32th EWGLAM&17th SRNWP Meetings - MetOffice, EXETER, 4th to 8th October, 2010

Meteo Romania

LAM ACTIVITIES IN ROMANIA

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A. ALADIN applications

D. BANCIU, M. PIETRISI, S. TASCU, with help of C.SOCI

Operational suite – important changes since last year

- change of the model version: ALADIN (still "alive"- backup) ⇒ ALARO
- change of the computing platform

ALARO model: cy35t1

➢ **Characteristics**

- semi-implicit semi-Lagrangean two-time-level scheme
- projection: Lambert Projection - linear grid
- physical parameterizations : standard ALARO-0 set up

prognostic variables for water species
pseudo –prognostic TKE scheme
radiation: NER for thermal band
surface ISBA scheme
3MT frame for moist processes

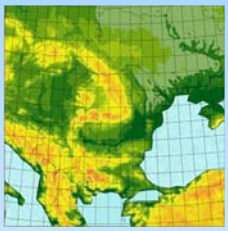
➢ **Post-processing and visualization**

- in line FPOS on a geographical regular grid (0.1 x0.125°) and of line in model grid, hourly up to 54h, every 3 hrs afterwards; grib format
- new graphics based on Magics → ALARO intranet web site

➢ **Statistical adaptation (MOS still based on Aladin)**

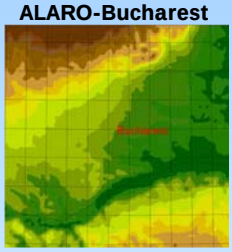
➢ **Local verification :** unified procedure for all models (daily, monthly, annual)

ALARO-ROMANIA



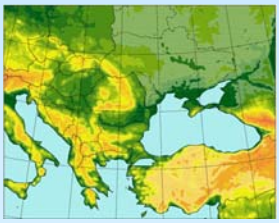
Δx=6.5km 240 x 240, 49 levels
Δt=240 s; hydrostatic
4 runs/day 00, 06,12,18 ⇒ 78, 54, 66, 54 hrs
LBC from ARPEGE (3 hrs frequency)

ALARO-Bucharest



Δx=2 km 120 x 120 , 49 levels
Δt=45 s ; non-hydrostatic
1 run /day ⇒ 24 hrs
LBC from ALARO-Romania (1h)
Input for Chemistry and Transport models

ALARO-SELAM



Δx=11.5km 240 x 192 , Δt=450 s
49 vertical levels
2 runs/day 00,12 ⇒ 78, 66,
LBC from ARPEGE (6 hrs frequency)
Input for Marine applications

RESEARCH & DEVELOPMENT

- mainly within ALADIN/LACE projects –

- prognostic convection
- short range EPS (LAE.F, local multi model EPS)
- Data assimilation: first steps in using 3DVAR

B. COSMO&HRM-RO applications

R. DUMITRACHE, C. BARBU, M.BOGDAN, B.MACO, A.IRIZA

COSMO-RO – integration characteristics

COSMO-Ro7

- **Δx= 7km ; 40 levels; Δt=72s**
- **IC & LBC: GME 00, every 3h**
- **Data Assimilation: Synop data**
- **Forecast range: 78h**
- **Operational suite for 2 runs/day (00, 12)**

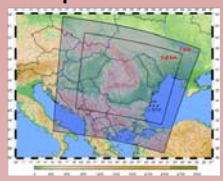
COSMO-Ro2

- **Δx= 2.8km ; 50 levels; Δt=25s**
- **IC & LBC: COSMO-Ro7, every hour**
- **Data Assimilation: not available (yet)**
- **Forecast range: 30h**
- **Operational suite for 2 runs/day (00, 12)**

Physical parameterizations:

- **Clouds and precipitation**
  - Grid-scale: 2-ice category scheme, prognostic
  - Convection scheme: Tiedtke
  - Grid-scale and convective clouds, total cloud cover
- **Radiation**
- **Turbulent fluxes**
- **Soil processes**

Operational domain and products



- **T_{2m}; V_{10m}; MSLP**
- **total, convective, grid scale precipitation**
- **geopotential 850, 700, 500 hPa**
- **cloudiness**
- **meteograms**
- **SkewT diagrams**

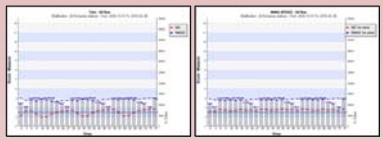
Research – development activities

- **Testing different convection schemes, soil humidity initial conditions , microphysical parameterizations and numerical schemes for COSMO-RO at 7 & 2.8 km resolution**
- **Implementation of the "VERSUS" verification package; evaluation of COSMO-RO**

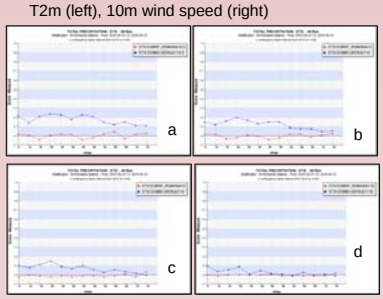
Developments in the frame of COSMO consortium

- Participation on the priority project ***"Km-Scale Ensemble-Based Data Assimilation"***
- Participation on priority projects ***"VERSUS 2"***
- Participation on priority projects SPRT ***"Support Activities"***
- Participation on priority project "***Towards Unified Turbulence-Shallow Convection"Scheme*** "

COSMO-RO7
VERSUS EVALUATION



ME, RMSE: Dec- 2009 – Feb 2010
T2m (left), 10m wind speed (right)



a) ETS + 0.2
b) ETS +2
c) ETS +5
d) ETS +10
e) ETS +20

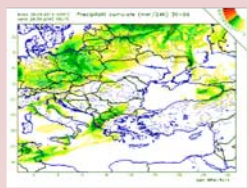
6 h cumulated precipitation
Equitable Threat Score: May 2010 ;

Future Local developments

- **Evaluation of the COSMO model using ECMWF data as initial and boundary condition**
- **Improvement of the data visualization**
- **Operational verification versus observational data.**
- **Data assimilation for radar data.**

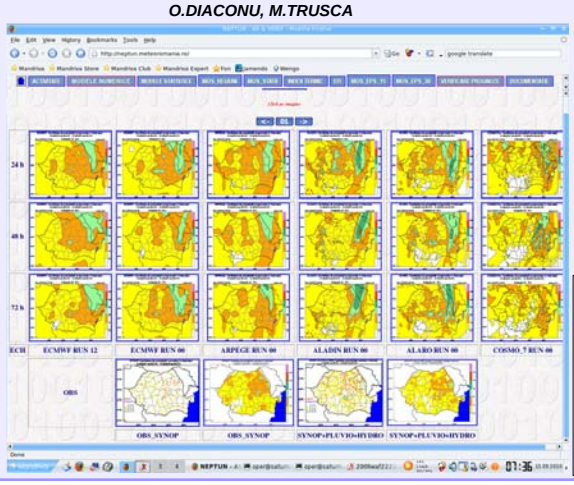
HRM-RO

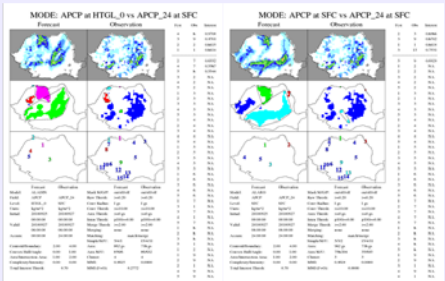
- **Full operational implementation**
- **Initial and boundary conditions from GME-DWD**
- **Rotated geographical grid 0.125°, 40 vertical levels**
- **78 hours forecast range, one run/day**



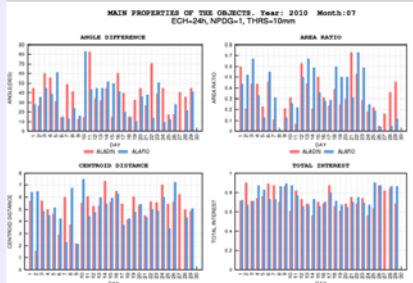
PRECIPITATION VERIFICATION

O.DIACONU, M.TRUSCA



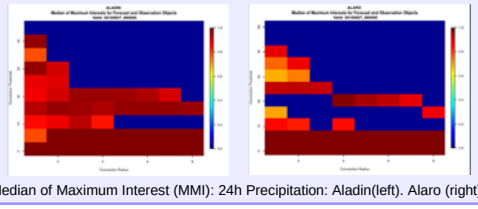


Object identification: 24h Precipitation Aladin(left) and Alaro (right)



Object property synthesis: 24h Precipitation, July 2010

MET (Model Configuration Tool)
http://www.dtcenter.org/verification/
-highly configurable tool
-for precipitation (and in future for cloudiness and wind) :
MODE: Method for Object-Based Diagnostic Evaluation (Davies et al. 2009, Weather and Forecasting, 24, 1252-1267)
WAVELET: next step



Median of Maximum Interest (MMI): 24h Precipitation: Aladin(left). Alaro (right)