



CAWa Seminar Innovative Tools for Improved Water Management

1 Dates and Venue

13 – 19 June 2018

Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME) ul.
Kary-Niyaziy 39
100000 Tashkent, Republic of Uzbekistan

2 Objectives

Central Asia, comprising Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan, is characterized by a highly continental semi-arid climate. Climate change and variability have substantial impact on water availability and thus present a major challenge for sustainable agricultural development and energy production. In the framework of the CAWa project several state-of-the-art tools were developed in close cooperation with Central Asian partner organizations, all aiming at an improvement of transboundary water management. The tools cover a broad range of water related monitoring and modelling applications. Statistical models have been developed and calibrated in order to provide robust seasonal climate and runoff predictions. Remote sensing based monitoring techniques allow for the systematic observation of water resources and land use characteristics.

The seminar will provide an overview of data-driven methods in the field of climatology, hydrology and remote sensing and emphasize its potential for improved decision making in the context of water resource management in Central Asia.

The course will also include an introduction into statistical data analysis, geographical information systems and remote sensing and will thus provide a basis for the independent application and advanced development of the presented tools.

The seminar addresses dedicated master and PhD students as well as junior university teachers, researchers and practitioners from Uzbekistan with interest in geoscientific methods for water resources management and its practical implementation.

The seminar will be organized at the jointly established Innovation Centre between the Regional Environmental Centre for Central Asia (CAREC) and TIAME.



3 Language

The seminar will be held in English. Hence the profound knowledge of the English language is a prerequisite for the participation!

4 Lecturers

- Dr. Abror Gafurov, German Research Centre for Geosciences
- Dr. Lars Gerlitz, German Research Centre for Geosciences
- Dr. Maik Netzband, University of Wuerzburg
- Lucia Morper-Busch, University of Wuerzburg

5 Organizers

CAWA Project www.cawa-project.net



Tashkent Institute of Irrigation and Agricultural
Mechanization Engineers (TIAME)
Tashkent, Uzbekistan

www.tiame.uz



University of Wuerzburg
Institute of Geography and Geology
Department Remote Sensing
www.uni-wuerzburg.de



German Research Centre for Geosciences
Section Hydrology

www.gfz-potsdam.de





Regional Environmental Centre for
Central Asia (CAREC) www.carececo.org



6 Application

Interested students and researchers are expected to send their expression of interest with a short CV to local organizer Farrukh Kattaqulov (farruhk1@gmail.com) until May 31, 2018. Participation will be confirmed by June 3, 2018.

7 Preliminary Programme

Part I: Climate, Glaciers and Water (June 13-14 2018)

13 June	Arrival of Participants
	Wednesday, 13 June
	Welcome and Opening
8:30	Registration
9:00	Welcome speech: Prof. Tokhir Sultanov (Vice-Rector, TIAME) Dr. Jusipbek Kazbekov (Head of TIAME Innovation Center)
9:15	Overview of the CAWa Project <i>Dr. Abror Gafurov (GFZ)</i>
9:30	Introduction round of the participants
10:00	<i>Coffee break</i>
	Climate Variability and Change <i>Session head: Dr. Lars Gerlitz (GFZ)</i>
10:15	Introduction to Climatology and Climate Data Analysis in R – Lecture <i>Dr. Lars Gerlitz (GFZ)</i>
11:00	First steps in R: Analysis of temperature and precipitation trends – Practical Exercise <i>Dr. Lars Gerlitz (GFZ)</i>

12:30	Lunch
	Seasonal Climate Forecasting <i>Session head: Dr. Lars Gerlitz</i>
13:30	Climate Predictability and Uncertainty – Lecture <i>Dr. Lars Gerlitz (GFZ)</i>
14:30	Statistical Prediction of Winter Precipitation in Central Asia – Practical Exercise <i>Dr. Lars Gerlitz (GFZ)</i>
15:30	Model Evaluation and Uncertainties – Practical Exercise <i>Dr. Lars Gerlitz (GFZ)</i>
16:30	Coffee break
17:00	The CAWa Seasonal Precipitation Forecast Tool – Presentation & Discussion <i>Dr. Lars Gerlitz (GFZ)</i>
18:00	End
19:00	Welcome Dinner
	Thursday, 14 June
	The Cryosphere of Central Asia <i>Session head: Dr. Abror Gafurov (GFZ)</i>
9:00	Changes of Glaciation and Snow Cover – Lecture and Discussion <i>Dr. Abror Gafurov (GFZ)</i>
10:00	Remote Sensing based Analysis of Snow Cover – Practical Exercise <i>Dr. Abror Gafurov (GFZ)</i>
11:30	Coffee Break
12:00	MODSNOW – Operational Tool for Snow Cover Monitoring – Presentation and Discussion <i>Dr. Abror Gafurov (GFZ)</i>

13:00	Lunch
	Regional hydrology of Central Asia Session <i>Head: Dr. Abror Gafurov (GFZ)</i>
14:00	Hydrology: Processes and Predictability – Lecture and Discussion <i>Dr. Abror Gafurov (GFZ)</i>
15:00	Forecasting Summer Discharge in Central Asian Catchments – Practical Exercise <i>Dr. Abror Gafurov (GFZ)</i>
16:30	Coffee Break
17:00	The GFZ Runoff Forecast Tool: a generic linear modelling tool for operational water resource management – Presentation and Discussion <i>Dr. Abror Gafurov (GFZ)</i>
18:00	End

Part II: Monitoring and Mapping of Landuse (June 18-19 2018)

	Monday, 18 June
	Welcome and Opening
9:00	Opening of the Seminar Part II <i>Dr. Maik Netzband (Uni Würzburg)</i>
9:15	Overview of Landuse related research in the CAWa Project <i>Dr. Maik Netzband (Uni Würzburg)</i>
9:30	Introduction round of the participants
10:00	Coffee break
	Introduction to GIS <i>Session head: Lucia Morper-Busch, Wuerzburg University</i>

10:15	Introduction to GIS and QGIS – Lecture and Practical Course <i>L. Morper-Busch , Dr. Maik Netzband (Wuerzburg University)</i>
12:30	<i>Lunch</i>
	GIS & Spatial Analysis Tools <i>Session head: Lucia Morper-Busch & Dr. Maik Netzband, Wuerzburg University</i>
13:30	Coordinate Systems – Lecture and Practical Course <i>Dr. Maik Netzband (Wuerzburg University)</i>
14:30	Digitization and Georeferencing – Lecture and Practical Course <i>L. Morper-Busch (Wuerzburg University)</i>
15:30	Legends and Web Mapping – Lecture and Practical Course <i>L. Morper-Busch (Wuerzburg University)</i>
16:30	<i>Coffee break</i>
17:00	WUEMOCA (Water Use Efficiency Monitoring in Central Asia) – Presentation & Discussion <i>L. Morper-Busch (Wuerzburg University)</i>
18:00	End
19:00	<i>Dinner</i>
	Tuesday, 19 June
9:00	Introduction into Remote Sensing – Lecture and Practical Course <i>Dr. Maik Netzband (Wuerzburg University)</i>
11:00	<i>Coffee Break</i>
11:30	Remote sensing image classification – Exercise <i>Dr. Maik Netzband (Wuerzburg University)</i>
13:00	<i>Lunch</i>

14:00	Raster tools (Distance measures, raster algebra) and Digital Elevation Models (DEM) – Lecture and Practical Course <i>Dr. Maik Netzband (Wuerzburg University)</i>
15:30	<i>Coffee Break</i>
16:00	Land suitability analysis – Exercise <i>L. Morper-Busch, Dr. Maik Netzband (Wuerzburg University)</i>
18:00	End