Minutes of the COSMO WG7 (Working Group on Predictability and Ensemble Methods) meeting, Roma, 5th September 2011

Participants:
Chiara Marsigli (ARPA-SIMC, WGC), Dmitry Alferov (RHM), Elena Astakhova (RHM), Michael Buchhold (DWD), Andrea Montani (ARPA-SIMC), Susanne Theis (DWD), André Walser (MCH).

Minutes:

The current WG7 tasks have been presented by C. Marsigli and it is here included in Table 1.

7.1	**Development of COSMO-LEPS**	
7.1.1	Maintenance and updates of the operational suite at ECMWF	ARPA-SIMC, A. Montani on-going
7.1.2	Study, development and implementation of new clustering and member selection techniques	ARPA-SIMC, A. Montani starting in autumn 2011
7.1.3	Testing the use of different sources for the initial conditions of soil fields ("soil merge")	ARPA-SIMC, A. Montani, MCH, A. Walser **completed**
7.1.4	Generation of calibrated COSMO-LEPS forecasts	ARPA-SIMC, T. Diomede, C. Marsigli, A. Montani on-going
7.1.5	Tests for the LAM-EPS BC project	ARPA-SIMC, A. Montani on-going
7.2	**Development of an ensemble system for the Sochi olympic games**	
7.2.1	SOCHMEL	ARPA-SIMC on-going
7.3	**Perturbation of the surface fields**	
7.3.1	Development of soil moisture perturbations	HNMS, P. Louka, F. Gofa ARPA-SIMC, C. Marsigli on-going
7.4	**Verification of ensemble forecasts**	
7.4.1	Verification of ensemble forecasts	WG7-WG5 C. Marsigli, A. Montani, A. Walser starting next year
7.5	**Development of convection-permitting ensembles**	
7.5.1	Product development and evaluation	MCH, A. Walser, M. Arpagaus starting in autumn 2011
7.5.2	Studying model perturbations for COSMO at 2.8 km over Italy	ARPA-SIMC, C. Marsigli USAM/CNMCA L. Torrisi on-going
7.5.3	Evaluate ECMWF LAM-EPS BC test data-sets for the convection-permitting scale	MCH, A. Walser ARPA-SIMC, C. Marsigli, A. Montani waiting for BC availability

Table 1. WG7 current plan.

E. Astakhova has asked is the test data-set provided by ECMWF (M. Leutbecher) for the LAM-EPS BC project could be made available also to Russia, in the framework of the COSMO cooperation. This will be checked by Chiara.

Then, the work carried on in the different countries has been presented:

- Dmitry Alferov: COSMO-RU ensemble weather forecasting system: first steps
- André Walser: Ensemble activities and plans at MeteoSwiss
- Andrea Montani: COSMO-LEPS: present status and developments
- Susanne Theis: COSMO-DE-EPS: an update
- Michael Buchhold: soil moisture perturbations for COSMO-DE-EPS

Presentations will be made available on the COSMO web (GM 2011).

Some feed-back/recommendation for the COSMO-LEPS development has been made by A. Walser:

- Positive impact of using the COSMO-EU soil in COSMO-LEPS
- Ensure that the COSMO-LEPS configurations follow as good as possible the COSMO-EU one
- Produce a 00 UTC run
- Check the validity of the super-ensemble strategy
- Develop soil moisture perturbations
- In the reforecast for COSMO-LEPS run by MCH the soil fields are not provided by COSMO-EU, but a bias correction for the soil moisture is applied, based on a comparison between COSMO-EU and interpolated ERA-interim for 2008.

Question asked by A. Montani:

- Would it be desirable to increase the vertical resolution of COSMO-LEPS moving from 40 to 50 levels? Follow MCH or stay close to COSMO-EU?

From the discussion, it turned out that, for the moment, it is better to stay close to COSMO-EU. A. Montani has asked to be included in the mailing list relative to COSMO-EU updates, in order to be promptly informed about model updates.

Then, the CONSENS part started.

C. Marsigli presented the results of the intercomparison between COSMO-LEPS and COSMO-SREPS for the short-range (up to 48 h) and their merging. Out of this, a proposal was made to the WG7:

- Stop running the extra COSMO-SREPS members (nested on the same sets of IC and BC but with different physics)
- Keep only the COSMO-SREPS members which receive i.c. and b.c. by different global models. These runs are already provided by the BC-EPS suite run by DWD at ECMWF (for COSMO-DE-EPS)
- Create a new COSMO-SREPS system for short-range mesoscale ensemble forecasting by merging the 16 COSMO-LEPS runs with the 4 BC-EPS runs, creating an additional product with no extra BUs required.

A discussion on this took place in the WG:

- A. Walser: to have a new ensemble system for the short-range only, with the same resolution, could be a problem for the forecasters, since they need to get used to a new product. For this, they should be convinced that they can obtain a big gain which the new system, which does not seem supported by the results
- S. Theis: for DWD to extend the BC-EPS suite up to 48 h (currently is 36h) could be an issue, due to transfer time

- To keep the benefits of a multi-model approach, A. Walser suggests to add some multi-model members to COSMO-LEPS, but for the whole forecast range (up to 132h). A. Montani states that this is feasible for IFS, where a deterministic run already exists, and that it should be checked if it is possible for GME as well (M. Buchhold says that the forecast range of GME is long enough). GFS is available for free up to a sufficient forecast range.
- It was highlighted that a back-up solution is needed in case one of the global is not available on a given day (e.g. an older run or one of the EPS members which has not been already selected for COSMO-LEPS). At the moment, back-up solutions are not present and should be implemented from scratch.
- This proposal will be presented to the SMC during the meeting of the 9th September. *(Added in proof: the SMC welcomed this idea. The BUs required for this COSMO-LEPS enhancing should be asked to the STC by the usual procedure. It was highlighted that stopping the COSMO-SREPS runs (16 member for 48 h) frees some BUs which could be used to run the new multi-model extra 3/4 COSMO-LEPS members for a longer forecast range. It was also recommended to create a new product with this enhanced COSMO-LEPS, to be compared with the actual one for the whole forecast, for different COSMO areas and for different variables (e.g. also wind). On the basis of the results, it will be decided if to substitute the actual COSMO-LEPS product with this new one.)*

The CONSENS PP has just ended (August 2011) and the still pending tasks will now be carried on as WG7 activities.

The status of the soil moisture perturbation task (belonging to HNMS) was presented. The first tests of the developed methodology are on-going. A meeting will take place in Athens at the end of September to organise the last part of the work. HNMS will complete this task within the end of the year.
After this date, ARPA-SIMC will continue to work on the development of perturbations for the soil fields, included soil moisture.

Finally, the calibration task is almost completed. Within the end of the year the methodology developed for calibrating COSMO-LEPS precipitation will be implemented at ECMWF as part of the COSMO-LEPS suite. A new precipitation product will be made available ("calibrated precipitation") in GRIB format. Data will be available only on the COSMO areas where calibration was tested, the other areas will be masked.