CTCN assistance in Thailand

Strengthening Bangkok's Early Warning System to respond to climate induced flooding

Deliverable 7 (Activity 1.3.2) Advanced Urban Flood modelling course

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Contents

1 Training Course on Urban Flood Modelling

This report summarises the outcome of the training course on Urban Flood Modelling (3.2) conducted under the project activity on Capacity Building (Activity 3).

In the CTCN project, enhancement of knowledge and experience on 2D modelling at BMA was pursued through conduct of specialised training on urban flood modelling. A focused training course was devised, comprised of a mix of lectures and numerous hands-on exercises, aimed at providing the participants with good basic knowledge of flood modelling concepts and confident use of various software tools for urban flood analysis.

1.1 Course Schedule

The 7-day training course was conducted during the period 7-16 December 2016 at the BMA office in Bangkok, Thailand. It was administered in three segments, each comprising of general course lectures and exercises, followed by applied work using available data on the Bangkok case study.

As part of the course, the participants received a comprehensive course package, with detailed documentation and exercise notes.

1.2 Participants

Eight BMA staff participated in the training, most of whom completed the course on MIKE URBAN Collection System (CS) during the first week.

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Table 1   List of participant

Attendance in the course varied as the attendees scheduled it around their other work commitments. Three participants were present for the whole duration of the training course.

Figure 1   Photo during the lecture on urban flood modelling during the BMA training course (7 December 2016).

1.3   Course Topics

The course covered the following topics:

- 1D modelling of sewer systems with MIKE URBAN Collection System (CS)
  - MIKE URBAN application & project concept
  - GIS functionalities
  - Data import/export options
  - Various MIKE URBAN tools
  - Time series and model boundary conditions
  - Model data requirements and model building principles
  - Surface runoff methods
  - The hydrodynamic model
  - Running simulations
  - Model result presentation
- Integrated 1D/2D modelling of urban flooding with MIKE FLOOD Urban FM
  - Introduction to urban flood modelling
  - Introduction to MIKE 21 FM
  - Urban mesh generation
  - Coupling 1D and 2D models with MIKE FLOOD
  - 1D-2D linkage options
  - Setting boundary conditions (Water levels, discharge, rainfall)
  - Results viewing and presentation
- Building a 1D/2D flood model for Bangkok (CTCN project case area)
  - Building and validating the 1D model for Bangkok
  - Creating an urban mesh model for Bangkok
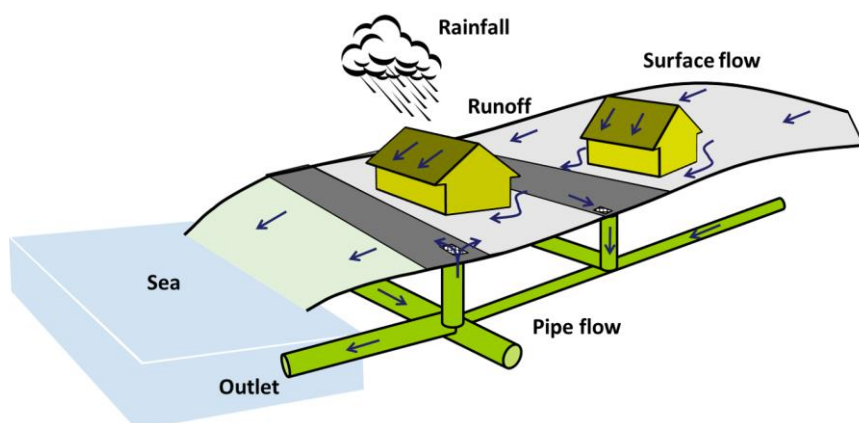 - Assembling a coupled 1D/2D urban flood model for Bangkok

Figure 2   Illustration of the coupled 1D/2D flood modelling concept covered in the training course.
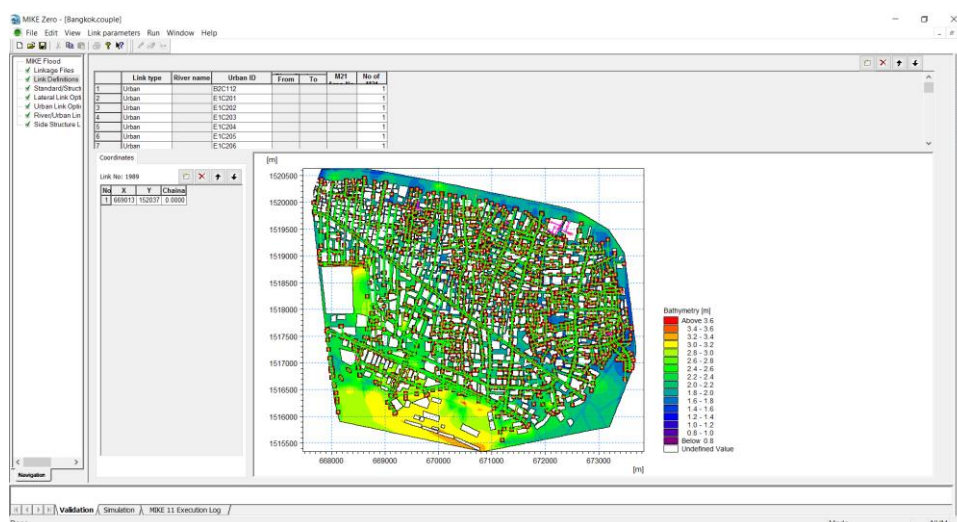

Figure 3   Coupled 1D/2D urban flood model for Bangkok built as a practical exercise in the training course.

1.4   Summary

A specialised training course on urban flood modelling was provided to BMA staff under the CTCN project. The participants, over the 7-day course, learned about the concepts behind 1D modelling of sewer systems, and integrated 1D/2D modelling for flood analysis. More importantly, they gained hands-on experience on the use of various software tools for urban flood modelling through prepared exercises and through practical application of their learning with available CTCN case study data for Bangkok.