

# Nordic Network on Fine-scale Atmospheric Modelling (NetFAM)

## Progress report 2007 - draft 16.11.2007

The present progress report summarizes the main results of NetFAM during the period 1.1.2007 - 30.11.2007. An attached list of publications covers the years 2005-2007. The previously submitted activity reports covering 2005 and 2006 are attached.

### 1. Summary of the activities 2007

#### 1.1 Workshops arranged by NetFAM et al.

- Workshop on Cloudy boundary layer, Toulouse, 12-14.3.2007 was arranged together with COST action 722. Nine participants and lecturers were supported by NetFAM, 43 participants from 14 countries in total.
- Workshop on Integrated systems of meso-meteorological and chemical transport models, Copenhagen, 21-23.5.2007 was arranged together with COST Action 728. Five participants and lecturers were supported by NetFAM, 45 participants from 18 countries in total.
- International lecture course "Geophysical turbulence and boundary layers: nature, theory and role in Earth's systems", 28 May - 1 June 2007 at FMI and University of Helsinki. Seven participants and lecturers were supported by NetFAM, more than 30 participants from 14 countries in total.

The presentations, workshop programmes and participant lists of all mentioned three events were made available at NetFAM web site. In addition, a printed COST-728/NetFAM report is in preparation, based on the extended abstracts of the Copenhagen workshop.

#### 1.2 Workshops supported by NetFAM

The participation of NetFAM members in the following workshops was supported:

- Course on Mesoscale observation usage, related to the Helsinki Testbed, arranged by University of Helsinki 12-16 February, 2007. One participant supported.
- HIRLAM - ALADIN All staff meeting - workshop, arranged by international HIRLAM and ALADIN programmes in Oslo 23-27 April 2007. Three participants supported.
- 29th International Conference on Alpine Meteorology ICAM 2007

- 4-8 June 2007, Chambéry, France. 1 participant supported.
- Summer Course on Mesoscale Meteorology and Predictability: 19-25 August 2007 in Hyytiälä, Finland. Led by prof. David Schultz, arranged by FMI and UH. No expenses for NetFAM.
- HARMONIE workshop on physical parametrizations, Helsinki 10-14 September 2007. Organised by FMI and the international HIRLAM programme. 14 participants supported.

Links to course materials of the supported meetings were made available through the NetFAM web site.

## 2. Mobility within the network 2007

During 2007, 19 persons participated in 29 exchange visits of a total length of approximately 36 weeks. The details of these visits are shown at the end of this report.

## 3. Supervision of research students 2007

During 2007, NetFAM participants defended the following PhD dissertations:

Reima Eresmaa: Exploiting ground-based measurements of the Global Positioning System for numerical weather prediction. UH, Meteorology.

Magnus Lindskog: On errors in meteorological data assimilation. MISU, Meteorology.

Sami Niemelä: On the behaviour of some physical parameterization methods in high-resolution numerical weather prediction models. UH, Meteorology.

Jurgita Ovadnevaite: Origin of regional and urban aerosol and dispersion conditions forecasts. UV, Physics.

Laura Rontu: Studies on orographic effects in a numerical weather prediction model. UH, Meteorology.

Preliminary results of PhD studies by Jevgeni Atlaskin (Nordic temperature problem in stable boundary layer) and Hamza Kabelwa (Use of ECOCLIMAP surface description for HIRLAM experiments over Tanzania) were reported at UH seminars and NetFAM workshops.

## 5. Main scientific achievements

A preliminary list of publications by NetFAM members in 2005-2007 is attached. A few main areas of scientific interest can be emphasized:

The description, data-assimilation and parametrization of the surface and surface-related processes require increasing attention in mesoscale atmospheric models. NetFAM participants closely contributed to an improved parametrization of atmospheric processes in the specific case over snow and forest, especially under the conditions of stable boundary layer, characteristic to the high latitudes. The formulation of a new parametrization of the lake-atmosphere interactions was started within the HIRLAM and HARMONIE community. The handling of orography-related processes was improved in HIRLAM.

The usage of micrometeorological and remote-sensing observations for data assimilation and validation of mesoscale atmospheric models was advanced, especially with the help of the Sodankylä (Finnish Lapland) and Helsinki testbed data.

Interaction between mesoscale meteorological and chemical atmospheric models was devoted special attention during 2007. In this evolving area, the Copenhagen workshop provided recommendations for studies and solutions during the next few years, to be accounted in the NetFAM plans for 2008 - 2009. Work on coupling of atmospheric chemical model SILAM (FMI) and aerosol model SALSA (UH) was started – a step towards considering the aerosol feedback mechanisms dynamically in meso-scale atmospheric modelling.

NetFAM members contributed actively to the development of a new mesoscale atmospheric modelling framework HARMONIE (*HIRLAM and ALADIN Research for Mesoscale Operational MWP In Europe*). The combination of the physical parametrizations of HIRLAM with the nonhydrostatic dynamics of ALADIN will form the basis of the HARMONIE framework. In parallel, further development and evaluation of the nonhydrostatic dynamical core for HIRLAM was continued by the Estonian partner in Tartu.

5. List of participants: names, academic position, department, university and country

List of participants is given in the attached list. Another attached list summarizes participation of network members in the NetFAM events.

## 6. Communication within NetFAM

The central platform in the communication was the NetFAM web site <http://netfam.fmi.fi>. The site was updated and improved by adding presentations of workshops arranged and supported by NetFAM in 2007. For the sake of more efficient and collaborative working conditions, the Sodankylä and Helsinki testbed observational data were made available via links at the site. The page with links to meteorological journals was renewed. The upcoming and past events were regularly reported under the title of "NetFAM news". The site is open for users within and outside of the network.

### **A list of NetFAM exchange visits and supported participants in workshops during 2007**

Evgeny Atlaskin RSHU FMI 15-28.1.2007 Sodankylä + stable boundary layer  
Jon Egill Kristjansson UO UH 25-26.1.2007 Opponent PhD Sami Niemelä  
Gennady Tarakanov RSHU FMI 24-27.1.2007 RSHU FMI Nowcasting + cooperation  
Suleiman Mostamandy RSHU FMI/UH 11-18.2.2007 Testbed course  
Suleiman Mostamandy RSHU UT 18.-23.2.2007 Hirlam setup learning  
Ivars Javaitis Latvia UT 18.-23.2.2007 HIRLAM setup learning  
Kirsti Salonen FMI SMHI 19-23 February 2007 4D-Var training  
Reima Eresmaa FMI SMHI 19-23 February 2007 4D-Var training  
Katerina Kurzeneva RSHU FMI 26.2-6.3.2007 FLAKE + surface  
Stefan Gollvik SMHI FMI 26.2-2.3.2007 FLAKE + surface  
Evgeny Atlaskin RSHU FMI 5.3-11.3.2007 Sodankylä + stable boundary layer  
Hamza Kabelwa RSHU FMI 19.-31.3.2007 ECOCLIMAP  
Marje Prank UT FMI 26-30.3.2007 SILAM  
Tatjana Jermakova RSHU FMI 2.4-7.4.2007 Radar data  
Gennady Tarakanov RSHU FMI 2.-4.4.2007 supervisor  
Jevgeni Atlaskin RSHU FMI 24-27.5.2007 Sodankylä data meeting 25.5.2007  
Daria Stepanova FMI-ARC, 24-26.5.2007 Sodankylä data meeting 25.5.2007  
Adomas Mazeikis, LHMS FMI 9-16.6.2007 SILAM  
Kristina Mockeviciute LHMS FMI 9-16.6.2007 HIRLAM verification system  
Katerina Kourzeneva RSHU FMI 15.-21.6.2007 FLAKE  
Hamza Kabelwa RSHU FMI 27.8-14.9.2007 ECOCLIMAP  
Jevgeni Atlaskin RSHU FMI Helsinki and Sodankylä 18.9-3.11.2007 Boundary layer  
Marje Prank UT FMI 14-19.10.2007 SILAM  
Tatjana Jermakova RSHU FMI 25-26.10.2007 SILAM fire modelling  
Branko Grisogono Zagreb University UH 24.-27.10.2007 opponent Rontu  
Veniamin Perov 1.-2.11.2007 SMHI FMI Boundary layer  
Gunnar Elgered Göteborg/Chalmers 15.-17.11.2007 opponent Eresmaa  
Suleiman Mostamandy RSHU LHMS 26.10-3.11.2007 HIRLAM in a Linux cluster  
Jevgeni Atlaskin RSHU FMI Helsinki 12-16.11.2007 Boundary layer

**NetFAM - COST 722 workshop on cloudy boundary layer, 11-14.3.2007 Toulouse**

Peter Bechtold  
Pier Siebesma  
Dmitri Mironov  
Laura Rontu  
Hannu Savijärvi  
Jevgeni Atlaskin  
Sami Niemelä  
Sylvain Joffre  
Veniamin Perov

**HIRLAM - ALADIN meetings 23-26.4.2007 Oslo**

Ivars Javaitis  
Arne Mannik  
Paulius Jalinskas

**NetFAM - COST 728 workshop 21-23.5.2007 Copenhagen**

Marje Prank  
Marko Kaasik  
Rene Redler  
Laura Rontu  
Viel Odegaard

**Boundary layer course 28.5-1.6.2007 Helsinki**

Marje Prank  
Marko Zirk  
Eva-Stina Kerner  
Martynas Kazlauskas  
Igor Esau  
Aleksandr Baklanov  
Jevgeni Atlaskin

**ICAM 2007 4.-8.6.2007 Chambéry, France**

Sveinn Brynjolfsson, Iceland

**Summer course on mesometeorology 19-25.8.2007 Hyytiälä, Finland**

- no NetFAM expenses, workshop announcement on NetFAM web site

**HARMONIE working week Helsinki 10-14.9.2007**

Malardel Sylvie <Sylvie.Malardel at meteo.fr>  
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Bjarne Stig Andersen <bsa at dmi.dk>  
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Paulius Jalinskas <paulius at meteo.lt>  
Andres Luhamaa <andres.luhamaa at ut.ee>  
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Karl-Ivar Ivarsson <Karl-Ivar.Ivarsson at smhi.se>  
Patrick Samuelsson <patrick.samuelsson at smhi.se>  
Lisa Bengtsson <lisa.bengtsson at smhi.se>  
Morten Andreas Ødegaard Køltzow <morten.koltzow at met.no>  
Mats Dahlbom <mda at dmi.dk>  
Radmila Brozkova <radmila.brozkova at chmi.cz>

**Workshop on surface data assimilation, 12-14.11.2007 Budapest, Hungary**

- no NetFAM expenses, workshop materials on NetFAM web site