HIRLAM Management Group (HMG) – ALADIN Committee for Scientific and System/Maintenance Issues (CSSI) Meeting

Brussels (Belgium), 6th and 10th April 2008

Minutes edited by Tilly Driesenaar and Martin Janousek

Executive actions highlighted in the text.

Participants:
HIRLAM MG: Jeanette Onvlee, Tilly Driesenaar, Nils Gustafsson, Mariano Hortal, Trond Iversen, Xiaohua Yang, Sander Tijm
ALADIN: Jean-François Geleyn, Pierre Benard, Bart Catry, Alex Deckmyn, Ryad El Khatib, Claude Fischer, Martin Janousek, Diana Klaric, Jean-François Mahfouf, Jean-Antoinne Maziejewski, Patricia Pottier, Piet Termonia

Tentative agenda

The meeting started on 6 April 2008 in the premises of RMI.

1. Review of actions agreed on in the Oslo HMG-CSSI meeting

Scan of the Oslo meeting action list was performed and items reviewed (the discussed actions are quoted in italics in the following text):

- *Ryad ElKhatib: explore extended extension zone solution and write analysis of the optimization of the extension zone grid-point calculations, in cooperation with Claude Fischer and Nils Gustafsson. Deadline: September 2007.*

N. Gustafsson reported that studies had been carried on. They have shown that a small extension zone is indeed a problem in 4D VAR. Solutions have been proposed comprising the combination of wide E-zone in the background constraint calculation and narrow E-zone for TL and AD. This is a working solution in HIRLAM framework due to its incremental character. But inspection of balances is still due and also consistency of this approach in ALADIN is also still to be investigated. C. Fischer confirmed that extra work to pursue the approach in ALADIN will be necessary estimated at 4 person-months for 3D VAR, for 4D VAR even more.
J.-F. Geleyn proposed to consider implementation of the Boyd's solution. P. Termonia supported J.-F. Geleyn's view. C. Fischer recalled the missing manpower in ALADIN and the on-going externalization of the bi-periodicization which will allow adding new functions only at a later stage. J.-F. Geleyn, J. Onvlee and P. Termonia further discussed the relevance of the biper externalization to the E-zone issue. C. Fischer proposed that those in charge of the externalization work will liaise to P. Termonia and N. Gustafsson to get proper specification of the required function of the biper package. N. Gustafsson noted that if the work amounts at 4 p-m it would be difficult to achieve it till the end of 2008. J.-F. Geleyn proposed that an inefficient temporary solution could be quickly implemented first. C. Fischer admitted the amount of necessary work (4 p-m) is still uncertain and will be more elaborated.

- *Boloni, Guidard: summarize work done so far on the extension zone topic*

J. Onvlee declared the work done.

- *Nils Gustafsson, Jean-Francois Mahfouf: arrange visit of Maria Diez, Han The to Toulouse, to work on proposed setup for surface soil data assimilation.*

N. Gustafsson reported the task was completed.

- *Claude Fischer, Nils Gustafsson: arrange completion of observation operator descriptions and report on recommendations for convergence. Common document ready in September.*

N. Gustafsson and C. Fischer reported the inter-comparison was done. The performances were similar with some differences in radar reflectivity and slant GPS delays observation operators.

- *Surface WG1 members: write guideline scientific paper for surface development within 1 year. Initiator of WG1 activities: Jean-Francois Geleyn. First inventory of issues to be delivered mid-June 2007.*

J.-F. Geleyn stated no progress had been made due to the lack of time.

- *Jeanette Onvlee, Radmila Brozkova: initiate working group on physics validation and intercomparison, to plan these experiments in detail. Jeanette will get in touch with AROME management on their participation. Plans to be ready by September 2007.*

J. Onvlee reported the first activity had started during the Helsinki training week but significant part of the work assigned to the working group was still to be done. D. Klaric noted that completion of the DDH diagnostics development was also the important contribution to the topic. J.-F. Geleyn added that A. Deckmyn, J.-M. Piriou and T. Kral had also progressed in view of a more general approach of the issue. More coherent work on this topic is anyhow needed.

- *Sander Tijm: consider how to provide feedback from HIRLAM mesoscale monitoring /verification efforts to ALADIN/AROME developers more structurally and regularly.*

J. Onvlee reported good progress had been made in the issue.

- *Piet Termonia, Aidan McDonald: consider possibilities of treatment of transparent LBC as proposed by Termonia in more detail.*

J. Onvlee said the work had been done and report made available.

- *Piet Termonia: contact Peter Lynch on his proposals for DFI treatment, also on possibility to involve students from Dublin University in this work.*

P. Termonia reported that the issue resulted in the proposal of the scale-selective DFI which would be presented later during the ALADIN Wk/HIRLAM ASM. The scheme exists but is not yet included in the reference cycle.

- *Ulf Andrae, Radmila Brozkova: work out experiments on treatment of pressure gradient force near orography.*

J. Onvlee said the tests had been made and the issue would be pursued further albeit with less priority.

- *Jean-Francois Geleyn, Andras Horanyi: coordinate ALADIN contributions to GLAMEPS laboratory system setup. To be ready in September 2007.*

J.-F. Geleyn said the issue was pushed further. However due to heavy duties of involved people linked to the demonstration project for Olympic Games the involvement of ALADIN in GLAMEPS will increase only after the Olympics. D. Klaric seconded and added the Austrian team was currently overloaded also by other duties, namely in the LAEF system which was now operational in LACE.

- *Trond Iversen: distribute setup of "Version 0" of GLAMEPS system, as agreed at the meeting.*

J. Onvlee reported the item was done.

- *Jean-Francois Geleyn: promote pooling of computational resources at ECMWF in ALADIN.*

J. Onvlee said that A. Horanyi had taken care, to be reported later.

- *Jeanette Onvlee, Xiaohua Yang: discuss possibilities to do phasing at ECMWF in future with appropriate people at Meteo-France (to be indicated by Claude Fischer).*

X. Yang and C. Fischer reported that some further work would have to be done to make the phasing possible at ECMWF. Already now certain validations are possible at the Centre. J.-F. Geleyn added that X. Yang and M. Janousek participated in the IFS/ARPEGE coordination meeting in the role of observers.

- *HIRLAM system group together with ALADIN/AROME system experts: documentation of installation of ALADIN on different platforms from scratch.*

J. Onvlee said the work had been done.

- *Xiaohua Yang, Ryad ElKhatib: push API GRIB solution for I/O formats in Interoperability proposal.*

J. Onvlee reported the lobbying was done and GRIB-2 was recognized as suitable interoperability file format.

- *Claude Fischer: invite Marek Jerczynski to familiarize himself with INCA and work on INCA-type verification.*

C. Fischer said that I. Lelatko was trained in Toulouse and that she was now ready to help installation of INCA in other countries.

- *Jeanette Onvlee: request HAC for suggestions for responsible members/programme management of SRNWP follow-up proposals; Jean-Francois: the same for PAC. Jeanette Onvlee: ask Jean-Pierre Chalon about possibilities to recruit project staff from countries other than responsible member.*

J. Onvlee reported it was done.

- *Jeanette Onvlee, Jean-Francois Geleyn: take initiative to get drafting committee for model as tool for academia up and going.*

J. Onvlee said that several people had made effort to make the progress in the issue.

P. Termonia said he had no progress to report. T. Driesenaar reported she wants to form a group to support provision of HARMONIE to universities, collecting requirements and ideas. She planned a discussion meeting with P. Termonia and B. Catry a.o. on this during this week to start cooperation. N. Gustafsson added HIRLAM had been used for 10 years at Stockholm University for teaching and can provide relevant experience. Several people showed interest joining the discussion.

2. Status of ongoing activities

a. Data assimilation

i. Status of common work on upper air data assimilation

ii. Common plans for mesoscale upper air data assimilation (3D-VAR, 4D-VAR)

X. Yang reported the implementation of data assimilation part of ALADIN 3DVAR in HARMONIE. Experimentation can start shortly. N. Gustafsson said the next step would be the validation parallel run of HARMONIE and HIRLAM on the North Atlantic area in stereographic projection.
C. Fischer reported the baseline version ("in a nutshell") of 4DVAR was set up in Olive. It relies on the multi-incremental solution using fulpos. The minimization is still a pending issue; it is available but not fully tested yet (B. Chapnik is in charge). N. Gustafsson added it would be later tested in HARMONIE. He made a visit to Toulouse where he discussed also an issue of the simplified physics. The proposal is to use M. Janiskova's simplified physics as a starting point. A basic version of 4DVAR is expected in the beginning of 2009.
N. Gustafsson also mentioned need of wavelets. A. Deckmyn replied the wavelets experimental version was ready but not yet implemented to Olive. Still some mathematical problems exist in boundary conditions. C. Fischer said the effort was made to make Olive accessible externally but there were still some difficulties also due to rather limited manpower.
J.-F. Geleyn reported the progress of TL/AD code of F. Vana which worked well albeit not yet in the reference cycle. C. Fischer recalled the insufficient manpower available to 4DVAR. He said more contacts to HIRLAM were made for B-matrix and more contacts would be needed for ETKF. He further reported some discussion was made on the image processing ("image assimilation") which a research grant was applied for at Meteo-France. J.-F. Geleyn noted more coordination was needed in the latter issue (research grant for image assimilation).

iii. Observation pre-processing, observation impact studies

N. Gustafsson reported ongoing work on the radar reflectivity assimilation. C. Fischer noted it had focused so far on the operator development but the work was going to continue in the experimentation inside the model framework. N. Gustafsson continued reporting the work on radar radial winds assimilation focusing on the thinning in HIRLAM; bias correction of GPS data made first in HIRLAM and going to HARMONIE in future; progress in IASI assimilation (R. Randriamampianina); work on SEVIRI in Sweden; not-so-clear progress in the binary cloud assimilation.
N. Gustafsson stressed the need of impact studies to evaluate performance of all new observation types assimilation. HIRLAM comprehensive impact studies should be applied in HARMONIE/ALADIN framework before preoperational validation. J. Onvlee stressed the need of support to easier implementation of the data assimilation systems in countries with no observation experts available. J.-F. Geleyn noted this would need to freeze the DA version for longer periods. X. Yang recalled the associated question of defaults changes – default options have to be very well validated. J. Onvlee stressed again that the lack of local knowledge of DA systems was a blocking to the local implementation which has to be alleviated. N. Gustafsson proposed a common script system – something what had never been done in ALADIN.
C. Fischer noted the extra work associated with that.
D. Klaric reported the impact studies of high-resolution surface observation network, partially non-conclusive due to the still missing good surface DA system. She further presented a new idea of LACE: a common pre-processing of satellite and AMDAR data with possible future

extension to radar data. J.-F. Geleyn asked why surface and upper-air data pre-processing is dissociated in the LACE plan. D. Klaric replied the system was not frozen and would evolve in future.
J. Onvlee and N. Gustafsson further discussed the issue of use of new BUFR format which should be a part of data pre-processing with some consequences for the Oulan + Bator current approach in ALADIN.

iv. Surface data assimilation

J.-F. Mahfouf presented the progress in the surface DA:

In ALADIN:

- Development of a dedicated ALADIN soil analysis (T,W) with the CANARI OI (Adam Dziedzic at Meteo-France)
- Externalisation of the CANARI OI soil analysis (L. Taseva) and inclusion in SURFEX (technical aspects of the externalization of the surface assimilation)
- Developments on the SURFEXEKF (preparatory work for the assimilation of satellite derived soil moisture)
- Put a number of (diplomatic) efforts to allow Karim Bergaoui (Tunisia) to work at MF on 18 months on a research project funded by a French regional council for scientific research in order to progress on this aspect (SMOS, ASCAT)
- Submission of an EGIDE scholarship for bilateral collaborations between RMI and MF (R. Hamdi) : unsuccessful
- Reduction of inconsistencies when assimilating T2m and HU2m in the AROME 3DVar: CLS observation operators in 3DVar different from those in SURFEXs (L. Kullmann)
- No analysis of T2m and HU2m at night time in 3DVar ALADIN France

In ALADIN/LACE

- Collaboration on the use of satellite LANDSAF albedos for surface albedo analyses (J. Cedilnik) – one month visit planned in 2008

In ALADIN/HIRLAM:

- Intercomparison of 2D spatial interpolation schemes CANARI vs SPAN (WG3 + surface assimilation workshop in Budapest) – discussion of first results in February (visit of Nils and Magnus) meeting on surface aspects on Tuesday
- SURFEX EKF given to Maria Diez and Han The
- Improvements on snow analysis

J.-F. Geleyn asked where the patching is considered. J.-F. Mahfouf answered the patches were used in the vertical interpolation for 2m temperature.

v. OSE/OSSE/re-analysis activities, plans

N. Gustafsson explained the interest of EUCOS in the reanalysis and impact studies in high-resolution models. J. Onvlee said after EUCOS call individual HIRLAM countries responded. HIRLAM wants to make this a joined effort and J. Onvlee was asking whether ALADIN was interested to participate in EUCOS. C. Fischer replied that this has not been discussed yet within ALADIN.

b. Predictability

i. GLAMEPS status and development

T. Iversen expressed his much more positive general view now. Quasi-operational setup at ECMWF is delayed but some test period experiments got produced. Outputs are fitted to the

requirements of HIRLAM and ALADIN. The Spanish verification package HPPV is installed at ECMWF albeit not fully tested. A lot of work was done for the system improvement: several techniques tried to get a better spread in the first 0.5 to 1 day; ensemble TKF developed in Sweden; development in singular vectors (SV); work on physics perturbations.
A. Deckmyn added that from ALADIN side a work on singular vectors was done but not yet finished. D. Klaric noted the studies on optimization time of SV.
A. Deckmyn reported further his work on downscaling of TEPS presenting technical problems due to missing 901-like software for LBC production from non-global fields. C. Fischer recalled the problem of conversion of IFS soil moisture fields to ALADIN using the soil-wetness index which is now solved and implemented to the 901 configuration. J.-F. Mahfouf noted the complete check still have to be done with ECMWF to reflect the current development in IFS. A. Deckmyn also noted problems he had due to the different domains of HIRLAM and ALADIN. J.-F. Geleyn proposed to investigate usability of past IFS software for frames production.
T. Iversen reported the progress in stochastic physics, in HIRLAM part of GLAMEPS. J.-F. Geleyn reported that work on similar topic was also done in LAEF system of LACE.
J. Onvlee noted that a number of approaches are being considered and experience is being gained, but we have to keep in mind that in future we need a strategy for this topic. C. Fischer said people in global model would be interested in results and conclusions as well. T. Iversen presented the question on what to do within GLAMEPS when HIRLAM would be completely replaced by HARMONIE. S. Tijm presented the problem of size of the physics perturbation and the maintenance of the statistical distribution consistency of the ensemble at start and during the forecast.
D. Klaric presented the possible contribution of LAEF for GLAMEPS: extra verification package developed for LAEF system with collaboration with COSMO and calibration of LAEF system using INCA analysis system. She said the domain size is an issue as LAEF domain is much smaller than GLAMEPS. J. Onvlee asked if LAEF could be combined with GLAMEPS to produce bigger ensemble. D. Klaric answered that the resolution targets may not be compatible.
J.-F. Geleyn proposed to be both careful not to slow down GLAMEPS and to be ambitious to make LEAF as a second stream for future GLAMEPS development. T. Iversen noted potential difficulties of LAEF with internal data handling in GLAMEPS.

ii. GLAMEPS resources at ECMWF

T. Iversen presented difficulties with missing computing resources at ECMWF for GLAMEPS. More SBUs would need to be collected from ECMWF Member States but there is only small margin left. The possibility to ask ECMWF to include GLAMEPS into its core activities is being explored. In future when more data will be sent to countries also the data transfer will become an issue.
J.-F. Geleyn noted the missing SBUs is a real bottleneck of the system. He would discuss possibilities of ALADIN countries to contribute from their national quotas but bearing in mind only few ALADIN countries are full members of ECMWF. J. Onvlee concluded both path to be pursued: to see what are reserves at national level and what can be done at ECMWF to allocate more computing resources for GLAMEPS. The estimate was done that the increase of allocated resources should go from about 10 to about 20%.

c. Model physics and dynamics

i. Status of dynamics developments

P. Benard reported the progress in the dynamics development in LACE (formulation of boundary conditions for NH VFE and derivative operators formulation in NH VFE), Meteo-

France (attempt to circumvent the C1 constraint) and ECMWF (new set of prognostic variables, now coded). He further presented an idea to use spline functions on both ends of the vertical to address stability – it is close to results now. P. Benard recalled the persisting problem of the dynamics – the missing manpower.
J.-F. Geleyn announced that Polish newcomers would have familiarisation stays in Bratislava and Prague. He further reported on AROME study on the intensity of horizontal diffusion on various prognostic variables and he warned about a potential interaction of this issue with the choice of the prognostic variable (w or d_x).

P. Benard recalled the work on LBCs: the idea of A. McDonald is tried in ALADIN (F. Voitus) but problems aroused in the spectral framework with currently no practical solution available. P. Termonia complemented that this could only be solved with the proposal made one year ago of a fundamental change of practice ('externalisation' of the LBC computation) and that the critical issue for the application of McDonald's idea in ALADIN would also probably become the finding of a well posed transparent LBC formulation for NH.
P. Benard noted the Davies' scheme is still difficult to beat and its problems have nothing to do with transparency. P. Termonia said that since no fast results can be expected from the McDonald's idea the Boyd scheme should be implemented as soon as possible. P. Benard said this year the experimentation was going to be done still with Davies trying to address the problems of spurious precipitation in the domain corners in AROME.
P. Benard further reported the tests of AROME at 1 km and 500 m horizontal mesh (L. Auger) indicating problems apparently only due to the coarse vertical resolution of 40 levels and showing necessity to increase number of levels to about 100 for such high horizontal resolution.
M. Hortal reported work on rotated Mercator projection and the linearized map factor. New conclusions had been made concerning the stability conditions on the map factor. The implementation is still preliminary and the work progresses rather slowly now.
D. Klaric reported the development of new interpolators for s-L advection providing better conservation properties. M. Hortal complemented that studies had been carried on removal of the quasi-monotonous interpolators in the continuity equation (but for tracers the quasi-monotonous interpolators still needed). Some other approaches were also explored in HIRLAM. J.-F. Geleyn noted those approaches were not exclusive. J. Onvlee said it was good to explore several possibilities but consolidation would be needed at some stage.
P. Termonia reported the development of the scale-selective DFI improving the initialization in cases of fast moving objects near the initial time which would be normally filtered by DFI.
M. Hortal reported the development of Phys&Dyn interface allowing different resolutions in space for physics and dynamics and providing the second-order time coupling scheme in HARMONIE. J.-F. Geleyn said a caution should be made not to duplicate the future work of M. Tudor and I. Bastak – HIRLAM and ALADIN group must liaise and collaborate.
P. Benard said that AROME developers were trying to use SLHD as a tool to solve number of problematic cases where horizontal diffusion played important role. D. Klaric said J. Masek was going to carry on study on SLHD triggering. P. Benard replied AROME had taken in its beginning SLHD as-it-was and then after some problematic cases SLHD was completely dropped. Now a more prudent approach to implementation is intended. J.-F. Geleyn asked what were the decisive points to remove SLHD and whether SLHD was going to be used for 3D turbulence. P. Benard replied that no real work had been done in that direction. J.-F. Geleyn noted that could be an attractive topic for collaboration with universities. From HIRLAM side it's noted that SLHD may be interesting for 4DVAR.

ii. Validation/development of mesoscale physics parameterizations: AROME, ALARO, HARMONIE

D. Klaric said LACE would continue the development of ALARO-5km. ALARO-0 including 3MT scheme has now reached a pre-operational testing. Tests with ALARO-5km will start soon, some options still considered. There is a lack of enough tools for validations, in particular 2D tools – contacts will be made to HIRLAM. P. Termonia reported they had some 4.5km version already running validated by both standard scores and by forecasters. S. Tijm noted on the standard scores that usually deteriorate when increasing resolution from 10 to 5 km. There is a need for tools for validation and verification at 5 km. P. Termonia adds that at IRM they have a verification method that uses both standard scores and forecasters. He agrees that especially precipitation gives much worse standard scores for 5 km.
J.-F. Geleyn reported the first results of 3MT scheme made with its base-line version. It demonstrated a realistic behaviour of the scheme in 5 km model proving the multi-scaleness and positive effect on removal of spurious weak-rain areas in convective regions.
J.-F. Geleyn reported on the development of DDH diagnostics in ALARO and asked if AROME was going to use it as well. C. Fischer said AROME team was carrying on internal discussion on this aspect. He said there were several issues of using DDH in AROME, namely the fact of existence of a diagnostic tool in MesoNH, interfacing issues and issues linked to the microphysics.
The ensuing discussion moved more generally to the ALARO/AROME convergence process. J.-F. Geleyn expressed his worries about an insufficiently opened approach of the AROME side. J. Onvlee noted we were driven to a situation of stopping collaboration and going more to cooperation. B. Catry said AROME team had asked for time to evaluate the convergence proposals but there had been little progress since. C. Fischer opposed that there had been responses and proposals for tests and modifications. J.-F. Geleyn and D. Klaric said that the birth of LACE special projects somehow reflected the lack of opportunities for collaboration offered by AROME. C. Fischer admitted that there was a problem for physics but he said there had been other open options for collaboration. D. Klaric said there were such but the time plan had not been favourable for LACE. J. Onvlee urged open mind of both AROME and ALARO teams would be essential to make the progress in the convergence. J.-F. Geleyn replied that some efforts had started seven months ago but with little progress since then. J. Onvlee said she was not eager to draw conclusions so straightforward.

iii. Surface modelling

J.-F. Mahfouf reported progress in surface modelling in ALADIN/HIRLAM:

- Priority coupling SURFEX to ALADIN: configuration E923 – PREP PGD (F. Taillefer)
- Tests ALADIN/SURFEX with ECOCLIMAP : M. Jidane
- SURFEX version 3 available since February: CANOPY, FLAKE, CD and CH consistent with ALADIN(M. Jidane), ECUME
- Evaluation of CLS interpolation schemes: L. Kullman / R. Hamdi (improved analytic formulation of Geleyn88 in very stable conditions) / Y. Seity (v3 with Ri=min(Ri,0,2)) ALADIN/HIRLAM
- Evaluation of Flake over the Balaton lake (M. Voros) – workshop in September in St Petersburg
- Inclusion of a double energy balance for snow/forest interactions (visit P. Samuelson autumn 2008)

J.-F. Geleyn noted the main problems seemed to be concentrated on the interaction of surface with atmosphere. J.-F. Mahfouf agreed but he pointed out the diagnostic tools being a weak point as well.

iv. Issues about the convergence of interfacing and cross use of parameterization schemes

S. Tijm reported on the physics development in HIRLAM/HARMONIE

- advanced development of EDMF scheme (different from the one of ECMWF on the code level and interface);
- GABLS-oriented interpolation for vertical diffusion; study of impact of initial and boundary condition choice for HARMONIE 2.5 km model;
- study of the impact of deep convection parameterization on resolved convecton in the dynamic model in order to help some problems in AROME;
- radiation parameterization inter-comparison;
- AROME initial condition studies;
- attempt to put HIRLAM into ALARO (difficulties due to need to enter ALARO routines);
- validation and verification group not really active until now, perhaps due to spread of the member over different countries – there are many well documented validation cases in KNMI;
- development of the test-bed for parameterization inter-comparisons at KNMI.

J. Onvlee asked what kind of tools for validation would be appropriate. J.-F. Geleyn noted one can see two strategies for validation: to compare oneself against others or against some reference – the latter being virtually impossible as one cannot extract completely one scheme from the whole model system. J. Onvlee noted one should aim at identifying forecast values of different parameterization schemes.
D. Klaric presented intention of LACE to set up and run the ALADIN/LACE reference model with ALARO physics and (potentially) 4 km resolution. She said LACE was collecting more arguments for the proposed system and how it could be beneficial for collaborations. J. Onvlee proposed to run two domains – one over Central Europe and the second over Scandinavia to compare to HIRLAM domains. T. Iversen asked why the model was to be run in high resolution if it was for 72 h forecast which required a large domain (requiring the relaxation of the resolution). X. Yang noted the tests had been done on large and small domains showing small domains were possible even for long forecasts providing models were driven by good global models. T. Iversen maintained more domains were needed for different time ranges. J.-F. Geleyn encouraged the discussion to continue during the workshop week.

v. Coupling of atmospheric model with chemistry, ocean

J. Onvlee said the discussions on the coupling of atmospheric models with chemistry and ocean models had started in HIRLAM because more communication with other modelling groups would be desirable. S. Tijm reported about the meetings between HIRLAM and COST-728 people. There is an aim to built chemistry branch in HIRLAM system with a plug in the physics. J. Onvlee complemented the chemical modellers were very interested to have chemical models interfaced with HIRLAM with both one-way nesting (more for operations) and two-way nesting (for feed-back studies, for operations later). All countries agreed to use ENVIRO as the basis for chemistry branch, which is already based on HIRLAM. Also a standard interface has been adopted, WRF-CHEM.

C. Fischer proposed CNRM could be contacted for the collaboration as well. J.-F. Geleyn noted the caution must be taken in the chemical models nesting into operational model due to operational constraints.
J.-F. Mahfouf reported there was some development of the ocean model coupling with atmospheric model as a part SURFEX. There are plans for future coupling of ocean with climate models. Concerning chemistry there are a dust transport and a sand transport module in SURFEX.
D. Klaric asked about links to hydrology. J. Onvlee referred this issue to applications. J.-F. Mahfouf noted the hydrology is used in DA of surface, in future also for upper-air DA (hydrology-influenced radiances).

vi. Use of model at universities

The topic was postponed to the second HMG/CSSI meeting at the end of workshop. During the week an initial discussion on this topic is organised by T. Driesenaar and P. Termonia.

d. System aspects

i. Phasing: plans for 2008, 2009

C. Fischer briefly reported the current status of reference cycles:

- CY33T1 – currently prepared
- CY34 planned for 19 May with limited input from Meteo-France (AROME DDH)
- CY35 planned fro June/July – a cleaning cycle;
- CY35T1 – deadline 22 September;
- CY35T2 – possibly around 17 November – to be confirmed in June;
- CY36 – March-April 2009.

ii. Phasing: process and procedures, information exchange, inclusion of scripts in repository

S. Tijm asked if EDMF scheme can be added to the cycle. C. Fischer replied it could enter through HIRLAM physics. As for AROME physics all development must go through MesoNH code library.
J.-F. Geleyn and J.-F. Mahfouf announced there would be important contributions also from the SURFEX side and associated software within the main code.
X. Yang asked how contributions should be properly reported to C. Fischer. C. Fischer explained there was no strict procedure, that he was usually forwarding the contributions to contact persons on a case by case basis. X. Yang said the community was growing and people were not always aware of who to ask. J.-F. Geleyn noted there were scientific contact points but those people were not always best contacts for phasing issues. C. Fischer said that usually the list of contribution for phasing was first collected and then it was checked if contact people were necessary.
X. Yang further commented there were also problems with scripts and namelists and insufficient knowledge which cycle to use. J.-F. Geleyn replied it was the work of phasing team. X. Yang claimed namelists to be included to the source distribution to ensure the right settings. J.-F. Geleyn opposed this would be both against the principle of "knowledgeable usage" of the model and would also destroy variety in different model implementation.
C. Fischer noted that comprehensive comments included in namelists could help understanding but experience showed fully commented namelists were difficult to maintain and short comments were not enough instructive. J.-F. Geleyn proposed to enlarge information circulation before phasing. If code and namelist were to be auto-documented more people would be

necessary for phasing. M. Janousek noted more opened technical solutions for documentation should be explored.
J.-F. Geleyn finally proposed (i) to have for each cycle one HIRLAM person in charge of namelist changes review and building and (ii) to set up the action of namelist defaults review.
C. Fischer remarked on the request of the scripts inclusion in the source package that it was now possible to install the "mitraillette" in the countries (a HIRLAM request).

iii. Compilation and version control

R. El Khatib informed about new development of the compilation system taking place and that it is intended to make the system more modular in future. X. Yang said gmkpack worked very well. He however asked SURFEX software for the climate file generation to be included in the source code package as this is currently not available. C. Fischer replied this part of the code, the tools PREP and PGD, were going to be modified significantly and that they would be one part of the reference code only in the future.

End of the meeting on 5 April 2008.

The meeting continued after the end of the Workshop on 10 April 2008.

3. Review of actions decided during the meeting

Items of importance were listed and discussed.

a. Observation pre-processing

J. Onvlee stated that the proposed package for processing of GTS observation data to BUFR and then to ODB to be developed by met.no and SMHI offers an opportunity for cooperation. As the package is going to be based on open-source software everybody will be able to benefit from it but at the same time it will demand contribution from all partners.
C. Fischer confirmed that this proposal aimed at a logical direction but he saw some difficulties in ALADIN and internal issues in Meteo-France as the new package development and use could have impact at many places. J.-F. Geleyn proposed there should be contact points at ALADIN for testing of the package – A. Trojakova, somebody at Meteo-France (to be specified by C. Fischer) and somebody in charge of pre-processing development at Hungarian MS (to be specified by D. Klaric).

b. ODB internal HARMONIE user-support

This is to answer the request of ECMWF for nomination of HIRLAM and ALADIN ODB contact points. J.-F. Geleyn said those should be channel points rather than user support. The real user support should have rather transversal nature.
It was decided that the ODB contact points would be A. Trojakova, D. Puech, R. Randriamampianina and T. Wilhelmsson.

c. Moisture assimilation

J. Onvlee summarized that two approaches existed (a relative-humidity based control variable by Elias Holm and Loik Berre's ensemble assimilation), both to be followed closely to ensure the outcomes are shared.

d. *Parallel dynamics activities (VFE, improved mass conservation properties, dyn-phys interactions)*

J.-F. Geleyn summarized the issue: not enough people are available for the dynamics so chasing redundancies is important to make sure some manpower is not further lost.
M. Hortal recalled the need of additional manpower and gave some indication on under-staffed issues. J.-F. Geleyn and J. Onvlee agreed but they urged M. Hortal and P. Benard to further communicate. For the time stepping issue P. Termonia, I. Bastak and I. Martinez will be in charge. New people from IMGW will join dynamics (M. Kolonko going to visit SHMI and I. Lelatko visiting CHMI).
D. Klaric said a common document for dynamics development plan (including SLHD) would be needed. P. Termonia agreed to take care of it.
D. Klaric further asked about the description of a proper DFI setup. J.-F. Geleyn proposed the person in charge of DFI phasing would prepare the document. C. Fischer objected such task would go beyond the scope of phasing document. P. Termonia and J.-F. Geleyn said a short text would be sufficient especially because there was still work to be done on DFI. J. Onvlee noted that further DFI development should be also specified in the dynamics plan.
Three levels of documentation are needed: reference documentation, technical documentation for phasing and the development plan. C. Fischer added there were further documents needed, namely the incremental differences in the namelists and specification of the data flow – this can accommodate the requested documentation on the DFI setup (to be provided by P. Termonia).
Finally J.-F. Geleyn made a remark on the future need of cleaning of dynamics.

e. *Rotated Mercator LSIDG-type set-up*

M. Hortal explained that raising the rotated Mercator projection issue is a matter of pushing incomplete development. J.-F. Geleyn said the work should go in two levels: finish the started development and then make the proper branching. No calendar is set, the issue is not urgent. However a firm implementation plan will be necessary to impose transition to rotated Mercator in the operational configurations. A caution must be taken not to make a deadlock with NH VFE and w/Φ approach.
C. Fischer noted that the tool for domain setup (MAKDO) is still not ready for rotated Mercator but it would be available shortly.

f. *Validation of physics development and related interfacing issues*

J.-F. Geleyn said it was pity ALADIN was not enough involved in the impressive HIRLAM validation system. J. Onvlee proposed to ALADIN and LACE to find good cases and report them to the validation system. J.-F. Geleyn and D. Klaric said there would be people involved from ALADIN side (L. Gerard, N. Pristov).
On convergence: J.-F. Geleyn explained there were misunderstandings of the "convergence" meaning. Three actions had started as exploratory measures. Feasibility studies were started but even if successful they would not solve the basic problem of parallel vs. common development. CNRM is sceptical and is asking for proofs. J.-F. Geleyn proposes to concentrate on identifying situations where the problems of either approaches are easy to reveal via clean experiments.
J. Onvlee pointed out the difficulty of clean comparisons as the setups differ significantly. She encouraged people to meet and think of meaningful experiments in the line of thoughts just outlined by J.-F. Geleyn.
A workshop "on techniques of meaningful inter-comparison" was proposed for February-March 2009 to take place probably in KNMI. All available diagnostic tools should be ready till then. The testing should be strictly restricted to issues compatible with the ideas expressed just above. They would obviously comprise radiation as well as other upper-air parameterizations and may be include a given SURFEX version as a general constraint. N. Pristov, B. Catry, C. Lac and

F. Bouyssel will be contacted by S. Tijm to help the workshop preparation. In September 2008 the final decision will be made whether the workshop will be organized or not, depending on the real interest for clean and meaningful comparisons.

g. SURFEX climate file creation

J.-F. Geleyn urged that although the situation was currently not convenient nobody should invent a bypass solution: if somebody needs climate SURFEX files he or she must contact those who have a correct prepPGD installation. J. Onvlee promised X. Yang will watch it but Meteo-France is requested to inform about the progress of implementation of prepPGD tool in the reference code. C. Fischer said the issue is being worked on by number of people (F. Taillefer, R. Hamdi, J.-F. Mahfouf) and HIRLAM is welcome to nominate somebody. J.-F. Geleyn informed a coordination meeting would be held later in the year in Brussels to evaluate the situation and to check that everybody may use the same SURFEX version (see above the link with Item 'f').

h. Physics perturbation issue in EPS

T. Iversen summarized the physics perturbation was built on use of different physical packages and that there was still too much to learn before making the right choice. J. Onvlee asked at what stage the convergence would be needed. T. Iversen answered he was not in a position to make a selection. J.-F. Geleyn pointed out the missing regular procedure to evaluate which package is better. J. Onvlee agreed the issue is not mature yet but that there was a necessity to see how to make evaluation. T. Iversen replied there would be methods in ensemble. J. Onvlee and J.-F. Geleyn asked which methods wil be used – how to compare value of packages in the probabilistic systems. J. Onvlee stressed the point was in the packages validation, not verification: to see what packages really do but not how good they are. T. Iversen replied the parameterization packages were constructed on purpose to act certain way but the point is how EPS can benefit from certain package impact on the ensemble spread. He also preferred to avoid 'classical' stochastic physics and rather to adapt physical packages for EPS needs by putting the stochastic side of the computation on the physics tuning parameters. J.-F. Geleyn noted that it was a very promising idea but that the calibration of a physical package for such a goal requires its prior assessment. C. Fischer asked if sensitivity studies would help. T. Iversen agreed and said optimum sensitivity had to be found first and the calibration would come next. J.-F. Geleyn stressed that the procedure will require very good streamlining.

i. ALADIN contribution to GLAMEPS: issue of billing units at ECMWF and ECMWF boundary files software

J.-F. Geleyn informed he had asked if Turkey could contribute to GLAMEPS billing units from their national quota. The answer was pending. Portugal will be contacted. More exact figures of needed SBUs would be necessary for negotiations with Meteo-France.
J. Onvlee recalled the issue of using ECMWF software for frames for coupling files production. R. El Khatib will check if fullpos is still compatible with the frames software – he will contact G. Radnoti.

j. Coordination of the maintenance networking

C. Fischer invited HIRLAM to improve the (existing but partly obsolete) phasing documentation as the procedures of communications had been still judged as not completely clear. He proposed to enlarge the scope of documentation to include pre-phasing, post-phasing and export version creation. X. Yang proposed C. Fischer to discuss it with T. Wilhelmsson.

X. Yang further asked if it was possible for short-term phasers to know their task well in advance. C. Fischer replied it was not always possible as some flexibility of tasks distribution was required during the course of phasing.
X. Yang informed the description of the major blocks of code was almost finalized – some contacts to experts to help would be necessary. He also said the HARMONIE scripts were now split per cycle so support to run more physical packages was possible. He would appreciate if changes of namelist would be announced in time. J.-F. Geleyn responded this would be a typical post-phasing issue.
C. Fischer said the documentation was generally old but it would be updated and the role of experts in the documentation preparation and maintenance re-assessed. Mitraillette would be also covered including its port to IBM. He said he could not always answer question of future phasers what documentation to read because it was not always clear what they would be doing.

k. Question of versioning of new releases => namelists as core issue

J.-F. Geleyn said this would be put to hands of HIRLAM. J. Onvlee replied they would review list of changes for phasing and then identify recommended settings by themselves. C. Fischer said the usual pace was 5-10 modified namelist parameters per cycle. X. Yang said he was not completely sure the procedure was going to be efficient but they would try. He felt the task extends of MG work so more people were going to be necessary. J.-F. Geleyn admitted the start might be difficult but when the communication would be set up, for the next cycles the procedure could be much easier.

l. WG: HARMONIE for Academia

T. Driesenaar presented the working group meeting outcomes.
There are different possibilities of model software usage: (i) a black box/higher level version for experimentation, case studies etc. or (ii) an opened environment for further development. Then there can be different approach for licence: (a) completely opened use or (b) a contract basis. J.-F. Geleyn noted not all combinations of i-ii versus a-b are viable. J. Onvlee proposed a staged approach should be taken. J.-F. Geleyn said if something was to be done then with a minimal deal because of limited resources. He recommended not to grant a research licence but to conclude agreement of the software use with the obligation to send back results of the software use. Case by case approach should be used – for universities in an ALADIN or HIRLAM country the local Partner should be contact institute, for universities outside ALADIN/HIRLAM some Partner should volunteer.
There should be number of restrictions of the code modification – e.g. the change of the internal file format by a user cannot be prohibited in principle but no promise can be given to bring such modification back to reference HARMONIE library.
A need of a list of contact persons in both HIRLAM and ALADIN will be set up as well as a staged plan and roadmap.

m. WG: regularised physics for 4D-Var

J. Onvlee said this was very difficult topic having from concept to realization well of 7-10 years. J.-F. Geleyn suggested to propose a special topic for next EWGLAM to seek for an input from other Consortia.

n. WG: SURFEX consistency issues [HIRLAM ⇔ ALADIN; upper air ⇔ surface]

J. Onvlee reported the results were clear and no contentious issue had been found. Report awaited.

o. WG: GLAMEPS

T. Iversen made the GLAMEPS status review. The outstanding issues are still the application and validation packages. There will a short meeting to set up chainof changes (on Bayessian averaging). There is still a small mismatch of domains – in a small area the domain of HIRLAM is a bit larger than ALADIN.
There is a plan to run the whole system at ECMWF in October. There is still a discussion on which period to run: either August 2007 or January-March2008.

p. Issues raised during scientific discussion in the course of the Workshop

D. Klaric briefly presented LACEprojects. The LACE web site will be further maintained granting the access to documentation and model results on a personal basis. ALADIN/LACE work on a reference system will probably start in 2009.
J. Onvlee presented intention to improve and intensify communication between both consortia. Email distribution lists will be set up. Web pages should be more cross-linked.
D. Klaric noted more effort should be done to keep reports and presentations from workshops permanently accessible.
J.-F. Geleyn proposed to invite talks for each session on the next common Workshop covering the progress made by both consortia over last year. Those talks should report on both common and contentious issues.