

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 April 23-26 in Oslo this year. It was the second ASM to be held jointly with the ALADIN Workshop. In comparison to the 2006 meeting in Sofia, this year's ASM/Workshop programme consisted of plenary sessions and a set of parallel thematic sessions, with one day reserved for each consortium separately. In addition, several side meetings were held on dedicated topics, such as a working group meeting on mesoscale surface modelling and a discussion on the GLAMEPS configuration to be built at ECMWF. The parallel sessions gave HIRLAM and ALADIN researchers welcome opportunities to mingle, but sometimes resulted in difficult choices for the participants on which presentations to attend and which to give a miss! The new building of the met.no Research department offered excellent facilities for our meeting. Many thanks to our Norwegian hosts, who have done a great job in creating such a pleasant and relaxed atmosphere!

The ASM/Workshop began with a plenary session on Monday morning. Jean-Francois Geleyn, Jeanette Onvlee and Francois Bouttier gave overview talks of the present status of the ALADIN, HIRLAM and AROME programmes, respectively. This was followed by several talks of general interest. Nils Gustafsson and Claude Fischer jointly presented the plans for mesoscale data assimilation. Radmila Brozkova described the developments in the ALARO physics package, and the performance of this "grey zone" physics. Trond Iversen gave an overview of the HIRLAM EPS activities and plans. At the end of the morning session, the authors of posters were given the chance to "advertise" their work to the audience.

On Monday afternoon and Tuesday six parallel thematic sessions were held, on data assimilation and use of observations, model dynamics, model physics, probabilistic forecasting, system aspects and applications and a demonstration session for useful tools.

Andrea Storto started the data assimilation session with a presentation on the first experiences within HIRLAM with implementation and testing of ALADIN 3D-VAR. Initial results indicate the need to address certain aspects of this system. Gergely Boloni showed results from experiments with the ALADIN 3D-VAR analysis using FGAT. Roger Randriamampianina gave an overview of the latest developments in the Hungarian assimilation system. Ole Vignes described the use of balance equations as background constraints in variational assimilation; in the coming year, it will be important to evaluate the potential of this approach, particularly for mesoscale data assimilation. Then came a number of presentations on the impact of several types of observations: MODIS winds (Carlos Geijo), OSI SAF SST and sea ice (Mariken Homleid) and 10m wind (Ludovic Auger).

The dynamics session was opened by a thought-provoking presentation of Piet Termonia, with new ideas on several subjects. He suggested a different time stepping approach within ALADIN, indicated possible problems with digital filtering in ALADIN, and described a potential way to use the transparent later boundary condition concept (which was originally developed by Aidan McDonald for grid-point models) within ALADIN. These ideas will certainly all require more follow-up work. Mariano Hortal gave an overview of the HIRLAM dynamics activities. A series of presentations was given by Jan Masek, Martina Tudor and Filip Vana on various aspects of the ALADIN semi-Lagrangian horizontal diffusion scheme (SLHD). Josef Vivoda described the first experiments with a new vertical Finite Element discretization. Ulf Andrae closed the session with a presentation on the performance of the daily ALADIN/AROME runs at SMHI.

In the physics session on Tuesday morning, Sander Tijm began by giving an introduction of the HIRLAM physics developments. Jean-Marcel Piriou described the new 3MT microphysics

scheme, which will be implemented in ALARO-1, while Jure Cedilnik showed validation results for the “old” microphysics used in ALARO-0. Bjarne Stig Andersen and Sami Niemela showed monitoring results for the mesoscale runs carried out at DMI and FMI, interpreting them in terms of the potential strengths and shortcomings of the mesoscale physics. Eric Bazile presented the outcome of an extensive comparative verification of precipitation forecasts for various versions of ALADIN, HIRLAM and AROME over Austria, using the INCA precipitation analysis system. He also described the TKE/shallow convection scheme used in AROME. Stefan Gollvik gave a brief but provocative presentation on the inconsistencies that exist in our present treatment of surface and upper air analysis. He came with suggestions for a modified approach, which he is presently testing. A statistical method to derive improved thermal radiation fluxes was described by Neva Pristov. Laura Rontu pointed out several weaknesses found in the present HIRLAM physics, mainly the surface description, on the basis of experiments in Sodankyla and Iceland. Patrick Lemoigne explained the use of ECOCLIMAP in the SURFEX analysis. Finally, Jean-Marcel Piriou demonstrated the diagnostics package DDH, by which budgets for individual physics components can be calculated and compared. He made a strong appeal to all participants to exchange such tools and thus extend the range of our diagnostic abilities. Unfortunately, visa problems made it impossible for Katherina Kourzeneva to be present and give the participants an update on the status of the lake model.

The system session contained presentations on system aspects and on verification. In the former category, Ulf Andrae gave a presentation on the new HARMONIE repository and system tools, inviting those present to gain experience with it. The efforts begun at SMHI to archive HIRLAM data in MARS, and the underlying motives for doing so, were discussed by Per Uden. Kai Sattler described the script system for the “ensemble mode” in HIRLAM. Presentations on verification were given by Martina Tudor (comparison of meteorological and oceanographic models for the Adriatic), Lovro Kalin (comparison of ALADIN and ALARO), Thor-Erik Nordeng (verification of mesoscale models at met.no), Rafiq Hamdi (validation of the Town Energy Budget (TEB) model), and Arne Männik (precipitation forecasts for Estonia). Alex Deckmyn described how the ERA-40 re-analysis has been downscaled to Belgium using ALADIN. He also demonstrated an interactive graphics package, based on R, to manipulate and present ALADIN output.

In the predictability session, Yong Wang and Andras Horanyi gave overviews of the developments within ALADIN/LACE and of the contributions of ALADIN to GLAMEPS, respectively. Jose Antonion Garcia-Moya described the present status of INM’s SREPS system, and Carlos Santos showed impressive verification results for this system – a hard baseline for GLAMEPS to beat! John Bjørnar Bremnes demonstrated a variety of statistical calibration methods, indicating the benefits that they give for improving precipitation forecasts. Presentations on the development and validation of new ensemble generation methods for HIRLAM were given by Jan Barkmeijer (HIRLAM singular vectors) and Inger-Lise Frogner (EPS/TEPS). Alexander Kann presented the status of the pre-operational Austrian LAEF system

A new element in both the ASM and the ALADIN workshop was the demonstration session, in which a variety of tools from both sides were shown. The trigger for this session has been a questionnaire on tools used in the HIRLAM and ALADIN worlds. Oldrich Spaniel first presented the outcome of this questionnaire. This was followed by a series of demonstrations from the side of ALADIN (on Pinuts and the CHAGAL graphics package), and then by HIRLAM participants (on DIANA, ensemble monitoring and verification, HARMONIE monitoring, HIRLAM verification graphics, and PrepIFS). At the end of the session, the general feeling among the participants was that such a demonstration session can be quite useful, if held once every three years or so.

On Wednesday, the HIRLAM and ALADIN consortia had separate programs. The HIRLAM session was opened by Magnus Lindskog, who gave a brief overview of the plans of the HIRLAM observation experts on coherent observation impact studies. This was followed by a series of presentations on the recent adaptations made in the STRACO and Kain-Fritsch Rasch-Kristjansson condensation-convection schemes, and on the plans for an intercomparison of these schemes which is scheduled to take place this summer. Next came a set of presentations focussing on the HIRLAM

Reference system. Xiaohua Yang described the most recent developments in the Reference System, and Kalle Eerola presented verification results of the present version 7.1. HIRLAM verification experts have recently decided that for model intercomparisons, the present Reference verification package is inadequate and it should be upgraded in a number of ways; Xiaohua elaborated on the reasons and arguments for this. Jacob Weismann Poulsen described his activities in the HIRLAM source code overhaul, and Tomas Wilhelmsson recalled one year of experiences with the Subversion code management system. Finally, Xiaohua gave an overview of the various national operational HIRLAM configurations.

In the afternoon there were two discussion sessions, on coherent impact studies and on the strategy for the validation of the various mesoscale physics packages that are now available. In the first session, the people involved in the coherent impact studies discussed in detail the status of those activities and the plans for the coming months. In the second discussion, the complexities of assessing and comparing the quality of mesoscale physics packages were made abundantly clear. Several points of attention were noted for the mesoscale physics comparison which is planned later this year, among them the need of a consistent surface treatment and the crucial role played by a correct treatment of lateral boundaries.

In the plenary closing session on Thursday morning, Jeanette Onvlee, Jean-Francois Geleyn and Andras Horanyi reported on the outcome of several side meetings held earlier that week: the meeting between the HIRLAM management group and the ALADIN CSSI, the meeting of the working group on surface issues, and the discussion on the configuration of GLAMEPS laboratory system. The chairmen of the thematic sessions then summarized the most salient points made in the presentations and discussions in their session.

At the close of the meeting, the participants briefly evaluated the format of this second combined ASM/Workshop meeting. People on the whole were positive about having common thematic sessions on specific research topics, although many regretted the necessity of parallel sessions. Various suggestions for improvements were made, which we will attempt to take into account in the organization of the next ASM/Workshop. That meeting is expected to take place in Belgium, in the period of 7-10 April 2007 (the dates are preliminary and the location is not yet known, both are to be confirmed later).

The Newsletter concludes with a few contributions which are not related to the ASM. The first is an article by Carlos Geijo describing his assimilation studies for the assessment of the impact of MODIS winds. Aidan McDonald gives an update on the status of his work on transparent lateral boundary conditions. The article from Anders Persson is the first of a series he intends to write on the intricacies of verification. The Management group has made member institute visits to FMI in October 2006, to KNMI in January 2007 and to MetEireann in May/June 2007; reports of those three visits, and the discussions held by the management group with HIRLAM staff, management and user representatives there, have been included here. The last contribution to this Newsletter is from Xiaohua Yang on the status of the Reference System (now including HARMONIE and HIRLAM EPS components).

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

An unfortunate bit of news is that recently we have lost our scientific secretary, Rene Noordhoek, who has decided to accept a full-time job elsewhere. The search for a successor has been started up. Happier news is forthcoming from the northeast. After a long-standing research cooperation between Estonia and HIRLAM, the Estonian Meteorological and Hydrological Institute (EMHI) has officially joined the HIRLAM consortium in January 2007. Requests to accede to HIRLAM have been made by the Latvian Environment, Geology and Meteorology Agency (LEGMA) and the Lithuanian Hydrological and Meteorological Service (LHMS). In June 2007 the HIRLAM Council has decided to accept both institutes as acceding members to the consortium. The Management Group is very happy with these developments. I hereby express a warm welcome to our new Baltic colleagues and assure them of our full support for their efforts to embed the HIRLAM system in the research and operational environments of their home institutes.

