Training
"Technical Equipment for River Runoff Monitoring: Sensors, handling and applications"

1 Dates and Venue

Workshop:	22th – 26th April 2013
Venue:	Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences, Germany GeoLab, Telegrafenberg, 14473 Potsdam
Field works:	Nuthe river, Potsdam

2 Introduction

After the collapse of the former Soviet Union in Central Asia and during the War in Afghanistan, the existing ground-based hydrometeorological monitoring networks degraded substantially, especially in the higher elevations. The resulting "observational gap" hinders research on climate and hydrological change as well as operational tasks in water management such as the seasonal runoff forecast.

In the frame of the CAWa project, GFZ supports the Central Asian Hydromet services by establishing a number of automated hydrometeorological monitoring stations as part of a regional monitoring network. This involves also the installation of river discharge measurement stations.

Beyond the CAWa project, several international donor programmes focus on the rehabilitation of the hydrological monitoring networks and prepare the procurement of high-tech equipment for mobile river discharge measurements.

In the envisaged training, we would like to give an overview about available equipment for river runoff measurements – both stationary and mobile. The objective is the presentation of various measurement systems, the demonstration of their handling under real-life conditions, and the discussion of the related knowledge and maintenance requirements. Special emphasis will be put on the discussion of the application ranges for the selected sensor / measurement principle and the limitations.

The training will enable the participants to select the appropriate measurement methods and equipment for the specific applications in their home institution. In addition, the training will raise awareness about the needed personnel and technical capacities in the home institutions and encourage the participants to develop an according capacity development strategy with the support of international donor agencies.

3 Course concept

The training will focus on:

(1) Stationary river runoff measurement systems,

(2) Mobile discharge measurement systems, e.g. used for the calibration of stationary sensors.

All devices will be presented and demonstrated by the respective supplier, in particular the handling under real field conditions at the Nuthe river in Potsdam:

- Installation of the stationary sensors incl. software configuration,
- field use of the mobile sensors,
- software tools and data download.

In addition, the supplier will give information on:

- Measurement principles
- Application range (i.e. which rivers / channels? Which environmental conditions?)
- Accuracies
- Maintenance requirements
- Limitations

The course program is planned as full-day lessons for 5 days. Each lesson is subdivided into a theoretical background presented by the lecturer, and extended practical exercises for the participants.

Language: Lectures are given in English. Course materials and sensor manuals will be provided in English and will be made available at the eLearning platform of the CAWa project: http://elearning.cawa-project.net/moodle/

Trainers

- Stephan Duckert, GFZ German Research Centre for Geosciences, GeoLab
- Dr. Tilo Schöne, GFZ German Research Centre for Geosciences, Section 1.2 Global Geomonitoring and Gravity Field
- Katy Unger-Shayesteh, GFZ German Research Centre for Geosciences, Section 5.4 Hydrology
- Alexander Schlosser, UIT Umwelt- und Ingenieurtechnik GmbH Dresden (http://www.uit-gmbh.de/en/)
- Andreas Castelao, SEBA-Hydrometrie GmbH (www.seba-hydrometrie.com)
- Stefan Siedschlag, OTT Hydromet GmbH (http://ott.com/web/ott_de.nsf/id/pa_home_e.html)
- N.N., Agency of Environment, Health and Consumer Protection of the Federal State of Brandenburg (http://www.mugv.brandenburg.de/)

4 Participants and Funding

Target group are specialists and heads of departments from the national hydrometeorological services of the five Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), and Afghanistan. The expected participants are responsible for the operation and maintenance of runoff monitoring networks and the implementation of monitoring programmes.

The training is funded by the German Federal Foreign Office in the frame of the CAWa project as part of the "Berlin Process". The CAWa project provides funding for travel (economy flight from Central Asian country to Germany) and accommodation expenses for the accepted participants. Accommodation will be organized by the CAWa course coordination.

5 Organizers

Helmholtz Centre Potsdam
GFZ German Research Centre for Geosciences
Telegrafenberg
14473 Potsdam, Germany

in association with:

CAIAG Central Asian Institute for Applied Geosciences
Timur Frunze rd. 32/2

720027 Bishkek, Kyrgyzstan

Funded by the German Federal Foreign Office in the frame of the CAWa project (www.cawa-project.net)

6 Application

Potential participants are expected to fill in the application form and send it to the organizers.

Deadlines

Submission of application form and abstract	15th March 2013
Notification of acceptance	22nd March 2013
Issue of invitations for visa application	22th March 2013
Submission of visa application to German Embassies:	3rd April 2013
	25th March 2013 (for Afghanistan)

7 Preliminary Programme

Technical Equipment for River Runoff Monitoring: Sensors, handling and applications	
Monday, 22nd April 2013	
	Welcome by representatives of GFZ and the CAWa Project
	Introductory presentations
	Course program presentation and introduction
	Round of introduction with short statements about the participants' background and runoff monitoring networks and programmes
	Lecture: CAWa monitoring stations
	Lecture: Introduction to river discharge measurements
	Talk: The State hydrological measuring network of the Federal State of Brandenburg (t.b.c.)
Tuesday, 23th April 2013	
	Ott Hydromet: **Stationary and mobile discharge measurements**
	Lecture: Discharge spot measurements and online discharge monitoring – general overview about techniques, methods and instruments
	Lecture: OTT Qliner and OTT SLD – acoustic technology for mobile and stationary applications
	Field trip: Operation in the field
Wednesday, 24th April 2013	
	SEBA Hydrometrie: **Mobile discharge measurements using ADCP**
	Lecture: Mobile discharge measurements using ADCP-based systems (RioGRande, RiverRay, Aquaprofiler-M)
	Presentation of the equipment in the lab
	Field trip: Operation in the field
Thursday, 25th April 2013	
	UIT Umwelt- und Ingenieurtechnik: **Stationary runoff measurements**
	Lecture: Non-contact water level and discharge measurements and data communication
	Presentation of the SENSOflow sensor in the lab
Friday, 26th April 2013	
	Summary
	Feedback round
	Excursion to the trade fair "Wasser Berlin International" (for details see: http://www.wasser-berlin.de/en/) - Reception at the joint stand of the German Water Partnership - Visits to the stands of Ott Hydromet, SEBA Hydrometrie, Sommer Mess-Systemtechnik, UIT Umwelt- und Ingenieurtechnik - Individual tours and visits

Changes in the course program may occur according to the requirements and feedback of the participants.

Training

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Venue: GFZ German Research Centre for Geosciences, GeoLab, Telegrafenberg, 14473 Potsdam, Germany

Application Form

Title	
Surname	
Given Names	
Citizenship	
Organisation	
Position	
Address	
City	
ZIP Code/Postal Code	
Country	
Telephone/Fax	
Email:	
Do you need visa support for Germany?	Yes / No
If so, please fill in the data needed for the visa application:	
Passport number	
Passport valid until	
Passport issued (date and place)	
Day and place of birth	
Comments	

Please add a scan of your passport to the application.

Please return this application form and the questionnaire not later than 15 March 2013 to:

GFZ German Research Centre for Geosciences

CAWa course coordination

Stephan Duckert

Fax +49 (331) 288-2321

Email: duckert@gfz-potsdam.de

Questionnaire

To support the training preparations, please provide details on your education, previous experiences in related fields, and your daily work:

What is your professional background? *(e.g., mechanic, electrician, engineer for construction, hydrologist, programmer, or else)*
What is the focus of your daily tasks in your home institution? *(e.g., station operation, information technology and communication systems, data management, etc.)*
Which kind of stationary equipment do you commonly use for river discharge measurements in your home institutions? (i.e. at "hydroposts")
Do you use mobile devices for river runoff measurements, e.g. for calibration of stationary measurements? If so, which type of devices do you use?
The selection of the appropriate discharge measurement method and equipment requires information on the river(s) to be monitored. Please provide information on the typical river characteristics at your home institution: River width: River depth: Flow velocities: Sediment load: Frequent changes in cross sections: Ice cover:
Do you have any suggestions on the kind of equipment that shall be demonstrated during the training?
English skills *(if possible, refer to CEFR scale, http://en.wikipedia.org/wiki/Common_European_Framework_of_Reference_for_Languages)* Listening: Speaking: Reading: