

Introduction, ASM and other recent developments

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This Newsletter is largely devoted to presentations made by HIRLAM staff in the All Staff Meeting (ASM) that was held on May 15-18 in Sofia this year. It was the first ASM of HIRLAM-A, and also the first meeting to be held jointly with the ALADIN Workshop. The HIRLAM and ALADIN meetings took place mainly “in parallel” in separate rooms, with a common joint session on Wednesday, and with simultaneously timed coffee, tea and lunch breaks. Due to the difficulties of planning meetings in May, actually the ASM/Workshop coincided with yet a third meeting in the same hotel, namely the SRNWP workshop on Mesoscale Verification. This sometimes resulted in difficult choices for the participants on which presentations to attend and which to give a miss! The opportunities for having informal side meetings and stimulating discussions with researchers from the other consortium were eagerly used by the attendants on both sides. Many thanks to our Bulgarian hosts, who have done a great job in creating such a pleasant and relaxed atmosphere! This Newsletter contains mostly write-ups of HIRLAM contributions to the ASM/workshop. Presentations given by ALADIN staff can mostly be found in the ALADIN Newsletter of July/August, and for the SRNWP workshop on Mesoscale Verification, a separate report will be published.

On Monday, the ASM began with a general introduction of Jeanette Onvlee on the goals and status of HIRLAM-A. Then Jean-Francois Geleyn gave a presentation on the new ALADIN programme, its organization and governance. This was followed by three sessions of presentations on data assimilation and use of observations, mesoscale modelling, and dynamics.

In the data assimilation session, Nils Gustafsson first presented the breakthrough he made with 4D-VAR after the introduction of a statistical balance and the discovery of a nasty bug. Preliminary testing showed the 4D-VAR system to perform consistently better than 3D-VAR after these changes. Nils then gave an overview of the many scientific challenges and open questions of mesoscale data assimilation, which were discussed with the audience. Next, there were presentations by Magnus Lindskog, Per Dahlgren and Vibeke Wauters Thyness on improved structure functions for 3D-VAR the assimilation of AMSU-B radiances and Observation System Experiments (OSE's) carried out for the EUCOS programme, respectively.

Bent Hansen Sass started the mesoscale session with a short review of the activities and results obtained in the mesoscale project so far. At present, the first set of recoded HIRLAM physics components has been phased into ALADIN/IFS, and versions of ALADIN with this HIRLAM physics package, or AROME are run routinely in several HIRLAM countries. Ulf Andrae presented the setup of the implementation of ALADIN/AROME at SMHI; the model is running successfully, but appears to be quite slow computationally. A new combined eddy diffusivity - mass flux (EDMF) scheme for the mesoscale was described in detail by Pier Siebesma. Karl-Ivar Ivarsson presented studies of the behaviour of the Kain-Fritsch Rasch-Kristjansson scheme at 5km resolution.

Nils Gustafsson gave a brief overview of the HIRLAM-A plans for dynamics, the activities of which focus strongly on developments required for the mesoscale. Radmila Brozkova presented the present non-hydrostatic dynamics formulation which is used in the ALADIN model, stressing its numerical efficiency and stability. One of the HIRLAM contributions to the ALADIN dynamics is the development and implementation of a Mercator map factor functionality. Isabel Martinez described the analytical studies that she and Inez Santos have performed for this purpose.

In previous ASM's, it was customary to have a series of presentations on the national implementations of HIRLAM. This time, Xiaohua Yang presented a single overview of the national HIRLAM versions, based on information supplied by the local system managers. Another novelty was the introduction of short (2 minute) poster presentations, in which authors of posters were given the chance to “advertise” their work to the audience.

On Tuesday there were sessions and presentations on the model physics, predictability and system and applications. First, Sander Tijm gave an introduction of the physics plans. Laura Rontu described the progress made in the development of orography-related parametrizations. Stefan Gollvik showed encouraging new results for the revised snow and forest surface scheme. Two new developments in

the turbulence scheme were presented: Sander Tijm described a moist version of CBR, while Evgeny Atlaskin presented the first results of a promising new approach for modelling the stable boundary layer (Sukorianky et al. 2005).

In the predictability session, Nils Gustafsson outlined the plans to build a grand ensemble of limited area models (the GLAMEPS system). Trond Iversen described the good results obtained with the operational NORLAMEPS ensemble setup at met.no.

After an overview of the system and applications plans by Xiaohua, several presentations were given first on the topic of validation and verification. Kalle Eerola described the verification studies he has done for HIRLAM version 7.0, and the reproducibility problems he encountered there. Sander Tijm presented the work of Cisco de Bruijn on 1D and 3D studies of the GABLS2 stable boundary layer case. Evgeny Atlaskin described the use he has made of Sodankyla mast data for the verification of HIRLAM boundary layer behaviour, and for the validation of the Sukoriansky et al. turbulence scheme. Markku Kangas presented the road weather model application developed at FMI.

Then a series of presentations and demonstrations were given on system aspects. First, Tomas Wilhelmsson described the new version control system introduced in HIRLAM 7.0, Subversion, and showed on his laptop a number of ways in which developers may benefit from its features. Toon Moene demonstrated a HIRLAM configuration suitable for use on LINUX pc's. Finally, Tomas Wilhelmsson and Xiaohua Yang gave a joint presentation of the wiki page setup and other new features that have recently been implemented on HexNet.

On Wednesday, there was a joint meeting of HIRLAM and ALADIN staff, covering data assimilation, predictability, mesoscale system and verification aspects. From the HIRLAM side, presentations were given by Nils Gustafsson, Bent Hansen Sass, Stefan Gollvik (all more or less similar to their presentations in the ASM), Jose Antonio Garcia-Moya (on the multi-model multi-boundary ensemble system used at INM), and Sander Tijm (on the goals, activities and progress of the validation / verification working group which was instigated early this year).

On Thursday, quite a few ASM participants visited the surface/physics session of the ALADIN workshop and the Mesoscale Verification workshop. The remaining staff participated in three discussion sessions, animated by Sander Tijm, Bent Hansen Sass and Xiaohua Yang, on common post-processing and tools, known problems with the model, and operational cooperation, respectively. A brief report on the outcome of the discussions can be found in this Newsletter.

At the close of the ASM, the participants briefly evaluated this first combined ASM/Workshop meeting. People were quite positive about the two consortia meeting in one place, and appreciated the opportunities given this way for informal contacts with ALADIN staff. On the whole, the participants were in favour of increasing the "common" part of the programme and of having more common sessions on specific research topics, even though some time to deal with "consortium-specific" matters in the programme should remain. Various suggestions for improvements were made, which will be taken into account in the organization of the next ASM/Workshop. That meeting is expected to take place in Oslo, in the period of 23-27 April 2007 (dates are preliminary, to be confirmed later).

The Newsletter concludes with a few contributions which are not related to the ASM. A report from Bjarne Amstrup describes the use of bias predictors for the bias correction of AMSU-A data at DMI. The Management group made a visit to met.no in June, and a brief report of that visit can be found here. In the second half of 2006, the management group expects to make two further member institute visits, to FMI (October) and KNMI (December). Thirdly, there is a short paper of Markku Kangas on the boundary layer monitoring and verification system used for the RCR. The RCR web pages of this system presently show a comparison HIRLAM-RCR and Arpege model data against observations of the masts of Sodankyla and Cabauw. We would like to extend this boundary layer monitoring with more mast observations and more national HIRLAM model data. For this purpose, Markku has provided a brief description of the input (model and mast) data required for the boundary layer verification. All national HIRLAM system managers are warmly invited to supply their operational model output to FMI according to this format! Another non-ASM contribution is a report from Xiaohua Yang on the status of Reference System. This summer and autumn have seen extensive testing of the many new components that are to be included in version 7.1; Xiaohua describes the progress of this complex process and its outcome so far.

Finally, a few words on the developments within HIRLAM and the HIRLAM management group in the past few months.

After a long-standing research cooperation between Estonia and HIRLAM, the Estonian Meteorological and Hydrological Institute (EMHI) applied for membership of the HIRLAM consortium. In the July meeting of the HIRLAM Council, the Council unanimously agreed to this request, and warmly welcomed EMHI to join the consortium. The official date of entry of EMHI into HIRLAM will be January 1, 2007. In July, a similar request to join HIRLAM was made by the Latvian Environment, Geology and Meteorology Agency (LEGMA). Their application will be considered by the Council in their December meeting. The HIRLAM Management Group is very happy with these developments. I would hereby wish to express a warm welcome to our new Baltic colleagues and to assure them of our full support for their efforts to embed the HIRLAM system in both the research and operational environments of their home institutes.

In July, the HIRLAM Council has also decided to fill the vacant position of Project Leader for Dynamics and Predictability with two people: Trond Iversen as Project Leader for Predictability and Mariano Hortal as Project Leader for Dynamics, both at a 50% level. I am very happy with this decision, through which the Management Group has been significantly strengthened in expertise and experience. Trond has taken up his new duties in August, Mariano will do so after his retirement from ECMWF in November. Also, René Noordhoek has begun his work as the new HIRLAM Scientific Secretary in September. His first tasks are the editing of this Newsletter, and a critical review and revision of the information contained on the HIRLAM web pages. I hereby wish Trond, Mariano and René all the best in their new roles.