ALADIN operations in Romania

METEO
ROMANIA

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ALADIN Romania

Computing platform:

• SUN E4500 workstation (8-CPU 400GHz, 8*1 GB RAM) for direct integrations and in line post processing

• ALPHA DEC 500 workstation (1CPU, 704 MB RAM) for off line post processing

➢ **Model version:** cy28t3

➢ **Characteristics**

- hydrostatic version

- 4 runs / day 00, 06, 12 18   78, 54, 66, 54 hrs forecast range

- boundary conditions from ARPEGE (6 hrs coupling frequency)

- domain: 144 x 144 points, 41 vertical levels (Lambert Projection)

- physical parameterizations : quite simple in respect to last developments

  ▪ NO prognostic variable for condensed water

  ▪ OLD radiation simple parameterization (Geleyn and Hollingsworth, 1979, Ritter and Geleyn (1992)

➢ **Post-processing and visualization**

- in line FPOS on a geographical regular grid (0.1 x0.125°), hourly up to 54

  forecast range, every 3 hrs afterwards

    grib format ; automatically routed to the visualization systems at NMA headquarters

              and Regional Centers

- of line FPOS on model grid, every 3 hours

- additional post processing: stability indexes, pseudo-temp, isotherms height

- graphical products on the Aladin intranet web site

ALADIN-ROMANIA   **ALADIN-SELAM**
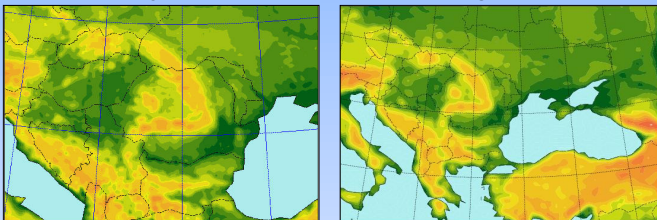
Model orography

➢ **Atmospheric input for**:

Wave models (western Black Sea Basin)
Hydrological models
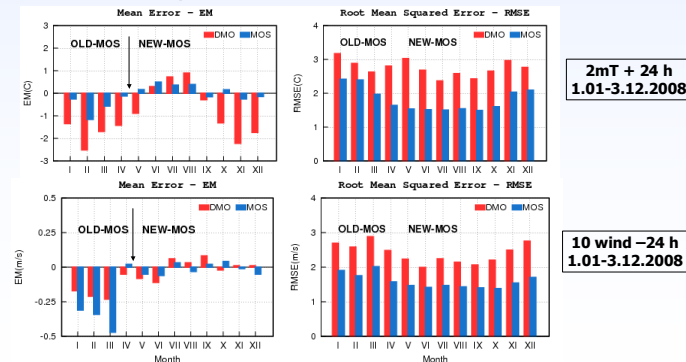**Pollutant transport and dispersion models(regional scale)**

ALADIN statistical adaptation and local verification

➢ **New Aladin MOS operational in May 2008:**
    parameters: 3 hrs and extreme temperatures, wind, cloudiness and precipitation (3 classes)

➢ **Unified verification procedure for all models**

Mean Error – EM

Root Mean Squared Error – RMSE

OLD-MOS   NEW-MOS

2mT + 24 h
1.01-3.12.2008

OLD-MOS   NEW-MOS

10 wind −24 h
1.01-3.12.2008

ALADIN SELAM (especially for marine applications)

➢ **Same platform as for ALADIN Romania**
➢ **Same characteristics like ALADIN Romania**
➢ **domain covering entirely the Black Sea**
- domain: 120 x 90 points, 46 vertical levels (Lambert Projection)
- Δx = 24 km, Δt = 900 s
➢ **Atmospheric input for**:
Wave and marine circulation models

ALADIN Bucharest

.... it will be replaced in the future by AROME
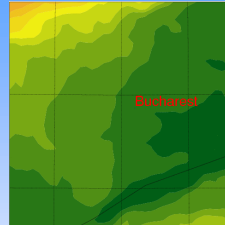
Computing platform: 2CPU SGI ALTIX   **Integration domain**

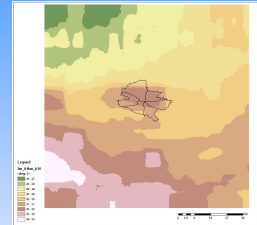➢ **Model version:** cy32t1, non hydrostatic version

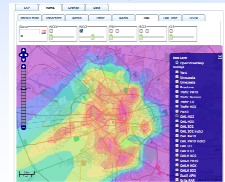50 x 50 points, Δx=3.5 km 41 levels. Δt=60   **Dynamical adaptation (1.5 km)**
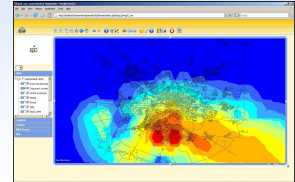
Model orography   **2m Temperature 00+36**

➢ **Atmospheric input for**:
Urban-scale (Bucharest) air quality forecast system

Operational use (interface)
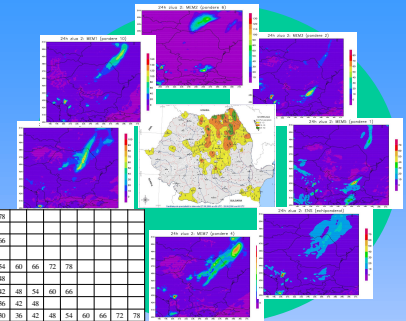**of the Air-Aware system**   **Pollutant numerical simulated deposition from industrial sources, GIS processing**

SHORT RANGE EPS – pre-operational

M. CAIAN M., R. RADU R., R. DUMITRACHE R. , S. TASCU

SINGLE-MODEL EPS (ALADIN)

▪ Parameterization of uncertainties associated with initial and boundary conditions.

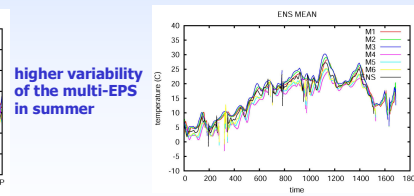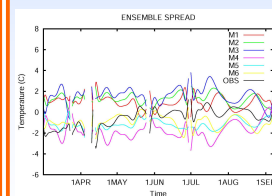▪ Ensemble member weights computed using REA (reliable ensemble averaging)

	00	06	12	18	24	30	36	42	48	54	60	66	72	78
00UTC	00	06	12	18	24	30	36	42	48	54	60	66	72	78
06UTC		00	06	12	18	24	30	36	42	48				
12UTC			00	06	12	18	24	30	36	42	48	54	60	66
18UTC				00	06	12	18	24	30	36	42	48		
00UTC					00	06	12	18	24	30	36	42	48	54	60	66	72	78
06UTC						00	06	12	18	24	30	36	42	48
12UTC							00	06	12	18	24	30	36	42	48	54	60	66
18UTC								00	06	12	18	24	30	36	42	48
00UTC									00	06	12	18	24	30	36	42	48	54	60	66	72	78
06UTC										00	06	12	18	24	30	36	42	48
12UTC											00	06	12	18	24	30	36	42	48	54	60	66
18UTC												00	06	12	18	24	30	36	42	48

MULTI-MODEL EPS

- built using first 3 different forecast models: ALADIN , COSMO and HRM
- operational post-processing, database created since January 2007

	00	06	12	18	24	30	36	42	48	54	60	66	72	78
ALADIN 00 UTC	0	6	12	18	24	30	36	42	48	54	60	66	72	78
HRM 00 UTC	0	6	12	18	24	30	36	42	48	54	60	66	72	78
COSMO 00 UTC	0	6	12	18	24	30	36	42	48	54	60	66	72	78
ALADIN 00 UTC					0	6	12	18	24	30	36	42	48	54	60	66	72	78
HRM 00 UTC					0	6	12	18	24	30	36	42	48	54	60	66	72	78
COSMO 00 UTC					0	6	12	18	24	30	36	42	48	54	60	66	72	78
ALADIN 00 UTC									0	6	12	18	24	30	36	42	48	54	60	66	72	78
HRM 00 UTC									0	6	12	18	24	30	36	42	48	54	60	66	72	78
COSMO 00 UTC									0	6	12	18	24	30	36	42	48	54	60	66	72	78

ENSEMBLE SPREAD   **ENS MEAN**

higher variability of the multi-EPS in summer

EPS Verification
- separately for : ALADIN and HRM
- for multi-model
    Better skill for multi-model ensemble solution for temperature and precipitation

ALADIN/ALARO Romania – on a new platform

❖ **IBM BLADE Linux Cluster**

▪ 14 nodes; 2 CPU-quad core / node; x86_64 processor architecture, 2.5 GHz
▪ Red Hat 5.3 Enterprise

❖ **CY35T1 implemented and tested** (C.Soci and D. Banciu)
ALADIN: Δx=10 km, 144x144, 60 levels, Δt=400s
    Meteo-France configuration
    78 h integration + Full Pos in line   **23 minutes** (5 nodes)
                                               ~ 10 times faster than
                                                  actual oper. ALADIN

❖ **Near future configuration**
    ALARO: Δx=10 km, 60 levels   over the same area
    ALARO: Δx= 5 km, 60 levels