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Report from session 4

Maria Monteiro & Ole Vignes, 26.04.2007

- Session 4: System aspects, verification. Chair: Maria Monteiro
- Martina Tudor: DART project and preliminary results
- Lovro Kalin : Comparison of ALADIN and ALARO forecasts in Croatia
- Ulf Andrae: Introduction of the HARMONIE system
- Sandor Kertesz (presented by Gergely Boloni) : Experiments with the use of ECMWF lateral boundary conditions for the ALADIN/HU model
- Per Unden: Archiving in MARS
- Kai Sattler: On the ensemble mode in HIRLAM 7.1
- Session 4: System aspects, verification (cont.). Chair: Ole Vignes
- Alex Deckmyn : Downscaling the ERA-40 re-analysis to the Belgian domain using ALADIN
- Thor-Erik Nordeng: The performance of the operational 4km resolution HIRLAM and UM runs at met.no
- Alex Deckmyn : Rfa: an advanced package for analysis of ALADIN data
- Rafiq Hamdi : Improving the SURFEX/TEB scheme : 1-D validation in a street canyon
- Aarne Mannik: Verification of different precipitation forecasts during extended winter season in Estonia

M. Tudor: DART project

- To drive wave and ocean models, the quality of model outputs should be checked by metorologists since those models are too dependent on the atmospheric (wind) field. On board observations should be used, however attention must be paid to their locations to avoid wind shadow situations.

L. Kalin: ALADIN vs. ALARO forecasts

The implementation of a new, more powerful, computer does not always bring first benefits; we witnessed a degradation of output scores on a computer upgrade in Croatia. Moreover, a change from ALADIN to ALARO for a 3 months validation period with warm and dry conditions did not show significant change on the scores. Temperature was underestimated and precipitation overestimated. Further development both on ALARO model and on validation are expected to improve the situation.

U. Andrae: Introduction of HARMONIE

An almost full NWP system is being developed by the HIRLAM community – HARMONIE: compilation tools, job submission scripts, archiving procedures, model code, verification are included, but not yet data assimilation. The system is available from IBM platform at ECMWF but successful tests have been performed also with Linux.

Plans are to use Hirlam's mini-SMS system to schedule and monitor the runs, or possibly full SMS.

P. Unden: Archiving in MARS

MARS has a much higher capacity than ECFS, that is currently used for archiving by HIRLAM.

Use of MARS also has benefits such as better access to data (MARS language), use of ECMWF tools (WebMARS, interpolation, Metview, verification software). Transisiton to GRIB2 will be easier.

SMHI will use MARS for local archiving. This work will benefit the Hirlam reference system.

K. Sattler: Ensemble mode in HIRLAM 7.1

The reference scripts have been extended to also make it possible to do ensemble runs. So far the possibility to downscale EPS members and to use the TEPS have been implemented. It is also possible to do 3D-Var assimilation for the members (or only for the control). More methods for initial perturbations will be added later. The work will provide a good base for the Hirlam GLAMEPS runs in the laboratory phase.

A. Deckmyn: Downscaling ERA-40

Double nesting: 120km →40km→10km with ALADIN, 46 levels.

Looked at wind climate for Belgium.

Found some orographic effect, particularly at night.

Future study will look at temperature and precipitation, use SURFEX, and DFI blending.

T.E.Nordeng: UM 4km vs. Hirlam 4 km

Looked at long term performance and case studies (heavy precipitation event).

UM has a problem with temperature, especially in winter.

UM is better on wind speed and direction.

UM is best on precipitation, particularly in localizing it and limit its extention.

Both models melt snow too rapidly (Hirlam worst).

A. Deckmyn: Rfa package

Interactive analysis of ALADIN files (FA) in R.

Can visualize fields on a map.

3 packages: Rfa/Rgrib and geogrid.

Can do computations on fields via the R language, many functions implemented (biperiodisation, inverse projections, zooming).

Easy to set up and visualize a new domain.

R. Hamdi: Improving SURFEX/TEB

Tower measurements above street in Basel.

TEB: surface temperature resolved for each of 3 surfaces: roads, roofs and walls.

Two simulations: NEW: prognostic SURFEX

ORI: diagnostic SURFEX

Also looked at coupling SURFEX off-line to ALADIN (case over Belgium).

A. Männik: Verification of precipitation

Compared ECMWF and HIRLAM 00z forecasts from Nov. 1, 2006 to March 31, 2007, also against duty forecasters on national TV.

Duty forecasters add value to precipitation phase.

All models outperform d.f. on intensity.

Hirlam heavily overpredicts intensity for no-precipitation events. Heavy precip. captured well.

NH Hirlam suffers same problems as hydr. Hirlam.

G.Boloni: EC boundaries for ALADIN/HU

Tested feasibility of operational usage.

Both 3D-Var and dynamical adaptation tested.

Special consideration of surface fields (ARPEGE).

Need to use 6h old IFS fields.

Results for upper air fields worse than for ARPEGE boundaries with dyn. adaptation, but slightly better for 3D-Var. Neutral for surface fields.

General discussion

No time because of presentation moved from previous session due to technical difficulties.