

# **4th Annual Report**

## **EISCAT\_USERS\_1**

**Access to EISCAT facilities for new users**

### **Transnational Access implemented as Specific Support Action**

Contract number: 026077  
Project Co-ordinator: EISCAT Scientific Association  
Project website: <http://www.eiscat.se/TransNationalAccess>  
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## A. ACTIVITY REPORT

### 1. Progress report

#### 1.1 Summary of the activities and major achievements

This is the fourth and final Annual Report of the EISCAT\_USERS\_1 project. The project has now ended.

The European Union support under the Transnational Access (TNA) programme allowed the unique radar facilities of the EISCAT Scientific Association to be made available to a much wider range of European scientists than has ever been possible before. The EISCAT systems are normally only available to user communities within the Association. With the TNA programme new users could, if successful in the peer-review process, obtain access to two of the EISCAT systems.

The sixth, seventh and eighth rounds of applications were solicited in February, May and September 2009. The seventh round was introduced in order to make available time for operations particularly during the summer period. Three user groups from the sixth round and two from the seventh round were awarded time on the systems. Also one group from the fifth round performed, as scheduled, a campaign during the year.

Six campaigns were successfully performed during the year whereof one was granted time already in the previous reporting period (2008). Three of the runs used two of the EISCAT systems, whereof one used the EISCAT Heating system which were not part of the TNA project. The operating cost for the Heating system was instead covered by EISCAT.

During this final year, the TNA project has continued to be advertised in formal oral and poster presentations at a range of meetings, particularly during the first half year, as well as through the international EISCAT committees and the EISCAT web pages. The collaboration with other institutes also running TNA programmes continued too.

This project has now ended.

The Final Report of the project summarises the whole activity done in this project:

[www.eiscat.se/TransNationalAccess/Final\\_Report\\_EISCAT\\_USERS\\_1.pdf](http://www.eiscat.se/TransNationalAccess/Final_Report_EISCAT_USERS_1.pdf)

## 1.2 Management overview

### Management

The overall Project Management has been conducted by the Headquarters staff of the EISCAT Scientific Association, located in Kiruna, Sweden, under the overall control of the Director. The Financial management and overall budgetary control were overseen by the Head of Administration, who was assisted by the administrative staff of the EISCAT Headquarters. The audit control is accomplished as part of EISCAT's normal audit procedures. The daily project activities were performed by the assigned Project Manager until she left in June 2009 and from there on by the EISCAT Senior Scientist.

### Proposal Submission and Review

Three submission deadlines were set during this period: 28 February, 15 May and 13 September 2009.

Totally five new proposals passed the evaluation and were awarded time on the systems during the year.

### Operations Status

The project by **Mendonca** et al., submitted in the fifth round (1 September 2008), was successfully performed in September 2009.

The project by **Forte** et al., submitted in sixth round was run in June 2009. **Forte** et al., submitted also a wanted project extension to the seventh run and the proposal was awarded time and done in November 2009.

**Hocke** et al., was granted time in the seventh round and the campaign was performed in September 2009. The campaign was the first using the remote monitoring capabilities at EISCAT meaning that the User followed the campaign in real-time from his home institute.

**Lamy** et al., submitted to the sixth round a follow-on campaign request to an event done in March 2008 and after successful evaluation, it was performed in December 2009.

An additional follow-on campaign request was submitted by **Brosch** et al. to the sixth round and after approval, it was also performed in December 2009.

### **1.3 Description of the publicity concerning the new opportunities for access**

The publicity activities have mainly focused on advertising the project at international meetings, either directly, the project only, or indirectly, as a part of the EISCAT overall presentations. These activities have generally turned out to be more productive than other means of publicity, like advertisements.

The project web site ([www.eiscat.se/TransNationalAccess](http://www.eiscat.se/TransNationalAccess)) has been used as the source regarding the project and submission procedures including outcomes. All publicity activities and documentation refer to this web site.

#### Publicity activities during this reporting period

During the 4th year of the project, EISCAT encountered a new phase of general publicity and outreach activity concerning the Association in general, due to the fact that EISCAT's plan for a new generation European Incoherent Scatter Radar facility, EISCAT\_3D, was accepted to the ESFRI Roadmap of Large European Research Infrastructures.

The EISCAT director and EISCAT staff scientists were presenting the operation of the current EISCAT facilities, as well as the plans for the future, in several international meetings. These presentations always included reference and appreciation to the European mobility support via this project.

A dedicated poster presentation of the project was done in the biggest European Science meeting relevant to the science themes of EISCAT, the European Geophysical Union Meeting in Vienna. Also the colour brochure of the project was distributed in that meeting.

The project was also advertised at the kick-off meeting of another ESFRI roadmap project SIOS and in the Nordic e-infrastructure meeting eNoria, both in Oslo, Norway, at the 3rd International Symposium on Space Climate in Saariselkä, Finland, at the International Space Science Institute workshop "Coupling of Atmospheric Regions with Near-Earth Space" and the same institute's forum on "ESA Earth-Observation Programmes" in Bern, Switzerland. Further international meetings, where this project gained publicity, were the 19th European Space Agency symposium on Rocket and Balloon Programmes and Related Research in Bad Reichenhall Germany, General Assembly of IAGA in Sopron Hungary, the annual Coupling, Energetics and Dynamics of the Atmosphere workshop in Santa Fe USA and the 2nd International workshop on High-Energy Particle Precipitation in the Atmosphere in Boulder USA.

Numerous representatives of interest groups and high-level decision makers made visits to the EISCAT facilities in all Scandinavian host countries. As such visits always include presentation of the activities and operation of EISCAT, including this activity, the project was presented to several countries ambassadors to Sweden and Norway, including Japan, India, Great Britain and Russia. Similar presentations were given for the international Space Master's students in the Erasmus Mundus programme run in Sweden by the Luleå University of Technology, as well as in order to encourage international collaboration opportunities for the physics students and researchers at University of Oulu, Finland and University Leicester, Great Britain.

In Finland, several universities doing space research organized together a series of lectures to general public, due to the international Heliophysical Year 2007-2009. The effort was done by the same lecturers in 5 major cities including the capital. The Transnational Access (TNA) opportunities were included in the lecture on Aurora and their research, given by the Director of EISCAT in two occasions in 2009, one of them at the largest Science Center of Finland, Heureka.

It is interesting to note that the accepted proposals during the last project year originated clearly from personal contacts with the EISCAT staff, made either during earlier years project activity or after the above mentioned presentations in the international meetings. One project originated from contacts at the European COST actions. The Biennial EISCAT Scientific Workshop, which covers all EISCAT research themes, was held in Norway. One proposal was originated and finally accepted due to the publicity of the project presented in that meeting.

A further important note to make is that there was a clear interaction of the TNA project with EISCAT's ESFRI Roadmap project EISCAT\_3D, which submitted the Preparatory Phase funding application in the end of 2009. Two institutes (Belgian Institute for Space Aeronomy and the Centre for Atmospheric Research, University of Nova Gorica, Slovenia) and one institution (The European Cooperation in Science and Technology Action COST ES0803) announced their interest to support the Preparatory Phase work by acting as Associate Partners. This is a clear outcome of the interaction within the reported mobility scheme support to EISCAT.

#### **1.4 Description of the selection procedure**

The proposals were reviewed by the EISCAT Scientific Oversight Committee (SOC), a committee of experts established by the EISCAT Council. While the SOC was formally not created for the purposes of this TNA activity, it has been specifically tasked by the EISCAT Council to act as the peer-review panel for proposals submitted under this, and other, programmes. The SOC consists of both experienced scientists from each of the present EISCAT Associates and external experts from outside the Association.

The review process follows closely the usual procedures for peer review and includes appropriate reporting of the referees' findings to proposers. The proceedings of the SOC are fully minuted and monitored by the EISCAT Council and user communities thus ensuring that proposals are treated fairly and impartially in a transparent system.

The proposals were submitted to EISCAT for review by the SOC. This is done normally twice each year, with submission deadlines in spring and autumn. For this year, a third opportunity was established to meet the potential requirements of summer campaigns. The SOC, using external reviewers where necessary to enhance its own competence, first classifies the submitted proposals and then ranks them in terms of scientific excellence, applicability to the EISCAT systems, and likely scientific return. The SOC also recommends the number of hours of radar running time given to each proposal. Where appropriate, the SOC also provides comments and suggestions to be relayed back to the proposers.

Selection meetings during this reporting period

*28 February submission (sixth round)*

4th meeting of SOC held at Leibniz-Institute of Atmospheric Physics (IAP), Kühlungsborn, Germany, 26 - 27 March, 2009.

*15 May submission (seventh round)*

The two applications received for the seventh round did not suggest campaigns before the next regular SOC meeting so it was agreed that the evaluation could be handled then instead of by the intended SOC-subset plus management team constellation.

*13 September submission (eighth round)*

5th meeting of the SOC held at the Arecibo Observatory, Arecibo, Puerto Rico 14 – 15 September, 2009.

### 1.5 Transnational Access activity

User	Schedule*	User Event
Study of electron density irregularity structures responsible for radio waves scintillation by <b>Forte</b> et al.	The project was successfully run 15 – 19 June 2009 using the UHF system. Totally 23.5 hours were run.	<b>UHF System 23.5 hours</b>
Study of photon acceleration in space plasmas by <b>Mendonca</b> et al.	The project was successfully carried out 21 – 25 September 2009. The UHF system and the EISCAT Heating facility ran in parallel for 20 hours. The Heating hours were provided by EISCAT (second system support run)	<b>UHF System 20 hours</b>
Auroral influences on mesospheric water vapour and ozone in observations of the EISCAT radars and ground-based microwave radiometers by <b>Hocke</b> et al.	The project was successfully run 24 – 25 September 2009 on the UHF system. Totally 24 hours were accounted to the User	<b>UHF System 24 hours</b>
Continued studies of electron density irregularity structures responsible for radio waves scintillation by <b>Forte</b> et al.	The project was successfully run 23 – 27 November 2009. Both systems ran 31 hours but due to external disturbances, the first 10 hours of VHF data became corrupted.	<b>UHF System 31 hours</b> <b>VHF System 21 hours</b>
Coordinated observations of auroral arcs with satellites, EISCAT and ALIS by <b>Lamy</b> et al.	The project was successfully carried out 12 – 18 December 2009 using the UHF system. Totally 26.5 hours were run.	<b>UHF System 26.5 hours</b>
A Systematic Investigation of High-Altitude Meteor Trails by <b>Brosch</b> et al.	The project was successfully carried out 17 – 18 December 2009. A total of 24 hours of observing time was run using both systems in parallel.	<b>UHF System 24.5 hours</b> <b>VHF System 24.5 hours</b>

\* Listed in date order

## 1.6 Scientific output of the users at the facility

User	Output
A Systematic Investigation of High-Altitude Meteor Trails by <b>Brosch</b> et al. performed December 2008 (AR3, previous reporting period)	The results of the experiment were presented at the Cedar meeting in Santa Fe, USA, 2009 and at EISCAT workshop in Tromsø, Norway, 2009. A scientific publication has been written and published: "Unusual features in high statistics radar meteor studies at EISCAT" (Monthly Notices of the Royal Astronomical Society, Volume 401, Issue 2, January 2010, Pages: 1069-1079) by Noah Brosch, Ingemar Häggström, Asta Pellinen-Wannberg, Assar Westman.
A Systematic Investigation of High-Altitude Meteor Trails by <b>Brosch</b> et al.	The data is under analysis, and preliminary results have been reached. These will be presented in EGU General Assembly, Vienna, and at Meteoroids 2010 in Boulder, in May 2010.
Study of electron density irregularity structures responsible for radio waves scintillation <i>and</i> Continued studies of electron density irregularity structures responsible for radio waves scintillation by <b>Forte</b> et al.	The data is under analysis, and preliminary results have been reached. These will be presented in EGU General Assembly, Vienna, May 2010. The interactions between EISCAT and UNG has opened a new branch of users and funding applications for these have been compiled and sent in.
Auroral influences on mesospheric water vapour and ozone in observations of the EISCAT radars and ground-based microwave radiometers by <b>Hocke</b> et al.	The data is under analysis, and preliminary results have been reached. The data is also used in a wider research group through ISSI, involving other types of data and atmospheric modeling.

## 1.7 User meetings

None during the reporting period.

## 1.8 Update of the non-confidential Project information

None during the reporting period.

## Annex 1 – Composition of the Users Selection Panel (section 1.4)

**Dr. Anita Aikio**

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Finland

**Dr. Stephan Buchert**

Swedish Institute of Space Physics  
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Sweden

**Prof. Nataly Blagoveshchenskaya** *(from*

*1 July 2009)*  
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**Dr. Jorge L. Chau**

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**Dr. Sixto Gonzalez** *(until 30 June 2009)*

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**Prof. Cesar La Hoz**

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**Dr. Satonori Nozawa**

Solar Terrestrial Environmental Lab.  
Nagoya University  
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Japan

**Prof. Markus Rapp** *(from 1 July 2009)*

Leibniz-Institute of Atmospheric Physics  
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Germany

**Prof. Jürgen Röttger** *(until 30 June 2009)*

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## Annex 2 – List of User-Projects (section 1.5)

### Projects Submitted and Reviewed by the SOC and Run on the Radar Systems

Acronym	<b>Brosch-2</b>
Title	A Systematic Investigation of High-Altitude Meteor Trails
Objectives	This project continues our attempt to detect and investigate the properties of high-altitude meteor trails as observed by the monostatic VHF and UHF radars of EISCAT. The specific goals are (a) to confirm the previous high-altitude echoes detected with EISCAT during a meteor shower, but now during a non-shower period, and (b) to study the altitude distribution and character (density, temperatures, drifts and ion composition) of the trails with the incoherent scatter method.
Users	N. Brosch (1), I. Häggström (2), A. Westman (2), A. Pellinen-Wannberg (3)
Institutions	(1) Wise Observatory, Tel Aviv University, Tel Aviv, Israel (2) EISCAT Scientific Association, Kiruna, Sweden (3) Umeå University and Swedish Institute of Space Physics, Kiruna, Sweden
Granted allocation	EISCAT UHF System, 40 hours EISCAT VHF System, 40 hours
Achievements	The project was successfully run 17 – 18 December 2009. Due to limited system availability the User allocation had to be reduced to 24.5 hours on each of the systems. The data is under analysis, and preliminary results have been reached. These will be presented in EGU General Assembly, Vienna, and at Meteoroids 2010 in Boulder, in May 2010.

Acronym	<b>Forte</b>
Title	Study of electron density irregularity structures responsible for radio waves scintillation
Objectives	The objectives of the proposed research activities focus on the characterization of electron density irregularities at high latitudes particularly with reference to strong scattering modelling. The topics to be investigated include the plasma density structures drifting velocity, their correlation length, their shape, and its influence on the correlation length. Finally, an appropriate and reliable characterization of plasma density irregularity structures might also lead to include the future EISCAT 3D in a sort of monitoring network for now casting purposes in Global Navigation Satellites Systems (GNSS) operations.
Users	B. Forte (1)
Institutions	(1) Centre for Atmospheric Research, University of Nova Gorica, Slovenia
Granted allocation	EISCAT UHF System, 25 hours The applicant had asked for 100 hours of time using both the UHF and the VHF systems. The review panel did not allocate this during its meeting but

	granted 25 hours and agreed that more time could be awarded later provided that the initial operations proved successful.
Achievements	The project was successfully run 15 – 19 June 2009 on the UHF system. Totally 23.5 hours were run. The data is under analysis, and preliminary results have been reached. These will be presented in EGU General Assembly, Vienna, May 2010.

Acronym	<b>Forte-2</b>
Title	Continued studies of electron density irregularity structures responsible for radio waves scintillation
Objectives	The objectives of the proposed research activities focus on the characterization of electron density irregularities at high latitudes particularly with reference to strong scattering modelling. The topics to be investigated include the plasma density structures drifting velocity, their correlation length, their shape, and its influence on the correlation length. Finally, an appropriate and reliable characterization of plasma density irregularity structures might also lead to include the future EISCAT 3D in a sort of monitoring network for now casting purposes in Global Navigation Satellites Systems (GNSS) operations.
Users	B. Forte (1)
Institutions	(1) Centre for Atmospheric Research, University of Nova Gorica, Slovenia
Granted allocation	EISCAT UHF System, 40 hours EISCAT VHF System, 40 hours
Achievements	The project was successfully run 23 – 27 November 2009. Both systems ran 31 hours but due to external disturbances, the first 10 hours of VHF data became corrupted. The data is under analysis, and preliminary results have been reached. These will be presented in EGU General Assembly, Vienna, May 2010. The interactions between EISCAT and UNG has opened a new branch of users and funding.

Acronym	<b>Hocke</b>
Title	Auroral influences on mesospheric water vapour and ozone in observations of the EISCAT radars and ground-based microwave radiometers
Objectives	For a better understanding of mesospheric processes, we suggest a synergy of ground-based microwave radiometers and incoherent scatter radars. The ground-based microwave radiometers of Institute of Applied Physics continuously measure ozone and water vapour profiles up to an altitude of about 70-80 km. Magnetospheric particle precipitation, solar variability, atmospheric waves, tides, and transport processes generate variations in ozone and water vapour at mesospheric altitudes. The combined analysis of wind, temperature, and plasma density from the EISCAT radar and ozone and water vapour profiles from the MIAWARA and GROMOS microwave radiometers will lead to new results about auroral processes and their

	influence on the mesosphere.
Users	K. Hocke (1), T. Flury (1), A. Haefele, (1) N. Kämpfer (1)
Institutions	(1) Institute of Applied Physics, University of Bern
Granted allocation	EISCAT UHF System, 24 hours
Achievements	The project was successfully run 24 – 25 September 2009 on the UHF system. Totally 24 hours were accounted to the User. The data is under analysis, and preliminary results have been reached. The data is also used in a wider research group through ISSI, involving other types of data and atmospheric modeling.

Acronym	<b>Lamy-2</b>
Title	Coordinated observations of auroral arcs with satellites, EISCAT and ALIS
Objectives	<p>We propose to run coordinated EISCAT/ALIS observations during conjunctions with Cluster and FAST in December 2009. We have the following objectives:</p> <ol style="list-style-type: none"> <li>(1) Retrieve 1-D flux of precipitating electrons along the geomagnetic field line by inverting EISCAT data using the method described in Semeter &amp; Kamalabadi (2005)</li> <li>(2) Retrieve 2-D fluxes of precipitating electrons by inverting ALIS data with tomographic-like techniques using data obtained with the blue filter</li> <li>(3) Compare both fluxes along the geomagnetic field line</li> <li>(4) Compare the EISCAT 1-D flux and the ALIS 2-D fluxes with the downward differential electron flux obtained by electrostatic analyzers onboard the FAST satellite (see Sergienko et al 2008 for an example)</li> <li>(5) Compare the field-aligned potential difference obtained by solving equation (1) with the value deduced from downward electron and upward proton spectra observed by Cluster. We will use RAPID/PEACE data for the electrons and CIS data for the protons. We will need both electrons and protons since Cluster will fly at a lower altitude in December 2009, therefore crossing the acceleration region.</li> <li>(6) Use the reconstructed ALIS electron flux along the geomagnetic field line as input for the TRANS4 ionospheric transport code and compare the outputs of the model with the altitude density and temperature profiles given by EISCAT. The code also allows to compute the red and green volume emission rates. These results will be compared to the 3-D volume emission reconstructed from ALIS data</li> </ol>
Users	H. Lamy (1), C. Simon (1), J. De Keyzer (1), R. Maggiolo (1), M. Echim (1), The ALIS team (2)
Institutions	(1) Belgian Institute for Space Aeronomy, Avenue Circulaire 3, 1180 Bruxxelles, Belgium (2) Kiruna, Sweden
Granted	EISCAT UHF System, 40 hours

allocation	
Achievements	The project was successfully carried out 12 – 18 December 2009. Due to limited system availability the User allocation had to be reduced to 26.5 hours. The data is under analysis, and preliminary results have been reached. As the experiments were carried out in a very busy time of radar operations, the group has through EISCAT got several new contacts sharing data and knowledge.

Acronym	<b>Mendonca</b>
Title	Study of photon acceleration in space plasmas using EISCAT
Objectives	<p>The request is for 24 hours of EISCAT accounting time for a joint mainland and HF heating experiment to study Stimulated Electromagnetic Emissions (SEE). The aim is to replicate some of the standard SEE measurements already carried out in previous years which have shown strongly structured SEE emissions observed at HF frequencies during CW heating experiments. To measure the stimulated emissions, we propose to use EISCAT's existing set of spectrum analysers and HF antennas, as already discussed with scientists at EISCAT. The project will concentrate particularly on geophysical conditions and heater pump frequencies which produce upshifted SEE structures. It is believed that this phenomenon can be explained by the wake field scattering model of photon acceleration developed by scientists working at the Rutherford Appleton Laboratory.</p> <p>In addition to the experimental studies, previous SEE data obtained at EISCAT will also be examined which also show these features. The aim is to compare the observed upshifted SEE emissions to the predictions of the model based on the pump frequency and heater power matching our experimental conditions and the characteristics of the background plasma determined by the EISCAT UHF radar.</p>
Users	T. Mendonca (1), B. Bingham (2), R. Trines (2), I. McCrea (2), M. Kosch (3), M. Rietveld (4)
Institutions	(1) Instituto Superior Technico, Lisbon (2) Rutherford Appleton Laboratory, Didcot, UK (3) University of Lancaster, Lancaster, UK (4) EISCAT Scientific Association, Kiruna, Sweden
Granted allocation	EISCAT UHF System, 24 hours EISCAT Heating System, 24 hours (funded by EISCAT)
Achievements	The project was successfully carried out 21 – 25 September 2009. The two systems ran in parallel and 20 hours were accounted to the User. The data is under analysis. Some basic results have been reached, but there are some temporary funding problems delaying further detailed analysis.

### Annex 3 – List of Users (section 1.5)

Project	Users	Institutions
<b>Brosch-2</b>	N. Brosch (1), I. Häggström (2), A. Westman (2), A. Pellinen-Wannberg (3)	(1) Wise Observatory, Tel Aviv University, Tel Aviv, Israel (2) EISCAT Scientific Association, Kiruna, Sweden (3) Umeå University and Swedish Institute of Space Physics, Kiruna, Sweden
<b>Forte</b>	B. Forte (1)	(1) Centre for Atmospheric Research, University of Nova Gorica, Slovenia
<b>Forte-2</b>	B. Forte (1)	(1) Centre for Atmospheric Research, University of Nova Gorica, Slovenia
<b>Hocke</b>	K. Hocke (1), T. Flury (1), A. Haefele, (1) N. Kämpfer (1)	(1) Institute of Applied Physics, University of Bern, Switzerland
<b>Lamy-2</b>	H. Lamy (1), C. Simon (1), J. De Keyzer (1), R. Maggiolo (1), M. Echim (1), The ALIS team (2)	(1) Belgian Institute for Space Aeronomy, Avenue Circulaire 3, 1180 Bruxxelles, Belgium (2) Kiruna, Sweden
<b>Mendonca</b>	T. Mendonca (1), B. Bingham (2), R. Trines (2), I. McCrea (2), M. Kosch (3), M. Rietveld (4)	(1) Instituto Superior Technico, Lisbon (2) Rutherford Appleton Laboratory, Didcot, UK (3) University of Lancaster, Lancaster, UK (4) EISCAT Scientific Association, Kiruna, Sweden

#### **Annex 4 – List of Publications (section 1.6)**

Refereed Journal: **Unusual features in high statistics radar meteor studies at EISCAT** (Monthly Notices of the Royal Astronomical Society, Volume 401, Issue 2, January 2010, Pages: 1069-1079) by Noah Brosch (1), Ingemar Häggström (2) , Asta Pellinen-Wannberg (3), Assar Westman (2)

(1) Wise Observatory, Tel Aviv University, Tel Aviv, Israel

(2) EISCAT Scientific Association, Kiruna, Sweden

(3) Umeå University and Swedish Institute of Space Physics, Kiruna, Sweden

#### **Annex 5 – Updated non-confidential Project information (section 1.8)**

None during the reporting period.

## B. MANAGEMENT REPORT (FINANCIAL INFORMATION)

### B.1 Justification of the resources deployed

The four year project had a slow start resulting in zero User events during the first year and only 50% utilisation in the second year. The underuse allowed for more User events than initially budgeted for this fourth and final year without exceeding the total project allocation.

#### *Summary of total human effort and actual eligible costs against initial plan*

##### *Deployed management effort in total for P4*

<b>Management</b>	Plan	Outcome	Percent
Person-months	0.72	0.87	121%

##### *User events per facility and outcome for P4*

<b>User events</b>	Plan	Outcome	Percent
Planned UHF events	2	6	300%
Planned VHF events	2	2	100%
In total	4	8	200%

##### *Operations per facility and outcome for P4*

<b>System</b>	Plan	Outcome	Percent
UHF system, hours	48	149.5	311%
VHF system, hours	48	45.5	95%
In total, hours	96	195	203%

##### *Actual eligible costs in total for P4*

<b>Cost type in €</b>	Plan	Outcome	Percent
Management	8 737	7 258	83%
UHF system	65 686	204 584	311%
VHF system	40 505	38 395	95%
Travel and accommodation	6 400	9 463	144%
In total	121 328	259 700	214%

## B.1.1 Justification of resources deployed during the reporting period

Justification of resources deployed during reporting period

Contract N°	026077	Project acronym	EISCAT_USERS_1
Participant N°	1	Participant short name	EISCAT
		<b>Management of the Design Study</b>	
		Total effort in person-months <sup>(1)</sup>	0.87
<b>Cost category</b>	<b>Actual direct eligible costs (€)</b>	<b>Justification of costs</b> <i>description of expenditure and link to the specific work carried out (e.g. tasks, work packages, ...)</i>	
Other cost	0.00		
Personnel cost	6 483.20	Management work by Mr. H. Andersson and support staff	
Travel cost	117.04	Management travel during P4 - part of 1 trip	
Sub-contracts	657.31	Audit certificate by Öhrlings PricewaterhouseCoopers AB	
		<b>Operations</b>	
		Total effort in person-months <sup>(1)</sup>	n/a
<b>Cost category</b>	<b>Actual direct eligible costs (€)</b>	<b>Justification of costs</b> <i>description of expenditure and link to the specific work carried out (e.g. tasks, work packages, ...)</i>	
UHF system	204 583.87	Operations, UHF system, totally 149.50 hours	
VHF system	38 395.18	Operations, VHF system, totally 45.50 hours	
		<b>User travel and accommodation</b>	
		Total effort in person-months <sup>(1)</sup>	n/a
<b>Cost category</b>	<b>Actual direct eligible costs (€)</b>	<b>Justification of costs</b> <i>description of expenditure and link to the specific work carried out (e.g. tasks, work packages, ...)</i>	
Travels	4 970.02	Airfare and ground transport, 5 users/events	
Accommodation	1 500.35	Accommodation, 5 users/events	
Subsistences	2 993.13	Claimed subsistences, 5 users/events	
<b>Total direct eligible costs</b>	259 700.11		
<b>Total indirect costs</b>	51 808.56		
<b>Adjustments previous period</b>	-49.05		
<b>Total costs <sup>(2)</sup></b>	311 459.61	<b>Global estimate of the total costs for AC contractors (not only the eligible costs)</b>	

<sup>(1)</sup> AC contractors must include both the total estimated human effort (including permanent staff) and, in brackets, additional staff only.

<sup>(2)</sup> Totals should correspond to the respective figures on FORM C - Financial Statement

## B.2 Forms C -Financial Statement

### B.2.1 Financial Statement

**Form C - Model of Financial Statement per Activity for a Specific Support Action /  
Transnational Access to Infrastructures**  
(to be completed by each contractor)

Type of instrument	Specific Support Action	Type of Action (if necessary)	Transnational Access to Infrastructures
Project Title (or Acronym)	EISCAT_USERS_1	Contract n°	026077
Contractors' legal name	EISCAT Scientific Association		
Legal Type	Non-profit		
Contact Person	Henrik Andersson	Telephone	+46-980 79150
Teletcopy	+46-980-79159	E-mail	Henrik.Andersson@eiscat.se
Cost model used (AC/FC or FCF) / (UF: User Fee)(*)	FCF/UF	Indirect costs (Real or Flat Rate of 20% of Direct costs, except subcontracting)	Flat Rate of 20% of Direct costs, except subcontracting (**)
Period from	01/01/2009	To	31/12/2009

(\*) If UF is used under "other specific activities: transnational access/connectivity", please mention the two cost models used (eg. FC/UF or FCF/UF or AC/UF)

(\*\*) Except otherwise agreed in Article 9 [special clauses] of the contract.

#### 1- Resources (Third party(ies))

Are there any resources made available on the basis of a prior agreement with third parties identified in Annex I of the contract? (Yes / No)

If Yes, please provide the following information

Third Party (Y1)	Legal name	Cost model used
Third Party 2 (Y2)	Legal name	Cost model used
Third Party 3 (Y3)	Legal name	Cost model used
Third Party 4 (Y4)	Legal name	Cost model used

If necessary add another Form C

#### 2- Declaration of eligible costs (in €)

Please complete only the activity covered by the relevant instrument (and type of action) indicated above and as mentioned in Article II.25 and/or in Annexes I and III of the contract.

If you are a contractor using the additional cost model (AC):

- indicate only your additional eligible costs, except for Management of the Consortium Activity for which you may indicate your full eligible costs;  
- do not declare eligible direct additional costs specifically covered by contributions from third parties as mentioned in Articles II.20 and II.23.a and b of the contract.

If you are a contractor using a full cost model (FC/FCF), indicate your full eligible costs

The costs declared should distinguish between direct and indirect costs

If necessary, adjustments to previous period(s) may be included where appropriate.

	Type of Activity													
	Research and Technological Development / Innovation (A)		Demonstration (B)		Training (C)		Management of the Consortium (D)		Other Specific Activities: Transnational Access (E)		Other Specific Activities (E)		Total (G) = (A)+(B)+(C)+(D)+(E)+(F)	
	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)
Direct costs							7 257.56		242 979.05		9 463.50		259 700.11	
Of which subcontracting							657.31		0.00		0.00		657.31	
Indirect costs							1 320.05		48 595.81		1 892.70		51 808.56	
Adjustments to previous period(s)							-49.05		0.00		0.00		-49.05	
<b>Total costs</b>							<b>8 528.55</b>		<b>291 574.86</b>		<b>11 356.20</b>		<b>311 459.61</b>	

**3- Declaration of receipts (in €)**

If you are a contractor using the additional cost model (AC), indicate only receipts covered by Article II.23.c of the contract.  
If you are a contractor using a full cost model (FC/FCF), indicate receipts covered by Article II.23 of the contract.

	Type of Activity													
	Research and Technological Development / Innovation		Demonstration		Management of the Consortium		Other Specific Activities: Coordination / Networking		Other Specific Activities: Transnational Access / Connectivity		Other Specific Activities		Total	
	(A)	(B)	(C)	(D)	(E)	(E)	(G) = (A)+(B)+(C)+(D)+(E)+(F)							
	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)	Contractor	Third Party(ies)
<b>Total receipts</b>					0				0		0			

**4- Declaration of interest generated by the pre-financing (in €)**

To be completed only by the coordinator.

Did the pre-financing (advance) you received by the Commission for this period earn interest? (Yes / No)

No

If yes, please indicate the amount (in €)

**5- Request of FP6 Financial Contribution (in €)**

For this period, the FP6 Community financial contribution requested is equal to ( amount in €)

311 459.61

**6- Audit certificates**

According to the contract, does this Financial Statement need an audit certificate (or several in case of Third party(ies) delivered by independent auditor(s)? (Yes / No)

Yes

If Yes, does this(those) audit certificate(s) cover only this Financial Statement per Activity? (Yes / No)

Yes

If No, what are the periods covered by this(those) audit certificate(s) ?

From - to

What is the total cost of this(those) audit certificate(s) (in €) per independent auditor(s) ?


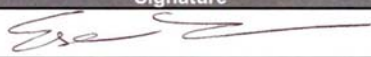
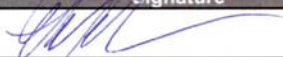
Audit certificate of the contractor (X)			
Legal name of the audit firm	Örhings PricewaterhouseCoopers AB	Cost of the certificate	657.31
Audit certificate(s) of the third party(ies) (Ys) (if necessary)			
Y1 : Legal name of the audit firm		Cost of the certificate	
Y2 : Legal name of the audit firm		Cost of the certificate	
Y3 : Legal name of the audit firm		Cost of the certificate	
Y4 : Legal name of the audit firm		Cost of the certificate	
<b>If necessary add another Form C.</b>		Total (Z) = (X) + (Ys)	

Reminders:

The cost of an audit certificate is included in the costs declared under the activity "Management of the Consortium". The required audit certificate (s) is (are) attached to this Financial Statement

<b>7- Conversion rates</b>	
Costs incurred in currencies other than EURO shall be reported in EURO.	
Please mention the conversion rate used (only one choice is possible) – Please note that the same principle applies for receipts. 1 EUR = 10.193 SEK	
Contractor	
- Conversion rate of the date of incurred actual costs? (YES / NO)	No
- Conversion rate of the first day of the first month following the period covered by this Financial Statement? (YES/NO)	Yes
Third Party(ies) (if necessary)	
Third Party 1 (Y1)	
- Conversion rate of the date of incurred actual costs? (YES / NO)	
- Conversion rate of the first day of the first month following the period covered by this Financial Statement? (YES/NO)	
Third Party 1 (Y2)	
- Conversion rate of the date of incurred actual costs? (YES / NO)	
- Conversion rate of the first day of the first month following the period covered by this Financial Statement? (YES/NO)	
Third Party 3 (Y3)	
- Conversion rate of the date of incurred actual costs? (YES / NO)	
- Conversion rate of the first day of the first month following the period covered by this Financial Statement? (YES/NO)	
Third Party 4 (Y4)	
- Conversion rate of the date of incurred actual costs? (YES / NO)	
- Conversion rate of the first day of the first month following the period covered by this Financial Statement? (YES/NO)	

If necessary add another Form C.

<b>8- Contractor's Certificate</b>		
We certify that:		
- the costs declared above are directly related to the resources used to reach the objectives of the project ;		
- the receipts declared above are directly related to the resources used to reach the objectives of the project ;		
- the costs declared above fall within the definition of eligible costs specified in Articles II.19, II.20, II.21, II.22 and II.25 of the contract, and, if relevant, in Annex III and Article 9 (special clauses) of the contract ;		
- the receipts declared above fall within the definition of receipts specified in Article II.23 of the contract ;		
- the interest generated by the pre-financing declared above falls within the definition of Article II.27 of the contract ;		
- the necessary adjustments, especially to costs reported in previous Financial Statement(s) per Activity, have been incorporated in the above Statement ;		
- the above information declared is complete and true ;		
- there is full supporting documentation to justify the information hereby declared. It will be made available at the request of the Commission and in the event of an audit by the Commission and/or by the Court of Auditors and/or their authorised representatives.		
Contractor's Stamp	Name of the Person responsible for the work	Name of the duly authorised Financial Officer
 <b>EISCAT Scientific Association</b> P.O. Box 812 SE-981 28 Kiruna, Sweden	Dr. Esa Turunen	Mr. Henrik Andersson
	Date	Date
	8 February, 2010	8 February, 2010
	Signature	Signature
		

## B.2.2 Audit Certificate

Öhrlings

PRICEWATERHOUSECOOPERS 

Öhrlings PricewaterhouseCoopers AB  
Box 1343  
801 38 Gävle  
Besöksadress: N Köpmangatan 12 B  
Telefon 026-457 05 00  
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Direktfax 026-457 15 54  
www.pwc.com/se

EISCAT Scientific Association  
P. O. Box 812  
SE-981 28 Kiruna

We, Öhrlings Pricewaterhouse Coopers AB, established in N Köpmangatan 12 B, SE-801 38 Gävle, Sweden represented for signature of this audit certificate by Annika Wedin, authorized public accountant, hereby certify that:

- we have conducted an audit relating to the cost declared in the Financial Statement per Activity of EISCAT Scientific Association hereinafter referred to as contractor, to which this audit certificate is attached, and which is to be presented to the Commission of the European Communities under RITA contract "Access to EISCAT facilities for new users", EISCAT\_USERS\_1, contract number 026077, for the following period covered by the EC contract: 2009-01-01 – 2009-12-31.
- We confirm that our audit was carried out in accordance with generally accepted auditing standards respecting ethical rules and on the basis of the relevant provisions of the above-referenced contract and its annexes.

The above mentioned Financial Statement per Activity was examined and all tests of the supporting documentation and accounting records deemed necessary were carried out in order to obtain reasonable assurance that, in our opinion, based on our audit:

- the amount of the total eligible costs € 311 459.61 (three hundred eleven thousand four hundred fifty nine euros and sixty one cents), declared in Box 2 of the attached Financial Statement per Activity is complying with the following cumulative conditions:
  - they are actual and reflect the contractor's economic environment;
  - they are determined in accordance with the contractor's accounting principles;
  - they have been incurred during the period covered by the Financial Statement per Activity concerned by this audit certificate;
  - they are recorded in the accounts of the contractor at the date of the establishment of this audit certificate;

*AMW*

Öhrlings PricewaterhouseCoopers AB Säte Stockholm Org nr: 556029-6740

# Öhrlings



- they are exclusive of any non-eligible costs identified below which are established in the second paragraph of article II.19 of the above mentioned contract with the Commission of the European Communities:
  - any identifiable indirect taxes, including VAT or duties;
  - interest owed;
  - provisions for possible future losses or charges;
  - exchange losses;
  - costs declared, incurred or reimbursed in respect of another Community project;
  - return on capital;
  - debt and debt service charges;
  - excessive or reckless expenditure;
  - any cost which does not meet the conditions established in Article II.19.1. of your contract with the Commission of the European Communities.
- they have been claimed according to the FCF (full cost flat rate) cost reporting model or the UF (user fee) cost reporting model depending on type of cost, which the contractor is eligible to use according to the above mentioned contract with the Commission of the European Communities;
- they are claimed according to the following basis for the conversion rate used of EURO:
  - the rate applicable on the first day of the month following the end of the reporting period;
- as declared in the Box 3 of the attached Financial Statement per Activity, the total amount of receipts for the period covered by this Financial Statement per Activity is equal to € 0 (zero euros);
- as declared in the Box 4 of the attached Financial Statement per Activity, the total amount of interest yielded by the pre-financing received from the Commission of the European Communities for the period covered by this Financial Statement per Activity is equal to € 0 (zero euros);
- accounting procedures used in the recording of eligible costs and receipts respect the accounting rules of the State in which the contractor is established and permit the direct reconciliation between the costs and receipts incurred for the implementation of the project covered by the EC contract and the overall statement of accounts relating to the contractor's overall business activity;

*mmw*

Öhrlings

PRICEWATERHOUSECOOPERS 

- our company is qualified to deliver this audit certificate in full compliance with the second and third paragraphs of article II.26 of the contract;
- as declared in the Box 6 of the attached Financial Statement per Activity, the contractor paid for this audit certificate a price equal to € 821.64 (eight hundred twenty one euros and sixty four cents) in which VAT is equal to € 164.33 (one hundred sixty four euros and thirty three cent).

Gävle 2010-02-03

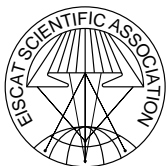
Öhrlings Pricewaterhouse Coopers AB



Annika Wedin  
Authorized public accountant



EISCAT\_USERS\_1 4th Annual Report, Contract number 026077  
Published 8 February 2010



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