

#### Workshop on:

## Rainfall-Runoff Simulation Supporting with GIS and Satellite Data

Speaker:
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Venue: FKASA 5, Level 1, Faculty of Civil Engineering & Earth Resources University of Malaysia Pahang (UMP), 26300 Gambang, Kuantan, 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

- Morning: 08:30-10 Lecture 3-1, 10:30-12:30 Exercise

- Afternoon:14:30-15:45 Exercise, 16:00-17:30 Exercise /discussion

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#### **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)

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## Spatial resolution of Hydrological model

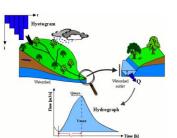


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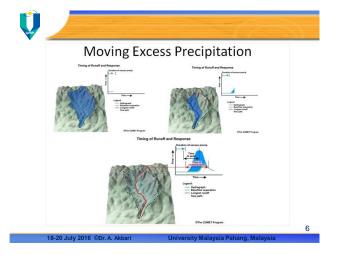
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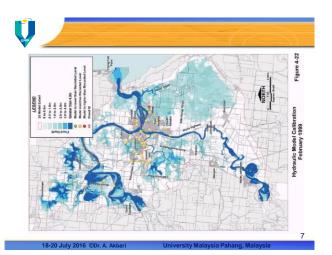


River discharge is the volume of water flowing through a river channel. This is the total volume of water flowing through a channel at any given point and is measured in cubic meters per second (cumecs)



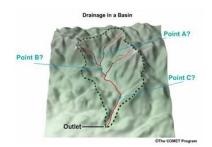
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### Spatial variation of River discharge



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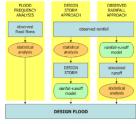
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Flood Damage Assessment involve with Annual damage potential, Calculation of losses and providing Damage function. It consider direct or indirect damages, tangible or intangible damages, primary and secondary damage.

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.



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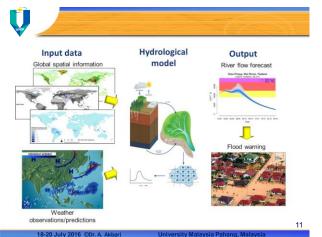


Flood forecasting system and warning, is a system designed to forecast flood levels before they occur and systematically aware people who are in danger of flood. Flood forecasting systems and warning can contain: gauging stations, flood action plans, services like hot line, sms, warnings in TV

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# Thank you akbariinbox@yahoo.com akbari@ump.edu.my

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