

Dept. of Soil Science and Soil Protection, FAFNR,
Czech University of Life Sciences

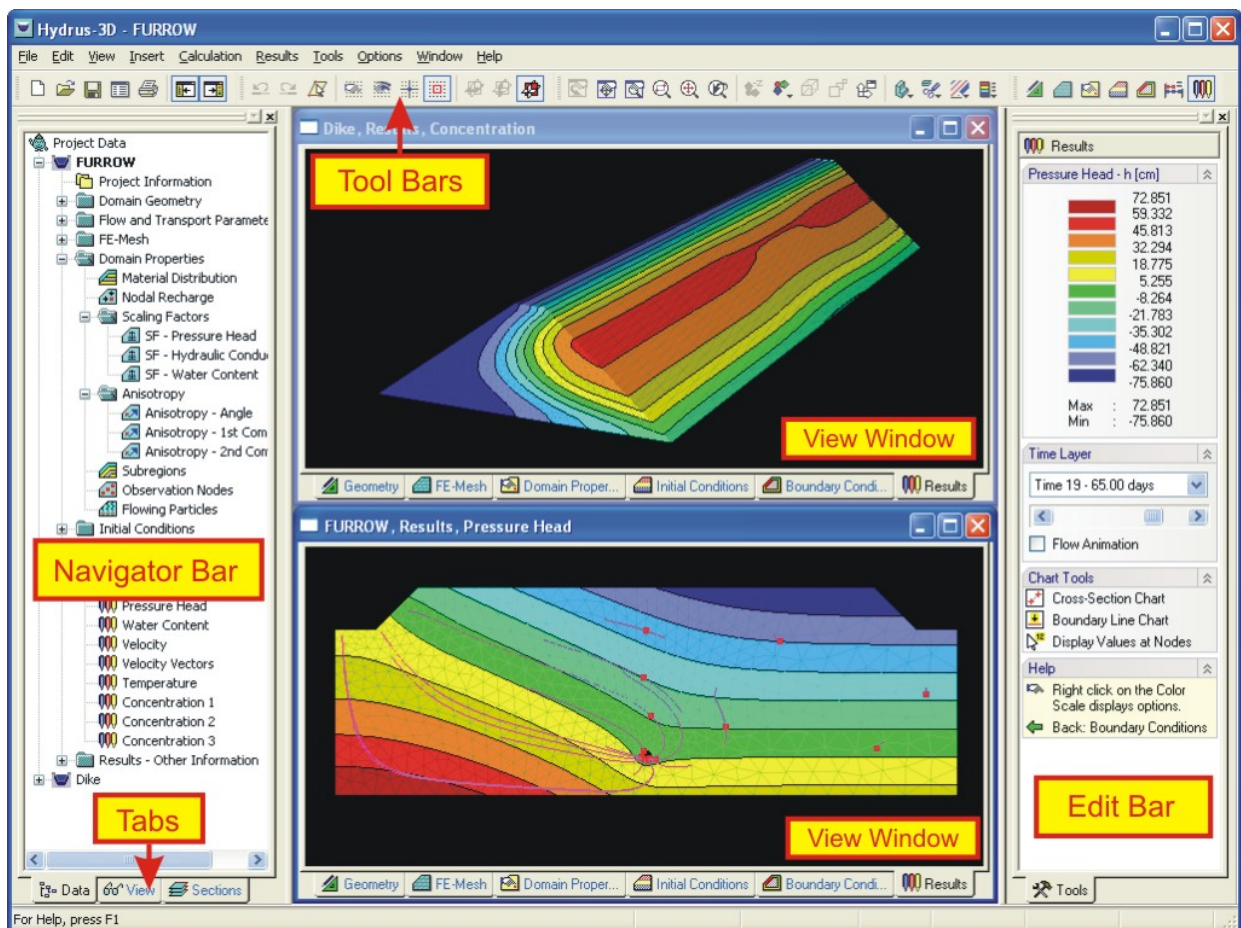
and

PC-Progress, Ltd.

organize

HYDRUS short course in Prague
March 23rd -25th 2010

**Advanced modeling of water flow and contaminant transport in
porous media using the HYDRUS software packages**



Czech University of Life Sciences, Prague
Faculty of Agrobiolgy, Food and Natural Resources
Kamýcká 129
165 21 Praha 6 – Suchbøl
Czech Republic
<http://www.af.czu.cz/en/>

HYDRUS Short Course

The HYDRUS short course will have a different format than usual. A standard two-day HYDRUS course will be followed by a third day, during which selected advanced HYDRUS topics will be covered. Course participants will have an option to attend the course during either only the first two days, or all three days.

The standard course includes basics of modeling water flow and solute transport in the vadose zone using ROSETTA, HYDRUS-1D and a two-dimensional module of HYDRUS (2D/3D). The course also includes lectures on soil hydraulic properties, basic concepts of numerical modeling, and inverse problem. **Advanced topics** will include:

- Coupled movement of water, vapor, and energy (including the surface energy balance)
- Preferential/non-equilibrium water flow and solute transport (using dual-porosity and dual-permeability models)
- Biogeochemical transport (solute transport of major ions using the UNSATCHEM module and transport of heavy metals and radionuclides using HP1 (coupled HYDRUS-1D and PHREEQC))
- Modeling flow and transport using a three-dimensional module of HYDRUS (2D/3D)

Course Objectives

The short course begins with a detailed conceptual and mathematical description of water flow and solute transport processes in the vadose zone, followed by a brief overview of numerical techniques for solving the governing flow and transport equations. Special attention is given to the highly nonlinear nature of the governing flow equations. Alternative methods for describing and estimating the hydraulic functions of unsaturated porous media are also given.

Hands-on computer sessions will provide participants an opportunity to become familiar with the windows-based STANMOD and HYDRUS computer software packages. Emphasis will be on preparation of input data for a variety of one- and multi-dimensional applications such as flow and transport into and through the vadose zone, infiltration from a subsurface source, and two-dimensional leachate migration from a landfill through the unsaturated zone into groundwater. Calibration will be discussed and demonstrated with several examples for both water flow and solute transport (using HYDRUS). Latest developments with respect to biogeochemical modeling with HP1 (HYDRUS-PHREEQC) and the large scale modeling (the HYDRUS package for MODFLOW) will also be discussed.

Instructors

Dr. Jirka Šimůnek is a Professor of Hydrology with the Department of Environmental Sciences of the University of California. He received an M.S. in Civil Engineering from the Czech Technical University, Prague, Czech Republic, and a Ph.D. in Water Management from the Czech Academy of Sciences, Prague. His expertise is in numerical modeling of subsurface water flow and solute transport processes, equilibrium and non-equilibrium chemical transport, multicomponent major ion chemistry, field-scale spatial variability, and inverse procedures for estimating the hydraulic properties of unsaturated porous media. He has authored and coauthored over 180 peer-reviewed publications and over 20 book chapters.

His numeric models are used by virtually all scientists, students, and practitioners modeling water flow, chemical movement, and heat transport through variably saturated soils. Dr. Simunek is a recipient of the Soil Science Society of America's Don and Betty Kirkham Soil Physics Award and a past chair of the Soil Physics (S1) of SSSA. He is an associate editor of Water Resources Research, Vadose Zone Hydrology, and Journal of Hydrological Sciences.

Dr. Radka Kodešová is an associate professor of soil science with the Department of Soil Science and Geology of the University of Life Sciences, Prague, Czech Republic. She received an M.S. in civil engineering and Ph.D. in irrigation and drainage from the Czech Technical University, Prague, Czech Republic. Her expertise is in numerical modeling of subsurface water flow and solute transport processes, inverse procedures for estimating the hydraulic properties of unsaturated porous media, field and laboratory experimental work, and soil structure analysis.

Registration fee

Before January 31st 2010

- 450 EUR for two-day short course (the first two days)
- 550 EUR for three-day short course

After January 31st 2010

- 550 EUR for two-day short course (the first two days)
- 650 EUR for three-day short course

Registration includes course material, lunch, 2 daily coffee breaks, and likely beer tasting in the university brewery.

Suggested Accommodation

Since hotels require Credit Card information for booking, organizers cannot arrange accommodation for participant. However, we can at least propose following hotels close to CULS (Czech University of Life Sciences).

The Hotel **WIENNA – GALAXIE**, situated in the villa quarter of Prague – Suchdol is recommended. The hotel has been refurbished completely in a luxurious fashion and provides 150 beds. There is a Prague local transport bus stop in front of the hotel complex. From here buses no. 107 and 147 run daily to Dejvická Metro Station on line A of the Prague Metro. Detail information and contact see: <http://www.hotelwienna.cz/index.php?lang=4>

The Hotel **Penzion JaS**, situated partly in the villa quarter of Prague – Suchdol is a small size cozy hotel (providing 40 beds). There is a Prague local transport bus stop in front of the hotel complex. From here buses no. 107 and 147 run daily to Dejvická Metro Station on line A of the Prague Metro. Detail information and contact see: <http://www.penzionjas.cz/index.php?menu=15&j=en>

The **Slunečnice** Hotel in Prague - Lysolaje offers the cheaper accommodation. The hotel is a reconstructed farmstead with a large adjacent garden, an orchard, and a stream. There is a Prague local transport bus stop in front of the hotel complex. From here bus no. 160 runs daily to Dejvická Metro Station on line A of the Prague Metro. There is not direct public transportation from the hotel to CULS. However the hotel is in walking distance from CULS. Detail information and contact see: <http://www.hotelslunecnice.cz/index.php?lang=en>

HYDRUS short course
Prague, March 23 -25, 2010
Application form
Please send to kodesova@af.czu.cz

Family name:

First name:

Affiliation:

Institute:

Mailing address:

Ph.:

Fax:

E-mail:

Registration fee: Please indicate your interest.

Before January 31st 2010

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- 550 EUR for three-day short course

After January 31st 2010

- 550 EUR for two-day short course (the first two days)
- 650 EUR for three-day short course

Please, make the payment via the bank transfer. The invoice will be sent to participants after the registration.

Date:

Signature:

If cancellations are made before January 31st 2010, the tuition fee will be refunded.
Cancellations made after January 31st 2010, will be refunded for 75% of the tuition fee.