Universiti Malaysia PAHANG

IOES Institute of Ocean and Earth Sciences Universiti Malaya

UNIVERSITY OF MALAYA

Workshop on:

GIS–based River Discharge Modelling

Speaker:
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Venue: Cube Room, Level 4, New IPS building, University Malaya, Kuala Lumpur, Malaysia

Workshop schedule

- **Day 1**
- Morning: 08:30-10 Lecture 1-1, 10:30-12:30 Lecture 1-2
- Afternoon :14:00-15:45 Lecture1-3, 16:00-17:30 Lecture 1-4 and Exercise
- **Day 2**
- Morning: 08:30-10 Lecture 2-1, 10:30-12:30 Lecture 2-2
- Afternoon :14:00-15:45 Exercise, 16:00-17:30 Exercise
- **Day 3**
- Morning: 08:30-10 Lecture 3-1, 10:30-12:30 Exercise
- Afternoon :14:30-15:45 Exercise, 16:00-17:30 Exercise /discussion

GIS and Hydrology

Hydrology study the motion of the earth's waters through the hydrologic cycle, and the transport of constituents such as sediment and pollutants in the water as it flows.

GIS is focused on representing the landscape by means of positional referenced data describing the character and shape of geographic features. A spatial hydrology model is one which simulates the rainfall-runoff process and transport on a specified region of the earth using GIS data structures.

The boundary of this region is represented by a polygon, such as a river basin boundary or an aquifer boundary.

Type of Hydrological model

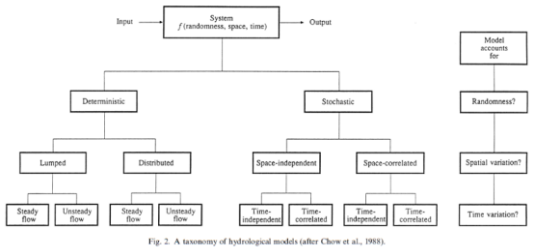
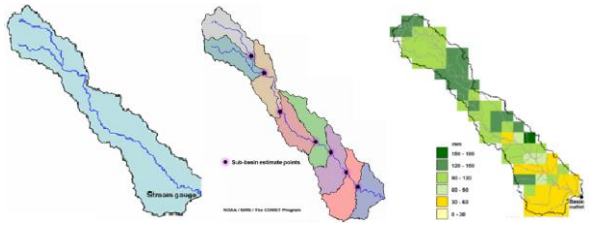


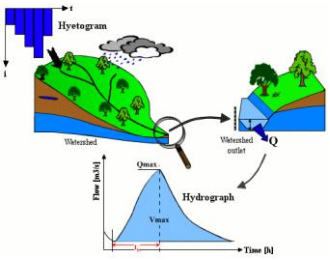
Fig. 2. A taxonomy of hydrological models (after Chow et al., 1988).

Spatial resolution of Hydrological model

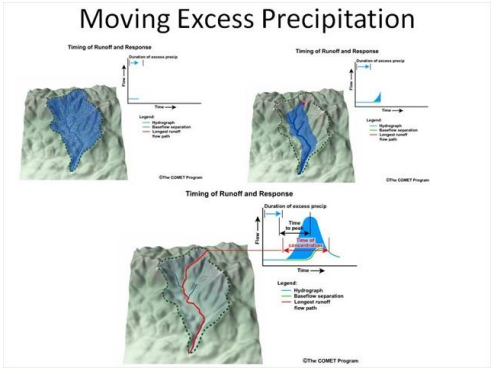


Lumped model Semi-Distributed Distributed

River discharge is the volume of water flowing through a river channel. This is the total volume of water flowing through a channel at any given point and is measured in cubic meters per second (cumecs)



Moving Excess Precipitation



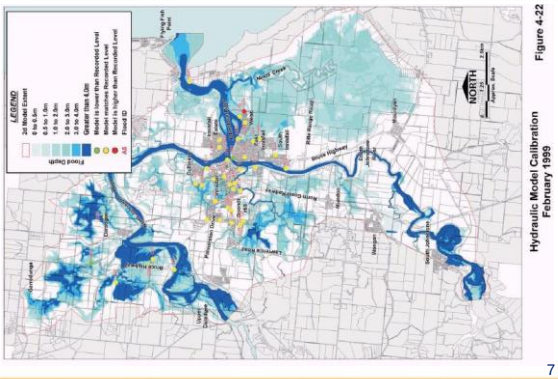
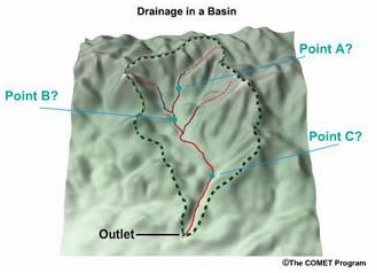


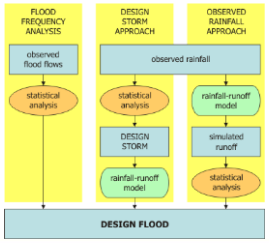
Figure 4-22
Hydraulic Model Calibration
February 1999

Spatial variation of River discharge

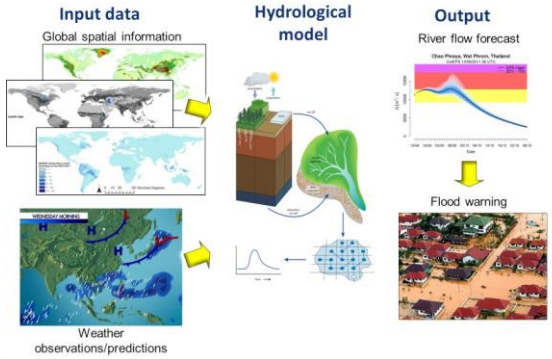


Flood Damage Assessment involve with Annual damage potential, Calculation of losses and providing Damage function. It consider direct or indirect damages, tangible or intangible damages, primary and secondary damage.

Flood estimation is the basic approaches for estimation of peak and volume of flood for design purpose. It is done by **statistical analysis** of observed stream flow data and **rainfall-runoff modelling**.



Flood forecasting system and warning, is a system designed to forecast flood levels before they occur and systematically aware people who are in danger of flood. Flood forecasting systems and warning can contain: gauging stations, flood action plans, services like hot line, sms, warnings in TV



Thank you

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