Training Course
"Use of Remote Sensing Techniques in Hydrometeorology"

1 Dates & Venue

Workshop: 16th – 20th July 2012

Venue: Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences, Germany - GeoLab

2 Description of the Workshop

Relevance of Remote Sensing for Hydrometeorological Monitoring

Remote sensing data have become increasingly important for the assessment of water resources. They provide information in an objective and repeatable manner on large areas but are also suitable for small-scale applications. The analysis of satellite data plays an important role for example in water resources management, irrigation planning or disaster control. For the complex challenges in water and land management in Central Asia remote sensing can be a useful method for information retrieval, monitoring and assessment.

The workshop provides a theoretical background in remote sensing as well as an introduction to specific applications in water resources monitoring. The participants will be trained in using the software ArcGIS 10 with lessons of downloading, visualization and processing of satellite remote sensing data used for hydrological modeling. A special focus is set on moderate resolution satellite data (MODIS) and land cover products (land use, snow cover, LAI) and the use of remote sensing based digital elevation models for deriving relevant topographical input parameters of hydrological models. Another focus is on the use of GPS samples for correct geolocation of hydrological measurements. The workshop aims at enabling experts from hydrometeorological services and research institutions in Central Asia to use independently remote sensing data for their specific tasks.

Course concept

First, an introduction to remote sensing concepts will be given. Several applications will be shown to demonstrate the use of ArcGIS 10. There will be an alternation of short theoretical modules and problem oriented practical exercises which will cover specific tasks in hydrometeorology, such as river catchment delineation. The exercises aim at producing individual maps on land cover, water demand and snow cover and at discussing the results in respect to hydrological questions.

The course concept is prepared to adapt the program to specific requests of the participants. The participants are encouraged to bring remote sensing and other geodata related to their current work.

Course characteristics:

- The course program is planned as full-day lessons for 5 days. The lessons start at 9.00 a.m. and end at 5.00 p.m. Each lesson is subdivided into a theoretical background presented by the lecturer, and extended practical exercises for the participants
- A significant part of the course will be practical work with the software ArcGIS 10, but the participants will also be trained in the handling of GPS (Global Positioning System) equipment, as well as the access and download of remote sensing data

Language: Lectures are given in English. The user interface of the software is English. A printed tutorial in English will be provided by the organizers. The course materials will be made available at the eLearning platform of the CAWa project: http://elearning.cawa-project.net/moodle/

Workshop Leaders

- Prof. Christopher Conrad, Department for Remote Sensing, University of Wuerzburg
- Gunther Schorcht, Department for Remote Sensing, University of Wuerzburg

Organizers

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GFZ German Research Centre for Geosciences

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3 Participants and Funding

Target group are specialists from hydrometeorological services, research institutions, water management organizations and universities in the Central Asian states having previous basic knowledge of remote sensing methods.

Participants with a practical background who intend to apply remote sensing techniques in their field of expertise, are especially envisaged.

The training course 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.

4 Application

Potential participants are expected to fill in the application form.

Deadlines

Submission of application form and abstract	30th May 2012
Notification of acceptance	1st June 2012
Issue of invitations for visa application	8th June 2012

5 Preliminary Course Programme

Use of remote rensing techniques in hydrometeorology	
Monday, 16th July 2012	
	Welcome by representatives of the CAWa Project, GFZ and the University of Wuerzburg /
	Course program presentation and introduction
	Theoretical background of remote sensing
	Introduction to the Software ArcGIS 10
	Data download, visual interpretation and data handling
	Welcome Dinner
Tuesday, 17th July 2012	
	Watershed delineation using SRTM digital elevation model – Part 1
	Watershed calculation using SRTM digital elevation model – Part 2
	Walkabout the historic Telegrafenberg
	GPS measurements
	Utilizing GPS points in ArcGIS for hydrological questions
Wednesday, 18th July 2012	
	Guest lecture: snow cover modeling
	Practical exercises: Statistics and forecasts of regional water availability
	Theoretical background of MODIS landcover products
	Practical exercises: processing and visualizing MODIS landcover
Thursday, 19th July 2012	
	Time series and change detection in landcover products
	Practical exercises: time series
	Examples of application: Water demand calculations based on landcover
	Practical exercises: Regional statistics and maps of water demand/availability
Friday, 20th July 2012	
	Results: Creating maps and further applications
	Practical exercises: Creating maps with ArcGIS
	Summary and feedback
	Excursion

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