Modeling Hydrodynamics and Water Quality of Pit Lakes

A Hands-on Introduction to the Open Source Software PITLAKQ

Dates and Times

Date: 29.-31. May 2018,
Time: 9:00 – 17:00 daily

Venue

Room ATK247, 2nd floor in the Natura building (previously: Luonnontieteidentalo 1), Vesilinnantie 5, Turku, Finland

Building T5 in the map: http://www.utu.fi/en/university/map/Pages/home.aspx

Workshop Content

Modeling pit lakes is a complex task. The open source software PITLAKQ (http://www.pitlakq.com/) allows one to model hydrodynamic processes in pit lakes including temperature stratification. Furthermore, transport of constituents and a variety of chemical and biological reactions can also be modeled. PITLAKQ combines the abilities of both CE-QUAL-W2 (http://www.cee.pdx.edu/w2/) and PHREEQC (http://wwwbrr.cr.usgs.gov/projects/GWC_coupled).
In addition, it provides new features such as distributed groundwater exchange, chemical treatment of lake water, and accounting for the impact of bank erosion on lake water quality.

This three-day workshop introduces PITLAKQ with a hands-on tutorial of setting up and running models. It covers:

Basic tools for running models

- Basics of the User Interface - Jupyter Notebooks
- Basic Python commands for steering computations

Setting up and running a hydrodynamic model

- Preparation of input data
- Running of simulations

Interpreting and presenting hydrodynamic results

- Basic Python commands for processing outputs
- Visualization of model output

Setting up and running a water quality model

- Preparation of input data
- Running of simulations

Interpreting and presenting water quality results

- Basic Python commands for processing outputs
- Visualizing model output

Varying the water quality processes

- Methods for systematically changing input parameters
- Interpreting outputs

Handling Model potential errors

- Model assumptions and limitations
- Diagnosing errors

Optional: Working on an user example

- Analyzing the problem
- Developing a model strategy
- Setting up a model
- Running a model
- Processing and interpreting model output

PITLAKQ solves complex problems and offers many more features than what can be covered in the workshop. The presenter will be glad to answer questions that go beyond the content described above. Each participant will receive a comprehensive course handout and the PITLAKQ software. After the course, participants will be able to set up and run PITLAKQ models.

Instructor

Dr. Mike Müller is the author of PITLAKQ and has been using this software to model a variety of pit lakes. He is CEO of hydrocomputing (http://www.hydrocomputing.com/) and has many years of modeling experience with a variety of hydrological and water quality models.

What is Required to Participate in the Workshop

It is helpful to be familiar with the topic of pit lakes and their water quality. Basic hydrogeo-chemical knowledge and some familiarity with important pit lake processes are assumed. Modeling experience with CE-QUAL-W2, PHREEQC or comparable models is not required but certainly helpful. Solid PC handling abilities are necessary.

Participants should bring their own laptop computer with a Windows, Linux, or Mac OS X operating system. You will receive a copy of the modeling software at the beginning of the workshop. Please contact the instructor (mmueller@hydrocomputing.com) for details. He is

also an experienced trainer and has taught hundreds of programming workshops for scientists and engineers.

Fees

950 € per participant, incl. VAT (24%)

IMWA members receive a 10 % discount with a valid 2018 membership.

A quota with special prices has been reserved for participants from the organizing institutes. Please contact Tiia Forsström (UTU) or Tommi Kauppila (GTK) for pricing details.

The fees include two coffee breaks daily.

Registration

Please register at:
https://www.lyyti.in/Modeling_Hydrodynamics_and_Water_Quality_of_Pit_Lakes_0489

(also applies to GTK and BGG participants)

Cancellation Policy

Registrations can be canceled. The following refunds will be given:

Canceled by	Refund
February 28, 2018	100 %
March 31, 2018	50 %
April 30, 2018	30 %
after April 30, 2018	0 %

A replacement participant can be named at any time without an additional fee.

Number of Participants

The maximum number of participants is 20.

Questions

Please contact Dr. Mike Müller mmueller@hydrocomputing.com for questions about the workshop content and Tiia Forsström (UTU; ttfors@utu.fi) or Tommi Kauppila (GTK; tommi.kauppila@gtk.fi) for questions about the organization.