

# Summary Report

## from Enviro-HIRLAM

### Practical Course

(26-30 Jan 2009)



The Enviro-HIRLAM practical course "Environment - High Resolution Limited Area Model (Enviro-HIRLAM)" was organised by DMI (Danish Meteorological Institute; <http://www.dmi.dk>) and NetFAM (Nordic Network on Fine-Scale Atmospheric Modelling; <http://netfam.fmi.fi>). The funding to cover expenses of students (travel, accommodation, per-deam) was provided by NetFAM and, partially, by TEMPUS. The course was conducted in the DMI premises (Copenhagen, Denmark) during 26-30 January 2009. The local organizers at DMI were Alexander Baklanov and Alexander Mahura (with assistance of DMI Research Department (RD) secretary - Britta Christensen). The lecturers included the DMI RD researchers - Ulrik S. Korsholm, Alexander Baklanov, Xiaohua Yang, Alexander Mahura, Allan Gross, Bent H. Sass, and Kristian P. Nielsen. The programme of the course is available on the NetFAM web-site (with corresponding links to presentations/lectures): [http://netfam.fmi.fi/ENV09/ENVHIRLAM\\_programme.html](http://netfam.fmi.fi/ENV09/ENVHIRLAM_programme.html). It will be available as well on the HIRLAM Chemical Branch wiki-pages (<http://hirlam.org>).

The course was oriented toward young researchers, whom are already working and/or planning to continue work on topics of research and development of the Enviro-HIRLAM modelling system; The aims of this included the following:

- to learn in details the current Enviro-HIRLAM code, main recent developments of the model, and the overall strategic Enviro-HIRLAM research programme;
- to choose main topics of interests in research and development of the Enviro-HIRLAM and its applications;
- to discuss individually (and in small research groups) and start/ continue to work on concrete scientific topics/tasks selected by students for further research based on the Enviro-HIRLAM.

The course proceeded from an assumption that the basic theoretical knowledge and background on the Enviro-HIRLAM model were already presented during the NetFAM et al. 2008 Summer School and Workshop on Integrated Modelling (July 2008, Zelenogorsk, Russia) and all the participants refreshed their own general knowledge/ basics/ skills from the lectures and practical exercises available at the web-site: [http://netfam.fmi.fi/YSSS08/SS/school\\_prese.html](http://netfam.fmi.fi/YSSS08/SS/school_prese.html)

The practical course involved 14 participants from Denmark, Estonia, Lithuania, Russia, and Ukraine (list of participants is available at <http://netfam.fmi.fi/ENV09/>).

The main aims of the course were realised as planned. During the course, the students installed a simplified version of the Enviro-HIRLAM code on their LUNIX oriented machines and run several practical exercises employing Enviro-HIRLAM.

After the Joint Round Table discussions (held on Wednesday, 28 Jan 2009), joint work continued in small groups and through individual talks/ discussions on specific scientific topics within the Enviro-HIRLAM Programme on research, development, and application of the modelling system. Each of the participants/ students has their direct scientific supervisors at home institutions and collaborators (i.e. scientists from DMI involved in practical consulting and co-advising), as well as each has selected a research topic in a major focus and geographical area of interest. During the course, the corresponding modelling domains were defined and designed by students for their selected research applications; then the climate generation files were produced for these domains; and finally, the boundary conditions files were generated for specific dates by interpolating from

operational numerical weather prediction models outputs. All these were steps carried out for further testing and verification of the Enviro-HIRLAM performance at home institutions.

The outcome of the Enviro-HIRLAM Practical Course can be seen from several perspectives, including:

1) **INTERNATIONAL NETWORK** perspective:

- building an international community of researches interested in the Enviro-HIRLAM research, development and application (both the NetFAM and COST play an important role in this activity as well);
- promoting new direction of on-line integrated modelling for the international community;
- as an important stage in the future development of the Earth system modelling;

2) **INVOLVED PARTNERS** perspective:

- coordination role of the Enviro-HIRLAM modelling system research and development for different applications;
- transforming/expanding the task of further development of the integrated system Enviro-HIRLAM from DMI initiative to more internationally recognized task within the NetFAM, HIRLAM, COST and an open international scientific community;
- practically involving researches/ scientists with their own expertise and skills contributing through own research studies to investigation of scientific questions and objectives considered in the externally/ internally funded projects;
- practically involving young researches (at different levels - BSc, MSc, PhD, PostDoc) under supervision of their scientific adviser at their home institutions into topics of the Enviro-HIRLAM research and development;

3) **HIRLAM-A** perspective:

- building the HIRLAM Chemical Branch (already opened, at first, through the branch e-mail communication and wiki-pages at <http://hirlam.org>);
- continue further development of the Enviro-HIRLAM to be set up as a baseline system in the HIRLAM Chemical Branch;
- involving new researches in realisation of the Task S4.3: 'Coupling with atmospheric chemistry';
- increasing collaboration of the HIRLAM community with the University research system;
- promoting the HIRLAM for international community and potential users.