

NordForsk - Application for networks for research and research training (extension)



norden

NordForsk

Beslutning

Mottaglit

Refer.

1 Last name Savijärvi		First name Hannu	Sex Male	Title/position Professor of Meteorology	
University University of Helsinki				Academic degree	
Department/institution Division of atmospheric sciences/Department of Physical Sciences				Telephone (work) +3589 191 50857	Mobile
Department/institution address P.O.Box 64				Telefax (work) 860 +3589 191 50717	
Postal code 00014	City University of Helsinki	Country Finland		E-mail hannu.savijarvi@helsinki.fi	

2 Title of the project/activity (max 50 characters)
Nordic Network on Fine-scale Atmospheric Modelling - NetFAM

3 Time span for the activity 01.01. 2008 31.12. 2009 <input checked="" type="checkbox"/> Year 4 and 5	4 Subject area (See last page) Mathematics/Natural science, other and combined subjects
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5 Estimated number of participants	DK	FI	IS	NO	SE	EE	LV	LT	RU	Other inside the EU*	Other outside the EU*	Total	Men	Women
research students	2	6	3	5	3	6	2	4	7	4		42	23	19
other participants	9	13	3	6	6	3	2	2	6	7	-	57	46	11
research groups	1	1	1	1	1	1	1	1	1	1	-	10	-	-

* Other countries * Other countries France ** Each research group is a "national team" combined of two research groups

6 Summary. Give a short description of the network's targets and aims (max 200 words). NordForsk reserves the right to use parts of the text or the text in full for information purposes.

The Nordic environment is unique in the world, with its extreme variability in time and space and thus poses a challenge for modelling and forecasting of the atmospheric behaviour and impacts. Its specific features require high temporal and spatial resolution together with adequate descriptions of the meteorological, climatological, environmental and physiographic conditions. Understanding, describing and properly predicting the Baltic and Nordic atmospheric variability is only possible using fine-scale models, capable of simulating all interacting physical processes of the atmosphere and the underlying surface. These special features and conditions must be properly taken into account also in most environmental and safety applications. On the other hand, this unique Nordic environment offers an excellent test bench for fine-scale models. Thus, the Nordic expertise in atmospheric modelling would make a valuable contribution to the understanding and prediction of global change processes and their impacts in specific and sensitive environmental conditions.

This Nordic Network on Fine-scale Atmospheric Modelling (NetFAM) aims to cover the whole chain from basic research and researcher training towards the application of these models. The network will share modelling tools, observational and physiographic data, as well as computing and educational resources, in order to strengthen the expertise in fine-scale atmospheric modelling in the Nordic countries and adjacent areas around the Baltic Sea. The network combines research groups from the leading universities and national weather services of the area. A special effort will be made to support, advice and monitor the training, mobility, communication/dissemination skills and research of young scientists in order to enhance their career profile.

Economically responsible institute/department: Finnish Meteorological Institute, Department of Meteorological Research
P.O.Box 503, 00101 Helsinki, Finland

7 Amount requested from NordForsk
2x300000=600000 NOK

The department has accepted to administer the grant according to NordForsk's rules and conditions

The information about the persons and groups participating in the application is correct. NordForsk may request confirmation (Letters of Intent) from the group leaders or network members.

8 Co-ordinating group (title, name, university, e-mail).			
Title	Name	University or equivalent	E-mail
Prof	Hannu Savijärvi	University of Helsinki	hannu.savijarvi@helsinki.fi
Prof	Sylvain Joffre	Finnish Meteorological Institute	sylvain.joffre@fmi.fi
Dr	Katherina Kurzeneva	Russian State Hydrometeorological University	kourzeneva@rshu.ru
Dr	Marko Kaasik	University of Tartu	marko.kaasik@ut.ee
	Paulius Jalinskas	Lithuanian Hydrometeorological Service	paulius@meteo.lt
Dr	Patrick Samuelsson	Swedish Meteorological and Hydrological Institute	patrick.samuelsson@smhi.se
	Bent Hansen Sass	Danish Meteorological Institute	bhs@dmi.dk
Prof	Thor Erik Nordeng	Norwegian Meteorological Institute	t.e.nordeng@met.no
Prof	Haraldur Olafsson	University of Iceland	haraldur@vedur.is
Dr	Eric Bazile	Meteo France	eric.bazile@meteo.fr
Dr	Laura Rontu	Finnish Meteorological Institute	laura.rontu@fmi.fi

9 Other sources of funding			
Source	Amount applied for (NOK)	Received (NOK)	Reply pending (date)

10 Budget (specify in appendix 12)				
	Year 4		Year 5	
EXPENSES	Budget (NOK)	Results (NOK)	Budget (NOK)	Results (NOK)
a) refundable from NordForsk				
Travel expenses	135000		135000	
Living exp.(room/board)	135000		135000	
Honoraria				
Administration	20000		20000	
Material	5000		5000	
Other	5000		3000	
b) not refundable				
Overhead				
Other	20000		20000	
TOTAL EXPENSES	320000		320000	
INCOME				
Requested from NorFA	300000		300000	
Surplus from previous year (for extension only)				
Other income				
Own resources	20000		20000	
TOTAL INCOME	320000		320000	
BALANCE				
Surplus can be transferred				

11 Activity plan for the coming two years and a short profile of any new collaborative partners/research groups of the network (maximum one page per group).

A workshop on "Lakes in numerical weather prediction models" will be arranged in the surroundings of St.Petersburg, Russia in March 2008. The workshop will bring together, for the first time, researchers studying and building parametrization methods for handling the influence of lakes in atmospheric models. Such new step in accommodating new phenomena in numerical weather prediction models has emerged due to the increase in model resolution. Integrating lake effects is especially relevant for Nordic countries. The announcement of the workshop will appear at <http://hirlam.fmi.fi/NetFAM> in November 2007. Estimated expenses of NetFAM participants + local arrangements: 9000 euros.

A summer school and workshop on "Interaction of meteorological and air quality models at the mesoscale", to be arranged in June 2008 in surroundings of St.Petersburg, Russia. The aim of the summer school is to study the principles and methods of handling chemical and aerosol processes in coupled and integrated atmospheric model systems. It is still a matter of strong debate how much chemical and aerosol effects have an impact on short-term weather forecasting results. Thus, the answer to this question induces different modelling system frameworks: online, offline, coupled, with the additional issue of at what head-time the effect cannot be neglected anymore. In addition to lectures, practical exercises and student presentations are planned. The announcement of the summer school will appear at <http://hirlam.fmi.fi/NetFAM> in January 2008. Estimated expenses of NetFAM participants + local arrangements: 9000 euros.

A workshop/course on "Representing moist processes in mesoscale models" will be arranged in Norrköping, Sweden in June 2009. The workshop will continue the work started in the NetFAM workshops in Tartu, 2005 and Toulouse, 2007, now concentrating in handling of convective processes in fine scale models. Total estimated expenses for NetFAM: 9 000 euros.

In 2009, a course/workshop on "Usage of local, micrometeorological and remote-sensing observations for data-assimilation and validation of mesoscale atmospheric models" will be arranged in (Norway/Iceland). Theoretical and practical questions related to the assimilation of near-surface and upper air observations in the NWP systems gain increasing importance as the model resolutions improve in the horizontal and vertical directions. The workshop will address the new developments in this area, using the experience already gained in the network. Total estimated expenses for NetFAM: 9 000 euros.

The total yearly expenses of exchange visits in 2008-2009 are estimated to be max. 17 000 euros. This will allow visits of a total length of about 30 weeks. A preliminary list of planned visits will be composed by the coordinating group in the beginning of each year.

If funds remain, NetFAM partners' participation in external workshops and schools will be supported. Information about relevant events will be made available at NetFAM web site.

Profiles of the Latvian (new) and Russian (modified) teams are given as attachments.

12 A detailed budget for the coming years, including specific information on the various items.

2008

Arrangement and participant's expenses of the workshop "Lakes in numerical weather prediction models"
80 000 NOK

Arrangement and participant's expenses of the summer school and workshop on "Interaction of meteorological and air quality models at the mesoscale"
80 000 NOK

Exchange visits: board, accommodation, travel
140 000 NOK

2009

Arrangement and participant's expenses of the workshop/course on "Representing moist processes in mesoscale models"
80 000 NOK

Arrangement and participant's expenses of the course/workshop on "Usage of local, micrometeorological and remote-sensing observations for data-assimilation and validation of mesoscale atmospheric models"
80 000 NOK

Exchange visits: board, accommodation, travel
140 000 NOK

13 A progress report on the past year

- a A Summary of the year under review, the results compared with the plans, explain differences if any.
- b Mobility within the network
- c Supervision of research students
- d Information on scientific results achieved through the network activities.

List of members of the network: names, academic position, department, university and country.

a Summary of the activities 2007

Workshops arranged by NetFAM et al.

A 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.

A 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.

An 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.

NetFAM events during 2005-2007 are detailed in an attachment.

Workshops supported by NetFAM

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

A 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.

A 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.

b Mobility within the network 2007

During 2007, 19 persons participated in 29 exchange visits of a total length of approximately 36 weeks. A detailed list of exchange visits is shown in an attached NetFAM progress report 2007.

c. 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.

d. 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.

NetFAM members contributed actively to the development of a new mesoscale atmospheric modelling framework HARMONIE (HIRLAM and ALADIN Research for Mesoscale Operational NWP 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.

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

List of participants is attached.

14 Statistics of participants for the third year

	DK	FI	IS	NO	SE	EE	LV	LT	RU	Other in the EU*	Other outside the EU*	Total	Men	Women
research students		4	1	1	1	3	1	4	4	2		20	14	6
other participants	4	6		3	5	1			3			22	18	4
research groups	1	1	1	1	1	1	1	1	1	1		10	32	10

* Other (specify) France

15 An economic report for the past three years, (clearly showing the allocation of funds to the various activities)

The report should be signed by a representative of those financially responsible for administration of the grant. Account listings should not be submitted. If the network has changed its financial administration during the period covered by the grant, the final accounts from the previous administration must be attached to the economic report

	Year 1 Budget (NOK)	Result (NOK)	Year 2 Budget (NOK)	Result (NOK)	Year 3 Budget (NOK)	Result (NOK)
EXPENSES						
a) refundable from NordForsk						
Honoraria						
Administration	30 000		5 000			
Travel expenses	52 000	131 015	135 000	120 402	150 000	138 127
Living exp.(room/board)	212 000	137 685	135 000	136 139	200 000	217 530
Other	6 000	11 860	25 000		16 173	
b) inte stödberättigade från NordForsk						
Overhead	8 000					
Other	12 000					
TOTAL EXPENSES	320 000	280 560	300 000	256 586	366 173	355 657
INCOME						
Grant from NordForsk	300 000	300 000	300 000	300 000	300 000	300 000
Other income						
Surplus from previous year				19 492	66 173	61 574
Own resources	20 000					
TOTAL INCOME	320 000		300 000		366 173	
BALANCE	0	19 400	0	62 906	0	9 786
Note: the differences in yearly balance and surplus are due to changes in money exchange rates used between Euro and NOK		Surplus may be transferred		Surplus may be transferred		

CONFIRMATION FROM AUDIT OFFICE

For an institution under the auspices of the National Audit Office: The financial manager or another responsible person.

Name: Ms. Leena Tuomainen

Title: Accounting Manager, Finnish Meteorological Institute

Place: Helsinki

Date: 21.11.2007

Auditor for an institution which is not under the auspices of the National Audit Office

Name:

Title:

CONFIRMATION: The grant holder confirms by his/her signature that all information in this report is correct.

Hannu Savijärvi

Helsinki, 21.11.2007

Place, date

Hannu Savijärvi, NetFAM coordinator, University of Helsinki

The grant holders signature

The application must reach NordForsk no later than 16.00 pm on 1 December or the next working day if 1 December is a Sunday or public holiday. (See NordForsk's guidelines for applicants)

NOTE! The application for extension should not be submitted by fax or e-mail

Address (before 17. october 2005):

NordForsk
Holbergs gate 1
NO-0166 Oslo
NORWAY

Address (after 17. october 2005):

NordForsk
Stensberggaten 25
NO-0170 Oslo
NORWAY

Appendix 1 (you can copy this page)**Presentation of new participating groups: Latvia**

Group leader's last name Javaitis	First name Ivars	Sex M	Position Specialist
University Latvian Environment, Geology and Meteorology Agency (LEGMA)			Academic degree
Department/Institution			Telephone (work) +371 703 2644
Dept. Address Maskavas str. 165			Telefax (work) +371 714 5154
Postal code LV-1019	City Riga	Country Latvia	E-mail Ivars.Javaitis@legma.gov.lv

Subject area (See page 5)
Mathematics/Natural Sciences, Other and combined subjects (atmospheric/environmental physics)

Other participants in the group (use more space if necessary)

Last name	First name	Sex	Position
Shishkin	Yuriy	M	Senior oceanographer (LEGMA)
Karklina	Laura	F	Head of Meteorological Forecast Division
Tjutjunnika	Elina	F	Forecaster's assistant

Description of the group and it's activities

The Latvian Environment, Geology and Meteorology Agency (LEGMA) is the national institution subordinated to the Ministry of Environment of Republic of Latvia. The main LEGMA objective is to carry out state hydrometeorological, geological and environment quality monitoring all around Latvian territory, to provide hydrometeorological forecasts, storm warnings and information on the state of environment to various governmental institutions, media, to state and private companies.

Further development of hydrometeorological forecasting system demands more advanced tools to be used as a source of providing more reliable data on the state of atmospheric and marine environment.

To provide further development of modeling and forecasting capabilities LEGMA starting a process to join consortium HIRLAM – High Resolution Limited Area Model and HIROMB – High Resolution Operational Model for the Baltic Sea. This membership will provide the Agency with corresponding model data and modeling tools. HIRLAM can give weather forecast over Latvia and surroundings for 54 hours. Horizontal resolution of model can be reduced up to 1km or less depending on computer capabilities. Such weather forecasts can be used as input for HIROMB that will provide the Agency with advanced model data on water circulation in the Gulf of Riga and the Baltic Sea. Coupling of HIRLAM-HIROMB capabilities can significantly support LEGMA's activity to fulfill our national duties with regard to providing society with sea currents, ice cover, upwelling events and water level forecasts. Additionally, modeling products on a substance drift at sea will be important informational supporting tool for responsible national emergency services in cases of oil and chemicals marine pollution.

Appendix 2. Presentation of updated participating groups: Russia

Group leader's last name Tarakanov		First name Gennady	Sex M	Position Professor
University (Institute) Russian State Hydrometeorological University			Academic degree Prof.	
Department/Institution Department of Weather Prediction			Telephone (work) +7 812 4448261	
Dept. Address Malookhtinsky pr., 98			Telefax (work) +7 812 4446090	
Postal code 195196	City Saint-Petersburg	Country Russia		E-mail kourzeneva@rshu.ru

Other participants in the group

Last name	First name	Sex	Position
Genikhovich	Eugene	M	Head, Air Pollution Modelling and Forecasting Lab, MGO
Ziv	Alexander	M	Senior Scientist, MGO
Kourzeneva	Katerina	F	Head, NWP Lab, RSHU Member of the coordinating group
Senkova	Anastasia	F	Lecturer, RSHU
Atlaskin	Eugene	M	PhD student, RSHU
Mironov	Dmitrii	M	Senior scientist, RSHU and DWD
Mostamandi	Suleyman	M	Scientist, RSHU and SPb Hydrometeorological center
Kabelwa	Hamza	M	PhD student, RSHU
Andreev	Pavel	M	Junior Scientist, SPb Hydrometeorological center
Ermakova	Tatiana	F	PhD student, RSHU
Borovskaya	Oksana	F	PhD student, RSHU
Smyshlyaev	Sergey	M	Prof., RSHU

Description of the group and its activities

The Russian team combines researchers and PhD students from the Russian State Hydrometeorological University/Weather Prediction Department (RSHU/WPD), the Main Geophysical Observatory/Air Pollution Modelling and Forecasting Laboratory (MGO/APMFL) and the St.Petersburg Hydrometeorological Center/ Research and Development Division (SPbHMC/RDD), St.Petersburg. The main scientific activities of RSHU/WPD focuses on studying atmospheric processes for weather analysis and forecasting methods development, as well as on natural and anthropogenic climate changes. The RSHU/WPD course in numerical weather prediction and climate modelling is one of the major educational topics. MGO/APMFL is the leading Russian scientific centre working on atmospheric diffusion theory, air pollution modelling/forecasting and corresponding problems in geophysical hydrodynamics and boundary-layer meteorology. SPbHMC/RDD is developing the NWP system providing the Neva floods prediction. Ongoing research within this team mainly addresses the following topics or issues of fine scale modelling:

- _ Parameterisation of radiative fluxes in a fine-scale model
- _ Surface parameterisation: coupling with a lake model, external parameters datasets
- _ Data assimilation of local data
- _ Data assimilation for local air-quality models
- _ Dispersion modelling in local and regional scales
- _ Assessment of the environmental and health impacts in local and regional scales
- _ Downscaling of meteorological fields governing dispersion processes in the atmosphere

At RSHU, the following atmospheric models have recently been installed for research and educational purposes: the weather finescale model HIRLAM, the FMI dispersion model SILAM, the weather prediction model of the Institute of Numerical Mathematics of the Russian Academy of Science (INM RAS), and the lake model Flake of the German Weather Service (DWD). A set of non-Gaussian dispersion models based on numerical integration of the advection-diffusion equation has been developed at MGO; these models can be used to estimate different statistics of the concentration fields. The Vorticity-Topography Model TVM (developed at the Catholic University of Louvain, Belgium) is presently in use as a meteorological driver for dispersion models. A comprehensive theoretical course on dynamical meteorology and numerical atmospheric modelling has been lectured at RSHU historically since a long time and being updated quite regular. The RSHU team provides educational materials for PhD students. The RSHU team has also close contacts with the team of the Institute of Numerical Mathematics (Russian Academy of Sciences, Moscow), which is developing the weather prediction and climate models, and DWD, who provides the expertise in coupling the lake model with fine-scale atmospheric models. RSHU team has an experience in modeling of atmospheric chemistry.

The MGO/APMFL team cooperates with scientists from the Finnish Meteorological Institute in the framework of a bilateral agreement between Russian and Finnish meteorological services; it works also in cooperation with scientists from the Catholic University of Louvain, Belgium, the National Environmental Research Institute of Denmark, and the Goddard Space Center, USA. The SPbHMC/RDD team has recently installed operationally the MM5 model on the Linux cluster and provides data for Neva floods prediction.

At present, the computing resources at RSHU and MGO are limited to workstations, which are mainly used for preliminary modeling studies, the resources of SPbHMC/RDD Linux cluster are quite limited at present. We would greatly benefit from sharing of the computing resources within the network and getting experience on work on parallel machines.

Appendix 3. Events organized or co-organized by NetFAM and participated by NetFAM members 2005-2007

Workshops and courses organised or co-organised by NetFAM

1. Workshop on clouds and condensation, 24-26.1.2005 in Tartu, Estonia. Arranged together with the International HIRLAM and ALADIN projects. Thirteen participants and lecturers supported by NetFAM, 30 participants from 16 countries in total.
2. Summer school and workshop, 4.-14.6.2005 in Sodankylä, Finland was arranged together with the EU-Marie Curie project PBL-TRMES and EU project FUMAPEX. Thirteen participants and lecturers supported by NetFAM, ca. 25 participants from 18 countries in total.
3. Two short working meetings on Nordic temperature problem (31 January 2005) and Stable boundary layer modelling (2 November 2005) were arranged by NetFAM in Helsinki: five participants supported by NetFAM, 28 participants from 5 countries in the two meetings together.
4. Workshop on "Uncertainty in meteorological and hydrological models" was arranged together with the COST action 731 at 26-28.4.2006 in Vilnius University, Lithuania. Five participants supported by NetFAM, 53 participants from 18 countries in total.
5. Summer school and workshop on nonhydrostatic dynamics and fine-scale data assimilation was arranged by NetFAM at 11.-17.6.2006 in Sestroretsk (St. Petersburg), Russia. 25 participants and lecturers supported by NetFAM, 46 registered participants and lecturers from 16 countries in total.
6. Summer school on Air-sea-interaction organized by the Marie Curie Chair project "Planetary Boundary Layer – Theory, Modelling and Role in Earth System" (PBL-TMRES) together with NeFAM 28.8-1.9.2006 in Helsinki. 1 participant supported by NetFAM, around 40 participants in total.
7. 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.
8. 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.
9. 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.

A total of 83 participants at 9 workshops/courses were supported by NetFAM in 2005-2007. Total amount of participants in these events arranged by NetFAM et al. is estimated to be 340 persons from more than 20 different countries.

Mobility within the network

Three Vilnius University students attended courses of dynamical meteorology and numerical methods during 4 months at RSHU, St.Petersburg, during spring 2005. In addition, 7 persons participated exchange visits of a total length of ca. 11 weeks in 2005.

17 persons participated in exchange visits of a total length of ca. 26 weeks in 2006.

19 persons participated in 29 exchange visits of a total length of approximately 36 weeks in 2007.

A total of 43 persons and ca. 73 weeks were covered by NetFAM exchange visits in 2005-2007.

Participants supported by NetFAM in external workshops, courses and meetings

One in a NordForsk training seminar in Oslo 14-15.1.2005
Two in a FMI severe storms course in Helsinki 8-10.6.2005
One in a SRNWP nonhydrostatic workshop in Bad Orb 31.10-2.11.2005
Three in an AROME training course in Poiana Brasov 21-25.11.2005
Two in a HIRLAM mesoworkshop in Oslo 12-13.12.2005
One in HIRLAM mesoscale working week DMI, Copenhagen 3-5.5.2006
One in HIRLAM/ALADIN all staff meeting Sofia, 15-18.5.2006
One in HIRLAM system workshop INM, Madrid 16-20.10.2006
Four in HIRLAM mesoscale days, FMI, Helsinki 28.11-2.12.2006
Five in SURFEX workshop, Meteo-France, Toulouse, 10-14.12.2006
One in a Course on Mesoscale observation usage, UH, 12-16.2.2007.
Three in the HIRLAM - ALADIN All staff meeting, Oslo 23-27.4.2007
One in ICAM2007, 4-8.6.2007, Chambéry, France.
Fourteen in a HARMONIE workshop on physical parametrizations, Helsinki 10-14.9.2007.

Total 41 participations in 14 external events, about 35 weeks altogether, were supported by NetFAM in 2005-2007.

A review of NWP education

A review of the present status of the NWP education in NetFAM institutes was finished in 2006. The document is available at the NetFAM web site, with recommendations to be applied for planning the future NetFAM work and NWP education in participating institutes.

The present progress report summarizes the main results of NetFAM during the period 1.1.2007 - 15.11.2007.

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.

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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.

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1.2 Workshops supported by NetFAM

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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 NWP 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.

6. 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.

7. 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 12-20.11.2007 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
Aarne 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>

Bent Hansen Sass <bhs at dmi.dk>

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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

Appendix 5. Preliminary list of peer-reviewed publications and academic theses by NetFAM members 2005-2007

Academic dissertations (8)

Eresmaa, R., 2007: Exploiting ground-based measurements of the Global Positioning System or numerical weather prediction. Finnish Meteorological Institute Contributions 61, 95pp. Doctoral dissertation in meteorology, University of Helsinki, Faculty of Science, Department of Physical Sciences, Division of Atmospheric Sciences. November 2007.

Niemelä, S., 2007: On the Behaviour of some physical parameterization methods in high resolution numerical weather prediction models. Finnish Meteorological Institute Contributions No. 59, Doctoral dissertation in meteorology, University of Helsinki, Faculty of Science, Department of Physical Sciences, Division of Atmospheric Sciences. January 2007.

Lindskog, M., 2007: On errors in meteorological data assimilation. Stockholm University, Faculty of Science, Department of Meteorology. Doctoral dissertation in meteorology, ISBN xx-xxxx-xxx-x. 28 pp.

Ovadnevaite, J., 2007: Origin of Regional and Urban Aerosol and Dispersion Conditions Forecasts. Doctoral dissertation, physical sciences, physics, Vilnius 2007, p. 107.

Piriou Jean-Marcel, 2005: Correction of compensating errors in physical packages ; validation with special emphasis on cloudiness representation. (Phd) Thèse de doctorat de l'Université Paul SABATIER Toulouse. Soutenue le 29/09/2005

Rontu, L., 2007: Studies on orographic effects in a numerical weather prediction model. Finnish Meteorological Institute Contributions No. 63. Doctoral dissertation in meteorology. University of Helsinki, Faculty of Science, Department of Physical Sciences, Division of Atmospheric Sciences. October 2007

Senkova A. V., 2005. Orographic effects in radiation fluxes for fine-scale atmospheric models. Abstract of PhD thesis. Sankt-Petersburg, 19 p. (in Russian)

Tisler, Priit, 2006. Aspects of weather simulation by numerical process. Finnish Meteorological Institute Contributions No. 53. Doctoral dissertation in meteorology. University of Helsinki, Faculty of Science, Department of Physical Sciences, Division of Atmospheric Sciences. October 2007

Books (1)

Baklanov, A. and Grisogono, B. (Eds.) 2007: Atmospheric Boundary Layers: Nature, Theory, and Application to Environmental Modelling and Security. Springer, 246 p., ISBN: 978-0-387-74318-9.

Peer reviewed articles (133)

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- BARTHE Christelle , PINTY Jean-Pierre, 2007. Simulation of a supercellular storm using a three-dimensional mesoscale model with an explicit lightning flash scheme. Titre de la Revue : Journal of geophysical research. [J. geophys. res..] , 2007 , vol. 112 , no D6
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Other publications

Not included in this list

Appendix 6

NetFAM participants 2005-2007

Degrees: achieved during NetFAM years 2005-2007

Publ: Publications during NetFAM years included in the list of peer

-reviewed publications

Coor: member of coordinating group

Super: (co)supervision of postgraduate and PhD students within NetFAM

Persons in italics have not used NetFAM funding for participation of events arranged or supported by NetFAM outside their own institutes

<u>Name</u>	<u>Title</u>	<u>Institute</u>	<u>Degrees</u>	<u>Publ</u>	<u>Coor</u>	<u>Super</u>	<u>Notes</u>
<u>Team: Denmark</u>							
<i>Leif Laursen</i>	Dr	DMI			Yes		Team leader 2005-2006
Bent Hansen Sass		DMI		+			Team leader 2007
<i>Karina Lindberg</i>		DMI					
<i>Xiaohua Yang</i>	Dr	DMI					
<i>Xiang-Yu Huang</i>	Dr	DMI					
<i>Alix Rasmussen</i>		DMI					
<i>Axel Walloe</i>	Dr	UC					
Alexandr Baklanov	Dr	DMI		+		Yes	
<i>Henrik Vedel</i>		DMI					
Ulrik Korsholm		DMI		+			
<i>Kai Sattler</i>		DMI		+			
Niels Woetman Nielsen	Dr			+			
Jesper Nissen							
Bjarne Stig Andersen							
Mats Dahlbo	Dr						
<u>Team: Estonia</u>							
Rein Rõõm	Prof	UTa		+		Yes	Team leader
Aarne Männik	Dr	Uta/EMHI		+		Yes	
Andres Luhamaa		UTa		+			
Marko Zirk		UTa		+			
<i>Ivar Ansper</i>		EMHI/UTa					
<i>Reidar Sarapu</i>		EMHI					
Marko Kaasik	Dr	UTa		+	Yes	Yes	
Marje Prank		UTa		+			
Eva-Stina Kerner		UTa					
<u>Team: Finland</u>							
Hannu Savijärvi	Prof	UH		+	Yes	Yes	NetFAM coordinator
Sylvain Joffre	Prof	FMI		+	Yes		Team leader
<i>Marja Bister</i>	Dr	UH					
Reima Eresmaa	Dr	FMI	PhD 2007	+			
Carl Fortelius	Dr	FMI		+		Yes	
<i>Erik Gregow</i>		FMI		+			
<i>Marke Hongisto</i>	Dr	FMI					

Markku Kangas	Dr	FMI		+			
Sami Niemelä	Dr	FMI	PhD 2007	+			
<i>Minna Rantamäki</i>		FMI		+			
Laura Rontu	Dr	FMI	PhD 2007	+	Yes	Yes	
Kirsti Salonen		FMI		+			
<i>Pilvi Siljamo</i>		FMI		+			
Mikhail Sofiev	Dr	FMI		+		Yes	
Priit Tisler	Dr	FMI	PhD 2006	+			
Sergei Zilitinkevich	Prof	FMI/UH		+		Yes	
Christoph Zingerle		FMI					From 2007 ZAMG, Austria
Teresa Tenhunen		UH	Master06	+			
Ivan Mammarella		UH					
Timo Vihma	Dr	FMI		+		Yes	
Juha Kilpinen		FMI					
Kalle Eerola		FMI		+			

Team: France

<i>Dominique Giard</i>	Dr	MF					Team leader 2005
Eric Bazile		MF		+	Yes		
Pierre Benard		MF		+			
<i>Gwennaëlle Hello</i>		MF					
<i>Thibaud Montmerle</i>	Dr			+			
<i>Jean-Marcel Piriou</i>	Dr	MF		+			
<i>Yann Seity</i>		MF					
Jean-Pierre Pinty	Dr	Uto		+		Yes	
<i>Hua Zhang</i>							
Francois Bouyssel	Dr	MF		+		Yes	Team leader 2006-2007
Olivier Caumont		MF					
Sylvie Malardel		MF					

Team: Iceland

<i>Haraldur Olafsson</i>	Prof	VI/UI/IMR		+	Yes	Yes	Team leader
<i>Halfdan Agustsson</i>		UI/IMR		+			
<i>Einar Einarsson</i>		UI/IMR					
<i>Seun Halldorsdottir</i>		VI/UI					
<i>Einar Olason</i>		VI/UI					
<i>Olafur Rögnvaldsson</i>		UI/IMR		+			
Sveinn Brynjolfsson		VI/UI					

Team: Latvia

Ivars Javaitis		LEGMA		+			New team from 2008 From 2006 (unofficially)
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Team: Lithuania

<i>Kestitus Kilkus</i>	Prof	UV					Team leader
<i>Jurgita Ovadnevaite</i>		UV	PhD 2006				
Paulius Jalinskas		LHMS		+	Yes		
<i>Inga Stankunaite</i>		LHMS					
<i>Martynas Janusauskas</i>		LHMS					
Martynas Kazlauskas		LHMS					
Daiva Karpaviciute		LHMS	Bach.06				
Silvestras Dikcius		LHMS					
Adomas Mazeikis		UV					
Kristina Mockeviciute		UV/LHMS					

Team: Norway

Thor Erik Nordeng	Dr	met.no		+	Yes		Team leader
<i>Knut Helge Mitbo</i>		met.no					
Viel Odegaard		met.no		+			

<i>Marit Jensen</i>		met.no			
<i>Ole Vignes</i>		met.no	+		
<i>Dag Bjorge</i>		met.no			
Jon-Egill Kristjansson	Prof	UO	+	Yes	
<i>Ragnhild Skeie</i>		UO			
<i>Guri Akre</i>		UO			
Andrea Storto		met.no			
Mariken Homleid		met.no			
Roger Randriamampianina	Dr	met.no			
Trond Iversen	Prof	met.no/UO	+	Yes	
Morten Koltzow		met.no	+		
Igor Esau	Dr	NERSC	+		

Team: Russia

<i>Raisa Repinskaja</i>	Prof	RSHU			Team leader 2005; deceased 2006
Eugene Genikhovich	Prof	MGO	+	Yes	
<i>Alexandr Ziv</i>		MGO			
Katerina Kourzeneva	Dr	RSHU		Yes	Yes
Anastasia Senkova	Dr	RSHU	PhD 2005	+	
Dina Kozlova		RSHU			
Anna Kanukhina		RSHU			
Jevgeni Atlaskin		RSHU			
Dmitri Mironov	Dr	DWD	+		
<i>Alexandr Gavrilov</i>	Prof	RSHU			
Gennadi Tarakanov	Prof	RSHU		Yes	Team leader 2006 -
Suleiman Mostamandy		RSHU			
Hamza Kabelwa		RSHU			
Tatyana Ermakova		RSHU	Master07		
Gantuya Ganbat		RSHU	Bach.05		

Team:Sweden

<i>Nils Gustafsson</i>	Prof	SMHI	+	Yes	Team leader
Patrick Samuelsson	Dr	SMHI		Yes	
<i>Ulrika Willen</i>		SMHI	+		
Ulf Andrae		SMHI			
Magnus Lindskog		SMHI/MIS	PhD 2007	+	
Colin Jones	Prof	SMHI/UQAM		+	
Stefan Gollvik	Dr	SMHI			
Veniamin Perov	Dr	SMHI	+		
Karl-Ivar Ivarsson		SMHI			
Lisa Bengtsson	Dr	SMHI/MISU			
Per Dahlgren		SMHI/MISU			

NordForsk young researcher grants

Anastasia Senkova	Dr				2005-2006, 6 months
Marko Kaasik	Dr				2005-2006, 6 months

NetFAM guests 2005-2007

Paul Schultz	Dr	NOAA			Tartu workshop 2005
Ernesto Rodriguez	Dr	INM			Sodankylä summer school 2005
Cisco de Bruijn	Dr	KNMI			Sodankylä summer school 2005
Jeanette Onvlee	Dr	KNMI			Sestroretsk summer school 2006
Hans-Joachim Herzog	Dr	DWD			Sestroretsk summer school 2006
Almut Gassmann	Dr	U.Bonn			Sestroretsk summer school 2006
Peter Bechtold	Dr	ECMWF			Toulouse workshop 2007
Pier Siebesma	Dr	KNMI			Toulouse workshop 2007

Rene Redler
Branko Grisogono
Gunnar Elgered
Radmila Brozkova

Dr NEC Europe
Prof U. Zagreb
Prof Chalmers Tech.U.
Dr CHMI

Copenhagen workshop 2007
opponent PhD defense L.Rontu UH 2007
opponent PhD defense R.Eresmaa UH 2007
HARMONIE workshop 2007