

การฝึกอบรมเชิงปฏิบัติการ

เรื่อง

การประยุกต์ใช้ชุดแบบจำลอง

*Decision Support Framework (DSF)*

โดย

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16-18 สิงหาคม 2560



# IQQM Calibration Technique

# Purpose of calibration

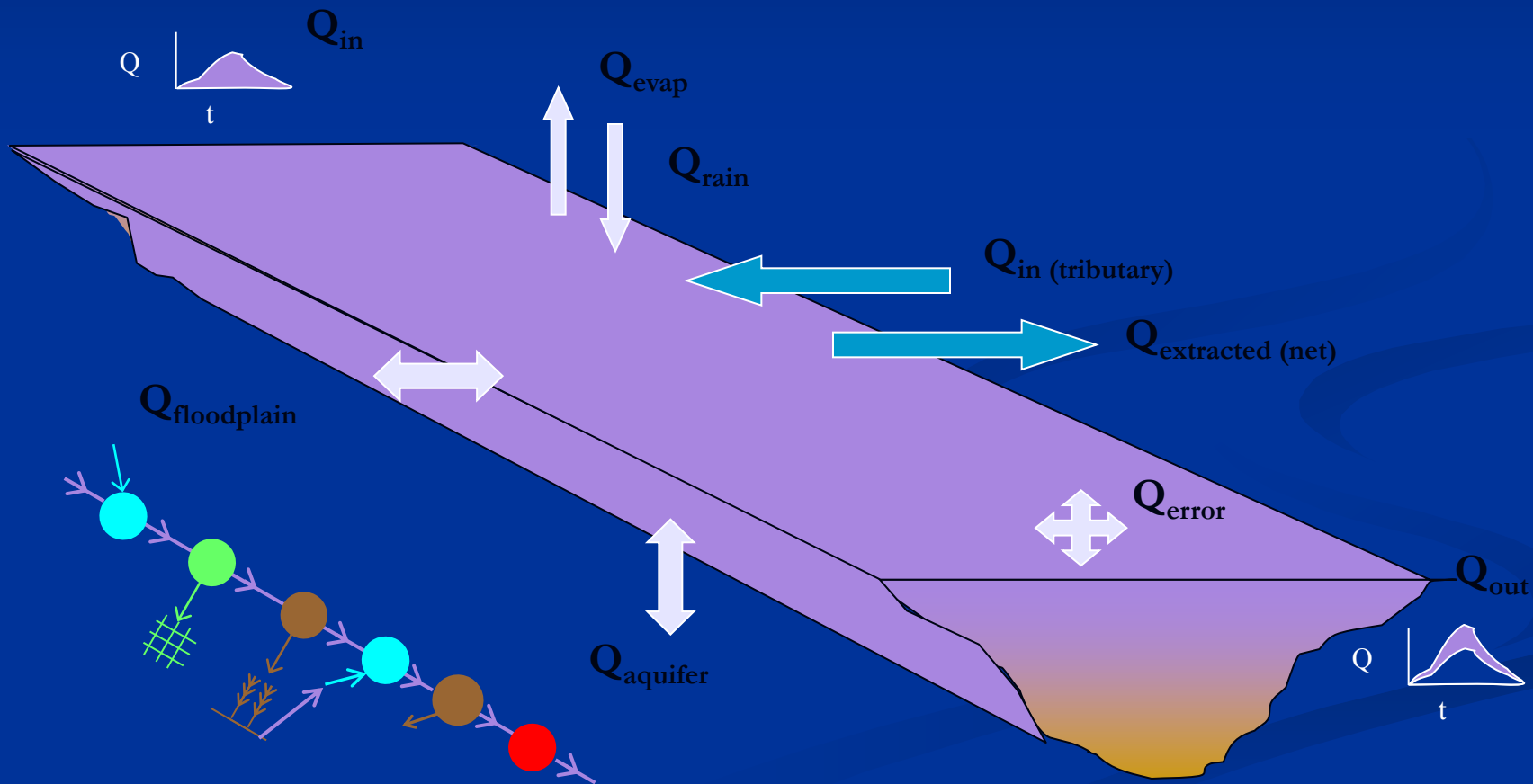
To ensure water balance components are the correct magnitude, to give confidence in estimates of

- water availability (runoff)
- water demands
- impacts of interventions
- surplus water

# Calibration and data

- Calibration can only take place against available data.
- Errors in one component of water balance will be masked by errors in other components.

# Water balance components in flow calibration

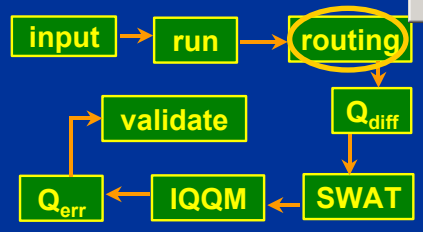
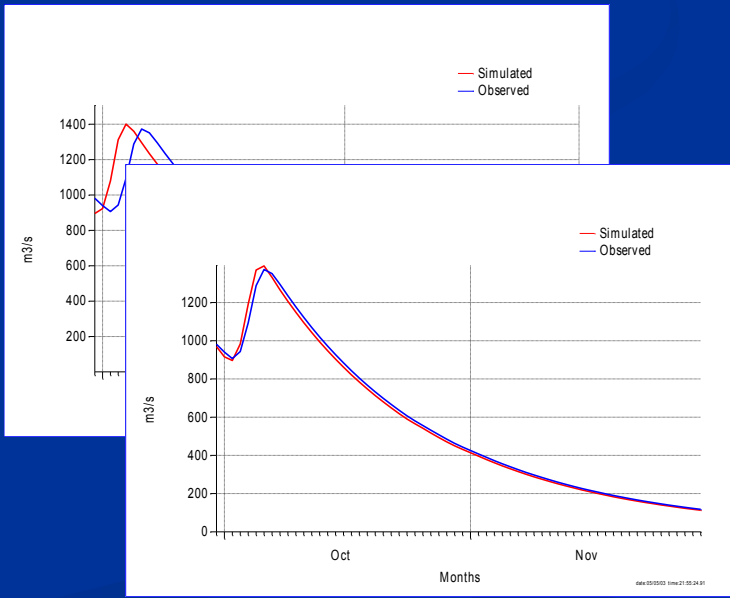


# Flow calibration method

1. Calibration of timing of hydrograph peaks by lag time.
2. Calibrate shape of hydrograph by non-linear routing parameters ( $S=kQ^m$ ).
3. Calibrate mass balance for flow distribution using effluent node.

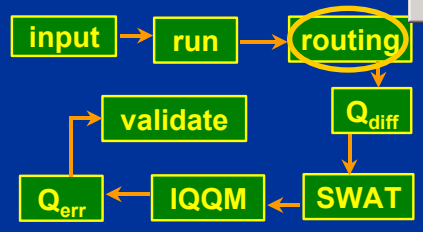
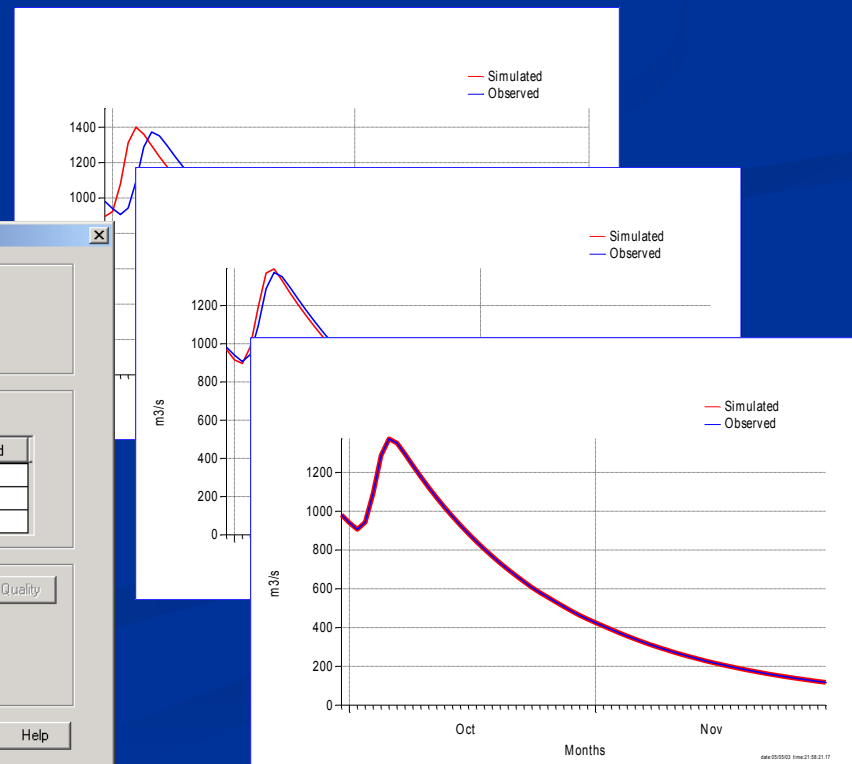
# 1. Calibration of timing of hydrograph peaks by lag time

The screenshot shows a software interface for hydrological modeling. On the left, a map displays a watershed network with a blue line representing a link. Two 'Add link data' dialog boxes are overlaid on the map. The first dialog box has 'Routing type' set to 'Non Linear' and 'Lag Time' set to '0.00 da'. The second dialog box has 'Routing type' set to 'Non Linear' and 'Lag Time' set to '1.50 days'. Both dialog boxes have 'Reach characteristics' fields for Length, Width, Initial Inflow, and Initial Outflow. The 'Reach characteristics' fields in the second dialog box are filled with values: Length 55.800 km, Width 0.0000 m, Initial Inflow 0.0000 m3/s, and Initial Outflow 0.0000 m3/s.



# 2. Calibrate shape of hydrograph by non-linear routing parameters ( $S=kQ^m$ ).

The screenshot shows the HEC-RAS software interface with three overlapping 'Add link data' dialog boxes. The top dialog shows routing parameters for a link with a Lag Time of 0.00 days and routing parameters k=0.10000 and m=0.70000. The middle dialog shows a Lag Time of 1.50 days and routing parameters k=0.10000 and m=0.70000. The bottom dialog shows a Lag Time of 1.50 days and routing parameters k=1.5000 and m=0.75000. The routing diagram on the left shows a network of links with a yellow arrow pointing to a specific link.

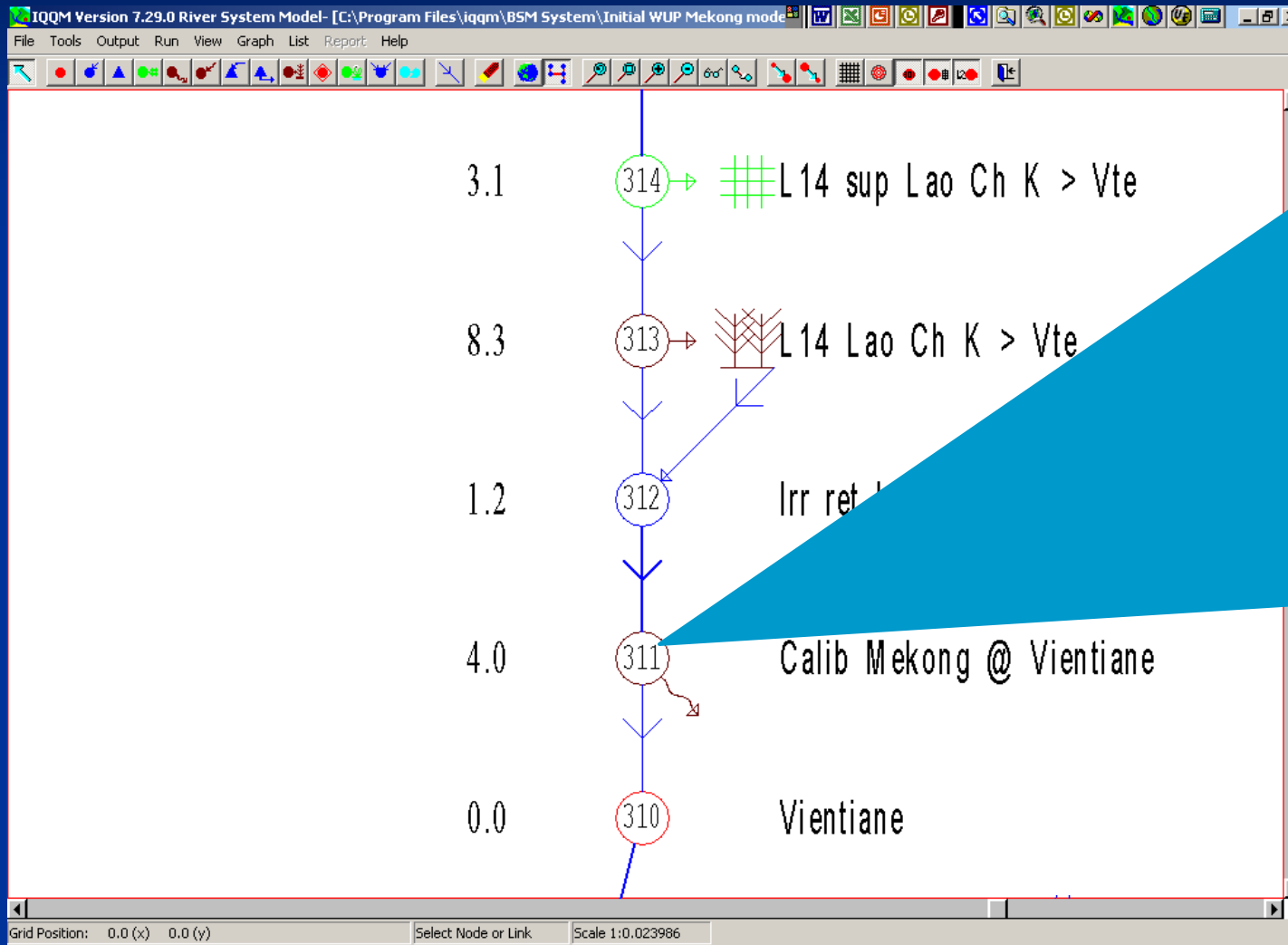




### 3. Calibrate mass balance for flow distribution

- Observed Flow  $>$  Simulation Flow  
→ Use Potential Demand
- Simulation Flow  $>$  Observed Flow  
→ Use Loss Node

# IQQM Calibration by losses node



River flow (m <sup>3</sup> /s)	Loss (m <sup>3</sup> /s)
0	0
900	0
1320	130
1515	130
2620	220
8000	250
10500	350
16150	550
19000	1400
1.16E+35	8.56E+33

# Method to calibrate mass balance for flow distribution using effluent node.

1. Plot graph between obs. and sim. Flow in Ranked
2. Add node 4.0 (Effluent Node) before simulated Node (0.0)
3. Add data in Specific data in general tab (River flow)
4. Input in River flow VS effluent flow



# Demonstrations