

CAWa Central Asian Water

Training Course

Geographical Information Systems in Hydrology

1 Place & Time

Place to hold the workshop:

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

Arrival: 24th October 2010

Workshop: 25th – 29th October 2010

Departure: 30th October 2010

2 Description of the Workshop

Relevance of GIS

Geographic Information Systems (GIS) have become important and widely used tools for problem solving, management and decision support in science, resources management, administration and business. They facilitate integrated data management, analysis and visualization for real world applications explicitly considering the spatial dimension. GIS play an important role in decision and management support in water resources management and landscape planning, where they are increasingly being used world-wide. For research on the complex water and land management problems in Central Asia GIS is a valuable tool.

The workshop is application-oriented and teaches the participants the general use of ArcGIS 9.3 with lessons of geodata integration of distributed sources, geodata management, sensor integration and map visualization. A special focus is set on hydrological data and the work with the ESRI® ArcHydro extension. It will include methods of information exchange and the experience on the use of GIS in research, resources management and decision support applications. The workshop will transfer knowledge and experience of the German Research Center for Geosciences and the Central Asian Institute for Applied Geosciences to the experts of the Hydrometeorological Services and other water-related institutions in Central Asia. The training will enable the participants to independently work with GIS and apply the technology to their own projects in future.

Course concept

Overview of GIS functions by learning to work with ESRI® ArcHydro. Alternation of short theoretical modules and problem oriented practical training. Examples of GIS used for typical problem solutions in hydrology will be demonstrated by the workshop leaders. Exercises are mainly selected from hydrological questions. Extensive tutorial by two trainers.

The course concept is prepared to adapt the program to specific requests of the participants. These are invited to bring data of their current GIS projects.

Course characteristics:

- The course program is planned as full-day lessons for 5 days. The lessons start at 9.30 a.m. and end at 4.00 (or 4.30) p.m. Each lesson is subdivided into 2 parts of problem presentation and demonstration by the lecturer, and practical work by the participants as the bigger part of the day.

- A significant part of the course is dedicated to the work on specific GIS-problems which will be proposed by the participants. Each participant is expected to introduce in his own GIS problem, solve it with the support of the trainers and present the solution in the end of the course in a short presentation.
- The aim of the course is to train the participants in a confident use of GIS-software ArcGIS (Version 9.3). The thematical focus is laid on hydrological problems, but also general GIS functionalities and the handling of geodata as well as the creation of maps, the use of remote sensing data and geoservices are introduced.

Language: Lectures are given in English with translation to Russian. The English user interface is used for the software ArcGIS 9.3 and ArcHydro

Workshop Leaders

- Matthias Schroeder, CeGIT Centre for GeoInformation Technology at GFZ
- Kanayim Teshebaeva, Department «Technical infrastructures and management of the information» at CAIAG

Organizers

Helmholtz Center Potsdam
GFZ German Research Centre for Geosciences

Telegrafenberg
14473 Potsdam, Germany

in association with:

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Geosciences

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3 Participants and Funding

Target group are advanced GIS users and experts from the hydrometeorological services, research institutions, water management organisations and universities in Central Asia.

Participants are expected to have basic knowledge of the software ArcGIS 9 user interface and experience in GIS projects.

The training course is funded by the German Federal Foreign Office in the frame of the CAWA project. The CAWA project provides funding for travel (economy flight from Central Asia to Germany) and accommodation expenses for up to two participants from each Central Asian country. Accommodation will be organized by CAWA course coordination.

4 Application

Potential participants are expected to fill in the application form and submit an abstract of 400 words, either in English or Russian, on their GIS project and its practical relevance in their daily work.

Deadlines

Submission of application form and abstract	01 st October 2010
Notification of acceptance	08 th October 2010
Issue of invitations for visa application	08 th October 2010

Training Course Geographical Information Systems in Hydrology

Date: 25th – 29th October 2010

Place: Helmholtz Center Potsdam German Research Center for Geosciences GFZ, Germany

Application Form

Title	
Surname	
Given Names	
Citizenship	
Year of birth	
Organization	
Position	
Address	
City	
ZIP Code/Postal Code	
Country	
Telephone/Fax	
Email:	
Abstract Title of GIS project	
Amount of requested travel costs (Sums)	
Do you need Visa support for Germany?	
If so, please fill in the data needed for the visa application:	
Passport number	
Passport valid until	
Day and place of birth	
Comments	

Please return this application form including the abstract of the GIS project on a separate page not later than 01st October 2010 to:

Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences
CAWA course coordination

Fax +49 (331) 288-2321

Email: duckert@gfz-potsdam.de

5 Course Program

GIS in Hydrology
Monday, 25th October 2010
Using of geographical data in preparation of a data base for the entire course
Applying base functions and spatial analysis
Coordinating systems
Applying map creation techniques
Aim is to generate an individual map
Tuesday, 26th October 2010
Hydrological modeling with the tool ArcHydro
Preparation of the terrain data for further processing steps
Applying the terrain morphology
Applying terrain Preprocessing of DEM, e.g. flow direction, calculating of threshold etc.
Aim is to generate a hydrologic model of a specific water catchment
Wednesday, 27th October 2010
Remote Sensing and GIS data handling
Levels of Image Integration
Geodatabase systems
Administration of spatial information
Database planning and design
Aim is to generate a geodata base for raster and vector data
Thursday, 28th October 2010
Integration, visualization and analyzing of sensor stations
Time series in GIS and Google Earth
Building of charts from the time series
Additional practices with GPS (construction and parts of GPS)
Devices and post-processing of the data into GIS and Google Earth
Aim is the visualizing of sensors with charts in a map and the using of GPS data
Friday, 29th October 2010
Applying of few and typical visual impact analysis in the 3D environment.
Geodata infrastructure and geoservices
Introduction in standardizations like OGC , ISO, Metadata
Introduction in Free and Open Source Software (FOSS)
Aim is the visualization of course data and hydrological results in 3D view environments and an insight in geoservices, standards, FOSS-GIS
Excursion: Visit of the office of Germany's National Meteorological Service (DWD) in Potsdam

Changes stay under reservation.