

ALADIN related activities @SHMU

25th ALADIN Workshop & HIRLAM All Staff Meeting, 13-17 April 2015, Elsinore, Denmark





Rastislav Bujňák Mária Derková Martin Dian Richard Habrovský Milan Káčer Michal Neštiak Oldřich Španiel Viktor Tarjáni Jozef Vivoda nwp@shmu.sk => Martin Belluš

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 CY38T1bf03 over the same domain since 01/06/2014 (4min vs. ~40min) Plans: operational with ALARO-1 after HPC upgrade (POVAPSYS project, spring/summer 2015?)

		operational	E-suite
	horizontal resolution	9x9km	4.5x4.5km
	no. of points	320x288	625x576
	spectral trunc & grid	106x95 quadratic	312x287 linear
	vertical levels	37	63
	orography	envelope	mean (old Z0)
	cycle	CY36T1	CY38T1bf03_export

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	N
IBM p755	IB
4x Power7 8core CPUs	4
(3.6 GHz), 256 GB RAM	25
10 nodes	13

AIX 6 SE OS

lew HPC (~1.26x) BM Flex System p460 x Power7+ 8core CPUs (3.6 GHz), 56 GB RAM 12 nodes

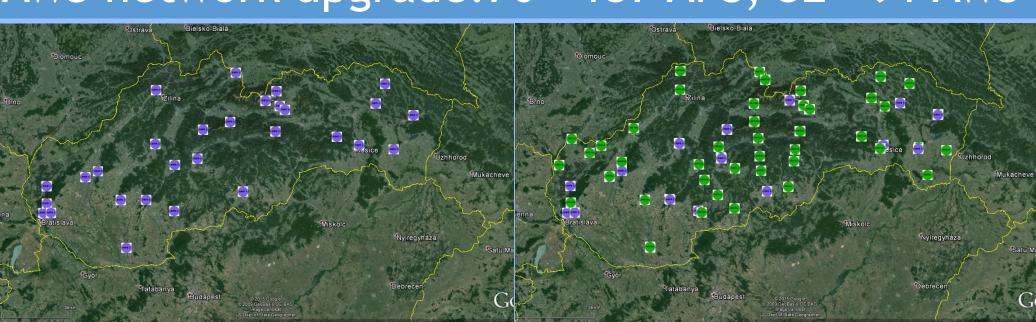
Red Hat Enterprise Linux



Radar network: 2 upgraded + 2 new installed







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

[maria.derkova@shmu.sk, oldrich.spaniel@shmu.sk]

Main topics:

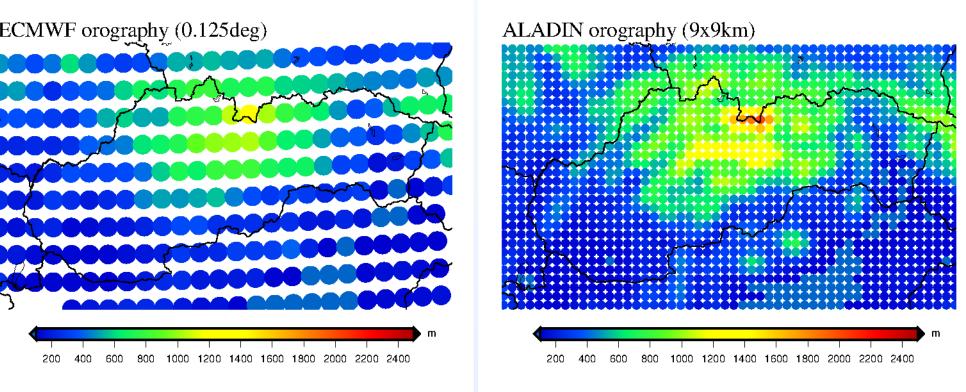
- installation of CY38T1.bf03 under HARMONIE (with the emphasis or the "T");
- installation of HARMONIE system including 3DVAR on local platforms, training of newcomers;
- installation of missing ALADIN system components (e.g. DFI blending) under HARMONIE system

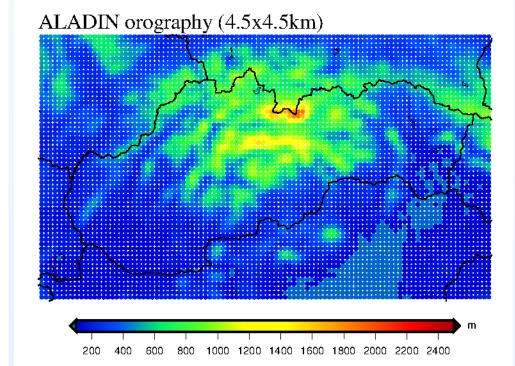
Ulf	Andrae	HIRLAM	cca	some	High!	
	ger R.	HIRLAM	cca/linux	some	High!	
	rygve	TIINCAM	cca/ tillux	SOUTH	riigii:	
	rygve pelien	HIRLAM	sgi/linux	some	High!	
Anis	Sattouri	Tunisia	IBM p690	none	<u>i</u> nstall	laptop: testbed running on h t compiled; IBM <u>2continue</u> @home
	Alena ojakova	CZ/LACE	NEC	trial to install (unsuccessful)	OPLACE support	ALARO testbed installed on laptop; support for OPLACE and verification
	Maria onteiro	Portugal	IBM p7	HARMONIE@ECMWF (radar DA), UBUNTU with Roger 2y ago	install, <u>verif, OPLACE</u> , h->t convergence, radar assim tools, SODA	h compiled but not linked; 2be continued with Francois Thoma
	mislav ovacic	Croatia	SGI	work with config file and Makefile	3dvar+canari, verification	h version compiled, no MASTER; to restart @home
	Mario astinski	Croatia	idem	none	installation	idem
	ristoph ttmann	Austria	SGI	none (gl installed)	install@ZAMG, verification	local ALARO running with T (-SURFEX, -3DVAR); verification monitor installed & working
	lorian /eidle	Austria	idem	idem	idem	idem
_	livier atinne	Belgium	SGI	none with HARMONIE, but with SMS	3DVAR+CANARI, EPS	rootpack not built; <u>2continue</u> @home
	Jure edilnik	Slovenia	SGI	@ECMWF (Bmatrix); installed but not used @ARSO	get insight; later: make compatible with ecflow	h&t versions compiled, TEST_11 tested
	ldrich paniel	SK	IBM	verif part installed/used	3DVAR, SURFEX(?)	running:) 38t1_bf03; testbed
	lartin ellus	SK		none		DFI blending under validation
	Maria erkova	SK		idem		HU domain with 3DVAR; SHMU domain
Joze	f Vivoda	SK		idem		high-res 1km domain running
	Nichal estiak	SK		none	install, 3dvar	AROME/HU
Mart	tin Dijan	SK		idem		

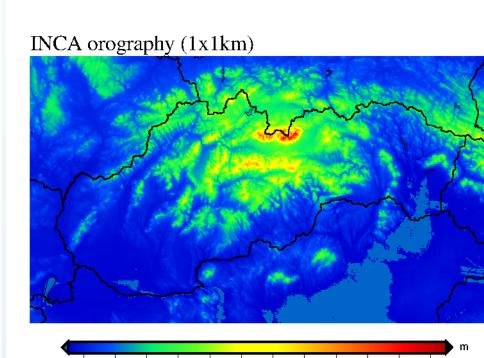
Hirlam ALADE THE THE THE THE PROPERTY OF THE P



Orography: zoom over the domains operationally used @SHMU





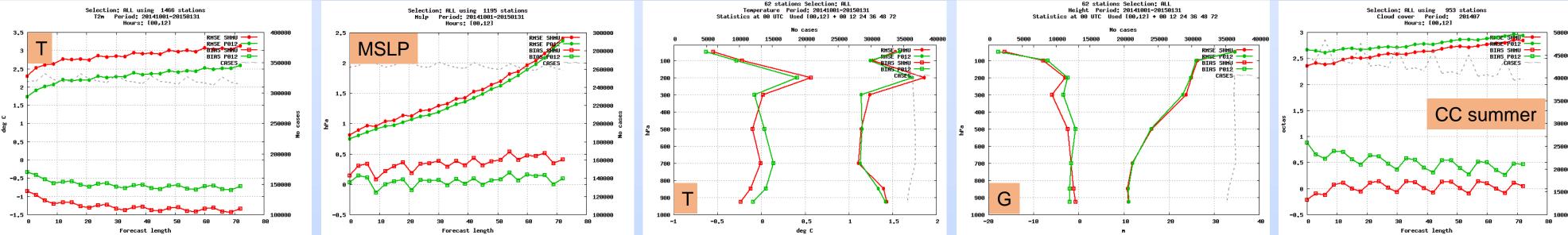


---- OPER

05:00 04:00	# Ella di eddi@iodic (iodays statistics)	oper:e001 18UTC (26.10.14 till 08.04.15) BDPI	PE problem
01:00 00:00 23:00 22:00			
21:00 20:00 19:00 18:00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
			1

Evaluation of the high resolution e-suite

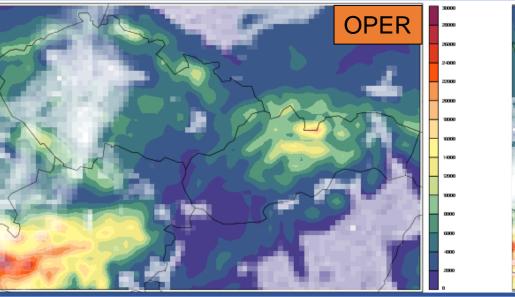
---- E-suite High resolution e-suite scores are neutral to slightly positive compared to operational ones. Deterioration noticed for cloudiness in summer. Subjective evaluation by forecasters mostly neutral. Waiting for HPC upgrade.



ALARO-1: implemented & first case studies

[oldrich.spaniel@shmu.sk, maria.derkova@shmu.sk]

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).









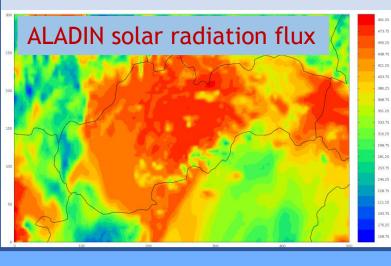
[martin.dian@shmu.sk]

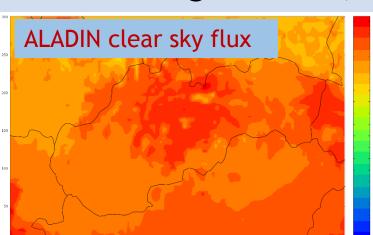
Correction of ALADIN solar radiation fluxes by SAFNWC

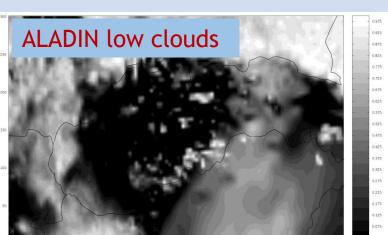
Aladin solar radiation fluxes are corrected according to real clouds as determined by SAFNWC product Cloud Type (CT). Algorithm is being developed and tested on e-suite 4.5km ALARO-0 version:

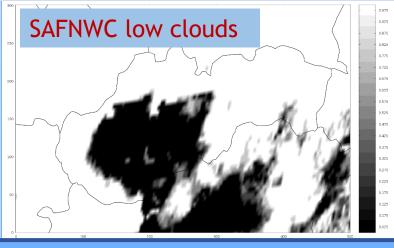
- 1) Cloud detection (C(x)) form SAFNWC: hourly averages from 15min outputs
- 2) Cloud detection from ALADIN forecast
- 3) Calculation of Damping factor $D(x_i)$ from ALADIN clear sky and solar fluxes over set of points x_i , where clouds were predicted by ALADIN: $D(x_i) = SR(x_i)/CS(x_i)$
- 4) Dumping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

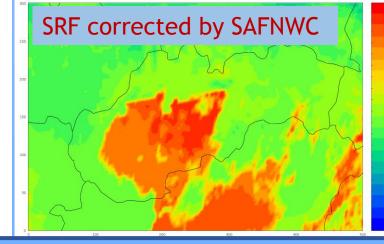
Plans: extension with medium & high clouds; correction with station measurements









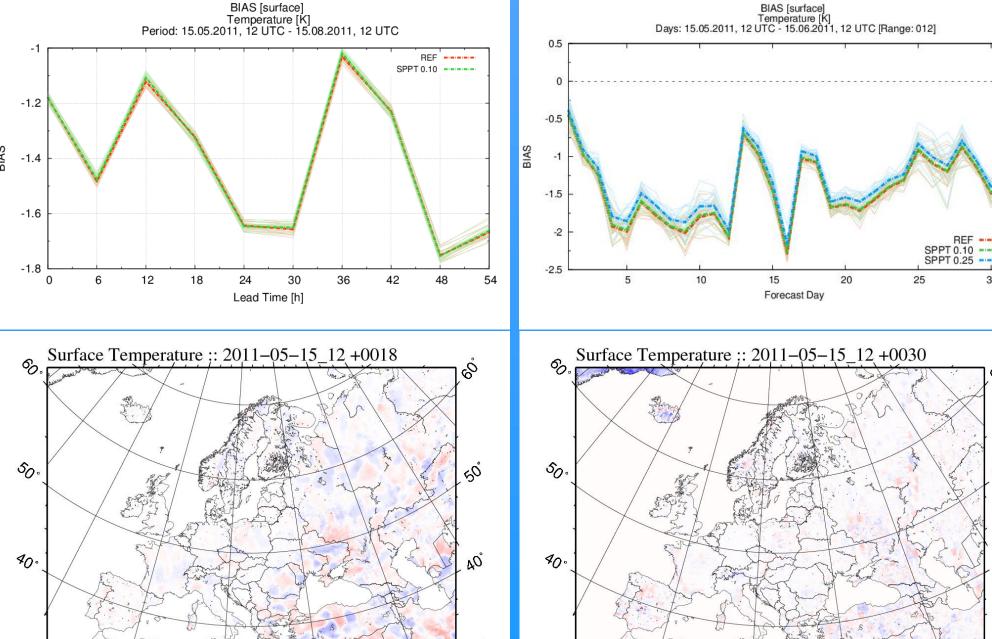


SPPT in ALADIN-LAEF

[martin.bellus@shmu.sk]

BMP'_ts - BMP_ref [MIN:-3.823 MAX:5.154]

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.



Long-term verification: SHMU NWP index [milan.kacer@shmu.sk, jozef.vivoda@shmu.sk] Simple Mean Average T=365 days

