



## COMPUTATIONAL HYDRAULICS INTERNATIONAL (CHI)

Associated with a PCSWMM license, CHI annually hosts a number of SWMM5 and PCSWMM Modelling workshops internationally, in addition to many regular workshops in North America. PCSWMM Professional 60-day single user software license includes the classroom-style training, all materials, continental breakfast, beverages and snacks. At these professional workshops, attendees are trained in the use of both the latest US EPA Stormwater Management Model (SWMM), and the graphical decision support system PCSWMM.

By attending the training, you will become proficient in the use of the software and learn how its application can enrich your stormwater drainage and sanitary system planning and design.

Information on the SWMM5 and PCSWMM models and associated training may be found on our website at [chiwater.com](http://chiwater.com).

### THE MODELS

#### About US EPA SWMM Version 5

The US Environment Protection Agency Stormwater Management Model (SWMM) is an open-source, comprehensive model for continuous and single-event simulation of runoff quantity and quality for both stormwater and sanitary sewers. It can model: dynamic storms; pollutant build-up, wash-off and transport; infiltration and inflow; dynamic routing; surcharging; storage ponds; storage treatment; diversions; pumping stations; BMPs and LIDs and much more. Established and continuously developed for 35 years, SWMM is simple to run, and is used as effectively on small as on large studies. SWMM5 is the latest release.

#### About PCSWMM 2011

PCSWMM 2011, used in the workshops to apply SWMM, is a GIS-based comprehensive graphical design and decision support system for SWMM5 storm, sanitary and combined sewer modelling. It is a fully-featured urban drainage system package, with no limitations on model size or complexity; it includes a complete, smart GIS engine, tailored to urban drainage (no 3rd party licenses required) and provides native support for a wide variety of GIS formats, as well as powerful topological operators and querying.

PCSWMM 2011 provides advanced versions of all the standard urban drainage modelling visualization techniques, including animated hydraulic grade line and energy grade line profiles, plan-view thematic coloring, powerful and flexible graphing, as well as on-the-fly statistical and error analysis. It automatically maintains standard SWMM5 models from GIS data and synchronizes in both directions, thus providing complete data compatibility with all other SWMM5-based software tools. With over 3,000 licenses, PCSWMM has been the leading decision support system for USEPA SWMM since its inception in 1984, because it is the easiest to use, and most cost-effective methodology.

### Typical Applications in South Africa

Urban and semi urban cities in South Africa have witnessed significant population growth in recent decades. Infrastructural development has challenged government and professionals on how to improve, plan and design efficient sewerage and storm water drainage systems. From tens of thousands of sewer and storm water studies in over 70 countries, PCSWMM offers unique modelling capabilities for planning, analysis, design and management of sanitary and storm water drainage systems. Typical applications include:

- designing drainage systems for flood control
- sizing detention facilities and their appurtenances for flood control and water quality protection
- designing control strategies for CSOs and SSOs
- evaluating the impact of rainfall-dependent in-flow and infiltration on SSOs and sewer backups
- dual drainage (major/minor) modelling/design, including dynamic interaction of dual systems
- evaluating global optimal and/or passive real-time control operational strategies
- flood plain mapping of natural channel systems
- integrated catchment/watershed management modelling, including rural areas, river systems, urban drainage, treatment plants and receiving waters
- generating non-point source pollutant loadings for waste load allocation studies
- evaluating BMPs and/or low impact developments for reducing wet weather pollutant loadings

# Stormwater and Watershed Modelling with US EPA SWMM5 and PCSWMM 2011

Fourways - Gauteng, October 10 - 12, 2011  
 Durban (eThekweni), October 19 - 21, 2011  
 Port Elizabeth, October 25 - 27, 2011  
 Cape Town, November 1-3, 2011



## INSTRUCTORS

The workshop will be lead by one of, or a combination of, the following instructors:

**William James**, DSc, PhD, P.Eng., University Professor Emeritus at Guelph University and President of CHI, is an internationally recognized authority on stormwater runoff, with over 50 years experience in research, teaching, and consulting to consultants and government agencies. He has published 20 books, over 200 technical papers, and has presented professional courses throughout the world. Dr. James has supported SWMM from its earliest distribution, developing the first PC version in 1984.

**Chris Brooker** BSc (Eng) MSc (Eng) PrEng has been a consulting engineer specialising in environmental water related subjects and hydraulic structures since 1982. In 2001 he opened a practice in South Africa offering specialist consulting services mainly to other consulting engineers. He is an external examiner and occasional visiting lecturer in the Department of Civil and Environmental Engineering at The University of the Witwatersrand, and in the Department of Landscape Architecture at the University of Pretoria. Chris has authored numerous journal papers and conference presentations.

## CONTINUING PROFESSIONAL DEVELOPMENT UNITS

Computational Hydraulics, Int. is a certified CPD provider of the Engineering Council of South Africa, and the course meets their requirements. Eligible participants receive 1 SAICE credit for each day of successful participation in the Introductory course, the Intermediate course, or the Advanced course. Upon receipt of the completed course evaluation, each attendee can download a CPD Certificate in PDF format.

### Computational Hydraulics International (CHI)

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(Please note: we are approx. 6 hours behind SA time)

## TRAINING PROGRAM

Each training day will run from 8:30 am to 5:00 pm daily, with lectures and hands-on exercises.

### Day 1 - Introduction to SWMM modelling

- Introduction to SWMM hydrology/hydraulics and modelling procedures, overview of SWMM applications: examples of new development drainage design, remediation, rainfall dependent infiltration/inflow (RDII), and watershed scale planning; SWMM surface hydrology event modelling: processes, data requirements, results interpretation; water quality; detention pond design and multiple best management practice (BMP) analysis
- Hands-on exercises to early level

### Day 2 - Intermediate SWMM using PCSWMM

- SWMM hydraulic event theory, limitations, applications including natural channel, free surface, surcharge and backwater effects, continuous SWMM modelling and water quality build-up/wash-off and removal processes
- Hands-on exercises to an intermediate level

### Day 3 - Advanced use of PCSWMM and SWMM

- Sanitary sewer modelling, including DWF estimation and pattern creation; rainfall derived inflow and infiltration (RDII) modelling; GIS integration, importing & exporting, entity aggregation & disaggregation, discretization and visual analysis; sensitivity, calibration, and error analysis (SCEA); precipitation and meteorological data management, radar-rainfall, storm dynamics analysis, probability and statistics
- Design of a drainage system for water quality management
- Hands-on exercises to an advanced level

## INCLUDES

Fees include coffee, tea & rusks, a light lunch, and beverages.

In addition to the PCSWMM 2011 Professional 60-day single user license, participants receive:

- SWMM5 software
- Urban Drainage Modelling workbook - 432 pp. (R2040 value)
- Rules for Responsible Modelling - 317 pp. (R340 value)
- User's Guide to SWMM5 - 905 pp. (R1025 value)

Questions? Contact us at [info@chiwater.com](mailto:info@chiwater.com)

## FEES - Workshop Registration

- 3 Days R4250 (US\$625)
- 2 Days R3300 (US\$475)
- 1 Day Advanced R2200 (US\$320)

## TRAINING DISCOUNTS

- Full-time students are entitled to a 50% discount. A 15% discount is allowed for early-bird registration (1 month ahead or more).

## SOFTWARE DISCOUNTS

With registration, a full single user license of **PCSWMM Professional** 2011 software may be purchased at a special discounted price:

- 1 day - purchase the software with \$100 discount
- 2 days - purchase the software with \$200 discount
- 3 days - purchase the software with \$300 discount

## TO REGISTER

Register online at [chiwater.com](http://chiwater.com) and payment can be made by VISA, MasterCard or Wire Transfer.

## LOCATIONS

Venue locations will be provided closer to the training date.

- **Fourways – Gauteng** - October 10 - 12, 2011
- **Durban (eThekweni)** - October 19 - 21, 2011
- **Port Elizabeth** - October 25 - 27, 2011
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## COMPUTING

Attendees must bring their own laptops with the 60-day software license installed. A link will be provided to download the software after the online registration is complete. PCSWMM requires Microsoft 7, Vista, XP (SP2), or 2000 operating system, with the Microsoft .NET 3.5 or higher framework installed. In addition, it requires a minimum screen resolution of 1024x768 pixels (XGA), 1GB of physical memory and 100MB of disk space.

## CANCELLATION POLICY

CHI retains the right to cancel the workshop, and if so, the registrants will receive a full refund of the registration fee. CHI will not be liable for any other expenses occurred by the registrant. Please visit [chiwater.com](http://chiwater.com) for the full cancellation and refund policy.