

CPEA-2012 - Annual report 2012

Project information

Project title

Norwegian-Ukrainian cooperation aimed to sustainable development of the education process in geospace researches

Project number CPEA-2012/10021

A - Information on the partnership

A.1 Norwegian partner

A.1.1 Main partner institution in Norway (liN)

University of Tromsø (NO-UoT)

A.1.2. Institutional legal representative

Name: Opheim, John Arne
Gender: Male
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A.1.3 Proposing department/faculty

Proposing Department: Faculty of Science and Technology

A.1.4 Head of department

Name: Hanssen, Alfred
Gender: Male
E-mail: alfred.hanssen@uit.no
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A.1.5 Project coordinator

Name: La Hoz, Cesar
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The University of Tromsø
N-9037 TROMSØ
Norway
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A.1.6 Changes since project document

No changes.

A.2 Partner in cooperating country

A.2.1 Main partner institution in cooperating country (loN)

Institute of Ionosphere under NAS and MES of Ukraine (UA)

A.2.2 Institutional legal representative

Name: Domnin, Igor
Gender: Male
E-mail: iion@kpi.kharkov.ua
Address: 16, Chervonopraporna Str., 61002, Kharkiv, Ukraine
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A.2.3 Proposing department/faculty

Proposing department/faculty: Scientific-educational center of the remote radio sounding of the ionosphere, "Ionosphere"

A.2.4 Head of department

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A.2.5 Project coordinator

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A.2.6 Changes since project document

No changes.

A.3 Additional partners involved in the project

A.3.1 Additional partners

Institution: UA-Institute of Radio Astronomy (UA)
Unit: Radio Physics of Geospace
Project researcher: Koloskov, Oleksandr
Gender: Male
Position: Senior Scientist, PhD

A.3.2 Changes

No changes.

A.4 Academic staff and researchers involved in the project (other than coordinators)

A.4.1 Academic staff/researchers involved in the project

| Name | Gender | Institution | Position | Degree |
|--------------------|--------|---|-------------------------|----------------|
| Belyey, Vasyl | Male | NO-University of Tromsø | Research Scientist | PhD |
| Bogomaz, Oleksandr | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | PhD student, researcher | Master diploma |
| Brekke, Asgeir | Male | NO-University of Tromsø | Professor | Professor |
| Burmaka, Viktor | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | PhD student, researcher | Master diploma |
| Charkina, Olesya | Female | UA-Institute of Radio Astronomy | PhD student, researcher | Master diploma |

| | | | | |
|------------------------------|--------|---|----------------------------------|---------------------------------------|
| Domnin, Igor | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | Director | DSc., Professor |
| Galushko, Volodymyr | Male | UA-Institute of Radio Astronomy | Senior scientist | PhD |
| Kascheyev, Anton | Male | UA-Institute of Radio Astronomy | Scientific associate, researcher | PhD |
| Katsko (Kharytonova), Sofiia | Female | UA-Institute of Ionosphere under NAS and MES of Ukraine | PhD student, researcher | Master diploma |
| Kotov, Dmytro | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | PhD student, researcher | Master diploma |
| Lialiuk, Oleksii | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | PhD student, researcher | Master diploma |
| Løvhaug, Unni Pia | Female | NO-University of Tromsø | Professor | PhD |
| Panasenko, Sergii | Male | UA-Institute of Ionosphere under NAS and MES of Ukraine | Senior scientist | PhD |
| Siusiuk, Maryna | Female | UA-Institute of Ionosphere under NAS and MES of Ukraine | Researcher | Master diploma |
| Soina, Anna | Female | UA-Institute of Radio Astronomy | PhD student, researcher | Master diploma |
| Sopin, Andrii | Male | UA-Institute of Radio Astronomy | PhD student, researcher | Master diploma |
| Vickers, Hannah | Female | NO-University of Tromsø | Post doktor | PhD |
| Yampolski, Yuri | Male | UA-Institute of Radio Astronomy | Head of department | Associate member of NASU, DSc., Prof. |
| Zalizovski, Andrey | Male | UA-Institute of Radio Astronomy | Senior scientist | PhD |

B

B.1

B.1.1 Objectives

Basically overall objective and sub-goals of the project remain unchanged.

B.1.2 Milestones

| Activity | Start year | Start month | End year | End month | Status |
|---|------------|-------------|----------|-----------|---------|
| Support for students and young scientists to participate in international conferences and schools on the project-related subjects ("EISCAT workshop", "EISCAT radar school" etc.). | 2012 | Jul | 2014 | Dec | Started |
| Involvement of students and young scientists in the conference "Electromagnetic Methods of Environmental Studies" to be organized in Ukraine by IRA. Support of the invited presentations by representatives of the University of Tromsø. Organizing a topical workshop for Ukrainian and Norwegian scientists during the conference. | 2012 | Sep | 2012 | Oct | Started |
| Guidance and assistance in the preparation of graduate works of bachelors, specialists and masters. | 2012 | Sep | 2014 | Dec | Started |

| | | | | | |
|--|------|-----|------|-----|-------------|
| Guidance of the PhD students. Assistance in arranging student's scientific seminars and workshops. | 2012 | Sep | 2014 | Dec | Started |
| Performance of field works in Norway and Ukraine aimed at improving the Internet-controlled diagnostic facilities developed by IRA. Adaptation of the facility software for the needs of the educational process. Organization of practical works with the equipment using special web-based software. | 2012 | Sep | 2014 | Dec | Started |
| Preparation and implementation of practical works for students on the incoherent scatter radars of the Ukrainian and Norwegian observatories. Arrangement of student measuring campaigns. Organization of student training in the operation with internet-controlled research facilities and working with online scientific databases. | 2012 | Sep | 2014 | Dec | Started |
| Preparation of courses of lectures "Radio engineering systems in radiophysic researches", "Statistical radiophysics", "Radioreceivers in radiophysics", "Systems analysis and computer simulation" by academic staff/scientific staff of the Institute of Ionosphere, which to be delivered in the Ukrainian institutions. | 2012 | Sep | 2014 | Dec | Started |
| Preparation of scientific publications by academic staff and researchers jointly with students. | 2012 | Sep | 2014 | Dec | Started |
| Providing the scholarship and fellowship programs for Ukrainian students at the University of Tromsø and EISCAT observatories. | 2012 | Sep | 2014 | Dec | Started |
| Refresher training of the academic and technical staff of the partner institutions at the ionospheric observatory of IION | 2012 | Sep | 2014 | Dec | Started |
| Refresher training of the academic and technical staff of the Ukrainian institutions at the University of Tromsø and EISCAT observatories. Organization of workshops and topical seminars to share the experience of the staff of partner organizations. | 2012 | Sep | 2014 | Dec | Started |
| Preparation and publication of educational and training materials for students. Development of the special software for practical works of the students. | 2013 | Jan | 2013 | Dec | Not started |
| Preparation of courses of lectures "Atmospheric-space weather systems interaction" and "Remote techniques for investigating the near-earth space environment" by academic staff/scientific staff of the Institute of Radio Astronomy to be delivered in the University of Tromsø. | 2013 | Jan | 2014 | Dec | Not started |
| Preparation of courses of lectures "Cosmic geophysics" and "Techniques for investigating the near-earth space environment" by academic staff/scientific staff of the University of Tromsø to be delivered in the Ukrainian institutions. | 2013 | Jan | 2014 | Dec | Not started |
| Training of administrative staff of the Ukrainian institutions in Norway. | 2013 | Jan | 2014 | Dec | Not started |
| Support of international ionospheric conferences for young scientist to be organized in Ukraine with participation of representatives from the University of Tromsø and other countries. Arrangement of practical works at the research | 2013 | Apr | 2014 | Oct | Not started |

| | | | | | |
|---|--|--|--|--|--|
| facilities of the observatories of the IION and IRA. Organizing topical workshops for Ukrainian and Norwegian scientists. | | | | | |
|---|--|--|--|--|--|

B.1.3 Activities in 2012

1) Fellowship program for Ukrainian PhD students at the University of Tromsø and EISCAT observatories.

Fellowship programs for two PhD student from IION (Oleksandr Bogomaz and Oleksii Lialiuk) and two PhD students from IRA (Mykola Baru and Volodymyr Lysachenko) have been supported from the Project funds. The PhD students visited the University of Tromsø for the period between October 29 and November 25, 2012. The fellowship programs included theoretic courses and seminars, as well as practical training and dual purpose (training and science) TROUP measuring campaign. The activities were as follows.

Lectures:

- a) "Theory of radar imaging. How it works?" and "Polar mesospheric summer echoes" by Cesar La Hoz (UiT)
- b) "EASI interferometer. How it works?" and "Hardware and software of EASI interferometer" by V. Belyey (UiT)

Seminars/workshops:

- a) "Ionospheric investigations using the Advanced Modular Incoherent Scatter Radars" by Hanna Dahlgren (Boston University)
- b) "Kharkov incoherent scatter radar", "Methods for detecting wave processes in the ionospheric plasma using Kharkiv incoherent scatter data" and "Aperiodic and quasi-periodic processes in the ionosphere over Kharkiv, Ukraine accompanying high-power HF heating by the "Sura" facility" by Sergii Panasenko (IION)
- c) "Incoherent scatter signal processing at zero and intermediate frequencies" by Oleksii Lialiuk (IION)
- d) "Multiposition observations of the ionospheric Alfvén resonance signals" by Mykola Baru (IRA)
- e) "Methods of improving the accuracy of solving inverse problem through simulation of incoherent scatter signals" by Oleksandr Bogomaz (IION)
- f) "Anomalous diurnal variations in the F-layer of the ionosphere and TEC: Antarctic Peninsula region investigation" by Volodymyr Lysachenko (IRA)

Practical training and courses:

- a) Practical training at the EISCAT UHF Radar at the Ramfjordmoen site (October 31 through November 5). The purpose of the classes was to train Ukrainian scientists in various aspects of the EISCAT radar - understanding the radar experiments and data acquisition, running experiments and analyzing the recorded data.
 - b) Practical work with the HF transmitter at Ramfjordmoen as a source of probe signals and HF acquisition systems (reception points) located in Tromsø and at Svalbard (November 14)
 - c) Trial observations with the new WinRadio HF acquisition system at SOUSY radar (Svalbard). The SPEAR heater was used as a source of the probe HF radiation (November 19)
 - d) TROUP experiment (November 22-24): Dual purpose (training and science) measuring campaign. Research facilities located in Norway (EISCAT UHF radar, EISCAT heating facility, probe HF transmitter at Ramfjordmoen, HF receivers in Tromsø and at Svalbard), Ukraine (Incoherent scatter radar near Kharkiv, HF receiver at Low Frequency Observatory near Kharkiv) and Antarctica (HF receiver at Ukrainian Antarctic Station) were involved. The educational aspect of the experiments was to train Ukrainian PhD students and scientists in various aspects of the EISCAT radar operation and HF pumping of the ionosphere using EISCAT heating facility. At the same time, the scientific aspect was focused on studying the "self-scattering effect" and other heating-induced phenomena
- Working with literature in the library of the University of Tromsø.

2) Support for students and young scientists to participate in international conferences and schools. Participation of two Ukrainian PhD students, namely, Andrii Sopin from IRA and Dmytro Kotov from IION, in the international EISCAT Radar School (27th August - 1st September, 2012) was supported from the Project budget. The Radar School was held at Sodankylä (Finland) where one of the EISCAT UHF remote sites is located. The training courses organized during the School covered all essential aspects of the current EISCAT systems, including the science program and an overview of the existing hardware and software. The course had a very strong emphasis on practice, i.e. on work of participant groups with real data. Dedicated radar experiments were carried out for every group, and the group members

analyzed the obtained data and presented the results under supervision of a team of experienced instructors. Further plans with a strong emphasis on the EISCAT_3D were discussed as well.

3) Organizing of scientific conferences. Participation of students and young scientists in conferences, seminars and workshops. Assistance in the preparation of graduate works of bachelors, specialists and masters. Supervision of PhD students

a) A scientific conference "Electromagnetic Methods of Environmental Studies" EMES-2012 was organized in Ukraine by the Institute of Radio Astronomy (September 25-27, 2012). The Conference topics include methods of remote sensing of the terrestrial and planetary atmospheres, geospace, interplanetary and interstellar space and radio wave propagation through these media in a wide frequency range. About one hundred representatives from Ukraine, Russia, USA, Norway, Israel and Kazakhstan took part in the conference. 11 participants of the Project presented papers at EMES-2102

b) Participation of students and young scientists from the IRA and IION in scientific conferences:
- 12-th Ukrainian Conference on Space Research (September 3–7, 2012, Yevpatoria, Ukraine) – 8 papers

- Scientific conference "Electromagnetic Methods of Environmental Studies" EMES-2012, (September 25-27, 2012, Kharkiv, Ukraine) – 10 papers

- 9-th International Conference "Problems of Geospace" (October 8–12, 2012, St. Petersburg, Russia). – 3 papers

- Scientific Conference of Students and Young Scientists "Actual problems of Automatics and Instrument in Ukraine" (December 24–25, 2012, Kharkiv, NTU "Kharkiv Polytechnic Institute", Ukraine). – 6 papers

c) Providing supervision and consultation for 16 students of the National Technical University "Kharkiv Polytechnic Institute" (specialization "Radio Physics and Electronics") in preparation of bachelors and masters degree theses

d) Providing supervision and consultation for D.P. Belozorov in preparing PhD thesis (Scientific advisor – Valeriy Pulyayev). D.P. Belozorov defended the thesis in November 2012.

4) List of scientific publications of academic staff and researchers prepared jointly with students.

1) V.P. Burmaka and L.F. Chernogor. Wave disturbances in the ionosphere during the last solar activity minimum // *Geomagnetism and Aeronomy*. – 2012. – v. 52, No. 2. – p. 183 – 196. (in Russian)

2) L.F. Chernogor, I.F. Domnin, L.Ya. Emelyanov, D.V. Kotov, and M.V. Lyashenko. Study of ionospheric processes over Ukraine // *Space Research in Ukraine / Edited by O.Fedorov.*–2012.–p. 49–68 (in Russian)

3) I.F. Domnin, D.V. Kotov, and L.F. Chernogor. Seasonal variations of hydrogen ions fraction in the topside ionosphere over Ukraine according to the incoherent scattering technique data and comparison with IRI-2012 model data: 1. solar activity minimum // *Radiophysics and Radioastronomy*. – 2012.–v. 17, n. 3.– p. 233-239 (in Russian)

4) I.F. Domnin, L.Y. Emelyanov, M.V. Lyashenko, S.V. Kharytonova, and L.F. Chernogor. Ionospheric processes during the geospace storm of August 5–6, 2011 // *Radiophysics and Radioastronomy*. – 2012.–v. 17, No 1.– p. 320-328 (in Russian)

5) A.O. Sopin, Y.M. Zanimonskiy, V.N. Lisachenko, and Y.M. Yampolski. Features of background variations in total electron content of ionosphere over the Antarctic Peninsula // *Radiophysics and Radioastronomy*. – 2012.–v. 17, No 1.– p. 49-66 (in Russian)

6) A.V. Paznukhov, Y.M. Yampolski and Y.M. Zanimonskiy and A.V. Soina. Search of "weekend effect" in the intensity of natural VLF noise variations // *Radiophysics and Radioastronomy*. – 2012.–v. 17, No 1.– p. 67-73 (in Russian)

7) V.G. Galushko, A.A. Sopin and Y.M. Yampolski. Diurnal variations of the parameters of ionospheric disturbances as derived from data of tec measurements over the Antarctic Peninsula // *Radiophysics and Radioastronomy*. – 2012.–v. 17, No 3.– p. 218-232 (in Russian)

8) A.V. Koloskov and N.A. Baru. F-layer critical frequency determination from ionospheric Alfvén resonance observations // *Ukrainian Antarctic Journal*. -2011/2012. –No 10-11, p.114-120. (in Russian)

9) A.V. Koloskov, N.A. Baru, O.V. Budanov, V.E. Paznukhov, and Yu.M. Yampolski. Two-position (Antarctica - Ukraine) monitoring of the global electromagnetic resonances of the Earth // *Ukrainian Antarctic Journal*. -2011/2012. –n. 10-11, p.121-127. (in Russian) 10) A.E. Chagan and O.I. Lialuk.

System of the automatic adjustment to the circular polarization of the incoherent scatter facility // *Bulletin of the National Technical University "Kharkiv Polytechnic Institute"*. Series: "Radiophysics and ionosphere" –2012. –No 57 (963). –p. 18– 24. (in Russian)

- 11) O.V. Bogomaz. Model of the processing system of incoherent scatter radar data // Bulletin of the National Technical University "Kharkiv Polytechnic Institute". Series: "Radiophysics and ionosphere" – 2012. –No 57 (963). –p. 18– 24. (in Russian)
- 12) O.V. Bogomaz, D.V. Kotov, and M.N. Siusiuk. Spatial correction of the incoherent scatter radar data // Bulletin of the National Technical University "Kharkiv Polytechnic Institute". Series: "Radiophysics and ionosphere" –2012. –No 57 (963). –p. 35– 42. (in Russian)
- 13) N.A. Pidruchnaja and V.O. Pulyayev. The influence of the spectrum of the probe pulse on the incoherent scatter signal spectrum // Bulletin of the National Technical University "Kharkiv Polytechnic Institute". Series: "Radiophysics and ionosphere" –2012. –No 57 (963). –p. 57– 60. (in Russian)
- 14) S.S. Kozlov and V.O. Pulyayev. Choosing of the database structure to store the Kharkiv incoherent scatter radar // Radiotechnique –2012. –No. 169. –p. 110-115. (in Russian)
- 15) S.V. Panasenko, A.A. Potapov, and L.F. Chernogor. Results of applying the algorithms based on the theory of optimal detection and optimal estimation to analysis of the envelope soliton // Journal of Communications Technology and Electronics. – 2012. – v. 57, No 3. – p. 301 – 309.

5) Preparation of courses of lectures

Two courses, namely, "Radio engineering systems in radiophysical researches" (5 credits) for students majoring in "Radiophysics and electronics" (7.070201) and "Computerization of specialized environments" (6 credits) for students majoring in "Computer engineering" (6.050102), have been prepared by the ION team. The courses started in the National Technical University "Kharkiv Polytechnic Institute" in February 2013 (see the curriculum using link: http://www.kpi.kharkiv.edu/re/up_sks.html (in Russian)).

6) Preparation and implementation of practical works for students on the incoherent scatter radars of the UoT and ION. Arrangement of students' measuring campaigns

- a) Practical classes for two study groups (28 students of the National Technical University " Kharkiv Polytechnic Institute ") were carried out at the Observatory of the Institute of Ionosphere between October and November 2012. The purposes of the classes were to train students to work with incoherent scatter radar and ionospheric station for vertical sounding of the ionosphere. Students were trained in many aspects of running radar experiments, data acquisition, processing and analyzing, etc.
- b) TROUP experiment. A dual purpose (training and science) measuring campaign was organized by UiT in Norway (November 22-24). The involved research facilities were the EISCAT UHF radar, EISCAT heating facility, Ukrainian probe HF transmitter (Ramfjordmoen, Norway), and Ukrainian HF receivers in Tromsø, Svalbard, Kharkiv (Ukraine) and at the Ukrainian Antarctic station. Educational aspects of the experiment were to train Ukrainian PhD students and scientists in many aspects of the EISCAT radar and HF heating of the ionosphere using the EISCAT heater. The scientific aspect was focused on studying the "self-scattering effect" and other heating-induced phenomena
- c) Dual purpose (training and science) measuring campaign with the Incoherent scatter radar of the ION (Kharkiv, Ukraine) simultaneously with TROUP experiment (November 22-24). Educational aspects of the experiments were to train students in operating the incoherent scatter radar and ionospheric station, as well as in processing and analyzing data of the real observations. The scientific aspect was focused on studying the heating-induced phenomena like aperiodic and quasi-periodic processes in the ionosphere.

7) Refresher training of the academic and technical staff. Organization of workshops and seminars to share the experience of the staff of partner organizations

- a) 6 representatives of the academic and technical staff of the Ukrainian institutions (O. Bogomaz, D. Kotov, M. Siusiuk, O. Lialiuk, V. Burmaka, and S. Panasenko) have been trained at the observatory of the Institute of ionosphere during three radar measuring campaigns which were carried out from 28 to 30 August, from 24 to 28 September and from 18 to 21 December 2012.
- b) 3 representatives of the academic and scientific staff of the Ukrainian institutions (Sergii Panasenko, Oleksandr Koloskov, and Anton Kashcheyev) have been trained at the University of Tromsø and EISCAT observatories. They have been familiarized themselves with the following issues:
 - methodologies of the educational process in Norway;
 - current status of the scientific research facilities of UiT and EISCAT and how they can be used in the educational process and for scientific researches;
 - modern scientific databases (like Madrigal) and how they can be used for teaching of bachelors, masters and PhD students;

- Norwegian experience in popularization and promotion of environmental studies and geospace researches.

Also, during the visit of the Ukrainian participants to the University of Tromsø the following lectures and presentations have been made:

- "Theory of radar imaging. How it works?" and "Polar mesospheric summer echoes" by Cesar La Hoz
- "EASI interferometer. How it works?" and "Hardware and software of EASI interferometer" by V. Belyey.
- "Ionospheric investigations using the Advanced Modular Incoherent Scatter Radars" by Hanna Dahlgren, Boston University

In addition, open discussion of current and future activities in the frame of the SIU Project and Ukrainian associated membership in EISCAT were carried out with participation of La Hoz, Belyey, Koloskov, Panasenko etc.). The following papers have been presented:

- "Kharkov incoherent scatter radar" by Sergii Panasenko
- "Joint Geospace Research Program by the National Academy of Sciences of Ukraine and European Incoherent Scatter Scientific Association for 2012 – 2015" by Oleksandr Koloskov

c) The Project coordinator from ION, Valeriy Pulyayev, participated in "The Eurasia Programme Project Workshop at University of Stavanger" December 5-7, 2012, Stavanger, Norway, by delivering a presentation "Norwegian-Ukrainian cooperation aimed to sustainable development of the education process in geospace researches". The presentation describes the current status of the Project and activities that took place in 2012.

8) Field works with the aim of adaptation of the research facilities hardware and software for the needs of the educational process

Implementation of field works in Norway (EISCAT Ramfjordmoen site) and at Svalbard (ESR site, SOUSY radar, KHO observatory) by Oleksandr Koloskov, Anton Kashcheyev, Volodymyr Lysachenko and Vasyl Belyey. Modernization and deployment of new research facilities to be further used in education and research activities:

- a) Upgrade of the WinRadio HF acquisition system at the Auroral Observatory (Tromsø, Norway), synchronizing of HF data with UTC using a GPS receiver
- b) Testing of the HF transmitter system at Ramfjordmoen site and providing a remote access to the system via Internet
- c) Performing of a trial measuring campaign with the use of the HF transmitter at Ramfjordmoen as a source of the probe signal and WinRadio HF acquisition system at Auroral Observatory as a receiver
- d) Practical work with hardware and software of EASI interferometer at ESR site (Svalbard)
- e) Upgrade of WinRadio HF acquisition system at Kjell Henriksen Observatory (Svalbard)
- f) Installation of a new WinRadio HF acquisition system at SOUSY radar, synchronizing HF data with UTC using a GPS receiver
- j) Test measurements with the new WinRadio HF acquisition system at SOUSY. Signal of the SPEAR heater (Svalbard) was used as a source of the probe HF radiation.

B.1.4 Deviations and delays

There were no major deviations from the planned activities in 2012. Some minor changes have occurred because of a delay in the start of the project.

For one, the funds intended for the support of the scientific conference "Electromagnetic Methods of Environmental Studies" EMES-2012 was unavailable up to conference beginning. Nevertheless, the conference was held (September 25-27, 2012, Kharkiv, Ukraine, <http://www.ri.kharkov.ua/emes/en/index.html>), as have been scheduled in the Project Document. The lack of funds was covered by the National Academy of Sciences of Ukraine. SIU approved to carry forward the conference money (NOK 68 920) to the next year. We ask to add these funds to the ION budget for 2013 to support the International Conference "Remote Radio Sounding of the Ionosphere (ION-2013)" which will be organized by ION in Maly Mayak (Big Alushta) (Crimea, Ukraine) on September 30 – October 4, 2013. These money will be used to support the School for students and young scientists which will accompany the conference.

The other deviation is that the intended activities regarding Fellowship Grants to PhD students fell short resulting in an underspend of NOK 51 550 (budgeted: NOK 106 000).

B.1.5 Student mobility

| Level | From | To | Gender | Months |
|---|--------------|-------------|----------|----------|
| PhD | Ukraine (UA) | Norway (NO) | Male | 1 |
| Oleksandr Bogomaz, Fellowship program for Ukrainian PhD students at the University of Tromsø and EISCAT observatories / a) lectures and seminars for students given by the leading scientists from Norway, USA and Ukraine; b) working with literature in the library of the University of Tromsø; c) practical training at the EISCAT UHF Radar at the Ramfjordmoen site; d) dual purpose (training and science) TROUP measuring campaign using EISCAT UHF radar and heating facility; e) processing of the real time UHF radar data, calculation of the parameters of the ionosphere; f) practical training with "Madrigan" database and web access to the EISCAT radar data. | | | | |
| PhD | Ukraine (UA) | Norway (NO) | Male | 1 |
| Oleksii Lialiuik, Fellowship program for Ukrainian PhD students at the University of Tromsø and EISCAT observatories / a) lectures and seminars for students given by the leading scientists from Norway, USA and Ukraine; b) working with literature in the library of the University of Tromsø; c) practical training at the EISCAT UHF Radar at the Ramfjordmoen site; d) dual purpose (training and science) TROUP measuring campaign using EISCAT UHF radar and heating facility; e) analysis of the technical characteristics of the EISCAT UHF radar hardware and signal processing algorithms. | | | | |
| PhD | Ukraine (UA) | Norway (NO) | Male | 1 |
| Mykola Baru, Fellowship program for Ukrainian PhD students at the University of Tromsø and EISCAT observatories / a) lectures and seminars for students given by the leading scientists from Norway, USA and Ukraine; b) working with literature in the library of the University of Tromsø; c) practical training at the EISCAT UHF Radar at the Ramfjordmoen site; d) dual purpose (training and science) TROUP measuring campaign using EISCAT UHF radar and heating facility; e) practical training with "Madrigan" database and web access to the EISCAT radar data; f) establishing of scientific cooperation with research teams of the University of Tromsø and Sodankulä Geophysical Observatory (Finland) involved in analysis of ULF-ELF data. | | | | |
| PhD | Ukraine (UA) | Norway (NO) | Male | 1 |
| Volodymyr Lysachenko, Fellowship program for Ukrainian PhD students at the University of Tromsø and EISCAT observatories / a) lectures and seminars for students given by the leading scientists from Norway, USA and Ukraine; b) working with literature in the library of the University of Tromsø; c) practical training at the EISCAT UHF Radar at the Ramfjordmoen site; d) dual purpose (training and science) TROUP measuring campaign using EISCAT UHF radar and heating facility; e) analysis of the technical information about ionosondes operation (EISCAT dynasonde, UiT digisonde): standard operating modes, pre-processing, obtained ionosphere parameters, access to the database; f) HF registration computers maintenance. Involved in the preparation, installation and testing of the HF transmitter system. | | | | |
| Total | | | 4 | 4 |

B.2

B.2.1 Work plan 2013

1. The International Conference "Remote Radio Sounding of the Ionosphere (ION-2013)" will be organized in Ukraine by IION and IRA, September 30 – October 4, 2013. Conference program includes plenary papers as well as presentations in working groups. These presentations will focus on processing and interpretation of ionospheric data, developing and modernization of data processing techniques and software, improving teaching methods, etc.

In addition to the activities described in the Project document we plan to carry out scientific school for PhD students and young scientists simultaneously with the conference as well as some training courses for students of the National Technical University "Kharkiv Polytechnic Institute" during the academic year. These courses will focus on learning of modern scientific theories and techniques of diagnostic of near-Earth plasma and will improve the theoretical knowledge and practical skills of students in the area of experimental physics and environmental studies. We plan to involve students and young scientists as well as leading researchers from Ukraine, Norway, Russia and other countries to participation in the Conference and School

2. It is planned to support several PhD students/scientists from the Institute of ionosphere and Institute of Radio Astronomy to attend international conferences/schools. At the moment participation of Ukrainian representatives at EISCAT International Symposium 2013 and EISCAT Radar School 2013 are envisaged

3. Fellowship programs for Ukrainian PhD students (from Institute of ionosphere and Institute of Radio Astronomy) at the University of Tromsø and EISCAT observatories are planned
4. Two courses, namely, "Radio engineering systems in radiophysics researches" (5 credits) for students majoring in "Radiophysics and Electronics" (7.070201) and permanent one "Computerization of specialized environments" (6 credits) for students majoring in "Computer engineering" (6.050102), will be delivered by IION academic staff in the National Technical University "Kharkiv Polytechnic Institute"
5. Cycles of review lectures "Atmospheric-space weather systems interaction" and "Remote techniques for investigating the near-earth space environment" will be prepared by the academic/scientific staff of the Institute of Radio Astronomy. One of these will be delivered by representatives of IRA in the University of Tromsø
6. Preparation of courses of lectures by academic/scientific staff of the University of Tromsø to be delivered in the Ukrainian institutions
7. Implementation of practical works/courses for students and young scientists at the Ukrainian and Norwegian ionospheric observatories. Performance of joint Norwegian-Ukrainian observations for studying polar and mid-latitude ionosphere and heating-induced phenomena in the near Earth plasma environment. Arrangement of student measuring campaigns. Field work in Norway and Ukraine for modernization and deployment of new research facilities to be further used in education and research activity
8. Training of the academic and technical staff of the Ukrainian institutions at the observatory of the Institute of ionosphere. Training of the academic and technical staff of the Ukrainian institutions at the University of Tromsø and EISCAT observatories
9. Preparation of scientific publications by academic staff and researchers jointly with students. Preparation and publication of educational and training materials for students. Supervision and assistance in the preparation of graduate works of bachelors and masters. Supervision of the PhD students and assistance in defense of PhD thesis for Viktor Burmaka (IION)

C - Additional information

C.1.1 Synergies

Up to now, we have not achieved synergies with other Norwegian or international programmes. However opportunities may arise in 2013, for example, in connection with participation in the EISCAT International Symposium in August 2013.,

C.1.2 Gender perspective

The project provides equal opportunities for participants of either gender. To increase the chance for female-candidates to be involved in the Project activities, English language courses were organized for Siusiuk Maryna, Soina Anna, Kharytonova Sofiia and Charkina Olesya. Their visits to IION and participation in International conferences and workshops are planned for 2013 and 2014.

C.1.3 Anti-corruption

Anti-corruption

Actual project activities during 2012 were in line with the rules of the "Norwegian Cooperation Programme in Higher Education with Eurasia" and appropriate Financial guidelines. The financial documents were prepared in accordance with the Norwegian (for IiN) and Ukrainian (for IoN) rules of regulations, respectively. The Project did not use any unscheduled funds.

C.1.4 Risk management

There are no clear risk factors for the project fulfillment. Some minor discrepancies between the planed and actual budgets for 2012 of IoN (see more detailed information in D.1.2) were caused by a delay in transferring the funds because of too late signing of the Project Contract in 2012. We hope that no delay occur in 2013. However, the project coordinator from IoN investigates together with Ukrainian

financial authorities how to minimize this issue in the future. Other minor discrepancies also occurred in the budget of the liN, also due to the delay in the start of the project (see D.1.2).

D

D.1 Expenditure

D.1.1 Expenditure

| NOK - Norwegian kroner | Budget 2012 | Expenditure 2012 |
|--|----------------|------------------|
| Scholarships/fellowships | | |
| Scholarships to Bachelor students | 0 | 0 |
| Scholarships to Master students | 0 | 0 |
| Fellowship grants to Ph.D students | 106 000 | 54 450 |
| SUM - Scholarships/fellowships | 106 000 | 54 450 |
| Infrastructure | | |
| Scientific equipment | 22 650 | 14 940 |
| Office infrastructure/software | 10 300 | 5 185 |
| SUM - Infrastructure | 32 950 | 20 125 |
| Institutional development | | |
| Books/periodicals/publication costs/dissertations | 0 | 0 |
| Networking/conferences/seminars/workshops | 60 000 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 193 000 | 193 000 |
| Travel expenditure, partner in Norway (IiN) | 34 000 | 27 901 |
| Costs for gender equalization related activities | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 228 000 | 224 811 |
| SUM - Institutional development | 515 000 | 445 712 |
| Project management | | |
| Compensation to department in Norway (IiN) | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 |
| SUM - Project management | 0 | 0 |
| Project administration | | |
| General administration costs/overhead (max 7 percent of total budget) | 45 060 | 40 290 |
| SUM - Project administration | 45 060 | 40 290 |
| SUM - Total | 699 010 | 560 577 |

Expenditure details for University of Tromsø (NO-UoT)

| NOK - Norwegian kroner | Budget 2012 | Expenditure 2012 |
|--|----------------|------------------|
| Scholarships/fellowships | | |
| Scholarships to Bachelor students | 0 | 0 |
| Scholarships to Master students | 0 | 0 |
| Fellowship grants to Ph.D students | 106 000 | 54 450 |
| SUM - Scholarships/fellowships | 106 000 | 54 450 |
| Infrastructure | | |
| Scientific equipment | 22 650 | 14 940 |
| Office infrastructure/software | 0 | 0 |
| SUM - Infrastructure | 22 650 | 14 940 |
| Institutional development | | |
| Books/periodicals/publication costs/dissertations | 0 | 0 |
| Networking/conferences/seminars/workshops | 0 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 193 000 | 193 000 |
| Travel expenditure, partner in Norway (IiN) | 34 000 | 27 901 |
| Costs for gender equalization related activities | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 120 000 | 120 000 |
| SUM - Institutional development | 347 000 | 340 901 |
| Project management | | |
| Compensation to department in Norway (IiN) | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 |
| SUM - Project management | 0 | 0 |
| Project administration | | |
| General administration costs/overhead (max 7 percent of total budget) | 31 700 | 31 700 |
| SUM - Project administration | 31 700 | 31 700 |
| SUM - Total | 507 350 | 441 991 |

Expenditure details for Institute of Ionosphere under NAS and MES of Ukraine (UA)

| NOK - Norwegian kroner | Budget 2012 | Expenditure 2012 |
|--|----------------|------------------|
| Scholarships/fellowships | | |
| Scholarships to Bachelor students | 0 | 0 |
| Scholarships to Master students | 0 | 0 |
| Fellowship grants to Ph.D students | 0 | 0 |
| SUM - Scholarships/fellowships | 0 | 0 |
| Infrastructure | | |
| Scientific equipment | 0 | 0 |
| Office infrastructure/software | 6 150 | 5 185 |
| SUM - Infrastructure | 6 150 | 5 185 |
| Institutional development | | |
| Books/periodicals/publication costs/dissertations | 0 | 0 |
| Networking/conferences/seminars/workshops | 0 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 0 | 0 |
| Travel expenditure, partner in Norway (IiN) | 0 | 0 |
| Costs for gender equalization related activities | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 108 000 | 104 811 |
| SUM - Institutional development | 108 000 | 104 811 |
| Project management | | |
| Compensation to department in Norway (IiN) | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 |
| SUM - Project management | 0 | 0 |
| Project administration | | |
| General administration costs/overhead (max 7 percent of total budget) | 8 590 | 8 590 |
| SUM - Project administration | 8 590 | 8 590 |
| SUM - Total | 122 740 | 118 586 |

Expenditure details for Institute of Radio Astronomy (UA)

| NOK - Norwegian kroner | Budget 2012 | Expenditure 2012 |
|--|---------------|------------------|
| Scholarships/fellowships | | |
| Scholarships to Bachelor students | 0 | 0 |
| Scholarships to Master students | 0 | 0 |
| Fellowship grants to Ph.D students | 0 | 0 |
| SUM - Scholarships/fellowships | 0 | 0 |
| Infrastructure | | |
| Scientific equipment | 0 | 0 |
| Office infrastructure/software | 4 150 | 0 |
| SUM - Infrastructure | 4 150 | 0 |
| Institutional development | | |
| Books/periodicals/publication costs/dissertations | 0 | 0 |
| Networking/conferences/seminars/workshops | 60 000 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 0 | 0 |
| Travel expenditure, partner in Norway (IiN) | 0 | 0 |
| Costs for gender equalization related activities | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 0 | 0 |
| SUM - Institutional development | 60 000 | 0 |
| Project management | | |
| Compensation to department in Norway (IiN) | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 |
| SUM - Project management | 0 | 0 |
| Project administration | | |
| General administration costs/overhead (max 7 percent of total budget) | 4 770 | 0 |
| SUM - Project administration | 4 770 | 0 |
| SUM - Total | 68 920 | 0 |

D.1.2 Explanations to deviations between budget and expenditure

According to Ukrainian financial rules only national currency – Ukrainian hryvnia (UAH) is acceptable for financial transactions of IoN. So, to be able to use the project money, the IoN first opened a bank account in NOK (to receive money from IiN) and then convert them to UAH (this transaction can take up to several weeks, since the Ukrainian bank announces tender to sell NOK). After the tender is completed, it is permitted to IoN to use the money (in UAH). Because of some delay in signing the Project Contract, the money became available for IoN only in late October 2012. We have asked SIU to carry forward the money (68 920 NOK) intended for the scientific conference EMES-2012 which was held from 25-th to 27-th of September 2012 in Ukraine to the next year. Also for the same reason it was not permitted for IION to pay for operation costs of the IION radar (item "Other operating costs/running costs") for a time period before November 2012 (this expenditures have been included to the initial IION budget 2012). SIU have approved redirection of 4356 UAH (about 3059 NOK) from item "Other operating costs/running costs" to "Office infrastructure/software" in IION budget 2012 to satisfy the permitted limits for radar operation costs in November and December 2012. These limits are determined by the Ukrainian financial authorities according to the domestic quotas for monthly operation costs for the IION radar. In addition, the bank serving the IION account has not been able to perform all payments before

31.12.2012. A sum of 190.55 UAH (about 130 NOK) from the item "Other operating costs/running costs", and 5800 UAH (about 4024 NOK) from the item "Office infrastructure/software" remained unused in the IION budget for 2012.

Regarding the budget of the liN:

The post "Fellowship grants to Ph.D students" has an underspend of 51 550. This was due to the late start of the project. We request that these remaining funds be transferred to 2013.

The post "Scientific equipment" has an underspend of 7 710. We request that these remaining funds be transferred to 2013.

The post "Travel expenditure, partner in Norway (liN)" has an underspend of 6 099. We request that these remaining funds be transferred to 2013.

The post "Other operating costs/running costs (specify in comments - not general overhead)", includes 120 000 to pay for the use of the EISCAT radars (10 hours at 12 000 per hour). The radars were employed in October and November of 2012. EISCAT has not yet billed this amount to the UoT for the use of the EISCAT facilities. The use of the EISCAT facilities was the main activity of the students and scientists that visited the UoT in October and November of 2012. We anticipate that the billing will come shortly and the payment will be made effective. Therefore this post will have a small underspend of NOK 3 189 (228 000 - 104 811 - 120 000 = 3 189). The result in the total will be that the NOK 440 577 will actually be NOK 560 577 after accounting for the payment to EISCAT of NOK 120 000 that will be charged to the 2012 budget, as the service was carried out in 2012.

D.2 Balance

D.2 Balance

| | IoN | liN | Total |
|------------------------------------|---------|---------|---------|
| Disbursement from SIU 2012 | | 699 010 | 699 010 |
| Transferred from liN to IoN | 122 740 | 122 740 | |
| Available amount | 122 740 | 576 270 | 699 010 |
| Expenditures | 118 586 | 441 991 | 560 577 |
| Balance | 4 154 | 134 279 | 138 433 |
| Return to SIU | 0 | 0 | 0 |
| New balance | 4 154 | 134 279 | 138 433 |

Application for transfer of unused funds

1. As was mentioned above, the scientific conference EMES-2012 has not supported by the project budget for 2012 because the project money was unavailable up to the conference beginning. Nevertheless, the conference was held. The lack of funds was covered by the National Academy of Sciences of Ukraine. SIU approved to carry forward the conference money (NOK 68 920) to the next year. This sum includes the cost of the following items: financial support of the conference – NOK 60 000, office equipment to be used during the conference – NOK 4 150, general administration costs/overhead – NOK 4 770. We ask to add these funds to the IION budget for 2013 to support the International Conference "Remote Radio Sounding of the Ionosphere (ION-2013)" which will be organized by IoN in Maly Mayak (Big Alushta) (Crimea, Ukraine) on September 30 – October 4, 2013. This money will be used to support the School for students and young scientists which will accompany the conference.

2. Since the project money for IION became available only in late October 2012, the Ukrainian bank serving the IION expenditures has not been able to perform all payments before 31.12.2012. A sum of 190.55 UAH (about 130 NOK) from the item "Other operating costs/running costs", and 5800 UAH (about NOK 4 024) from the item "Office infrastructure/software" remained unused in the IION budget for 2012. As the money (UAH 5 990.55 about NOK 4 154) have been already converted from NOK to UAH, it is very complicated to reimburse them to SIU. We propose to transfer these money to the IION budget for 2013 and use according to the above items.

3. We request to transfer the following funds to 2013 (See D.1 for explanations) all in the liN budget:
Post "Fellowship grants to Ph.D students" NOK 51 550
Post "Scientific equipment" NOK 7 710
Post "Travel expenditure, partner in Norway (liN)" NOK 6 099
Post "Conference" including "Office" and "Administration" (Institute of Radio Astronomy, UA) NOK 68 920

4. The post "Other operating costs/running costs (specify in comments - not general overhead)", includes 120 000 to pay for the use of the EISCAT radars (10 hours at 12 000 per hour). The radars were employed in October and November of 2012. EISCAT has not yet billed this amount to the UoT for the use of the EISCAT facilities. The use of the EISCAT facilities was the main activity of the students and scientists that visited the UoT in October and November of 2012. We anticipate that the billing will come shortly and the payment will be made effective. When the bill comes and it is paid, its amount, NOK 120 000, will be charged to the 2012 budget, as the service was carried out in 2012.

D.3 Budget

D.3 Budget

| NOK - Norwegian kroner | Expenditure 2012 | Budget 2013 | Budget 2014 | Sum | Total budget from project document |
|--|------------------|------------------|----------------|------------------|------------------------------------|
| Scholarships/fellowships | | | | | |
| Scholarships to Bachelor students | 0 | 0 | 0 | 0 | 0 |
| Scholarships to Master students | 0 | 0 | 0 | 0 | 0 |
| Fellowship grants to Ph.D students | 54 450 | 145 550 | 94 000 | 294 000 | 294 000 |
| SUM - Scholarships/fellowships | 54 450 | 145 550 | 94 000 | 294 000 | 294 000 |
| Infrastructure | | | | | |
| Scientific equipment | 14 940 | 41 740 | 34 030 | 90 710 | 90 710 |
| Office infrastructure/software | 5 185 | 19 174 | 11 000 | 35 359 | 32 300 |
| SUM - Infrastructure | 20 125 | 60 914 | 45 030 | 126 069 | 123 010 |
| Institutional development | | | | | |
| Books/periodicals/publication costs/dissertations | 0 | 7 925 | 7 925 | 15 850 | 15 850 |
| Networking/conferences/seminars/workshops | 0 | 120 000 | 60 000 | 180 000 | 180 000 |
| Travel expenditure, partner in cooperating country (IoN) | 193 000 | 272 000 | 272 000 | 737 000 | 737 000 |
| Travel expenditure, partner in Norway (IiN) | 27 901 | 95 099 | 89 000 | 212 000 | 212 000 |
| Costs for gender equalization related activities | 0 | 0 | 0 | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 224 811 | 297 130 | 297 000 | 818 941 | 822 000 |
| SUM - Institutional development | 445 712 | 792 154 | 725 925 | 1 963 791 | 1 966 850 |
| Project management | | | | | |
| Compensation to department in Norway (IiN) | 0 | 0 | 0 | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 | 0 | 0 | 0 |
| SUM - Project management | 0 | 0 | 0 | 0 | 0 |
| Project administration | | | | | |
| General administration costs/overhead (max 7 percent of total budget) | 40 290 | 67 810 | 63 040 | 171 140 | 171 140 |
| SUM - Project administration | 40 290 | 67 810 | 63 040 | 171 140 | 171 140 |
| SUM - Total | 560 577 | 1 066 428 | 927 995 | 2 555 000 | 2 555 000 |

Budget details for University of Tromsø (NO-UoT)

| NOK - Norwegian kroner | Expenditure 2012 | Budget 2013 | Budget 2014 | Sum | Total budget from project document |
|--|------------------|----------------|----------------|------------------|------------------------------------|
| Scholarships/fellowships | | | | | |
| Scholarships to Bachelor students | 0 | 0 | 0 | 0 | 0 |
| Scholarships to Master students | 0 | 0 | 0 | 0 | 0 |
| Fellowship grants to Ph.D students | 54 450 | 145 550 | 94 000 | 294 000 | 0 |
| SUM - Scholarships/fellowships | 54 450 | 145 550 | 94 000 | 294 000 | 0 |
| Infrastructure | | | | | |
| Scientific equipment | 14 940 | 41 740 | 34 030 | 90 710 | 0 |
| Office infrastructure/software | 0 | 0 | 0 | 0 | 0 |
| SUM - Infrastructure | 14 940 | 41 740 | 34 030 | 90 710 | 0 |
| Institutional development | | | | | |
| Books/periodicals/publication costs/dissertations | 0 | 0 | 0 | 0 | 0 |
| Networking/conferences/seminars/workshops | 0 | 0 | 0 | 0 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 193 000 | 272 000 | 272 000 | 737 000 | 0 |
| Travel expenditure, partner in Norway (IiN) | 27 901 | 95 099 | 89 000 | 212 000 | 0 |
| Costs for gender equalization related activities | 0 | 0 | 0 | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 120 000 | 144 000 | 144 000 | 408 000 | 0 |
| SUM - Institutional development | 340 901 | 511 099 | 505 000 | 1 357 000 | 0 |
| Project management | | | | | |
| Compensation to department in Norway (IiN) | 0 | 0 | 0 | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 | 0 | 0 | 0 |
| SUM - Project management | 0 | 0 | 0 | 0 | 0 |
| Project administration | | | | | |
| General administration costs/overhead (max 7 percent of total budget) | 31 700 | 47 640 | 47 640 | 126 980 | 0 |
| SUM - Project administration | 31 700 | 47 640 | 47 640 | 126 980 | 0 |
| SUM - Total | 441 991 | 746 029 | 680 670 | 1 868 690 | 0 |

Budget details for Institute of Ionosphere under NAS and MES of Ukraine (UA)

| NOK - Norwegian kroner | Expenditure 2012 | Budget 2013 | Budget 2014 | Sum | Total budget from project document |
|--|------------------|----------------|----------------|----------------|------------------------------------|
| Scholarships/fellowships | | | | | |
| Scholarships to Bachelor students | 0 | 0 | 0 | 0 | 0 |
| Scholarships to Master students | 0 | 0 | 0 | 0 | 0 |
| Fellowship grants to Ph.D students | 0 | 0 | 0 | 0 | 0 |
| SUM - Scholarships/fellowships | 0 | 0 | 0 | 0 | 0 |
| Infrastructure | | | | | |
| Scientific equipment | 0 | 0 | 0 | 0 | 0 |
| Office infrastructure/software | 5 185 | 19 174 | 11 000 | 35 359 | 0 |
| SUM - Infrastructure | 5 185 | 19 174 | 11 000 | 35 359 | 0 |
| Institutional development | | | | | |
| Books/periodicals/publication costs/dissertations | 0 | 7 925 | 7 925 | 15 850 | 0 |
| Networking/conferences/seminars/workshops | 0 | 120 000 | 60 000 | 180 000 | 0 |
| Travel expenditure, partner in cooperating country (IoN) | 0 | 0 | 0 | 0 | 0 |
| Travel expenditure, partner in Norway (IiN) | 0 | 0 | 0 | 0 | 0 |
| Costs for gender equalization related activities | 0 | 0 | 0 | 0 | 0 |
| Other operating costs/running costs (specify in comments - not general overhead) | 104 811 | 153 130 | 153 000 | 410 941 | 0 |
| SUM - Institutional development | 104 811 | 281 055 | 220 925 | 606 791 | 0 |
| Project management | | | | | |
| Compensation to department in Norway (IiN) | 0 | 0 | 0 | 0 | 0 |
| Compensation to department in cooperating country (IoN) | 0 | 0 | 0 | 0 | 0 |
| SUM - Project management | 0 | 0 | 0 | 0 | 0 |
| Project administration | | | | | |
| General administration costs/overhead (max 7 percent of total budget) | 8 590 | 20 170 | 15 400 | 44 160 | 0 |
| SUM - Project administration | 8 590 | 20 170 | 15 400 | 44 160 | 0 |
| SUM - Total | 118 586 | 320 399 | 247 325 | 686 310 | 0 |

E - Signature

E.1 Signature

| | |
|--------------------|------------|
| Date: | Signature: |
| Position: | |
| Head of Department | |

| | |
|---------------------|------------|
| Date: | Signature: |
| Position: | |
| Project coordinator | |