**

**ALADIN/SHMU system**

- **Assimilation cycle**
- **CANARI surface analysis & upper-air spectral blending by DFI**
- **Suite characteristics**
  - 4 runs/day (00, 06, 12, 18 UTC), forecast length +72h (3 days), coupled to ARPEGE with 3h frequency
  - High resolution e-suite on CY38T1f03 over the same domain since 01/06/2014 (4min vs. ~40min)

Plans: operational with ALARO-1 after HPC upgrade (POVAPSYS project, spring/summer 2015)

**IT and infrastructure upgrade in frame of the POVAPSYS project (Flood Warning and Forecasting System of the Slovak Republic) - to be completed in 2015**

- **New computer hall, HPC upgrade**
  - Current HPC: IBM p755
  - New HPC (~1.26x)
    - IBM Flex System p460
  - 4x Power7 8core CPUs (3.6 GHz), 256 GB RAM
  - 10 nodes
  - AX 6 SE OS
  - Red Hat Enterprise Linux

- **Radar network: 2 upgraded + 2 new installed**

- **AWS network upgrade: 70->137 APS, 32->91 AWS**

**HARMONIE system Working Week 13-17/10/2014, Bratislava**

- [maria.derkova@shmu.sk, oldrich.spaniel@shmu.sk]
- [martin.bellus@shmu.sk, jozef.vivoda@shmu.sk]

**Main topics:**
- Installation of CY38T1f03 under HARMONIE (with the emphasis on the "T");
- Installation of HARMONIE system including 3DVAR on local platforms, training of newcomers;
- Installation of missing ALADIN system components (e.g. DFI blending) under HARMONIE system

**SPPT in ALADIN-LAEF**

Stochastically perturbed physic tendencies (SPPT) for prognostic surface parameters have been implemented in ALADIN-LAEF system, compared to BMP scheme and tuned to simulate the intrinsic model uncertainties. Verification showed bigger spread, less outliers, improvement in ensemble mean BIAS and RMSE. More details to be found in the report available on www.rclace.eu.

**Correction of ALADIN solar radiation fluxes by SAFNWC**

Aladin solar radiation fluxes are corrected according to real clouds as determined by SAFNWC Cloud Type (CT). Algorithm is being developed and tested on e-suite 4.5km ALARO-0 version:

1. Cloud detection (C(x)) form SAFNWC: hourly averages from 15min outputs
2. Cloud detection from ALADIN forecast
3. Calculation of Damping factor D(x,i) from ALADIN clear sky and solar fluxes over set of points x_i, where clouds were predicted by ALADIN: D(x,i)=SR(x,i)/CS(x,i)
4. Damping factor D(x) over the domain calculated with inverse distance weighting
5. Correction of Solar radiation fluxes with SAFNWC cloudiness C(x): SR(x) = ((D(x)-1)C(x)-1)CS(x)

Plans: extension with medium & high clouds; correction with station measurements

**Orography: zoom over the domains operationally used @SHMU**

**Evaluation of the high resolution e-suite**

High resolution e-suite scores are neutral to slightly positive compared to operational ones. Deterioration noticed for cloudiness in summer. Subjective evaluation by forecasters mostly neutral. Waiting for HPC upgrade.

**ALARO-1: implemented & first case studies**

ALARO-1 modset ported and implemented. Preliminary case studies focused on cloudiness conducted. Results for Oct2012 presented - fog in Danube valley: partly improved, but not everywhere (Bratislava).

**Correction of ALADIN solar radiation fluxes by SAFNWC**

Aladin solar radiation fluxes are corrected according to real clouds as determined by SAFNWC product Cloud Type (CT). Algorithm is being developed and tested on e-suite 4.5km ALARO-0 version:

1. Cloud detection (C(x)) form SAFNWC: hourly averages from 15min outputs
2. Cloud detection from ALADIN forecast
3. Calculation of Damping factor D(x,i) from ALADIN clear sky and solar fluxes over set of points x_i, where clouds were predicted by ALADIN: D(x,i)=SR(x,i)/CS(x,i)
4. Damping factor D(x) over the domain calculated with inverse distance weighting
5. Correction of Solar radiation fluxes with SAFNWC cloudiness C(x): SR(x) = ((D(x)-1)C(x)-1)CS(x)

Plans: extension with medium & high clouds; correction with station measurements

**Long-term verification: SHMU NWP index**

- [milan.kacer@shmu.sk, jozef.vivoda@shmu.sk]

- Simple Mean Average T=365 days

- Solar eclipse observations@SHMU 20/03/2015