

THE GIS/DB TRAINING COURSE FOR THE IRAQ GEOLOGICAL SURVEY

9-20th October 2006

DAY 1 – MONDAY (CGS HEADQUARTERS, KLAROV 3, PRAGUE 1)

9TH OCTOBER

- 9:00 – 9:15 Official opening (**Dr. Zdenek Venera, Director of the CGS**)
Ministry of Foreign Affairs representatives (to be decided)
- 9:15 – 10:15 Informatics of the Czech Geological Survey
(**Dr. Robert Tomas, Director for Informatics**)
- 10:15 – 10:30 Coffee break
- 10:30 – 11:30 Excursion to the CGS Headquarters Library, Archive, Geological Collections, CGS shop etc. (**Dr. Petr Budil**)
- 11:30 – 12:30 Roundtable discussion about the suggested program of the GIS training course, logistics etc. (**all CGS presenters, lecturers**)
- 12:30 – 14:00 Lunch
- 14:00 – 16:30 Geoscience data management in the CGS (methodology, strategy)
(**Ing. Jaroslav Aichler, Dr. Zuzana Krejci**)

DAY 2 – TUESDAY (CGS HEADQUARTERS, KLAROV 3, PRAGUE 1)

10TH OCTOBER

- 9:00 – 10:00 Geoscience data collection, administration and development of web based applications for user access - “State of play” in the CGS (**Dr. Olga Moravcova**)
- 10:00 – 10:15 Coffee break
- 10:15 – 12:30 Practical examples of web based applications for users access to geoscientific data
Applications for collection, management and dissemination of:
- Geological mapping documentation (**Mgr. Petr Coupek**)
 - Geological hazards (landslides) documentation (**Mgr. Petr Coupek**)
 - Decoration and building stones (Ing. Helena Skarkova)
 - Evidence of research publication activities of the CGS scientists (RIV, Geological bibliography of the CR (**Ing. Helena Skarkova**))
 - Historical and current geological photo documentation (**Pavel Bokr**)
 - Important Geological Localities (**Dr. Marketa Lorencova**)
- 12:30 – 14:00 Lunch
- 14:00 – 16:30 Development of the National Geological Map Database:
- The concept of the NGMD CR (**Dr. Robert Tomas**)
 - GEOCR50 – National coverage of digital geological map data, harmonization and the overall development (**Dr. Pavla Gurtlerova**)

- GEOCR25 – Geodatabase of geoscientific data gathered within the geological mapping at the scale of 1:25,000, from digital field collection of data to the knowledge based system (**Dr. Zuzana Krejci**)
- GEOCR500 – Digital geoscientific atlas of the CR – CD ROM application (**Ing. Martina Fiferova**)

DAY 3 – WEDNESDAY, Practical Session 1: Digitalization of geological maps 11 TH OCTOBER TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5

Lectures: *Dr. Zuzana Krejci, Ing. Martina Fiferova, Ing. Lucie Kondrova*

9:00 – 10:00 Overview of GIS/CAD software used in the CGS (ArcGIS, Microstation, MS Descartes, I/RAS B,C, I/Geovec)

10:00 – 12:30 Methodology and practical sessions of vectorization of geological maps

- Digitalization of autor's manuscripts, raster separations, transformation of rasters – georeferencing, working with coordinate systems
- Vectorization of raster data (manual, semiautomatic, automatic mode)

12:30 – 14:00 Lunch

14:00 – 16:30 Methodology and practical sessions of vectorization of geological maps - continue

- Cleaning of vectorised data, building of correct topological relationships of features
- Creation of basic GIS from vectorised map - topologically verified data

DAY 4 – THURSDAY, Practical Session 2: Working with ArcGIS geodatabase 12 TH OCTOBER TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5
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Lectures: *Dr. Zuzana Krejci, Ing. Martina Fiferova, Ing. Lucie Kondrova*

9:00 – 9:30 Introduction to the concept of the ArcGIS geodatabase

9:30 – 12:30 Working with a geodatabase

- Setting up a personal geodatabase and basic work
- Definition of correct topological rules
- Creating of domains and subtypes structures for geological objects
- Integration of the geological documentation database into the geodatabase
- Building and joining of attribute tables – advance structure of the geodatabase

12:30 – 14:00 Lunch

14:00 – 16:30 Utilization of the geodatabase – analyzing of geoscience data

- definition of spatial and attribute queries
- utilization of buffer zones in the geological projects
- creation of new thematics layers

DAY 5 – FRIDAY, Practical Session 3: Cartographical Design**13TH OCTOBER**

TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5

Lectures: Dr. Zuzana Krejci, Ing. Martina Fiferova, Ing. Lucie Kondrova

9:00 – 9:30 Introduction to Digital Map Production in the CGS (overview, methodology, SW used, examples of cartographical map production)

9:30 – 12:30 Cartographical preparations of the geological data for publishing
Map layout, symbolizing the data (creating of individual geological symbols, labels and annotations, map layout objects (title, legend, scale bar, north arrow, grid), exporting the map to different publishing formats)

12:30 – 14:00 Lunch

14:00 – 16:30 Cartographical representation of geoscientific data for publishing – continue

DAY 6 – MONDAY, Practical Session 4: Remote Sensing – introduction**16TH OCTOBER**

TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5

Lecturers: Mgr. Veronika Kopackova, Mgr. Vaclav Metelka

9:00 – 12:30 Introduction to Digital Remote Sensing application in the CGS

- Physical basis of remote sensing
- Current existing satellites (sensors, their accessibility)
- Current existing SW used for satellite interpretation (including existing freeware)

12:30 – 14:00 Lunch

14:00 – 16:30 Practical exercises:

- Searching the on-line data sources, freeware SW and educational remote sensing web pages
- Basic work with satellite images in Erdas Imagine

DAY 7 – TUESDAY, Practical Session 5: Remote Sensing–advanced processing 17TH OCTOBER

TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5

Lecturers: Mgr. Veronika Kopackova, Mgr. Vaclav Metelka

9:00 – 12:30 Presentation of case studies related to interpretation of optical images:

- Mapping mining-related contaminated areas in Sokolov & Karlovy Vary region
- Extraction of micro lineaments
- Use of unsupervised and supervised classification, band combinations, post-classification raster enhancement in the CGS Mongolian project

12:30 – 14:00 Lunch

14:00 – 16:30 Practical exercises:

- Image enhancement (spectral, spatial), use of spatial filters
- Unsupervised, supervised classification (landcover, lithological mapping)

DAY 8 – WEDNESDAY, Practical Session 6: Remote Sensing – Radar, DEM 18TH OCTOBER

TRAINING ROOMS, VRCHLICHEHO 60, PRAGUE 5

Lecturers: Mgr. Veronika Kopackova, Mgr. Vaclav Metelka

9:00 – 10:30 Introduction to Radar data processing

- Exploring different sensors & data acquisition
- Basic radar image enhancements

10:30 – 12:30 Practical exercises:

- Importing radar data and application of basic image enhancements
- Interpretation of linear features

12:30 – 14:00 Lunch

14:00 – 14:30 Working with Digital Elevation Models (DEM) in geosciences – introduction

- Creating DEMs, different methods, types of DEMs
- Introduction to DEM derived data products

14:30 – 16:30 Practical exercises:

- Creating DEMs from different types of data, comparing the outcome of several methods (raster to grid, spline, TIN)
- Deriving slope, curvature, aspect and their application to slope stability

DAY 9 – THURSDAY, Practical Session 7: WWW Portal, Internet Map Server 19TH OCTOBER

CGS HEADQUARTERS, KLAROV 3, PRAGUE 1

9:00 – 11:30 WWW Information Portal – the basis of the Information System of the Czech Geological Survey (**Ing. Jaroslav Aichler**)

- Methodology of creation of the Information Portal, the information source for the employees and the management tool
- Self-publishing of documents, the Portal management, methodology of updating of the information content

11:30 – 12:30 Internet Map Server of the CGS – introduction, basic concepts and the future development (**Dr. Zuzana Krejci, Dr. Robert Tomas**)

12:30 – 14:00 Lunch

14:00 – 16:30 Practical exercises: application development in ArcIMS and development of Internet map services ArcWMS, WMS, WFS - distributed Internet GIS

(**Mgr. Vaclav Pospisil, Mgr. Petr Coupek, Dr. Zuzana Krejci, Ing. Martina Fifernova**)

9:00 – 12:00 Information Services in the Czech Geological Survey

- Library – development of the on-line library services, digitalization of the card catalogues, use of on-line reference database (**Dr. Hana Breiterova**)
- Archive – management and utilization of Digital Map Archive System of the CGS (**Dr. Alena Cejchanova**)
- Collections and material documentation center – creation of applications for presentations of chosen specimens to the broader public - Virtual Museum Internet application (**Dr. Petr Budil**)

12:00 – 12:30 Administrrating of IT infrastructure in the CGS - PC, servers, networks, security management, central evidence of the users' requests – Helpdesk etc.
(**Mgr. Petr Coupek, Mgr. Vaclav Pospisil**)

12:30 – 14:00 Lunch

14:00 – 15:00 Overview of the develoment of CGS publications, promotion and marketing of the CGS activities (**Ing. Patrik Fiferna, Ing. Petr Madera, MgA Helena Neubertova**)

- Geoscientific publications & thematic CD/DVD ROM applications
- Implementation of the corporate graphical design
- Internet map & publications on-line shop

15:00 – 16:00 Closing session (**Dr. Robert Tomas & others lecturers**)

- evaluation of the GIS training course

Created by Dr. Robert Tomas et.al.

Prague 24.9. 2006