การฝึกอบรมเชิงปฏิบัติการ

เรื่อง

การประยุกต์ใช้ชุดแบบจำลอง

Decision Support Framework (DSF)

โดย

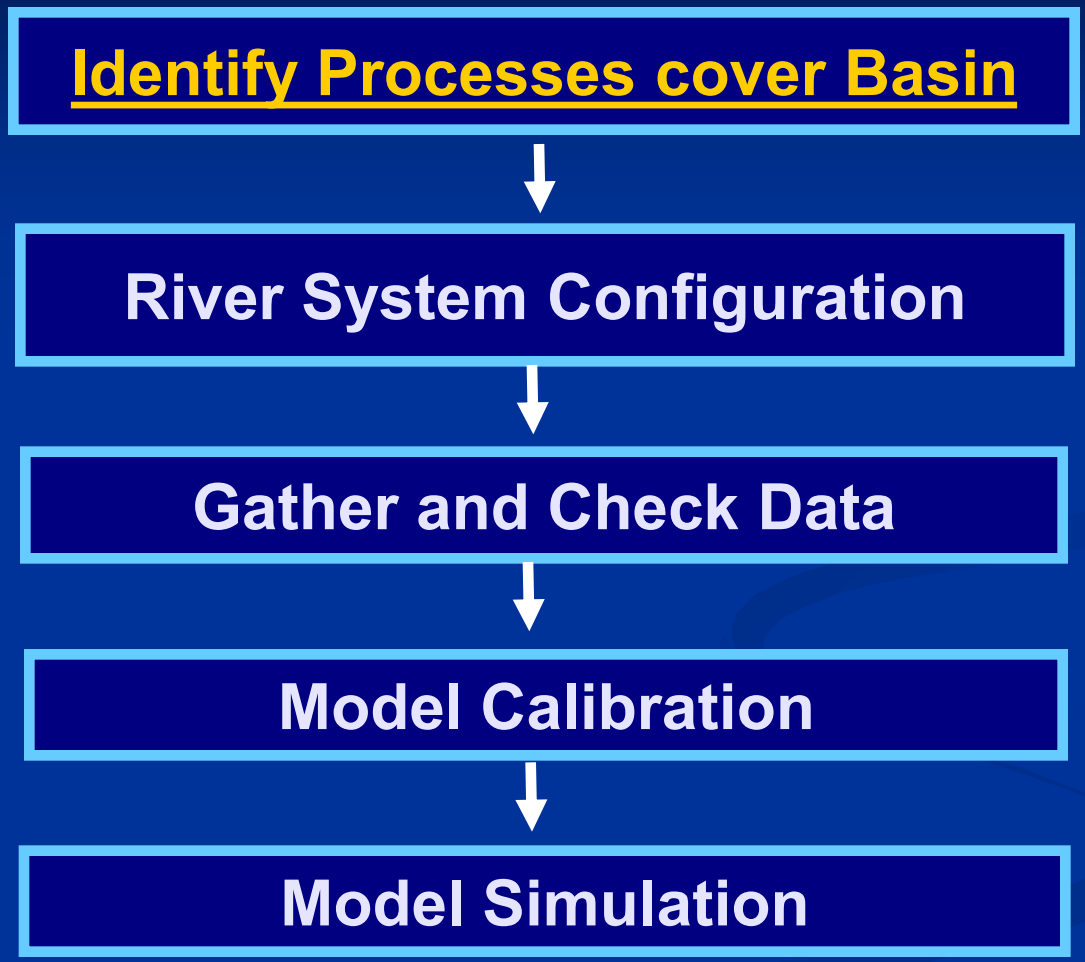
นายวินัย วังพิมูล

วิศวกรชำนาญการพิเศษ

16-18 สิงหาคม 2560

IQQM Model Set up

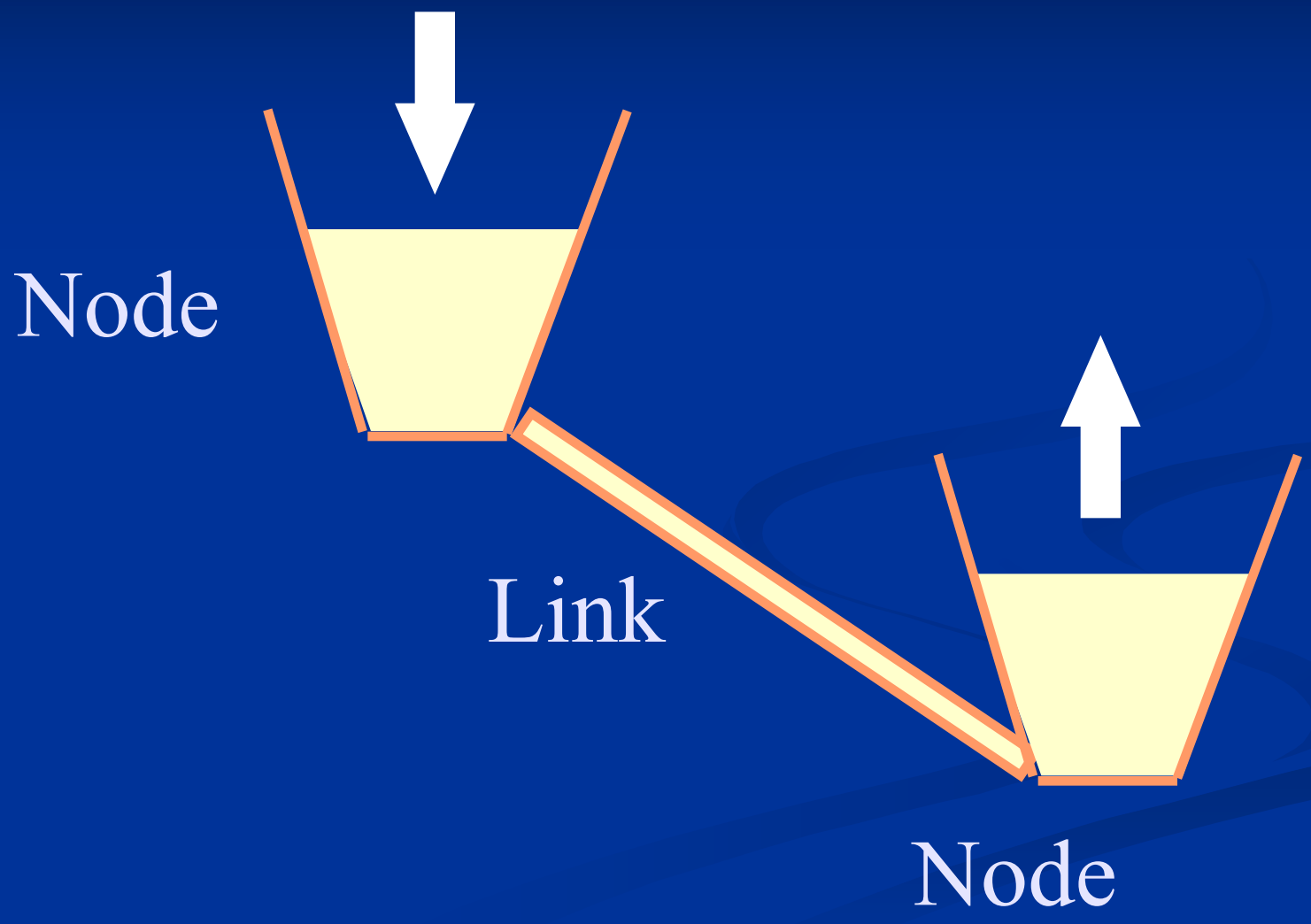
IQQM Implementation Process



River System Configuration

- การจำลองระบบลุ่มน้ำ จะแทนด้วย ปุ่ม (Node) และเชื่อมโยง แต่ละปุ่มนั้นเข้าด้วยกัน (Link)
- Nodes เป็นตัวแทนของ ตำแหน่ง หรือ locations ยาวตลอดตามลำน้ำ เช่น อ่างเก็บน้ำ,สถานีสูบน้ำ, สถานีวัดน้ำ เป็นต้น
- Links เป็นการเชื่อมโยงแต่ละ Node เข้าด้วยกันตามลักษณะของสภาพลุ่มน้ำและการใช้น้ำ

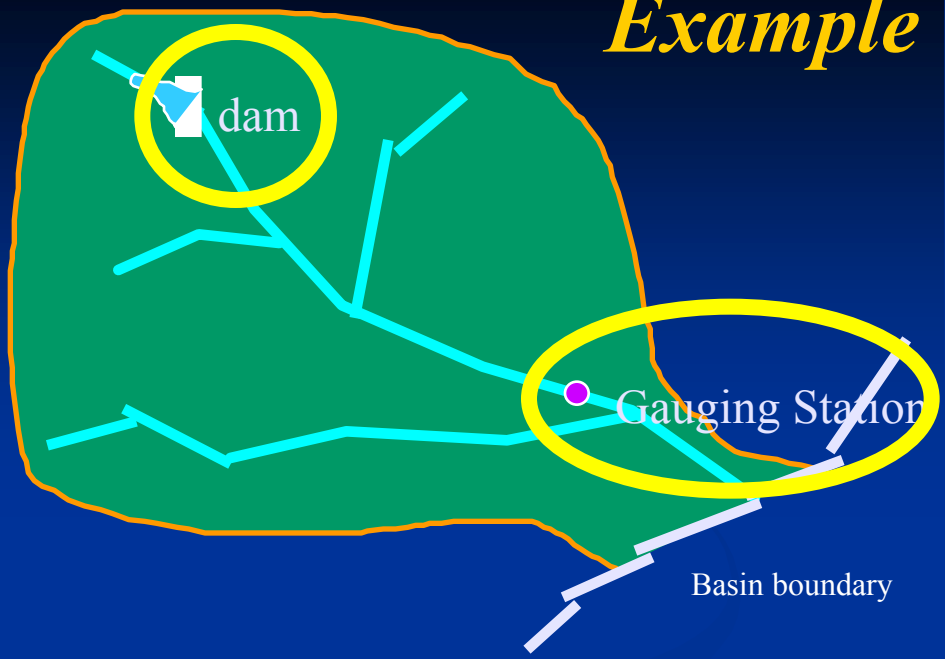
Node and Link



Example

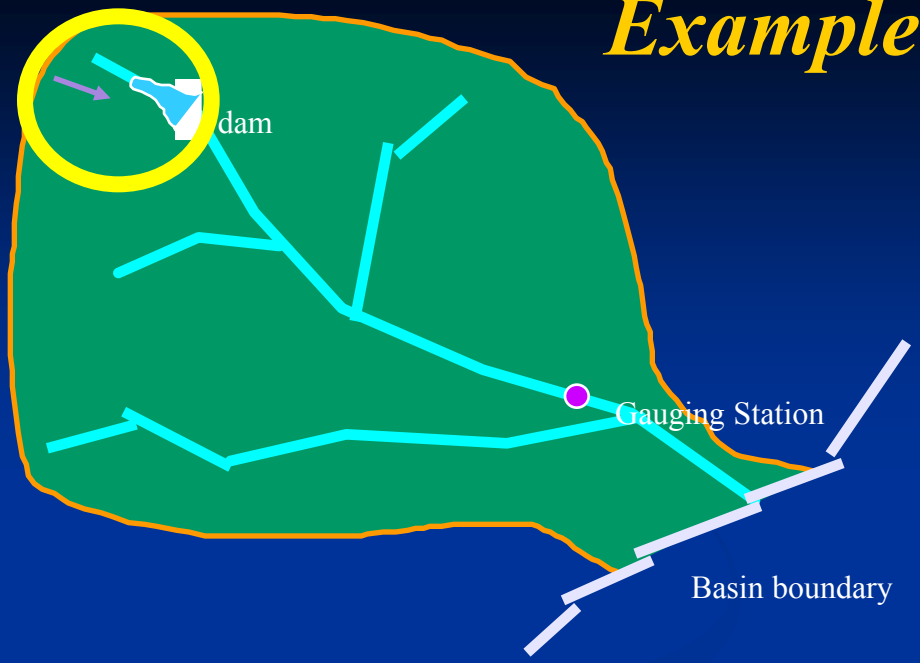

inflows
Reservoir
inflows
W/S Town
1300 ML/yr
1600 ML/yr
40 ha
60 ha
150 ML
1100 ML/yr
500 ML
inflows
300 ML
400 ML
สถานีวัดน้ำ
inflows
ขอบเขตลุ่มน้ำ
Regulated - irrigation
Regulated - water harvesting
Unregulated - irrigation
Unregulated - water harvesting

Example

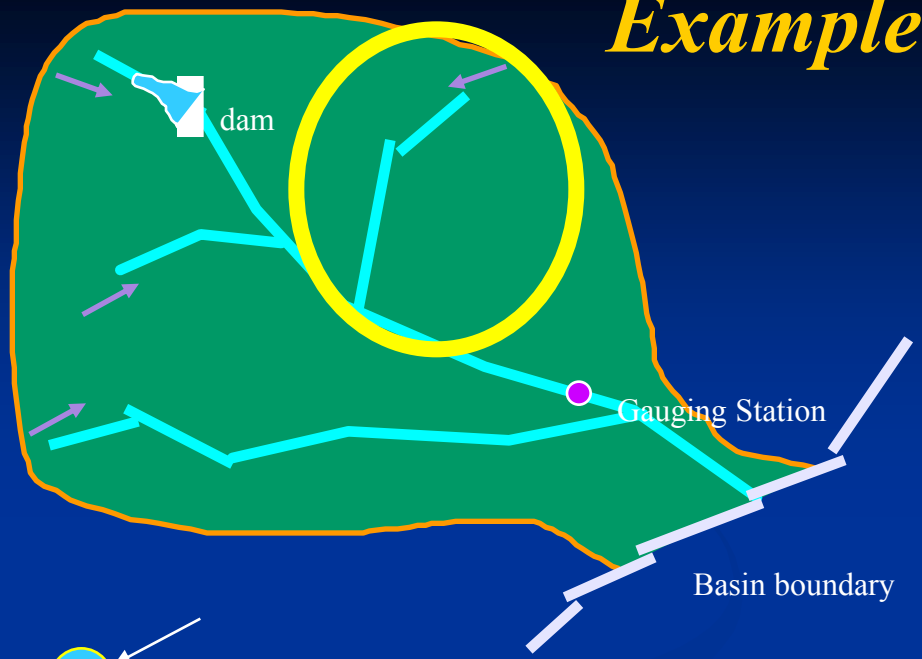


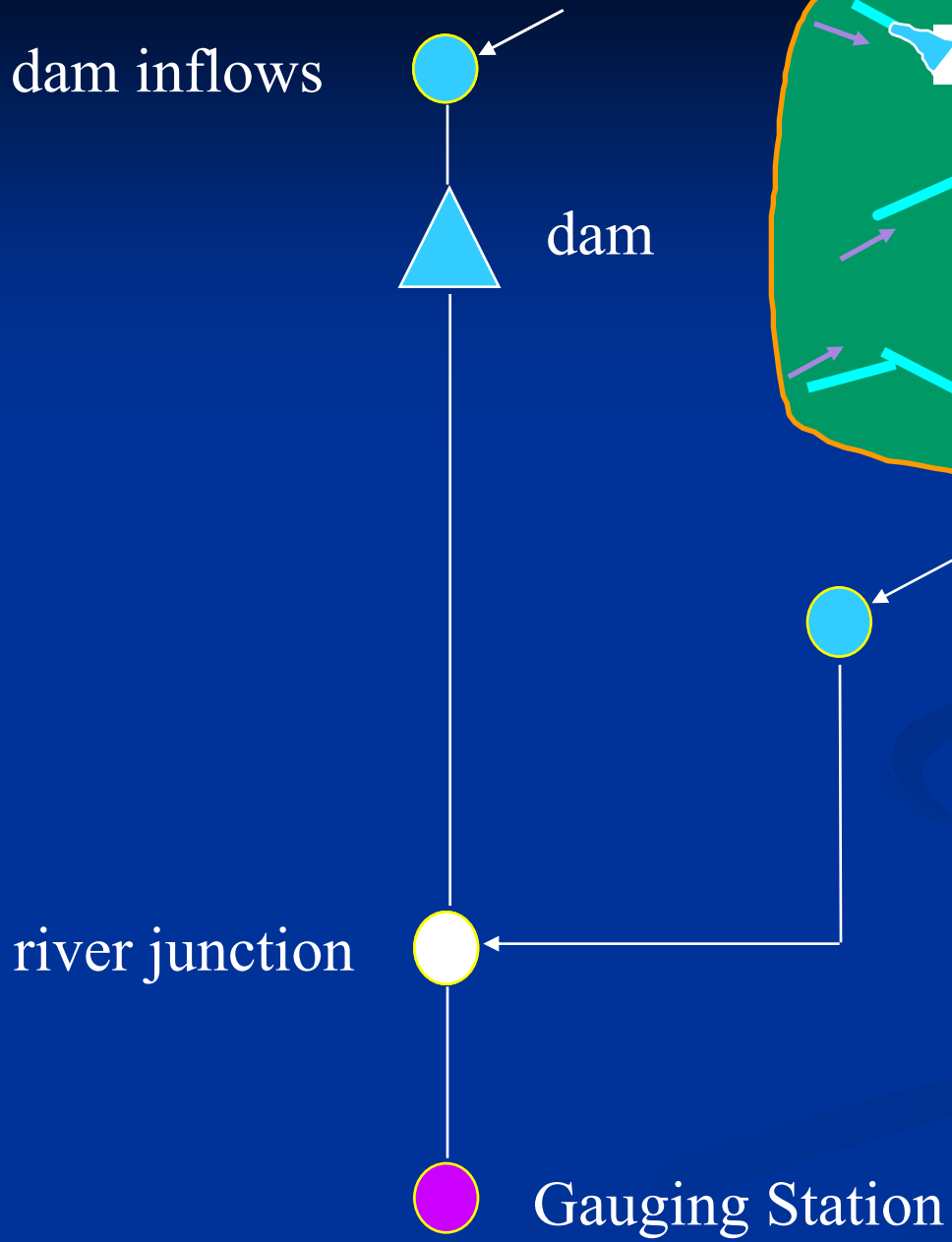
Example


dam inflows
dam
Gauging Station

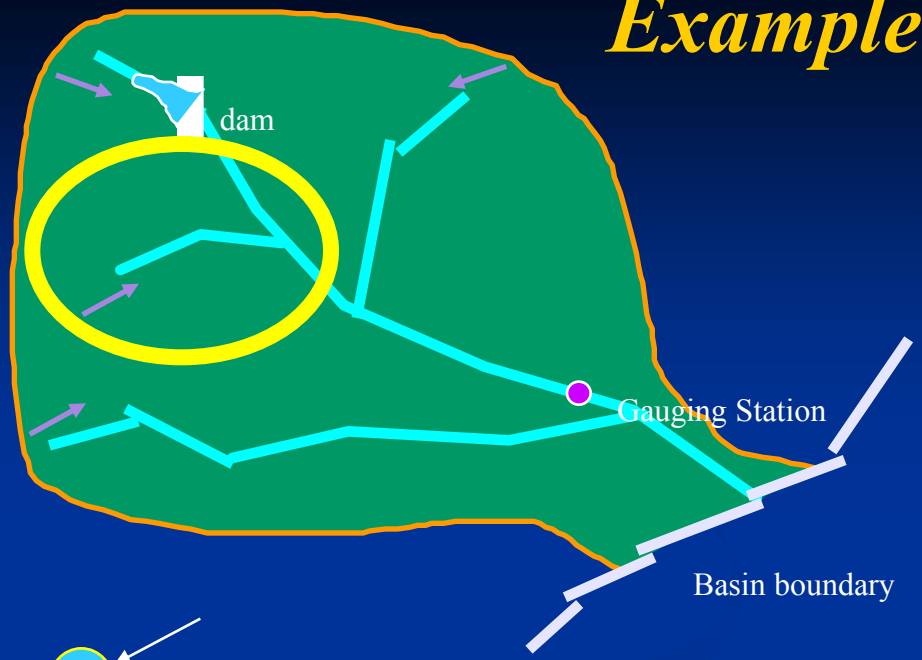

dam
Gauging Station
Basin boundary

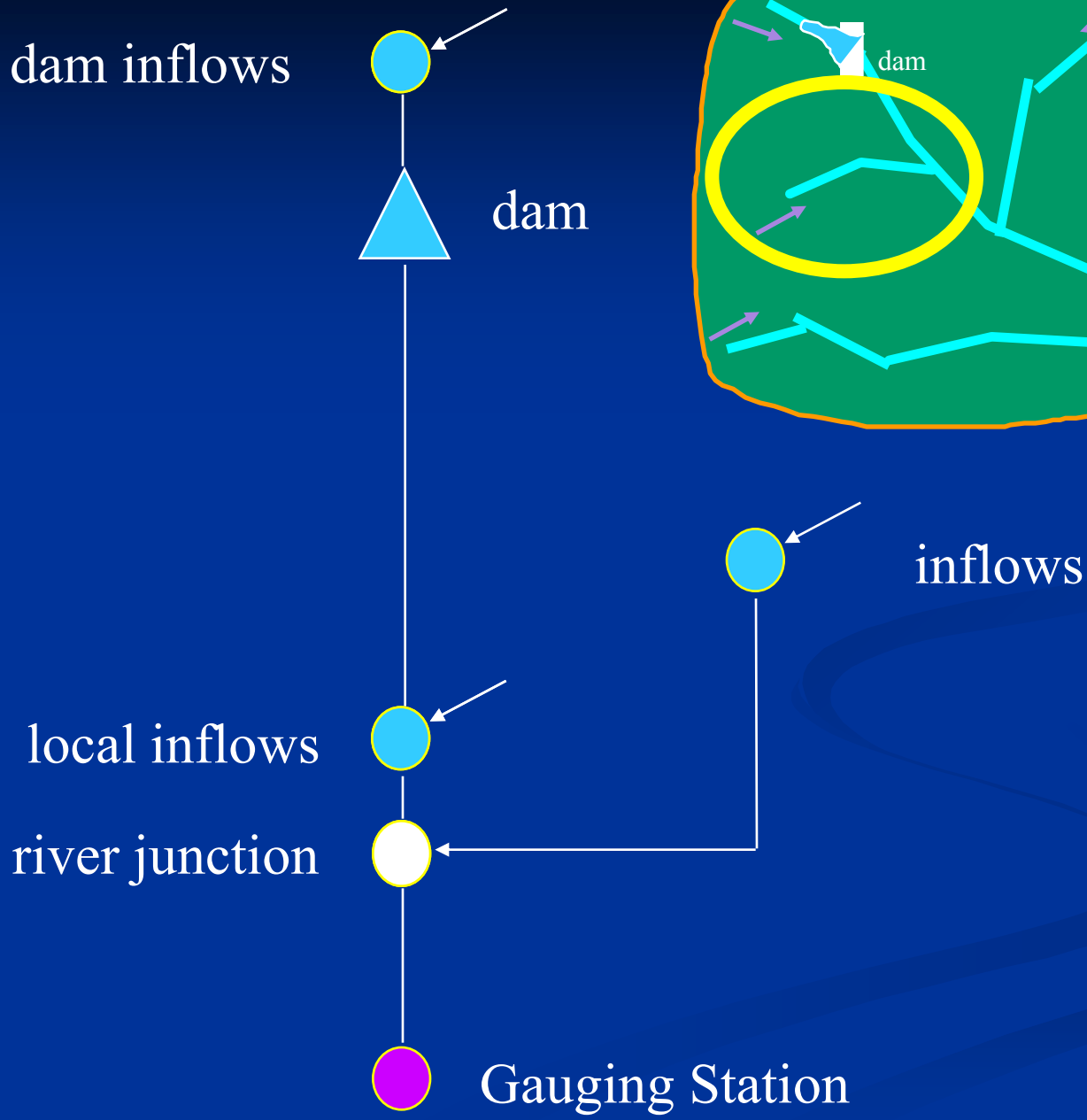
Example


dam
Gauging Station
Basin boundary

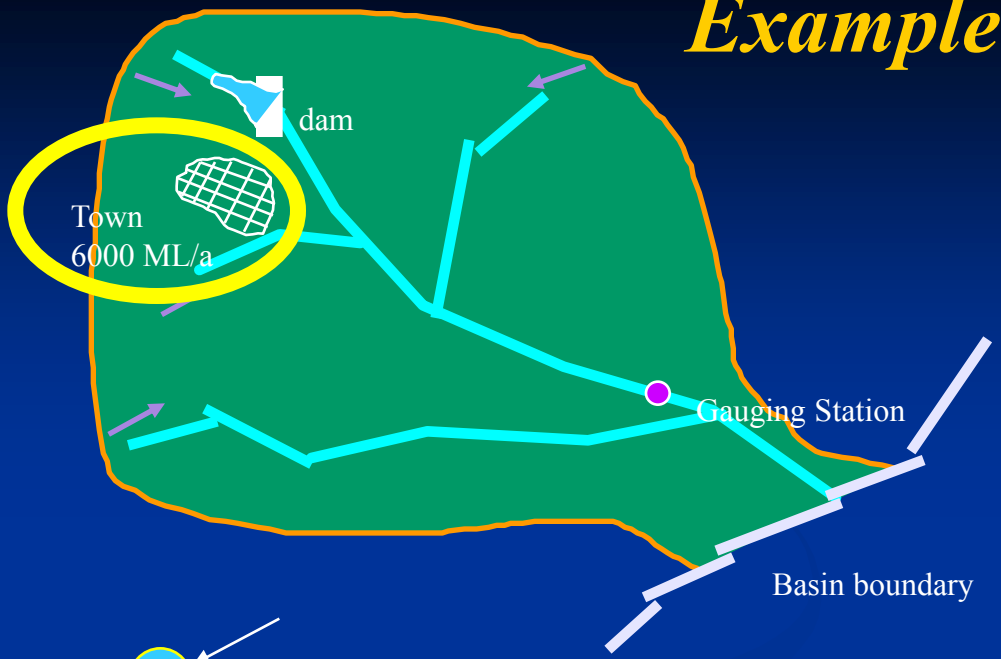

dam inflows
dam
inflows
river junction
Gauging Station

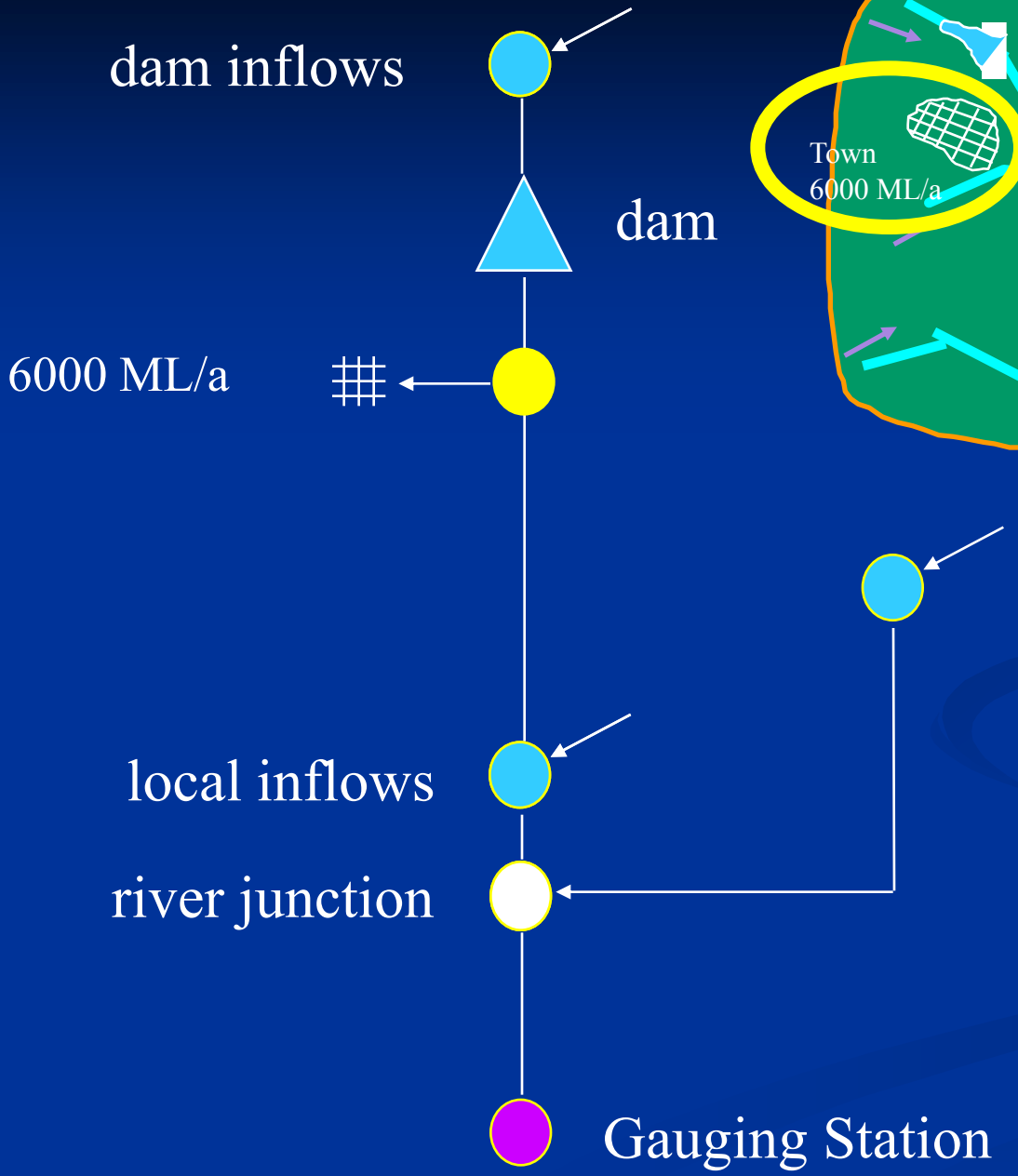
Example


dam
Gauging Station
Basin boundary


dam inflows
dam
inflows
local inflows
river junction
Gauging Station

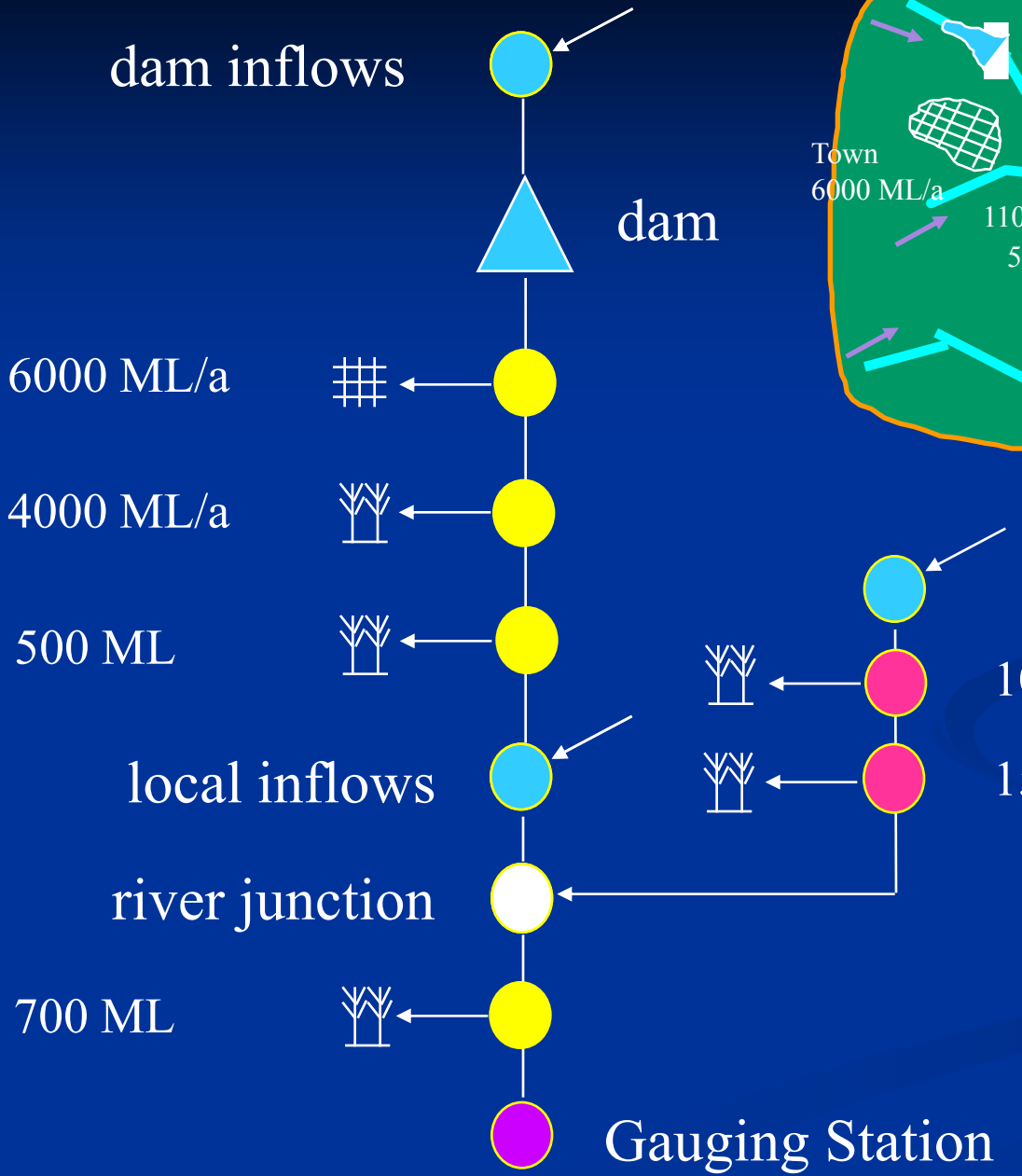
Example


dam
Town
6000 ML/a
Gauging Station
Basin boundary


dam inflows
dam
6000 ML/a
inflows
local inflows
river junction
Gauging Station

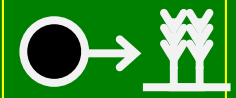
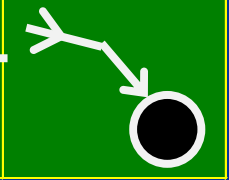
Example


dam
1300 ML/a
40 ha
1600 ML/a
60 ha
Town
6000 ML/a
150 ML ofs
1100 ML/a
500 ML ofs
300 ML ofs
400 ML ofs
Gauging Station
Basin boundary

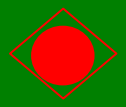

dam inflows
dam
6000 ML/a
4000 ML/a
500 ML
inflows
100 ha
150 ML
local inflows
river junction
700 ML
Gauging Station

Node & Link Symbols

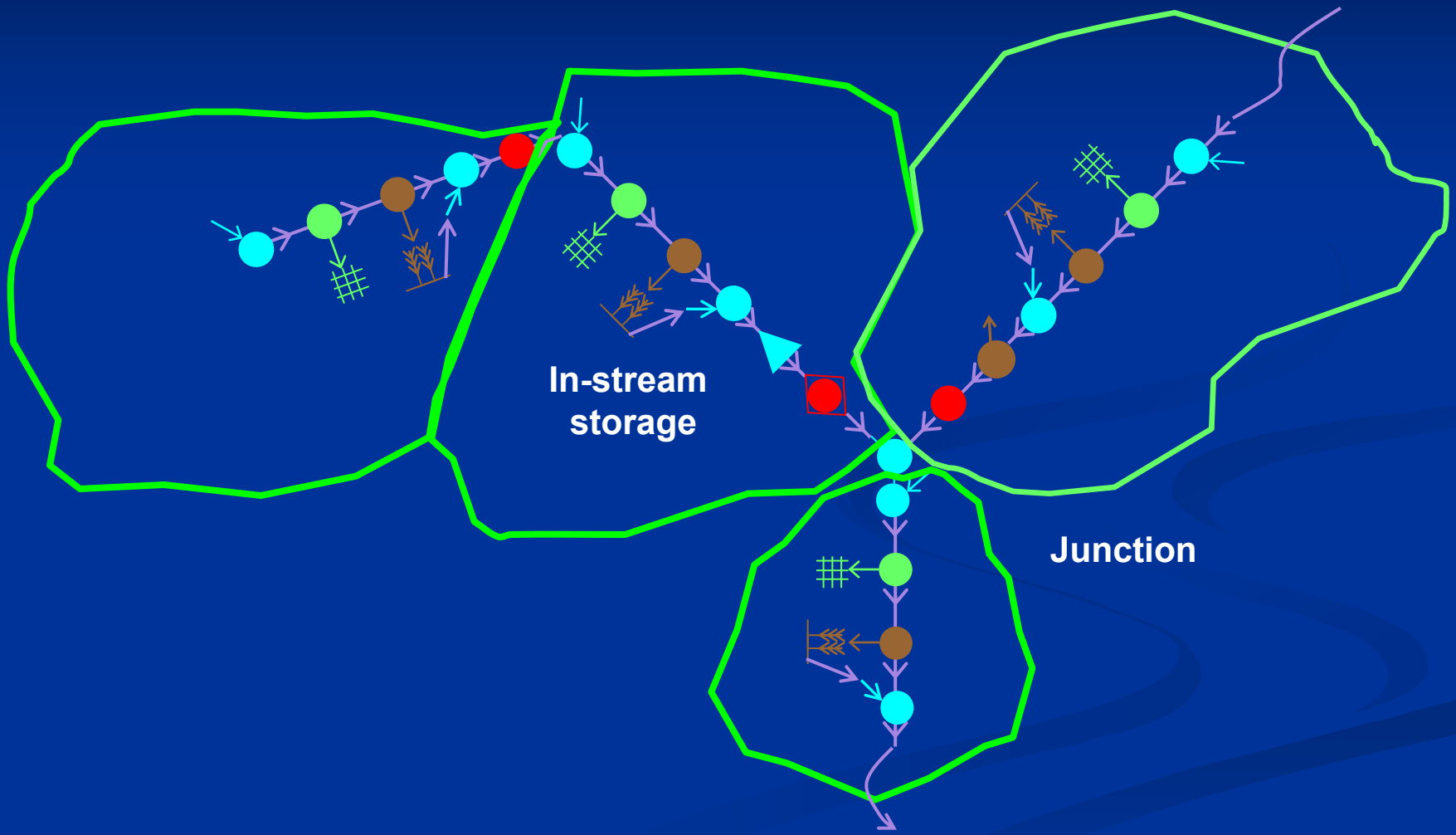
ปุ่มหลัก

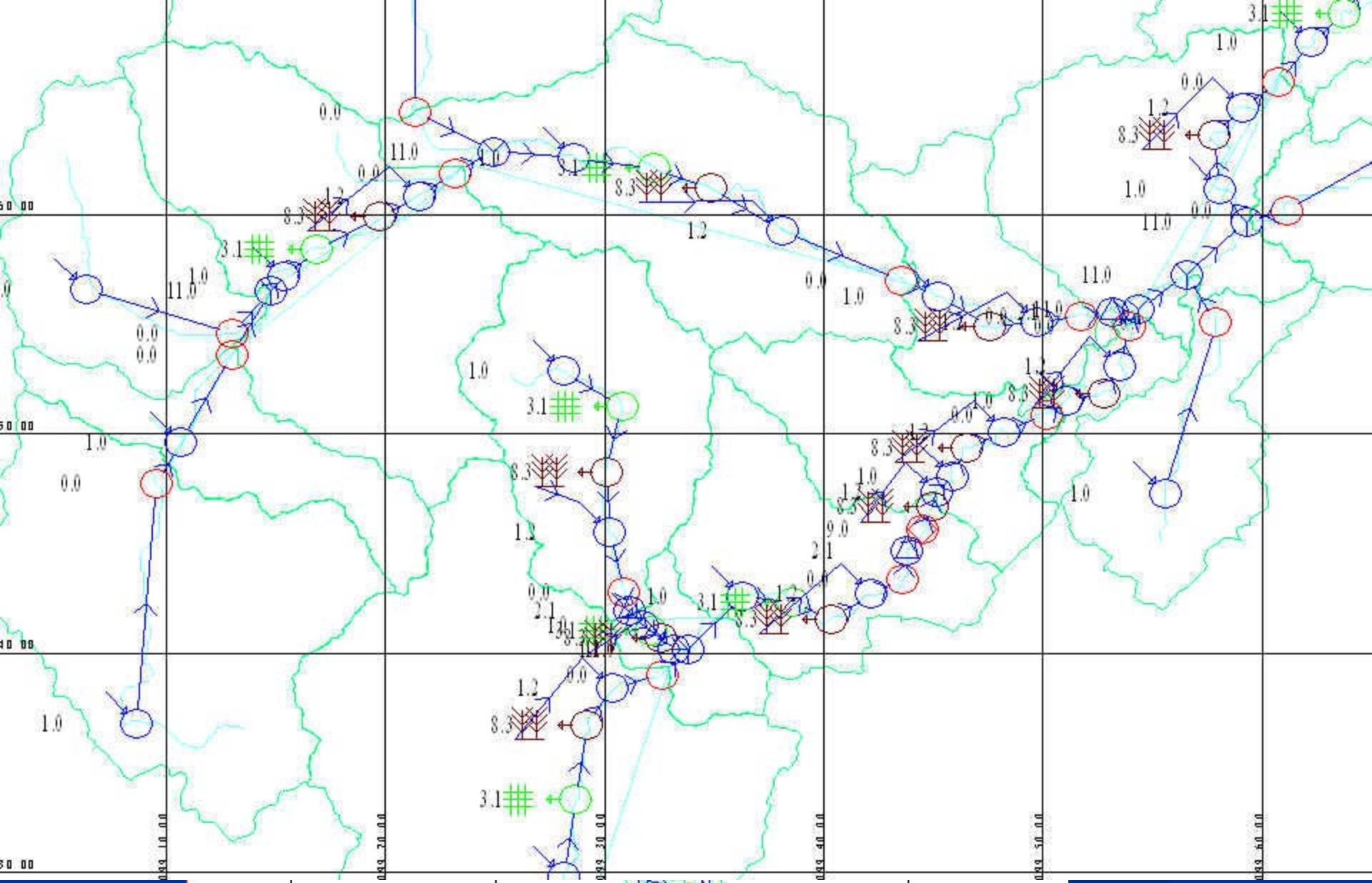
Inflows	Water movement	D&I demand	Crop demands	Return flows
				

ปุ่มเสริม

Storage	Hydro demand	Junction	Gauge	Calibration
				

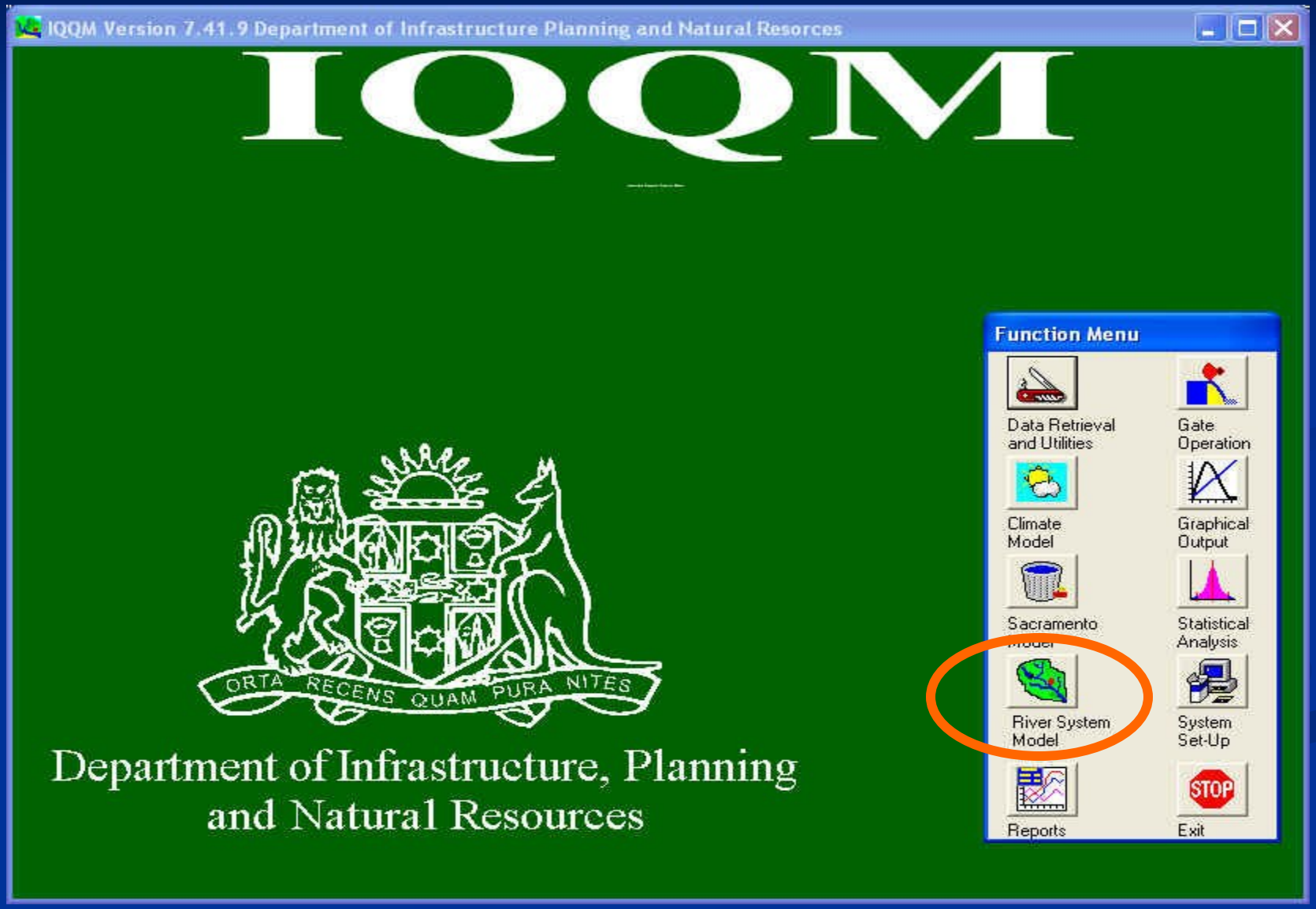
Model Configuration

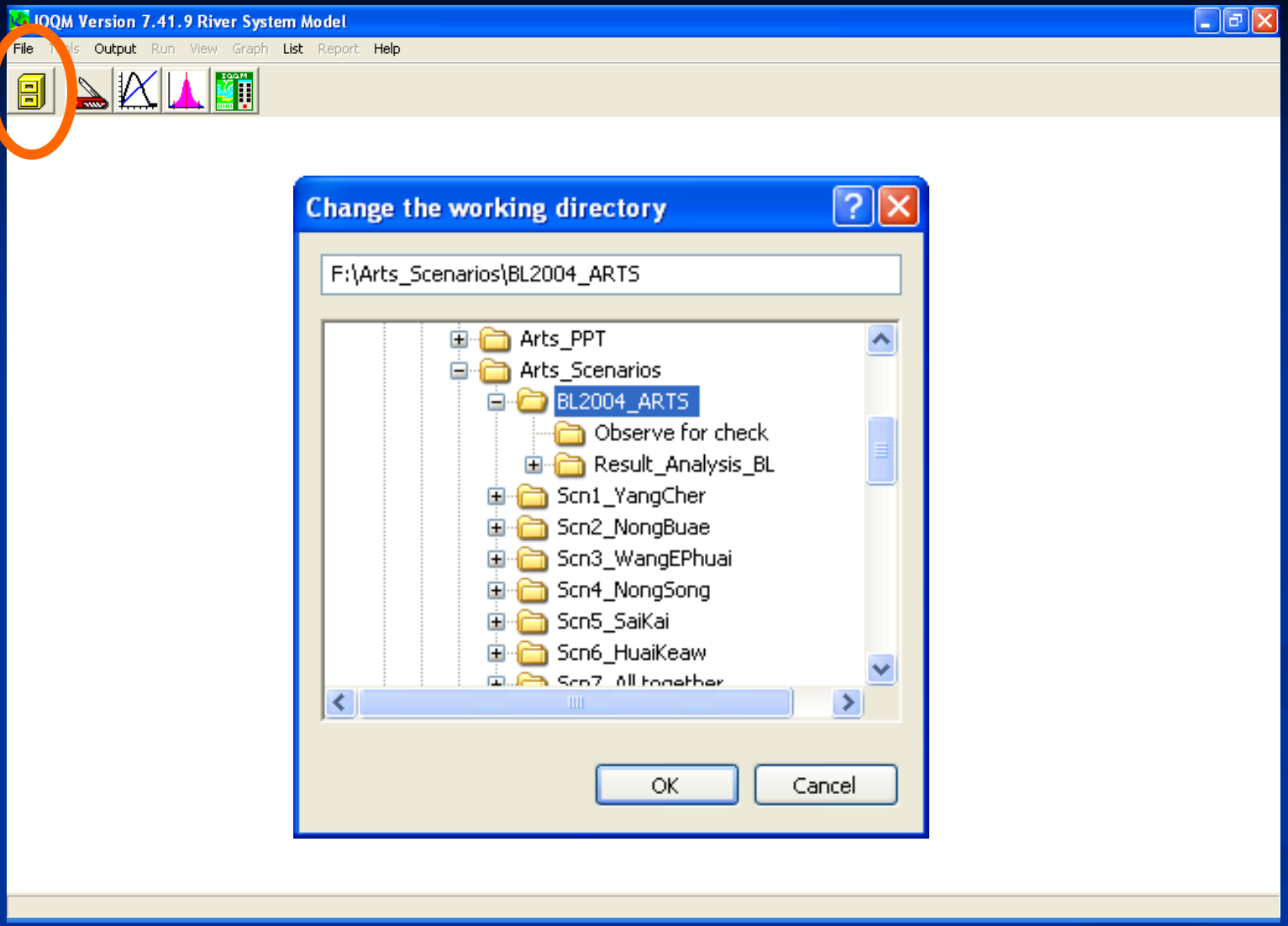


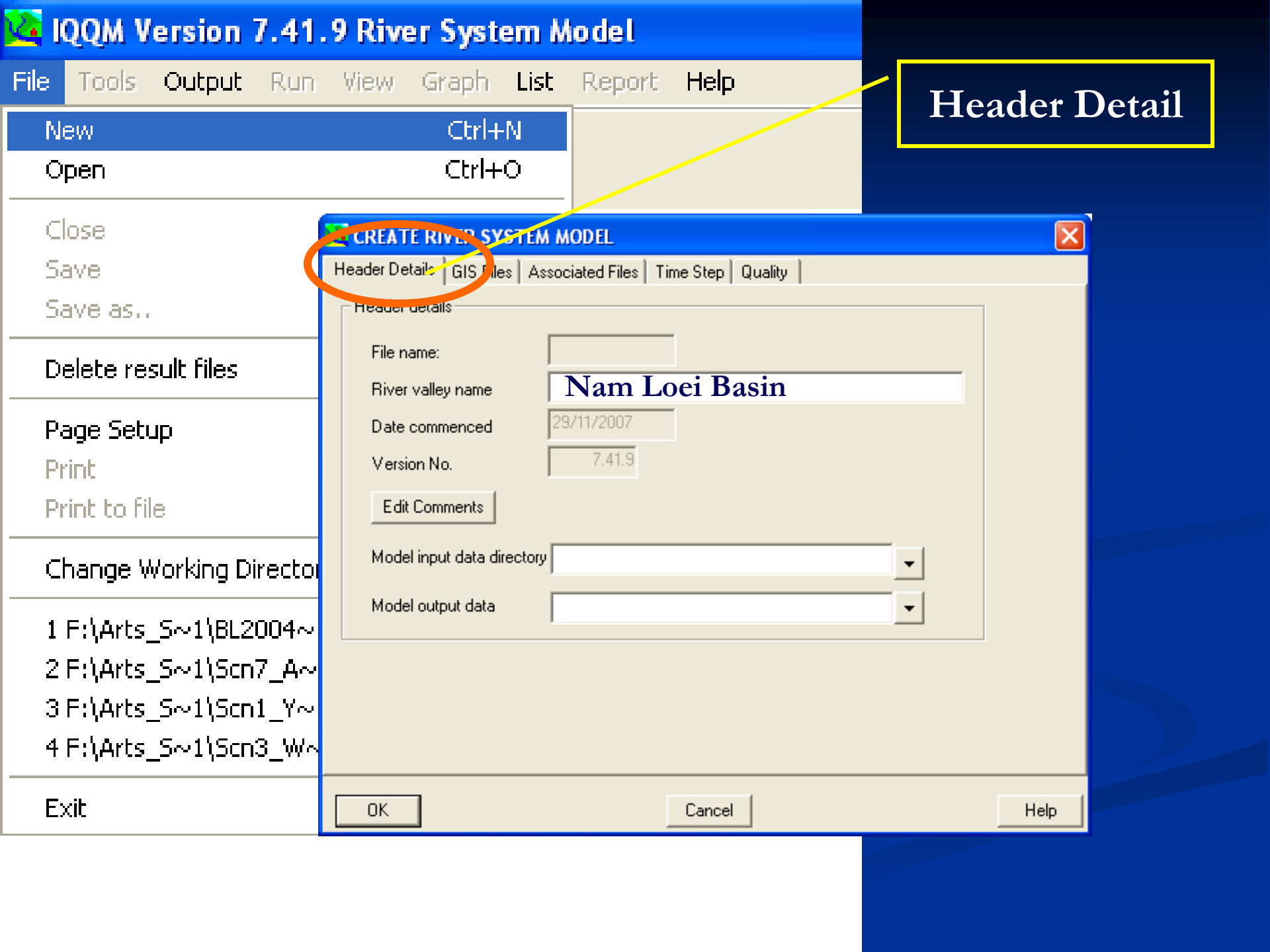


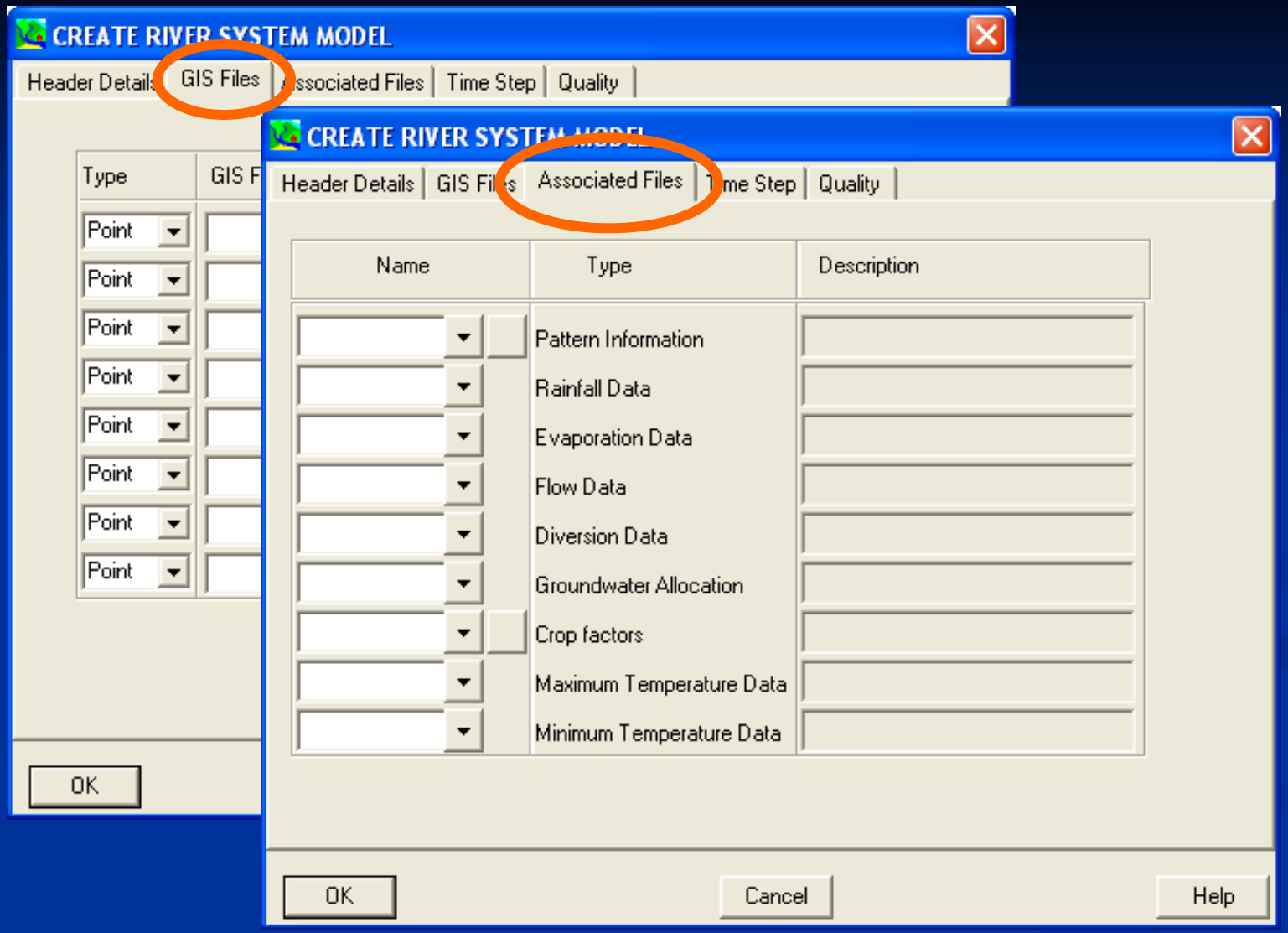
IQQM schematisation

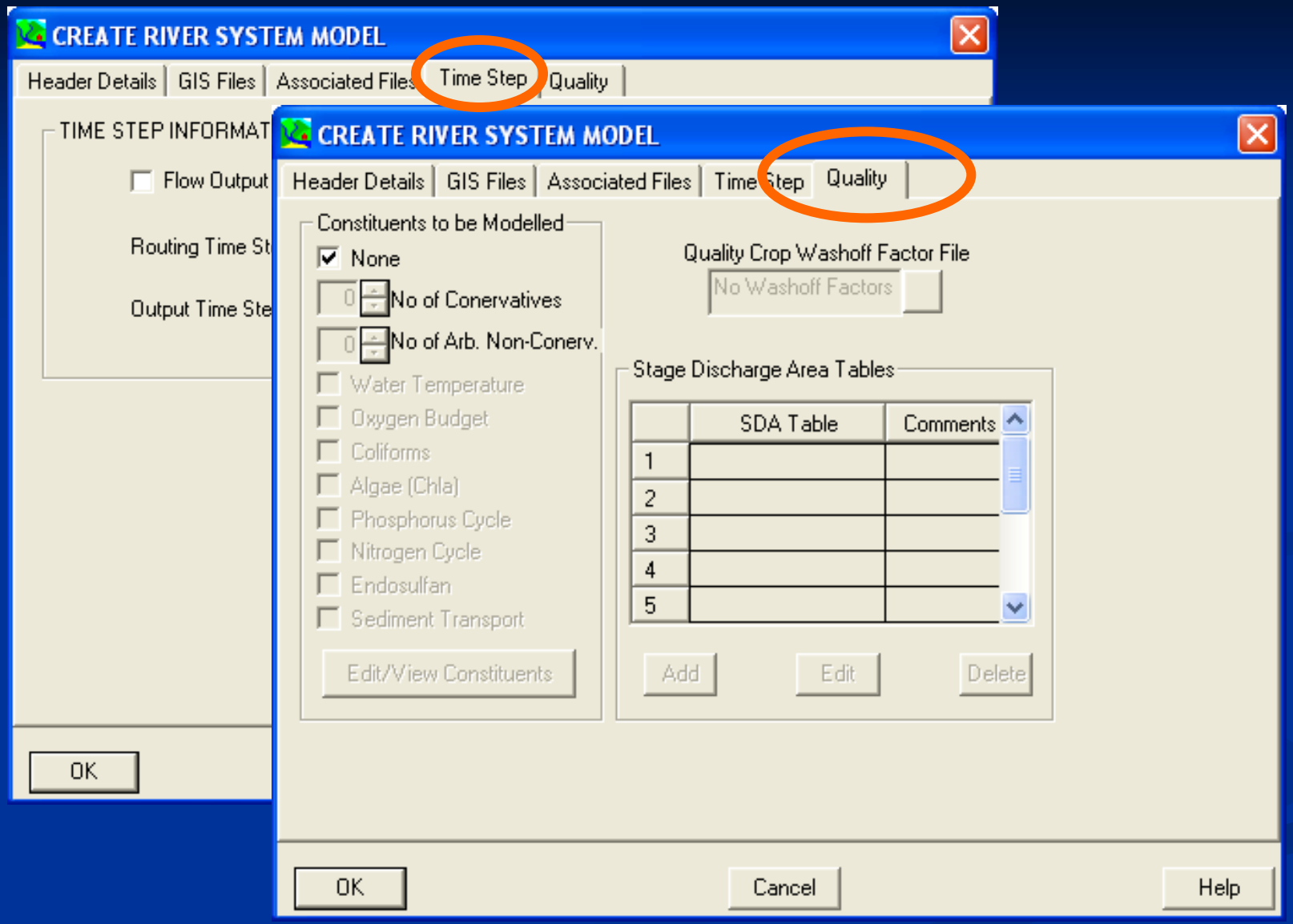
IQQM User Interface

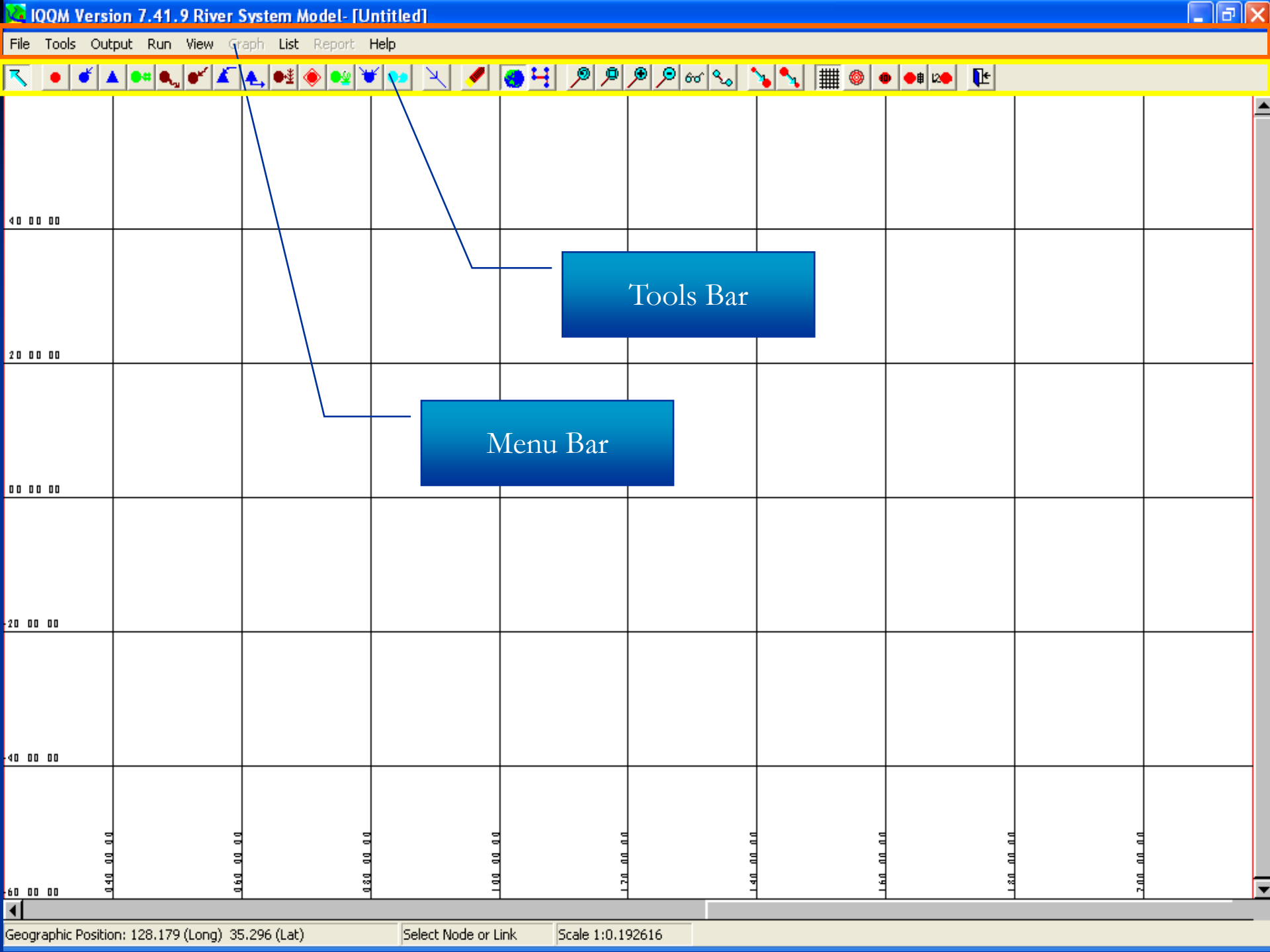



IQQM Version 7.41.9 River System Model
File
Output
Run
View
Graph
List
Report
Help
Change the working directory
F:\Arts_Scenarios\BL2004_ARTS
Arts_PPT
Arts_Scenarios
BL2004_ARTS
Observe for check
Result_Analysis_BL
Scn1_YangCher
Scn2_NongBuae
Scn3_WangEPhuai
Scn4_NongSong
Scn5_SaiKai
Scn6_HuaiKeaw
OK
Cancel

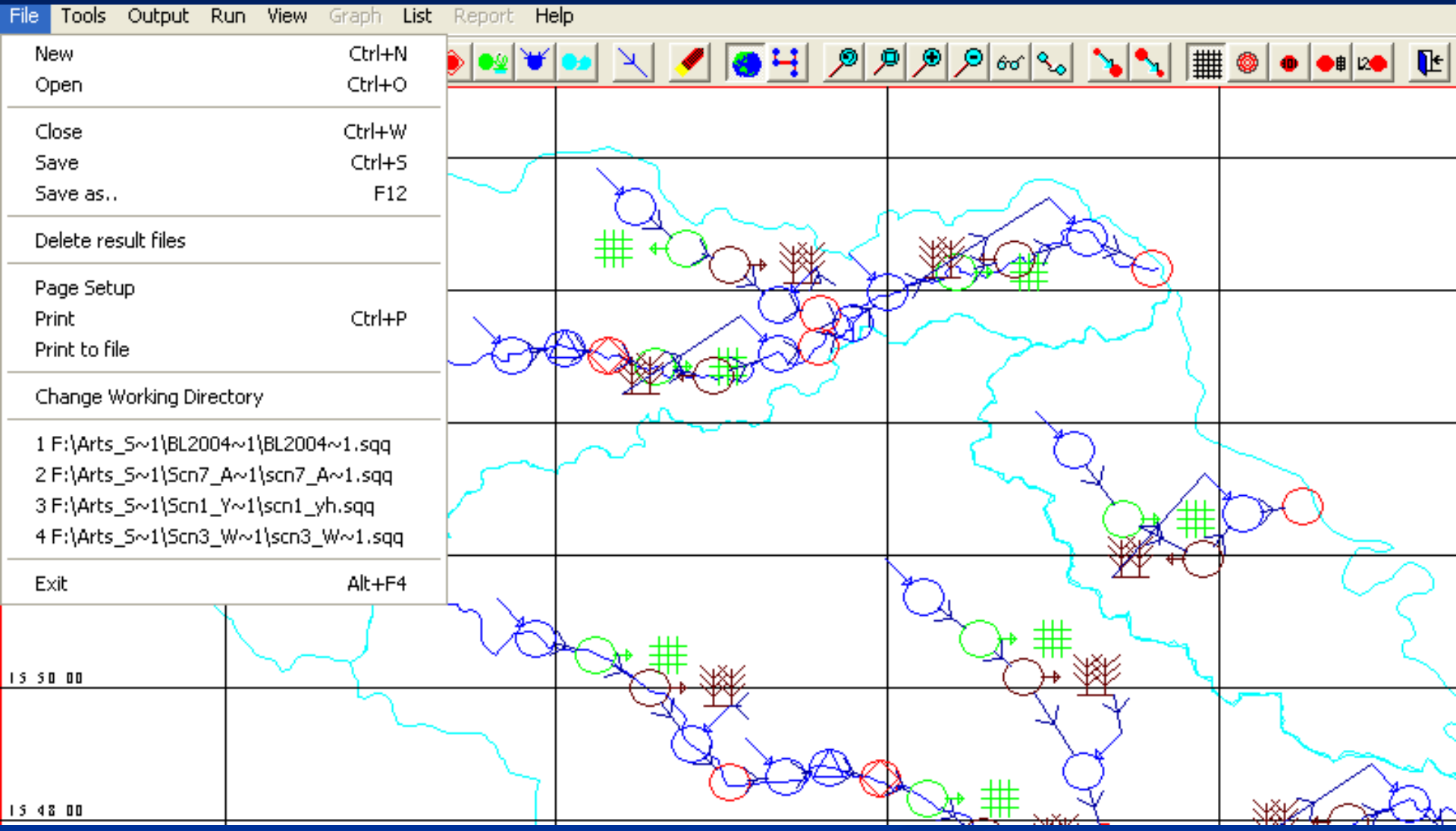

IQQM Version 7.41.9 River System Model
File
Tools
Output
Run
View
Graph
List
Report
Help
New Ctrl+N
Open Ctrl+O
Close
Save
Save as..
Delete result files
Page Setup
Print
Print to file
Change Working Director
1 F:\Arts_S~1\BL2004~
2 F:\Arts_S~1\Scn7_A~
3 F:\Arts_S~1\Scn1_Y~
4 F:\Arts_S~1\Scn3_W~
Exit
Header Detail
CREATE RIVER SYSTEM MODEL
Header Details
GIS Files
Associated Files
Time Step
Quality
File name:
River valley name
Nam Loei Basin
Date commenced
29/11/2007
Version No.
7.41.9
Edit Comments
Model input data directory
Model output data
OK
Cancel
Help


CREATE RIVER SYSTEM MODEL
Header Details
GIS Files
Associated Files
Time Step
Quality
Type
Point
OK
CREATE RIVER SYSTEM MODEL
Header Details
GIS Files
Associated Files
Time Step
Quality
Name
Type
Description
Pattern Information
Rainfall Data
Evaporation Data
Flow Data
Diversion Data
Groundwater Allocation
Crop factors
Maximum Temperature Data
Minimum Temperature Data
OK
Cancel
Help

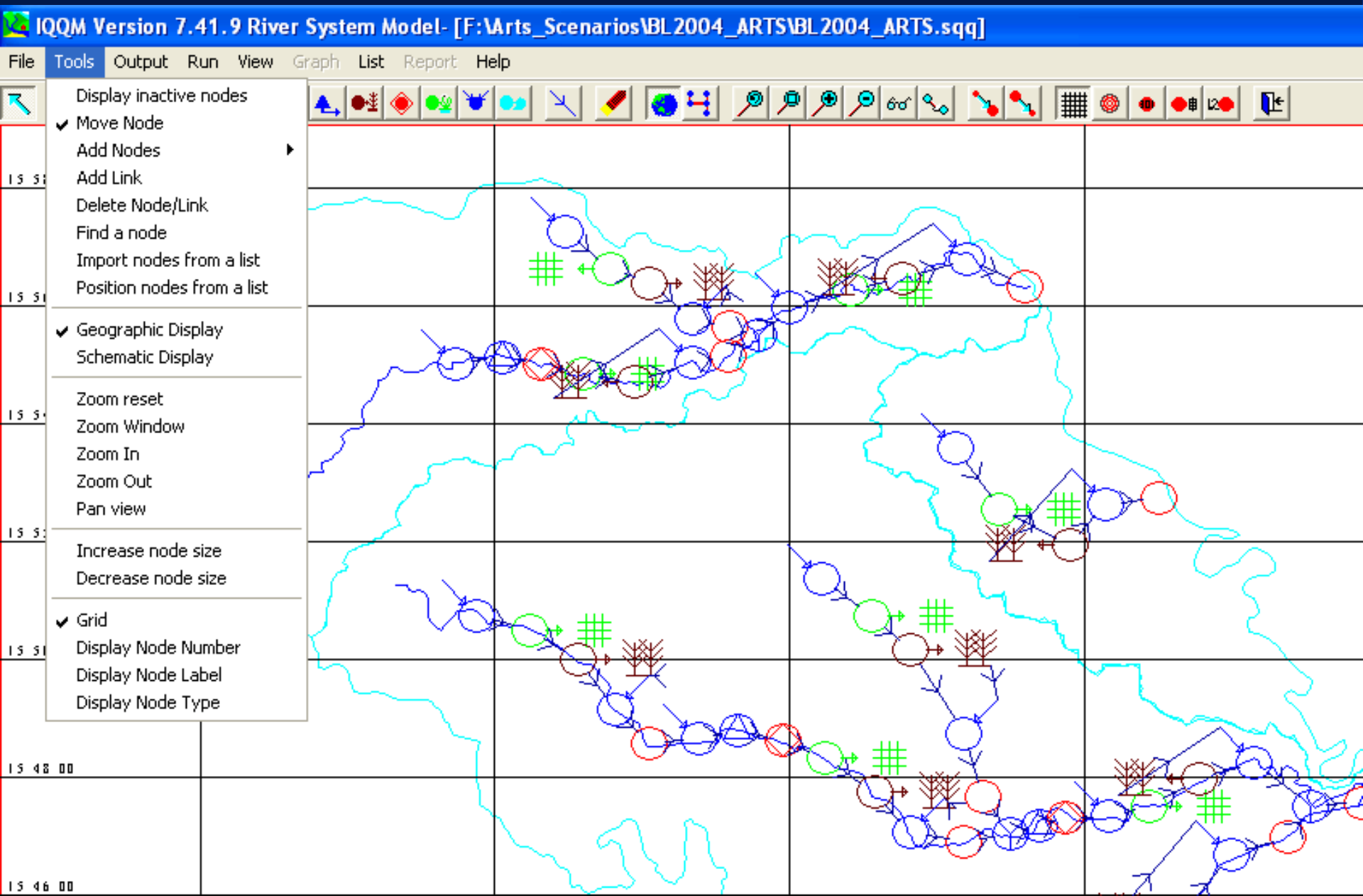

CREATE RIVER SYSTEM MODEL
Header Details
GIS Files
Associated Files
Time Step
Quality
TIME STEP INFORMAT
Flow Output
Routing Time St
Output Time Ste
OK
CREATE RIVER SYSTEM MODEL
Header Details
GIS Files
Associated Files
Time Step
Quality
Constituents to be Modelled
None
No of Conervatives
No of Arb. Non-Conerv.
Water Temperature
Oxygen Budget
Coliforms
Algae (Chla)
Phosphorus Cycle
Nitrogen Cycle
Endosulfan
Sediment Transport
Edit/View Constituents
Quality Crop Washoff Factor File
No Washoff Factors
Stage Discharge Area Tables
SDA Table
Comments
1
2
3
4
5
Add
Edit
Delete
OK
Cancel
Help


IQQM Version 7.41.9 River System Model- [Untitled]
File
Tools
Output
Run
View
Graph
List
Report
Help
Tools Bar
Menu Bar
Geographic Position: 128.179 (Long) 35.296 (Lat)
Select Node or Link
Scale 1:0.192616

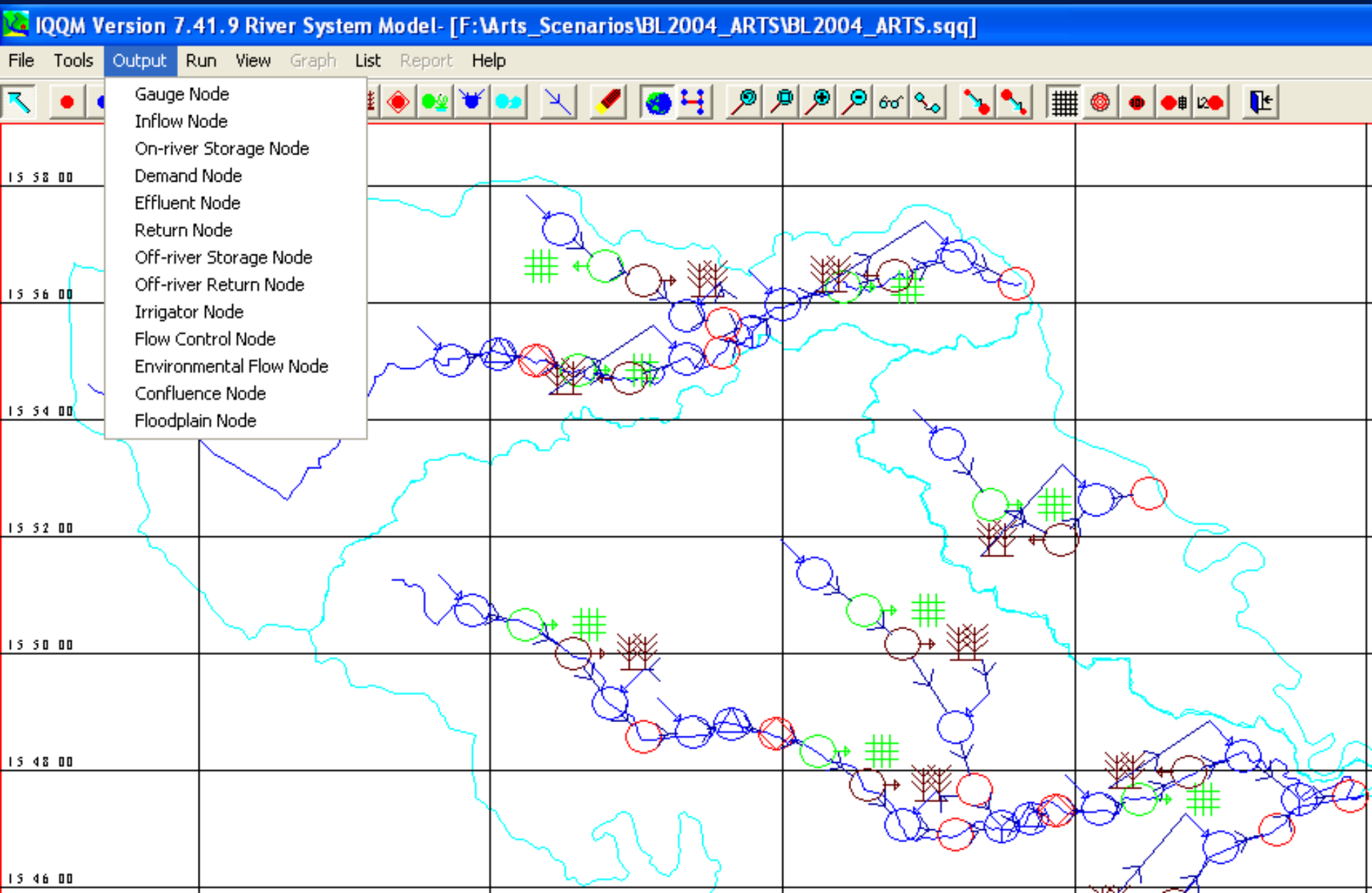
Menu "File"


File
Tools
Output
Run
View
Graph
List
Report
Help
New Ctrl+N
Open Ctrl+O
Close Ctrl+W
Save Ctrl+S
Save as.. F12
Delete result files
Page Setup
Print Ctrl+P
Print to file
Change Working Directory
1 F:\Arts_S~1\BL2004~1\BL2004~1.sqq
2 F:\Arts_S~1\Scn7_A~1\scn7_A~1.sqq
3 F:\Arts_S~1\Scn1_Y~1\scn1_yh.sqq
4 F:\Arts_S~1\Scn3_W~1\scn3_W~1.sqq
Exit Alt+F4
15 50 00
15 48 00

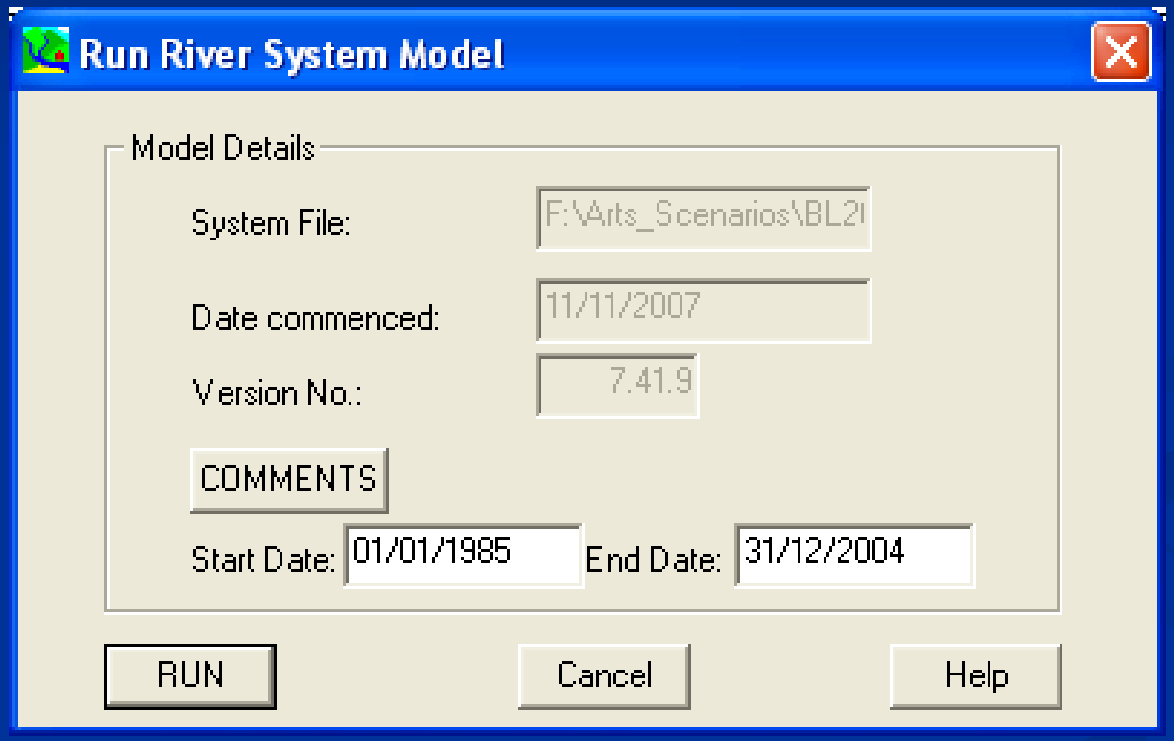
Menu "Tool"


IQQM Version 7.41.9 River System Model- [F:\Arts_Scenarios\BL2004_ARTS\BL2004_ARTS.sqq]
File
Tools
Output
Run
View
Graph
List
Report
Help
Display inactive nodes
Move Node
Add Nodes
Add Link
Delete Node/Link
Find a node
Import nodes from a list
Position nodes from a list
Geographic Display
Schematic Display
Zoom reset
Zoom Window
Zoom In
Zoom Out
Pan view
Increase node size
Decrease node size
Grid
Display Node Number
Display Node Label
Display Node Type

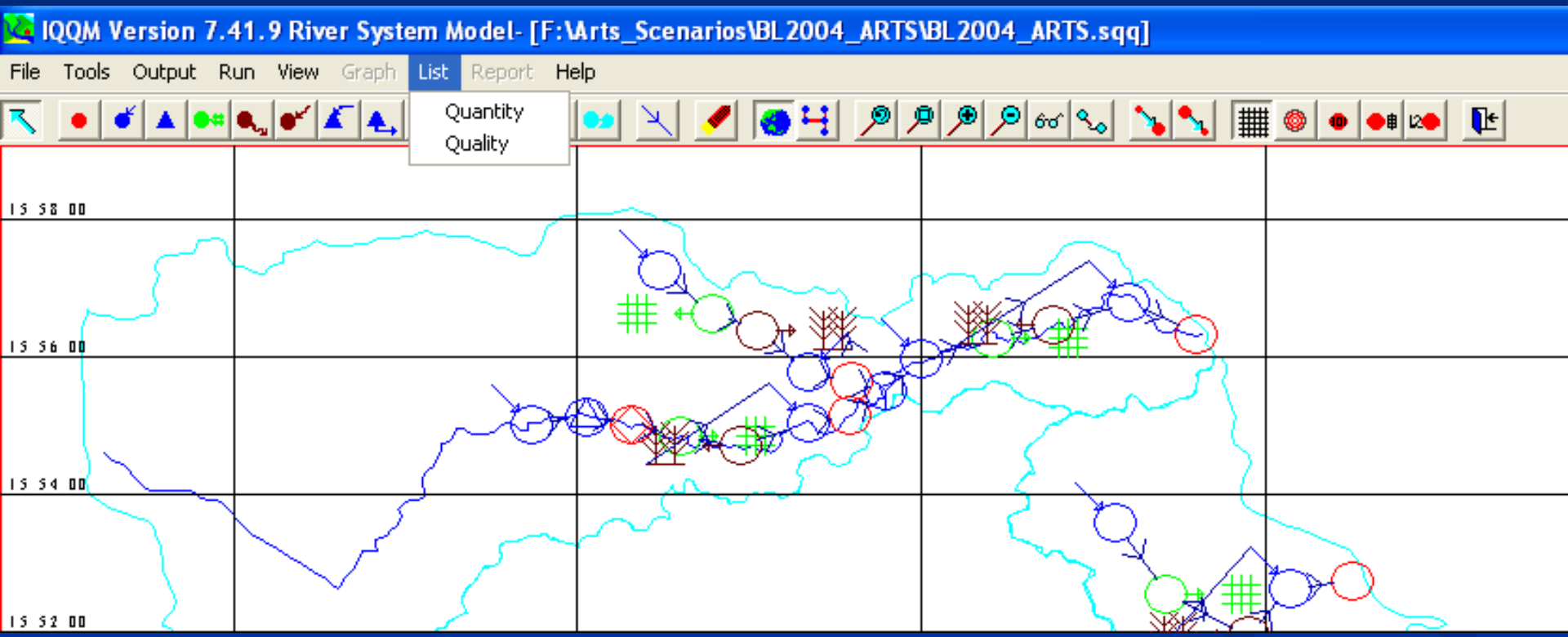
Menu "Output"


IQQM Version 7.41.9 River System Model- [F:\Arts_Scenarios\BL2004_ARTS\BL2004_ARTS.sqq]
File
Tools
Output
Run
View
Graph
List
Report
Help
Gauge Node
Inflow Node
On-river Storage Node
Demand Node
Effluent Node
Return Node
Off-river Storage Node
Off-river Return Node
Irrigator Node
Flow Control Node
Environmental Flow Node
Confluence Node
Floodplain Node
15 58 00
15 56 00
15 54 00
15 52 00
15 50 00
15 48 00
15 46 00

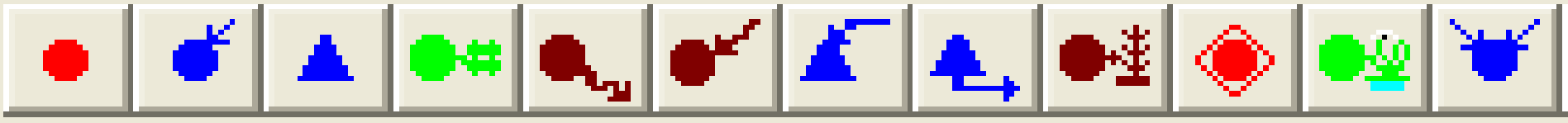
Menu "Run"

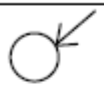
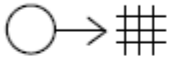
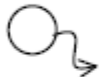
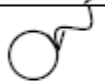
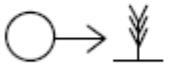
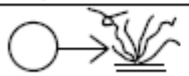
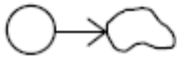

Run River System Model
Model Details
System File:
F:\Arts_Scenarios\BL2
Date commenced:
11/11/2007
Version No.:
7.41.9
COMMENTS
Start Date:
01/01/1985
End Date:
31/12/2004
RUN
Cancel
Help

Menu "List"

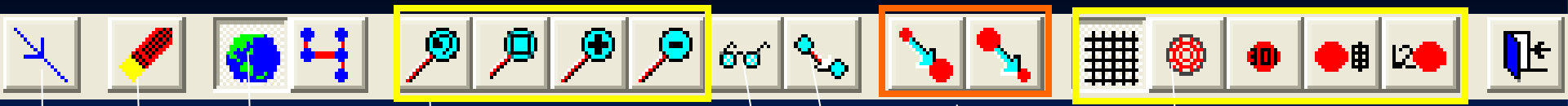

IQQM Version 7.41.9 River System Model- [F:\Arts_Scenarios\BL2004_ARTS\BL2004_ARTS.sqq]
File
Tools
Output
Run
View
Graph
List
Report
Help
Quantity
Quality
15 58 00
15 56 00
15 54 00
15 52 00

Tools Bar



Node Icon	Generic type	Description
	0	Straight node
	1	Tributary inflow
	2	On-river storage
	3	Town water supply
	4	Effluent offtake
	5	Effluent return
	6	Off river storage intake
	7	Off river storage return
	8	Irrigator
	9	Minimum flow
	10	Wetland
	11	Confluence
	12	Floodplain detention

- Nodes Type Description



Show/Hidden

Zoom Tools

Geo/Grid Mode

Increase /Decrease

Erase

Pan

Link

Find

Demonstrations

Demonstrations

- Understanding IQQM Implement process
- Understanding IQQM Model Interface
- Understanding Node and Link
- Understanding Schematization
- How to Create a new project ?