THE UNIVERSITY OF TOKYO

# An Example on Hydrological Modeling Training to Contribute AWCI Capacity Building

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# DHM Training course

Objective: Assist users to be familiar with the model, input data preparation and understanding of the hydrological modeling

- Simulate floods events
- Track spatial variability of rainfall, stream flow
- Simulate long-term climate change effects
- Quantify water resources availability
- Optimize WRM

# Distributed Hydrological Model

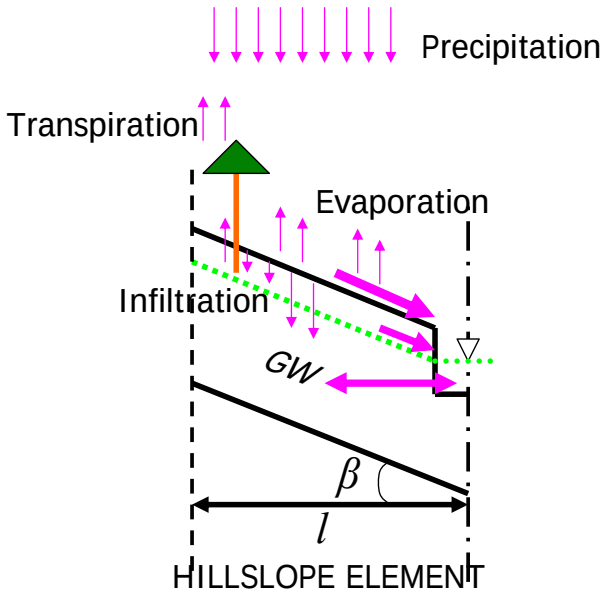
- In order to take advantage of remote sensing data and spatially distributed rainfall we suggest to use a Distributed Hydrological Model
- A grid-based version DHM was developed at University of Tokyo by Dawen Yang
- From the initial version is has being constantly improved according to needs

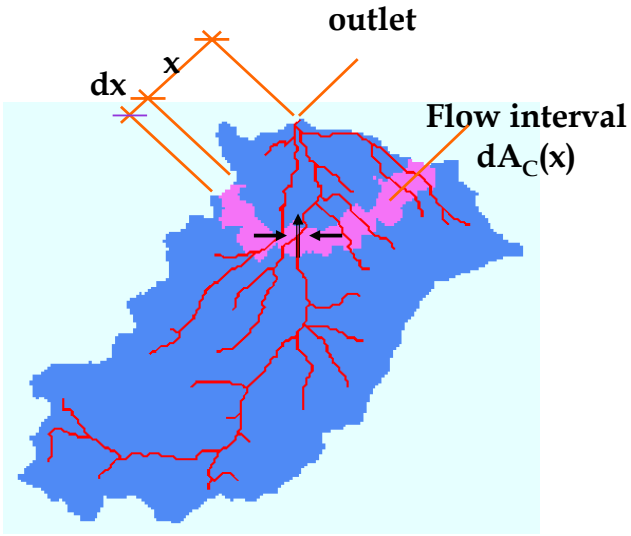
# Some Facts about GBHM

- Physically based using the governing equations
- Low execution cost due to its 1-D distribution function
- Capable to simulate large river basins such us Chao Phraya and even Yellow River
- Flexibility to be coupled with hydraulic structures such as dams, levees, gates, etc. Also with LSS, Atmospheric models, optimization.
- We do have an existing training course

# Distributed Hydrological Model

- A grid-based version of GBHM (by D. Yang)
- Physically based & 1-D distribution function

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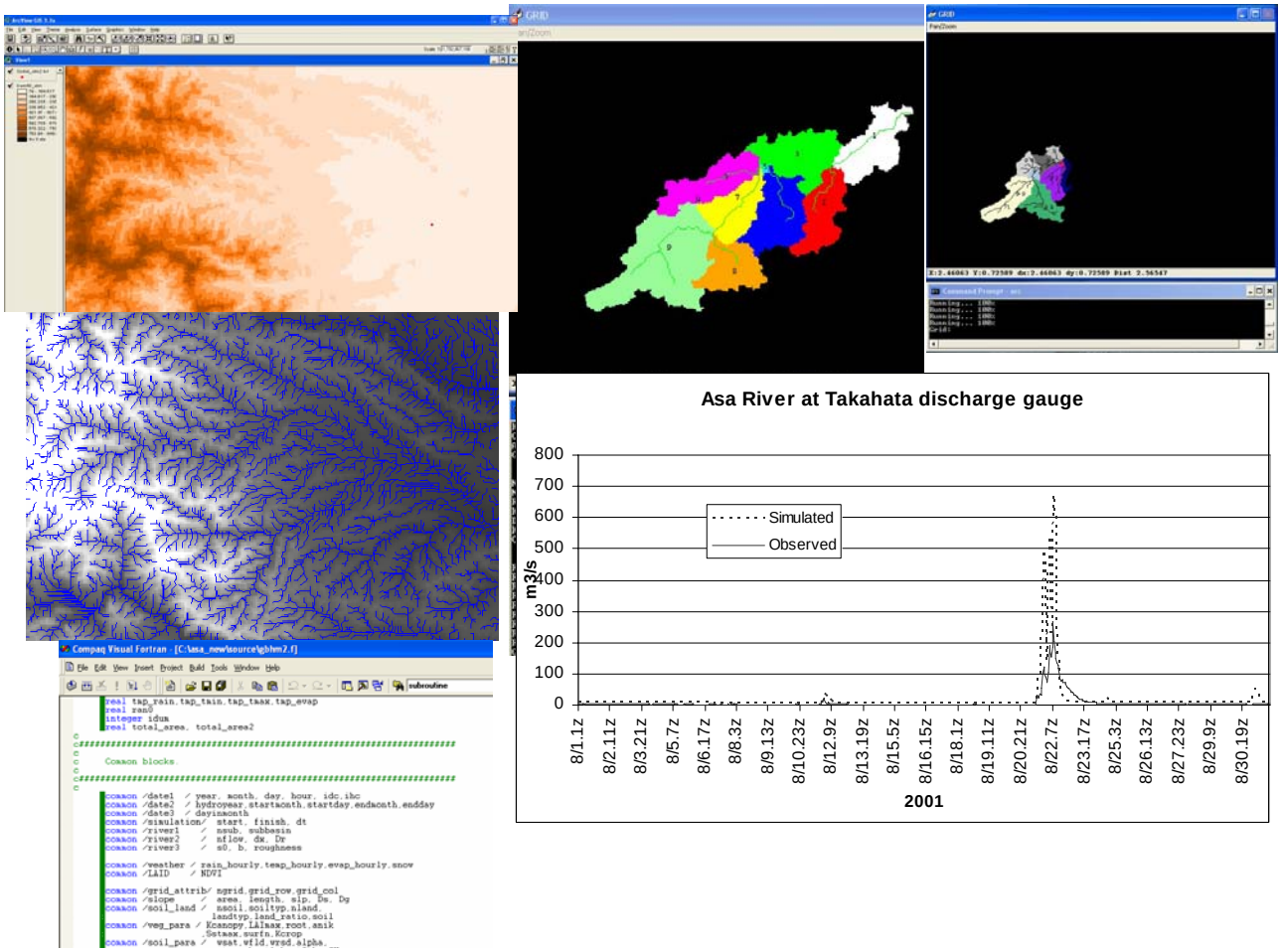
# Scope of the Training Course

- Class_0: GETTING STARTED WITH ARCINFO
- Class_1: TO DELINEATE A WATERSHED FROM A DEM
- Class_2: TO DELINEATE SUBBASINS WITH PFAFSTETTER CODING SYSTEM
- Class_3: TO DEFINE THE GEO-MORPHOLOGY OF ALL SUB-BASINS
- Class_4: TO PREPARE INPUT RAIN GAUGE DATA
- Class_5: TO PREPARE SPATIAL INPUT DATA & PARAMETERS
- Class_6: TO COMPLETE PREPARING SPATIAL INPUT DATA
- Class_7: TO UNDERSTAND THE STRUCTURE OF GBHM2 CODE
- Class_8: TO EXAMINE GBHM2 CODE AND SUBROUTINES
- Class_9: TO CALIBRATE MODEL PARAMETERS

# Required Software

- **Arc/info v. 8.2** (complete version incl. GRID) from ESRI, GIS mainly for raster data
- **ArcView 3.2**(with spatial analyst ext.) from ESRI, GIS mainly  for vector data
- **Compaq Visual Fortran compiler v.6**



# Applications of DHM

Geographic Information System
Arc/info v.8.2

Programming Language
Fortran 90/95

Geomorphology Based Hydrological Modeling (code)

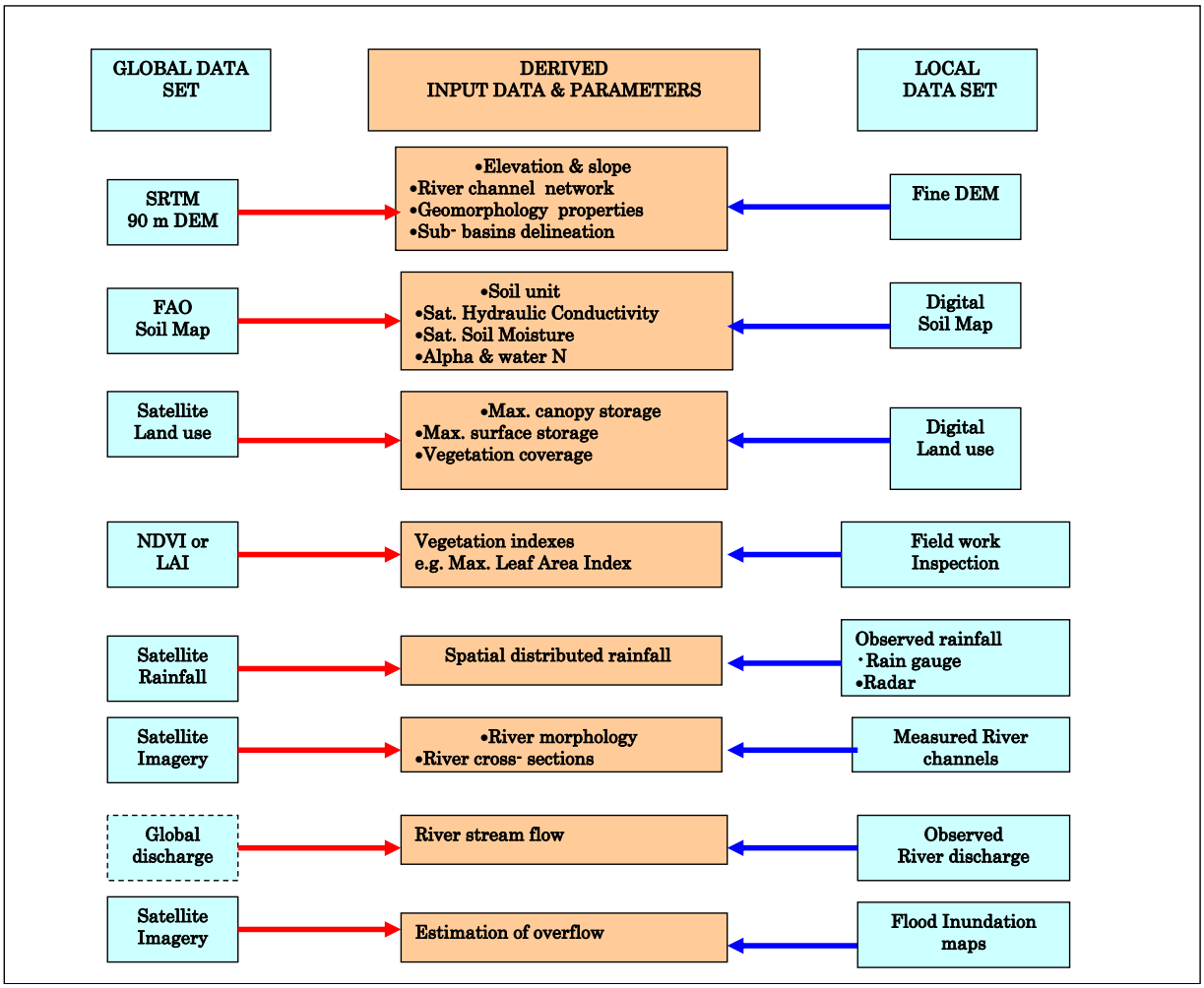
Coupled with optimization algorithms

Coupled With LSS

Coupled with Snowmelt model

Coupling with inundation areas

Improve water resources management



Thanks!