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6-10 June 2016

A 5-day international specialist course for PhD students, scientists, consultants, and engineers from private consulting firms, government, environmental agencies and industrial companies.

Contact for organization
Massimo Rolle
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OVERVIEW

The course is designed to introduce the participants to the model-based quantification of a wide range of water quality problems with a major focus on the fate of water-sediment/rock interactions and on modelling the fate of organic and inorganic contaminants in groundwater.

Taking this short course will help to:

- Understand the basics of coupled geochemical transport modeling.
- Learn how to apply reactive transport modelling to real-world water quality problems.
- Apply the theoretical framework with hands-on experience in the computer lab.
- Use the modeling tools MODFLOW, MT3DMS, PHREEQC and PHT3D (which couples MT3DMS and PHREEQC).

COURSE DESCRIPTION

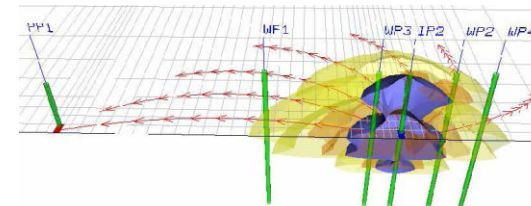
The short course will cover:

- Basics of groundwater modelling
- Advective and dispersive solute transport
- Development of conceptual models
- Numerical solution schemes
- Constructing MODFLOW/MT3DMS flow and solute transport models
- Overview of hydrochemical processes
- Principles of modeling biogeochemical processes such as complexation reactions, mineral dissolution/precipitation, ion exchange, surface complexation reactions, biodegradation of organic compounds and other redox-controlling processes
- Modeling of equilibrium and kinetically controlled reactive processes with PHREEQC, including surface complexation reactions
- Coupled modeling of multi-dimensional transport and chemical reactions using PHT3D
- Selected model applications for the fate of inorganic pollutants (e.g., ammonium, zinc, uranium and arsenic plumes, zinc in secondary effluent discharge, uranium from mine tailings impact on groundwater), and water supply (ASR, deepwell injection) will be presented and studied in lab exercises.

More than half the time of the course is devoted to computer labs. Simplified exercises that are based on real-world problems will help participants to translate theory into practice.

PREREQUISITES

Participants will benefit the most from this course if they have working knowledge of groundwater (flow/transport) processes and at least a basic understanding of geochemical processes. Prior modelling experience is not an absolute requirement but it will increase the benefits from the course significantly.



INSTRUCTORS

Henning Prommer is a Winthrop Research Professor at the University of Western Australia and a Principal research scientist at CSIRO Land and Water Australia. He is mainly working on the development and application of reactive transport models to water quality issues in porous media. He is coordinating the development of the MODFLOW/MT3DMS-based reactive transport model PHT3D and has a strong interest in the quantification of redox processes and the associated fate of organic and inorganic pollutants.

James A Davis has held Senior Scientist positions at the U. S. Geological Survey and Lawrence Berkeley National Laboratory. Dr. Davis's research experience includes (i) field investigations of radionuclide and metal contaminant transport at various physical scales and in differing geochemical regimes, (ii) reactive transport modeling under conditions that apply to various environmental settings, including transport coupled with surface complexation and redox reactions, and (iii) laboratory studies of sorption and transport of inorganic ions.

Philp J Binning is a Professor at the Department of Environmental Engineering at DTU, specializing in the modeling of contaminant transport in porous media. He currently has major research projects on catchment scale contaminated site risk assessment, Advancing GEOlogical, geophysical and CONTaminant monitoring technologies for contaminated site investigation, and microbiological degradation processes in groundwater.

Massimo Rolle is Associate Professor in the Department of Environmental Engineering at DTU. His research interests focus on the investigation of mixing processes in aquifer systems, reactive transport of chemicals in groundwater, biogeochemical modeling, hydrochemistry, interpretation of isotopic signatures and on natural attenuation and engineered remediation of contaminated sites.

AUDIENCE (max 30 participants)

The course is designed for PhD students, environmental consultants, government scientists, and researchers who want to undertake modelling studies of groundwater flow, transport and geochemical reactions as part of their work.

COURSE LANGUAGE

English

DATE

June 6th-10th 2016

SCHEDULE

Monday-Thursday: 9 – 17

Friday: 8.30 – 12.30

COURSE LOCATION

The course will be taught at the Department of Environmental Engineering, Technical University of Denmark. A participation certificate will be provided to the participants. Participants should bring their own portable computer (laptop).

REGISTRATION FEES

PhD students: 150 €

(No course fees + 150 €material and refreshments)

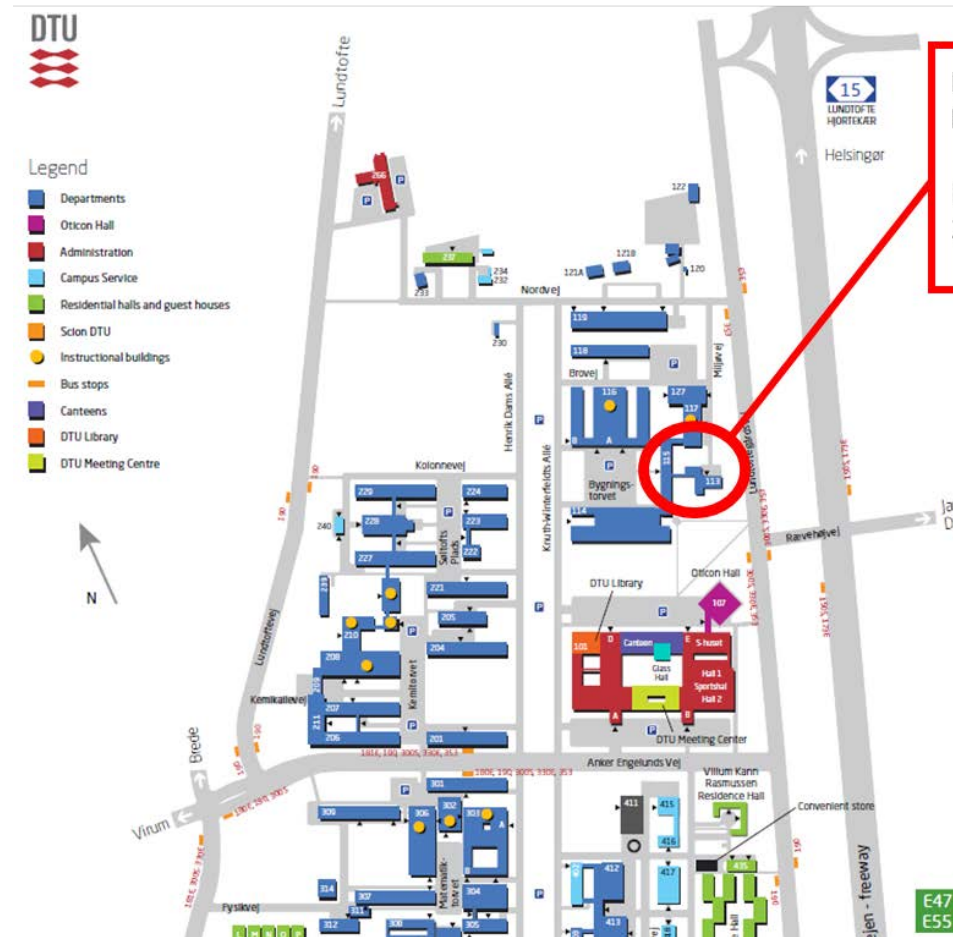
Privates and researchers: 1350 €

(1200 €course fees + 150 €material and refreshments)

REGISTRATION

An email with a compiled Application Form should be sent to masro@env.dtu.dk before **April 15th**

After confirmation of acceptance, registration fees must be paid before **May 1st**



Department of Environmental Engineering

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