

Institutional Partnership: Geoprocessing for Natural Resource Monitoring – Capacity Strengthening in Tajikistan and Kyrgyzstan

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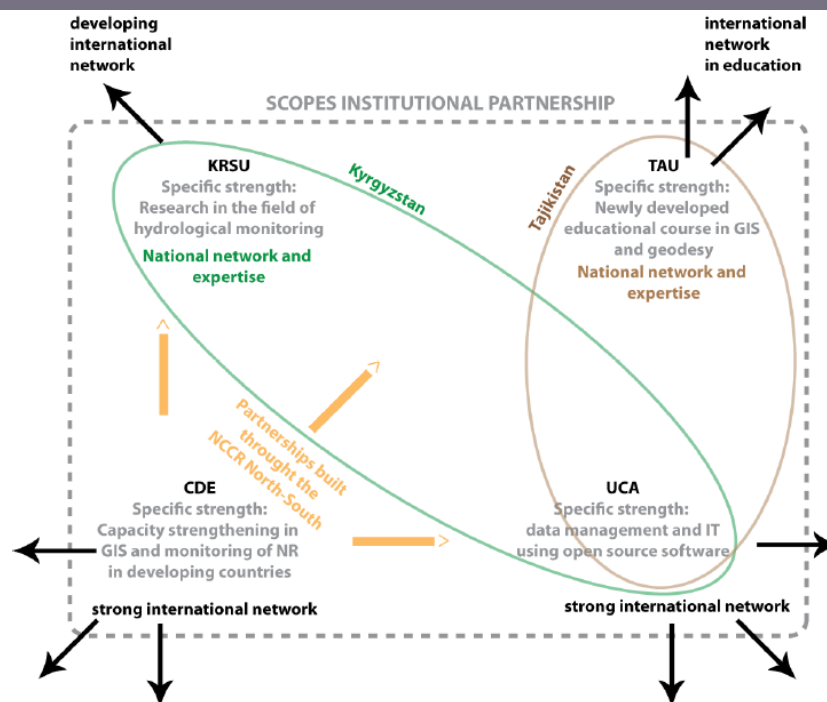
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1 General Information

Institutional Partnership: Geoprocessing for Natural Resource Monitoring – Capacity Strengthening in Tajikistan and Kyrgyzstan, Number of the IP: IZ74Z0_128214

In 2010, activities began in a three-year partnership between the University of Central Asia (UCA), Kyrgyz Slavic Russian University (KSRU), the Tajik Agrarian University (TAU) and the Centre for Development and Environment (CDE) at the University of Berne to strengthen capacity in geoprocessing for monitoring natural resources in Kyrgyzstan and Tajikistan. The project, Institutional Partnership: Geoprocessing for Natural Resource Monitoring – Capacity Strengthening in Tajikistan and Kyrgyzstan, is funded by a research grant awarded by the Swiss National Science Foundation and the Swiss Agency for Development and Cooperation to Dr. Thomas Breu (CDE) as the main applicant, and CDE Senior Research and UCA Senior Research Fellow Dr. Bettina Wolfgramm as the project coordinator in Central Asia. Dr. Wolfgramm is overseeing the project, to increase GIS capacity in the region in a holistic and integrated manner by building skills and resources, as well as opportunities in research, education and data management. Activities include establishing GIS laboratories at UCA and KSRU, developing online data management systems, linking and networking of partners, and financial support for participation in conferences and trainings.

The project team

The Steering Committee consists of Dr. Thomas Breu (CDE, Berne, CH), Dr. Nataliya Ivanova (KRSU, Bishkek, KG), Dr. Islomkul Ikromov (TAU, Dushanbe, TJ), and Dr. Nasreen Dhanani (UCA, Bishkek, KG). The following table provides an overview on the partner teams and their team members:

Table 1 Overview on team members

	Insti- tution	Name	SCOPES function	Other affiliations	email
1.	CDE	Bettina Wolfgramm	Coordinator CDE	NCCR North-South, UCA	Bettina.wolfgramm@cde.unibe.ch
2.	CDE	Thomas Breu	Steering committee	NCCR North-South	Thomas.breu@cde.unibe.ch
3.	CDE	Chris Hergarten	CDE GIS Unit	PhD researcher NCCR North-South	Christian.hergarten@cde.unibe.ch
4.	NCCR N-S	Hasan Safarov	Photogrammetry lecturer at TAU	PhD researcher NCCR North-South, TEMPUS GEM	khasan_81@mail.ru
5.	KRSU	Natasha Ershova	Coordinator KRSU	NCCR North-South Alumni	Natasha-er@yandex.ru
6.	KRSU	Natalia Ivanovna	Steering Committee	Regional Advisory Board NCCR North-South	n.ivanova@istc.kg
7.	KRSU	Galina Frolova	GIS lecturer		victorianoelia@yandex.ru
8.	KRSU	Farkhat Rakhmatullin	GIS lecturer		
9.	TAU	Zamira Kadirova	Coordinator TAU	TEMPUS GEM	kadirovaz@gmail.com
10.	TAU	Islomkul Ikromov	Steering Committee		
11.	TAU	Mirasil Mirzoev	GIS specialist	TEMPUS GEM	mirasilfazo@gmail.com
12.	TAU	Nozim Aliev	GIS lecturer	TEMPUS GEM	nnozim@gmail.com

13.	TAU	Behzod Abdullobekov	GIS lecturer	TEMPUS GEM	behzodtau@gmail.com
14.	TAU	Firdavs Kukanov	GIS lecturer	TEMPUS GEM	
15.	UCA	Emanuele Costa	Coordinator UCA, data management specialist	TEMPUS GEM	emanuele.costa@ucentralasia.org
16.	UCA	Nasreen Dhanani	Steering Committee	TEMPUS GEM, UCA is hosting the NCCR North-South regional office	nasreen.dhanani.ucentralasia.org
17.	UCA	Ainura Nazarkulova	SDI specialist on behalf of UCA	ACA*GIScience, TEMPUS GEM	nazarkulova@aca-giscience.org
18.	UCA	Suhaily Mamadramov	Natural hazard specialist	FOCUS	smamadramov@focushumanitarian.org
19.	UCA	Farrukh Nazarmavloev	Remote sensing specialist	MSc student at AIT in Bangkok, thesis with NCCR North-South (sponsored by UCA under its Central Asian Faculty Development Programme)	Farrukh.Nazarmavloev@ait.ac.th

2 Overview on activities

2.1 Activities

The following table gives an overview on the overall team activities. Changes decided upon or affecting the whole team area listed. Activities carried out by each of the teams are described in the paragraphs following this general overview.

Team activities

The table below provides an overview on presentation and participation in conferences, workshops and trainings.

Table 2 Overview on team activities 2010

Institution	Name	Kick-off workshop	2010 team workshop	Conference participation	UNIGIS student
CDE	Bettina Wolfgramm	Lead	Lead	-	-
CDE	Chris Hergarten	-	Presentation	-	-
CDE	Lorenz Ruth		Field work	-	-
NCCR N-S	Hasan Safarov	Participation	Presentation	-	-
KRSU	Natasha Ershova	Presentation	Presentation	EARSeL, GISCA10, enerGIS'10	Professional diploma
KRSU	Natalia Ivanovna	Participation	Participation	EARSeL	-

KRSU	Galina Frolova	Participation	Participation	enerGIS'10	-
KRSU	Farkhat Rakhmatullin	-	-	-	MSc program
TAU	Zamira Kadirova	Presentation	Presentation	EARSeL, GISCA10, enerGIS'10	Professional diploma
TAU	Islomkul Ikromov	-	Participation	-	-
TAU	Mirasil Mirzoev	Participation	Participation	GISCA10, enerGIS'10	Professional dipl.
TAU	Nozim Aliev	-	Presentation	enerGIS'10	-
TAU	Behzod Abdullobekov	-	Participation	enerGIS'10	-
TAU	Firdavs Kukanov	-	Participation	enerGIS'10	-
UCA	Emanuele Costa	Presentation	-	-	-
UCA	Nasreen Dhanai	Participation	-	-	-
UCA	Ainura Nazarkulova	Presentation	Presentation	GISCA10, GSDI	-
UCA	Suhaily Mamadramov	-	Presentation	-	MSc program
UCA	Farrukh Nazarmavloev	-	Presentation	-	-

Changes compared to the original work plan:

- During the kick-off meeting it was decided to change the order of the **topics to be discussed during the SCOPES team workshops**: instead of the following workshop order Research, Education and Data Management, it was decided to start with Education, followed by Research and Data Management. This order corresponded better to the immediate needs of the partner universities.
- Due to the political situation in Kyrgyzstan, all **field trainings in 2010** of the KRSU were cancelled including the field training foreseen within the SCOPES project. This also affected partners from TAU who were expected to participate in the KRSU field training in order to learn how to best conduct such trainings.
- **Joint MSc studies** in tandems of Swiss and Central Asian students were several times discussed. In general, all partners are interested in such studies, in practice however, it has proven to be more difficult to arrange for such tandem studies. The Swiss students have restricted time available for their field work making it difficult to coordinate their work plans. Topic wise the Central Asian MSc studies are restricted to disciplinary studies within their field of specialisation which creates difficulties in linking up different MSc students. Last but not least, administrative procedures on both sides and language problems (e.g. Tajik students nowadays generally only speak Tajik) create further hurdles. For 2011 it is proposed that the option of internships for Swiss students in Central Asia is foreseen.
- An **advisory board** has not been formally established, but information exchange with important GIS stakeholders in Tajikistan and Kyrgyzstan took place by way of participation in workshops or on an informal basis. For more information on cooperation, please see chapter 2.2.

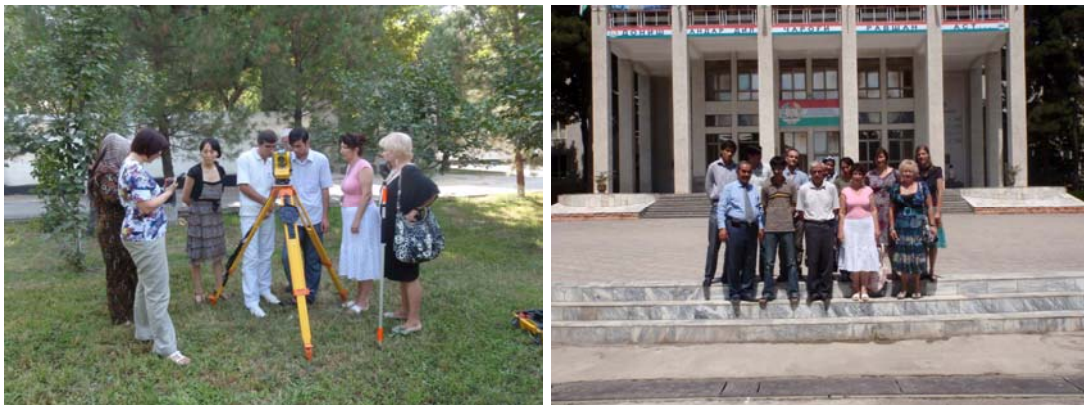
Centre for Development and Environment (CDE)

Memorandums of Understanding: A MoU between the NCCR North-South Regional Coordination Office and TAU was elaborated, and signed by Mira Arynova (Regional Coordinator of NCCR North-South for Central Asia) and the Dean of the Tajik Agrarian University. The MoU with KRSU was renewed. University of Central Asia has a MoU for academic cooperation with CDE since 2007 and hosts the Central Asia Regional Coordination Office of NCCR North South at its premises in Bishkek, Kyrgyzstan.

Team workshops: The following two team meetings were organized:

- The kick-off meeting was organized by CDE and took place on 15-16 February 2010 in Bishkek, Kyrgyzstan. The first day was conducted at KRSU and the second day at UCA. The program of the meeting can be found as Annex 1 to this report.
- The SCOPES workshop 2010 on “GIS Education and Training” was planned by CDE and organized by Zamira Kadirova and her team from TAU. The workshop took place from 16-20 August 2010 at the TAU GIS laboratory. The program can be found as Annex 3.

In August 2010, the first in a series of three SCOPES workshops planned in the Project took place. The workshop focused on *GIS Education and Training* and will be followed by workshops on GIS in Research and GeoData Management in 2011 and 2012 respectively. Held at the GIS laboratory of the Hydromelioration Department of the Tajik Agrarian University in Dushanbe, the 2010 workshop was attended by representatives from project partners, UCA, KSRU, TAU and CDE, as well as from the NCCR North-South research program, FOCUS Humanitarian Assistance Tajikistan, and GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit). Participants reviewed and exchanged ideas on existing curricula from masters-level programmes in India, Thailand and Switzerland; compiled and shared information about training materials, including data sets and GIS tools; and worked on announcements for joint masters-level studies between CDE and partner institutions.



Workshop participants of the 2010 SCOPES workshop in Dushanbe

Additional events:

1) GIS / Remote Sensing Day organized by NCCR North-South, 22 April 2010, at TAU, Dushanbe, Tajikistan: The GIS / Remote Sensing Day was organised for NCCR North-South MSc and PhD students, as well as for lecturers of GIS courses at TAU. It included a guided GIS and RS exercise, group work and discussions:

- 9-12.30: Digital Soil Mapping in 4 steps (Bettina Wolfgramm)
- 13.30-15.00: TAU, agrochemical laboratory and testplot visit
- 15.30-17.30: MODIS satellite imagery for land cover assessment in Tajikistan (Chris Hergarten)

2) A soil spectroscopy training has taken place in Dushanbe from 2 to 13 August 2010. The training was jointly organized between the FAO/IAEA division in Vienna, the Tajik Soil Institute, and CDE / NCCR North-South, RP11. From CDE Lorenz Ruth provided support with lab based soil spectral measurements. Students collaborating with RP11 from 5 different institutions in Tajikistan participated in the training, including the SCOPES partners from TAU. The second week of the training was conducted in the GIS laboratory at TAU. The program of the training can be found in Annex 5.

3) Three CDE team members have spent time in Tajikistan and foremost in August 2010 provided assistance to the institutional partners. Christian Hergarten (spent April and August 2010 in Tajikistan), Lorenz Ruth (spent August in Tajikistan) and Bettina Wolfgramm (spent in 2010 10 months in Tajikistan) provided inputs to the SCOPES team workshop 2010, to the soil spectroscopy training, and additionally provided support to the TAU GIS lab on a daily bases. Such support included installation of specific software, advice in back-up and anti-virus settings.

Communication: To ensure good communication among the SCOPES partners, the following means were applied:

- The SCOPES proposal and administrative document were translated into Russian.
- A protocol of the kick-off meeting, including a compilation of information related to GIS was distributed to all team members (Annex 2)
- A info-compilation was shared among team members in August 2010 (Annex 4)

CDE changes compared to the original work plan:

- An online information platform has not yet been established. Preliminary talks with UCA on the possibilities were conducted in 2010 and will be further pursued in 2011. In the meantime, the partners were updated with newsletters and email information on up-coming conferences.
- No conference visits in 2010: The NCCR North-South Research Project RP11 in 2010 was in its first year, which did not yet allow for research outputs. However, for 2011 several conference visits are foreseen, including GISCA 2011 conference, May 2011 in Almaty, and the EARSel workshop in April 2011 in Edinburgh.

Kyrgyz Russian Slavic University (KRSU)

Equipment: A GIS laboratory was set up at the sub-department of Hydro-Technical Constructions and Integrated Water Management of KRSU. The lab has 10 computers, and UPS for each computer. The lab is equipped with a HUB switch and an external hard disk for back ups. Furniture and air conditioners were bought. The latter are essential to assure also in summer, temperatures in the lab at a level not harming the computers. Additionally, a laptop and a GPS device for field work were bought. Emanuele Costa from UCA supported the purchase and installation of the GIS lab. The pictures below show the newly established lab, which is functional since the winter semester 2010/2011.



GIS Laboratory established at Kyrgyz Russian Slavonic University (KRSU)

Conferences: KRSU partners were actively participating in conferences and workshops

- 1) 30th EARSeL SYMPOSIUM, 31st May - 3rd June 2010, UNESCO, Paris, France
Natalia Ershova and Natalia Ivanova presented a poster on "Using Remote Sensing and GIS technologies for Hydrological Modeling". For the poster presented see Annex 7.
- 2) GISCA 2010, GIS in Environmental Management, 24-28 May 2010, Bishkek, Kyrgyzstan (<http://gisca10.aca-giscience.org/schedule/gis-in-environmental-management>)
Natalia Ershova participated in the workshop and the conference.
- 3) enerGIS'10 Staff Development Workshop, 20-24 September 2010, TAU, Dushanbe, Tajikistan, organized by Austria - Central Asia Centre for GIScience (<http://energis.tugraz.at>)
Natalia Ershova and Galina Frolova participated in the 4 days training.

Team workshop: The first day of the kick-off workshop in February 2010 was organized at KRSU.

KRSU changes compared to the original work plan:

- Due to the political insecurity in summer 2010 in Kyrgyzstan, KRSU cancelled all field practical trainings for summer 2010. The field trainings are foreseen to take place again in 2011.

Tajik Agrarian University (TAU)

Equipment: TAU purchased additional equipment for their GIS lab and covered maintenance expenses:

- Internet connection for the year 2010 for the TAU GIS lab.
- 4 Laptops for field work
- Anti-virus software license renewal for the GIS lab
- External back-up hard disk for the server of the GIS lab
- Necessary accessories to the Leica total station , purchased within a previous

Conferences: TAU partners were actively participating / co-organising of conferences and workshops

- 1) 30th EARSeL SYMPOSIUM, 31st May - 3rd June 2010, UNESCO, Paris, France
Zamira Kadirova presented a poster on “Development of a new education programme in geodesy and geoinformatics for Tajikistan – highlights and experiences”. For the poster presented see Annex 6.
- 2) GISCA 2010, GIS in Environmental Management, 24-28 May 2010, Bishkek, Kyrgyzstan (<http://gisca10.aca-giscience.org/schedule/gis-in-environmental-management>)
Zamira Kadirova and Mirasil Mirsoev participated in the conference.
- 3) GIS / Remote Sensing Day organized by NCCR North-South, 22 April 2010, TAU, Dushanbe, Tajikistan
Zamira Kadirova and her team were co-organizing this event in Dushanbe and also participated in the event.
- 4) enerGIS'10 Staff Development Workshop, 20-24 September 2010, TAU, Dushanbe, Tajikistan, organized by Austria - Central Asia Centre for GIScience (<http://energis.tugraz.at>))
Zamira Kadirova and her team were co-organizing this event in Dushanbe.

Team workshop: The SCOPES workshop 2010 on “GIS Education and Training” was organized by Zamira Kadirova and her team, and took place at the TAU GIS laboratory.

TAU changes compared to the original work plan: The original plan was to send TAU staff to participate in the annually conducted field practical trainings by KRSU. Due to the political insecurity in Kyrgyzstan, KRSU cancelled all field work for 2010. Participation in the trainings in 2011 is foreseen.

University of Central Asia (UCA)

Equipment: UCA equipped their GIS and IT laboratory with 14 desktop computers and bought one laptop for fieldwork. UCA not only set up their own GIS lab, but at the same time supported KRSU when setting up their lab. Emanuele Costa provided support in purchasing computers, as well as setting up the GIS lab with server and back-up facilities.

Conferences: UCA was represented by UCA Research Fellow Dr. Ainura Nazarkulova at the GSDI 12th World Conference on Realizing Spatially Enabled Societies held in Singapore, from October 19-22, 2010. Participation in the conference was funded through the SCOPES IP. Dr. Nazarkulova, who also serves as the Director of the Kyrgyz GIS Association, Deputy Director at the Austrian Central Asian Centre for GIScience, and a Visiting Researcher with the GIScience Institute of the Austrian Academy of Science, presented a paper on Building an Spatial Data Infrastructure (SDI) as a Community Project – Challenges in Emerging Economies. Co-authored with colleagues Josef Strobl of the Centre for Geoinformatic, University of Salzburg, and Mariana Belgui of the Centre for Geographic Information Science, Austrian Academy of Sciences, the paper described the challenges of establishing SDI in emerging economies with few existing facilities. At the same time, the paper highlighted the pressing need for SDI in these economies which urgently need the data that can be generated through SDI to guide effective policy and sustainable development. The paper also focused on the need for cooperation and collaboration across institutions, and presented a demonstrator geoportal to serve as a model for fostering cooperation and a communication and education resource. Dr. Nazarkulova's paper followed her nomination as a recipient of the GSDI small grants programme in 2008, and highlighted her efforts towards establishing several key elements of a SDI in Central Asia. The picture below shows Dr. Nazarkulova presents at the GSDI conference on Realizing Spatially Enabled Societies.



Dr. Ainura Nazarkulova presenting at the GSDI 12th World Conference on Realizing Spatially Enabled Societies in Singapore.

Team workshop: The second day of the kick-off workshop in February 2010 was organized at UCA.

Training materials: Ainura Nazarkulova has coordinated the translation into Russian of the “Modular GIS Training”, originally elaborated at CDE within the ESAPP¹ program. The training material consists of 7 Modules, each consisting of three parts theory, applications, and exercises. The exercises are being adapted to Central Asia and to be based on Central Asian datasets. Furthermore, the material is revised in order to link up to the latest version of the open source GIS software “Quantum GIS”.

UCA changes compared to the original work plan: In 2010 only Ainura Nazarkulova participated in conferences. With the UCA GIS team being developed, the participation of Suhaily Mamadramov and Farrukh Nazarmavloev are foreseen in 2011.

2.2 Co-operation

Co-operation is progressing very satisfactorily. Partners from KRSU and TAU have jointly participated in various conferences. Support in establishing the GIS laboratories has taken place. More collaboration is foreseen with regard to joint field work.

Co-operation with partners outside the 4 SCOPES partners is also very active:

- Close links to the Austria-Central Asia Centre for GIScience in Bishkek (**ACA GIScience**, <http://www.aca-giscience.org/>) have been through the collaboration with Ainura Nazarkulova, who is both ACA GIScience staff as well as an associated researcher at UCA. Furthermore, 5 persons from Central Asia supported by SCOPES have started the UNIGIS graduate studies and professional courses, which are coordinated by ACA GIScience. This strengthens the links to the ACA GIScience as well as to University of Salzburg, which is the Austrian partner of this important GIS centre in Central Asia.
- Active collaboration with **FOCUS Humanitarian Assistance** has been initiated. This has been facilitated through the Aga Khan Development Network, in which both FOCUS and UCA are included. Suhaily Mamadramov, Manager of the Knowledge Management Group (KMG) of FOCUS, has been actively participating in the SCOPES workshop 2010 and is now undertaking the UNIGIS MSc courses. Furthermore, FOCUS has made available their GIS and Remote Sensing Handbook for Hazard Mapping to all SCOPES partner institutions.
- Links to the **GIS activities of GTZ in Tajikistan** have been established. Stéphan Henriod and Behruz Ilnazarov both participated in the SCOPES 2010 team workshop and presented their projects.

¹ EASTERN AND SOUTHERN AFRICA PARTNERSHIP PROGRAMME (ESAPP), is a programme of the [Swiss Agency for Development and Cooperation](#) (SDC) and is executed by the Centre for Development and Environment (CDE) together with its [partners](#).

- Different SCOPES partners will now also work together on the **new TEMPUS project** on Geoinformatics: Managing Energy, Resources, Environment (GEM). This will assure for sustainability beyond the SCOPES project duration.
- Furthermore, continuous exchanges are taking place several other institutions and individuals: with the NEESPI network, and especially the group of Vladimir Aizen at University of Idaho, active in GIS and remote sensing in the region (<http://www.sci.uidaho.edu/cae/people/vaizen.html>). Links have also been established to the Seismic Risk Management Initiative and the Tajik GIS user network, both foreseeing efforts in pushing Spatial Data Infrastructure development. From the EARSeL conference visit by Zamira Kadirova resulted a active email exchange with Professor Gottfried Konecny the University of Hannover, which will hopefully result in a join project.

2.3 Involved individuals

Table 3 List of involved individuals

Name	Country of origin	Country of work/study	Age	Sex	Remarks
Bettina Wolfgramm	Switzerland	Tajikistan	36	Female	
Thomas Breu	Switzerland	Switzerland	48	Male	
Chris Hergarten	Switzerland	Switzerland (Tajikistan)	37	Male	
Hasan Safarov	Tajikistan	Tajikistan	29	Male	
Natasha Ershova	Kyrgyzstan	Kyrgyzstan	43	Female	
Natalia Ivanovna	Kyrgyzstan	Kyrgyzstan	56	Female	
Galina Frolova	Kyrgyzstan	Kyrgyzstan	51	Female	
Farkhat Rakhmatullin	Kyrgyzstan	Kyrgyzstan	27	Male	
Zamira Kadirova	Tajikistan	Tajikistan	52	Female	
Islomkul Ikromov	Tajikistan	Tajikistan	53	Male	
Mirasil Mirzoev	Tajikistan	Tajikistan	27	Male	
Nozim Aliev	Tajikistan	Tajikistan	25	Male	
Behzod Abdullobekov	Tajikistan	Tajikistan	27	Male	
Firdavs Kukanov	Tajikistan	Tajikistan	28	Male	
Nasreen Dhanani	Canada	Kyrgyzstan	50	Female	
Emanuele Costa	Italy	Kyrgyzstan	39	Male	
Ainura Nazarkulova	Kyrgyzstan	Kyrgyzstan	38	Female	
Suhaily Mamadraimov	Tajikistan	Tajikistan	30	Male	
Farrukh Nazarmavloev	Tajikistan	Thailand	35	Male	Farrukh has applied for a Swiss scholarship to continue his education with a PhD study

3 Practical issues

3.1 Major practical problems

The necessary equipment for the GIS labs was all bought in Tajikistan and Kyrgyzstan. Accessories for the LEICA total station were bought in Switzerland and brought to Tajikistan by Christian Hergarten when travelling to Tajikistan.

3.2 Money transfer

Money transfer to the partners in Kyrgyzstan and Tajikistan was transferred as follows:

KRSU, Bishkek, Kyrgyzstan: Money is transferred from CDE through the NCCR North-South regional coordination office (RCO) in Bishkek to KRSU. Strong collaboration between the KRSU and the RCO exist since 2003 and thus it was decided to use these established channels to transfer the finances.

TAU, Dushanbe, Tajikistan: Money is transferred through the CDE/NCCR North-South office in Dushanbe, Tajikistan.

UCA, Bishkek, Kyrgyzstan: Money is transferred directly from CDE to UCA accounts in Bishkek.

Expenses, such as payment of conference registration and UNIGIS registration were so far directly covered by CDE. In future, these shall be organised by partners in the region themselves, in order for them to get familiar with the procedures.

3.3 Important developments/changes in the scientific landscape of the involved partner countries

There are no important developments in the scientific landscape of the involved partner countries to report on.

4 Annexes

Workshop programs:

- Annex 1: Program of the kick-off workshop, 15-16 February 2010
- Annex 2: Protocol of the kick-off meeting, including a compilation of information related to GIS
- Annex 3: SCOPES workshop 2010 – GIS education and training, 16-20 August 2010, Dushanbe, Tajikistan
- Annex 4: An info-compilation shared among team members in August 2010
- Annex 5: Training course on Infrared Spectroscopy for Soil Analysis

Conference posters

- Annex 6: Kadirova Z. 2010. Development of a new education programme in Geodesy and Geoinformatics for Tajikistan – highlights and experiences. Poster for the EARSeL conference 2010 in Paris.
- Annex 7: Ershova N, Ivanova N. 2010. Using Remote Sensing and GIS technologies for Hydrological Modelling. Poster for the EARSeL conference 2010 in Paris.