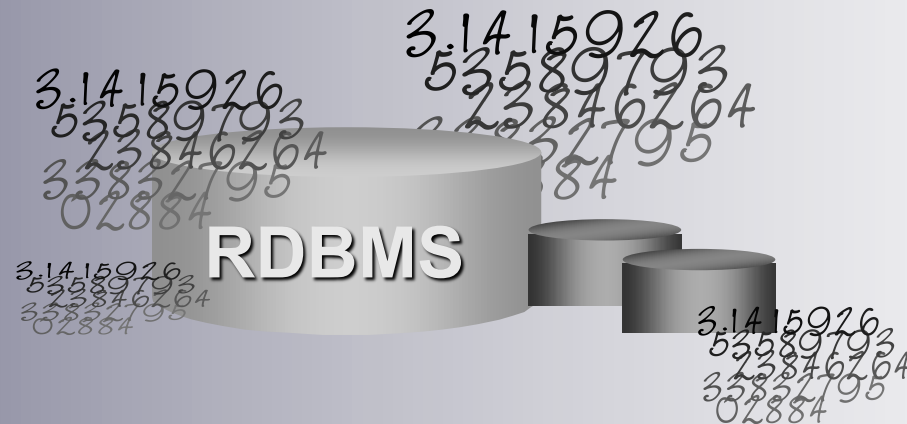


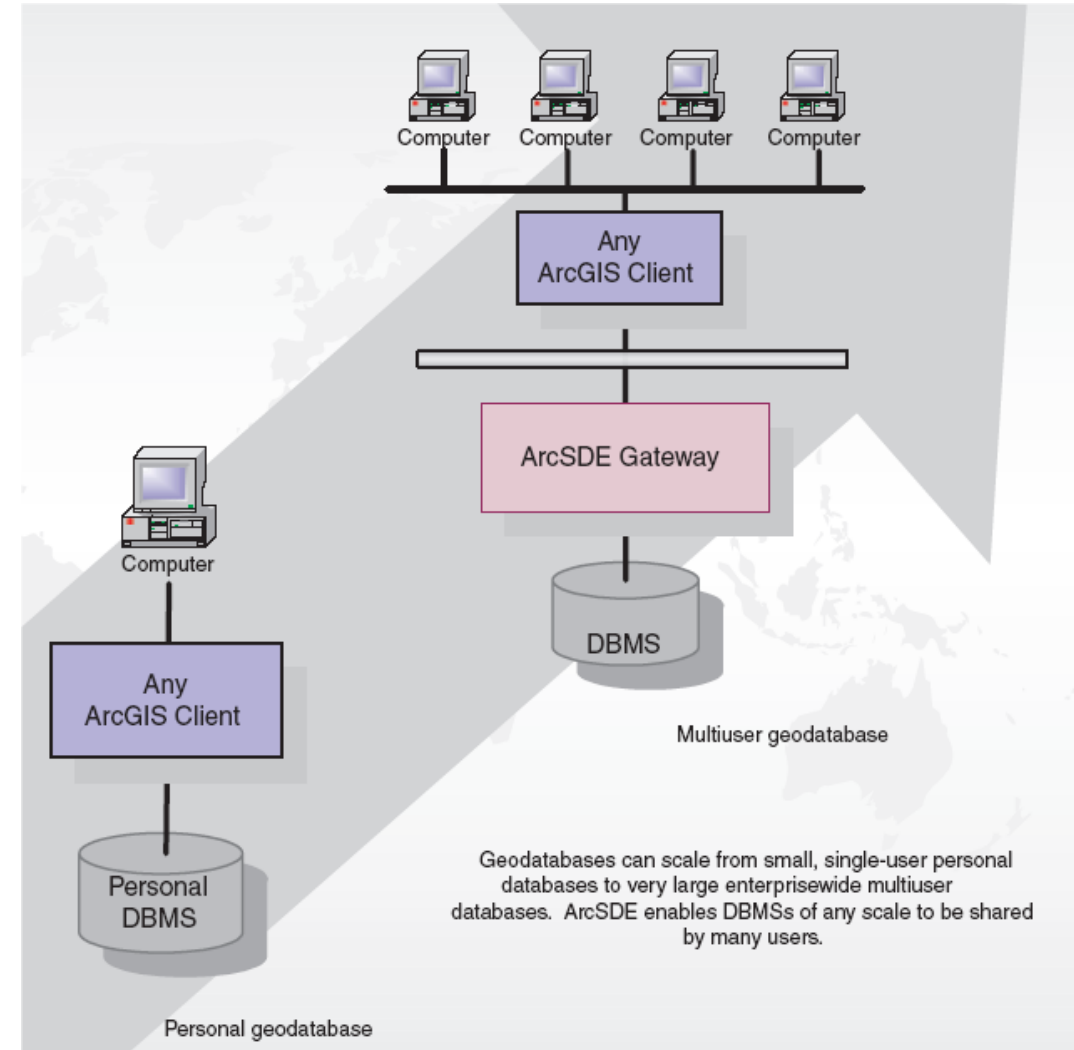
GIS

Geographic Information Systems



Geographical Information Systems

- Combination of Database and Spatial Information - FEATURES
- Layer structure
- Coordinate systems
- Labeling, merging, thematising,...
- Use of geodatabase, SHP, ...
- Geocoding
- Use of spatial queries
- Selections,
- Editing, Joining tables
- Export/Import



ArcGIS environment

MIKE URBAN Layout.mxd - ArcMap

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

1:4,000 RAS Geometry RAS Mapping ApUtilities Help

Table of Contents

- MOUSE Manholes
 - <all other values>
 - Description
 - spadisté
- MOUSE Basins
 - <all other values>
 - Description
- Rybník
- MOUSE Outlets
- MOUSE Soakaways
- MOUSE Storage Nodes
- MOUSE Links
- MOUSE Weirs
- MOUSE Orifices
- MOUSE Curb Inlets
- MOUSE Pumps
- MOUSE Valves
- 2D Overland Group
- MOUSE Boundaries
- Load Allocation Group
- CS Point Loads
- BufferDrainage
- MOUSE Load Allocation
- Catchment Group
 - Catchment Processing Group
 - Catchments
 - <all other values>
 - Element_5
 - COV
 - DestKan
 - Q1
 - Q2
 - Q2003
- Ortofotomapa ČR (S-JTSK)
- ZABAGED polohopis
- CZE INSPIRE View Service - Cadastral Parc
- Cadastral Parcels
 - Overview Map
 - Cadastral Zoning
 - Cadastral Boundary
 - Cadastral Parcel
- dmrsjg_2m_TREBIC_LevyBreh.tif
 - Value
 - High : 578.934

Info tool

Identify from: <Top-most layer>

Max. Node Flood(Meter)(N10-30min. HD. Base.PRF)

Location: -650 998.646 -1 151 712.417 Meters

Field	Value
OBJECTID	4017
SHAPE	Point
Enabled	True
MUID	77128
TypeNo	Manhole
InvertLevel	451.250508
GroundLevel	453.250508
Diameter	1
GeometryID	<null>
CriticalLevel	<null>
LossParID	No Cross Section Changes
LossParNo	False
OutletShapeNo	Classic
LossTypeNo	Km
LossCoeff	<null>
EffAreaNo	Full Node Area
PMTypeNo	<null>
PMLLevel	<null>
CoverTypeNo	Normal
BufferDrainage	0

Identified 1 feature

Map View

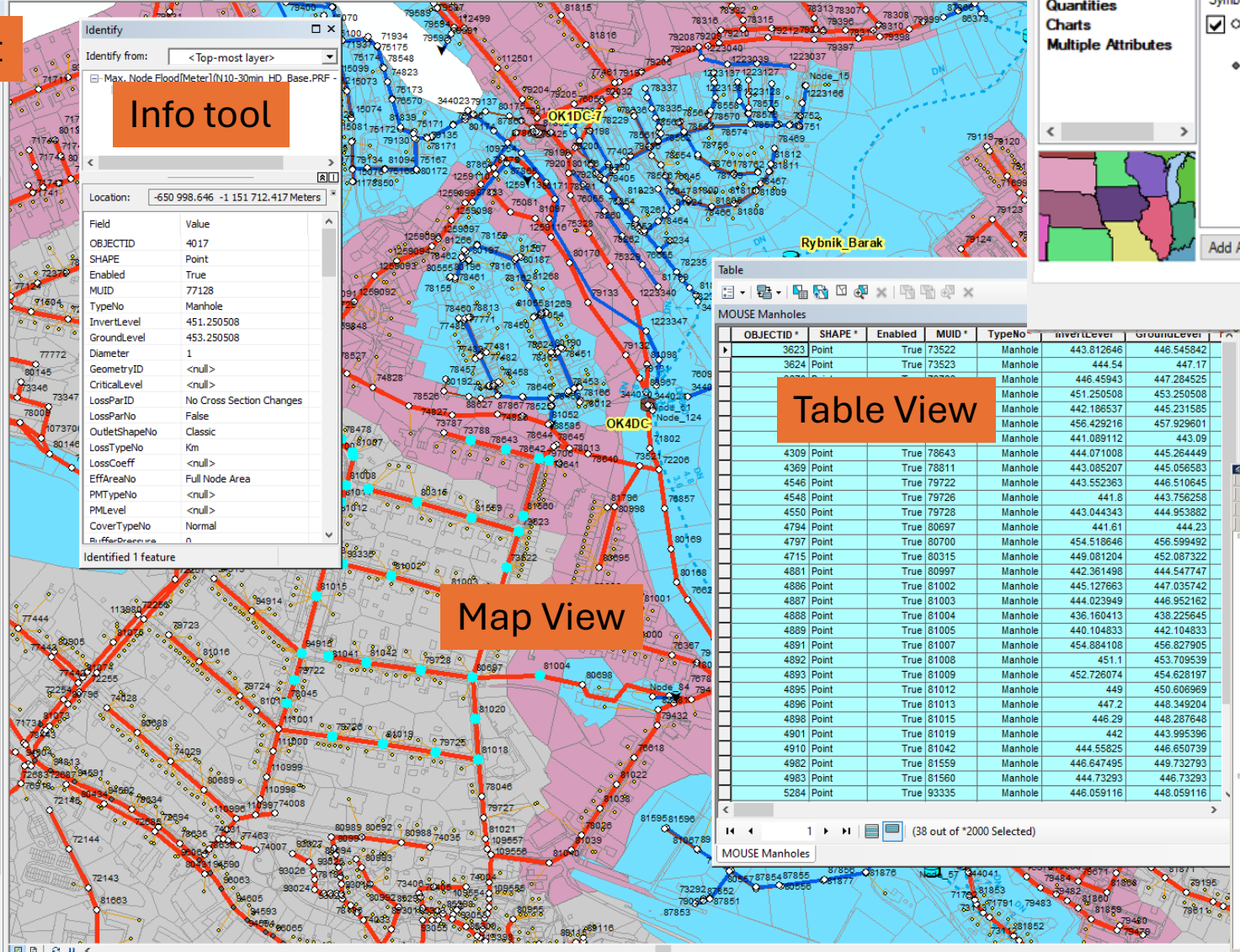


Table View

OBJECTID	SHAPE	Enabled	MUID	TypeNo	InvertLevel	GroundLevel
3623	Point	True	73522	Manhole	443.812646	446.545842
3624	Point	True	73523	Manhole	444.54	447.17
3625	Point	True	73524	Manhole	446.45943	447.284525
3626	Point	True	73525	Manhole	451.250508	453.250508
3627	Point	True	73526	Manhole	442.186537	445.231585
3628	Point	True	73527	Manhole	456.429216	457.929601
3629	Point	True	73528	Manhole	441.089112	443.09
3630	Point	True	73529	Manhole	444.071008	445.264449
3631	Point	True	73530	Manhole	443.085207	445.056583
3632	Point	True	73531	Manhole	443.552363	446.510645
3633	Point	True	73532	Manhole	441.8	443.756258
3634	Point	True	73533	Manhole	443.044343	444.953882
3635	Point	True	73534	Manhole	441.61	444.23
3636	Point	True	73535	Manhole	454.518646	456.599492
3637	Point	True	73536	Manhole	449.081204	452.087322
3638	Point	True	73537	Manhole	442.361498	444.547747
3639	Point	True	73538	Manhole	445.127683	447.035742
3640	Point	True	73539	Manhole	444.023949	446.952162
3641	Point	True	73540	Manhole	436.160413	438.225645
3642	Point	True	73541	Manhole	440.104833	442.104833
3643	Point	True	73542	Manhole	454.884108	456.827905
3644	Point	True	73543	Manhole	451.1	453.709539
3645	Point	True	73544	Manhole	452.726074	454.628197
3646	Point	True	73545	Manhole	449	450.606969
3647	Point	True	73546	Manhole	447.2	448.349204
3648	Point	True	73547	Manhole	446.29	448.287648
3649	Point	True	73548	Manhole	442	443.995396
3650	Point	True	73549	Manhole	444.55825	446.650739
3651	Point	True	73550	Manhole	446.647495	449.732793
3652	Point	True	73551	Manhole	444.73293	446.73293
3653	Point	True	73552	Manhole	446.059116	448.059116

(38 out of *2000 Selected)

Layer Properties

General Source Selection Display Symbology Fields Definition Query Labels Joins & Relates Time HTML Popup

Show: Features

Categories: Unique values

Value Field: Description

Color Ramp: [Color Ramp]

Quantities: <all other values>

Charts: <Heading>

Multiple Attributes: spadisté

Symbol: [Symbol]

Value: <all other values>

Label: <all other values>

Count: ?

Description: spadisté

Buttons: Add All Values, Add Values..., Remove, Remove All, Advanced

Buttons: OK, Cancel, Apply

Advanced labelling

Advanced Layout

General - ArcReader

File Edit View Bookmarks Tools Window Help

Layers:

- CA\1_WORK02_PROJEKTY00
- CA\1_WORK02_PROJEKTY156
- CA\1_WORK02_PROJEKTY157
- CA\1_WORK02_PROJEKTY159
- CA\1_WORK02_PROJEKTY160
- CA\1_WORK02_PROJEKTY161
- CA\1_WORK02_PROJEKTY161

Legend:

Frax

Hydrologická Situace

Podřadbové mapy

Statistika

Statistika_SS_SEVER_ID

Hydrologická Situace

Kanalizace

Aspet Data

mas_Node

mas_Pump

mas_ViewOrifice

mas_Link

mc

Ums

Punkty vyústění ploch

Shape

Letecké snímky

Shape data

Detail General

General

Letecké snímky

Shape data

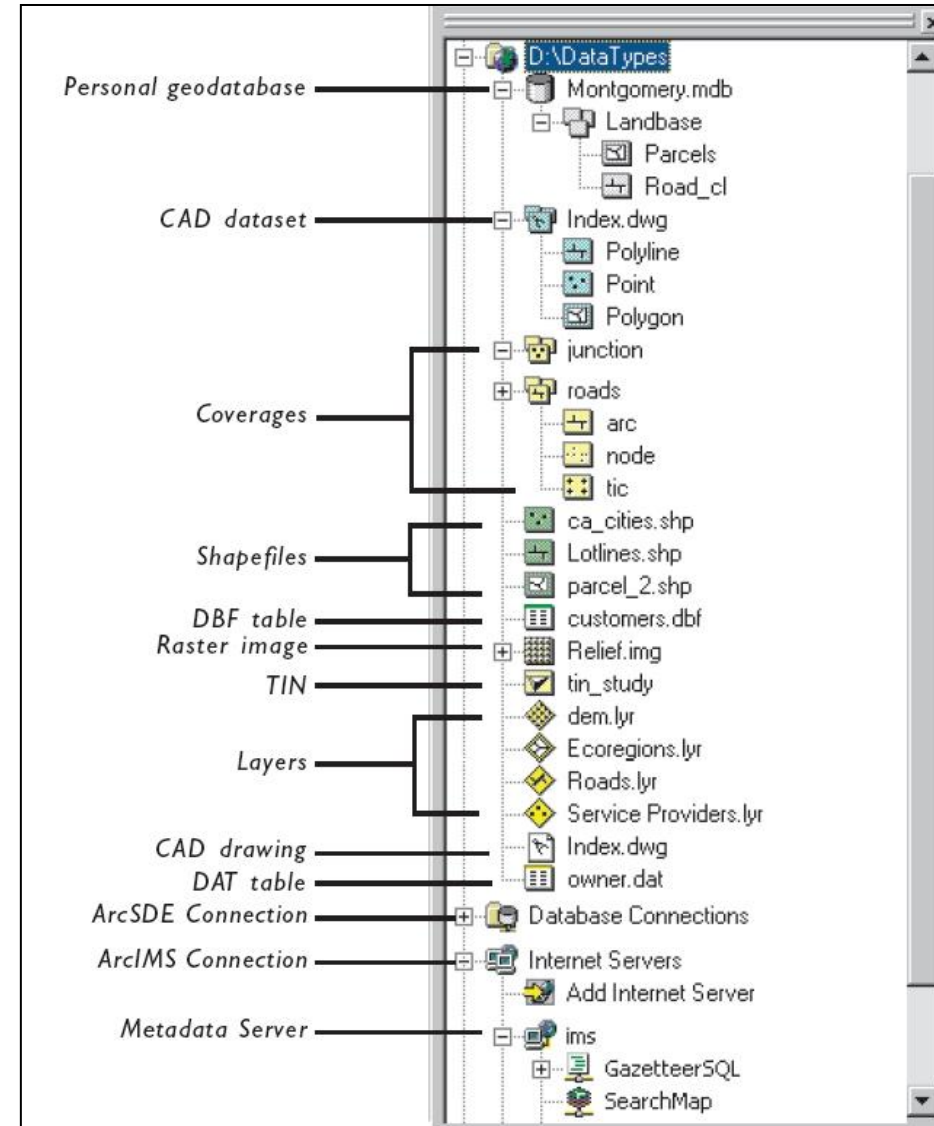
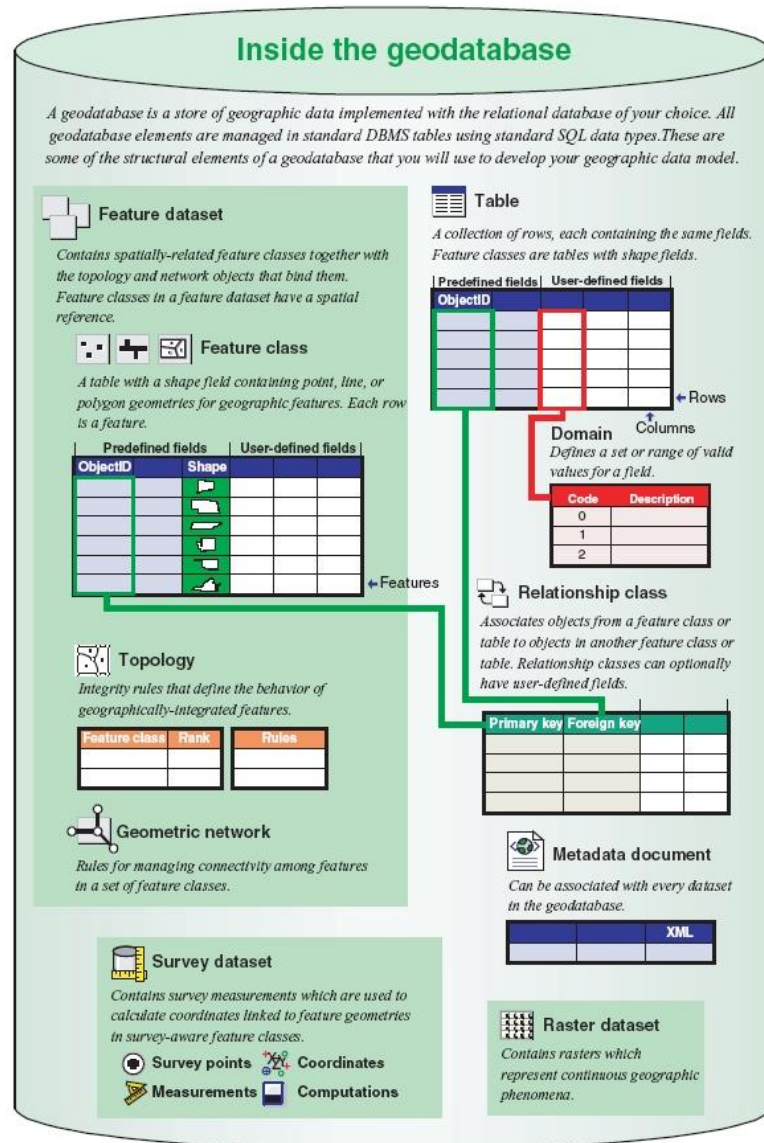
Test presentation

0 200 400 600 meters

Set a layers transparency value

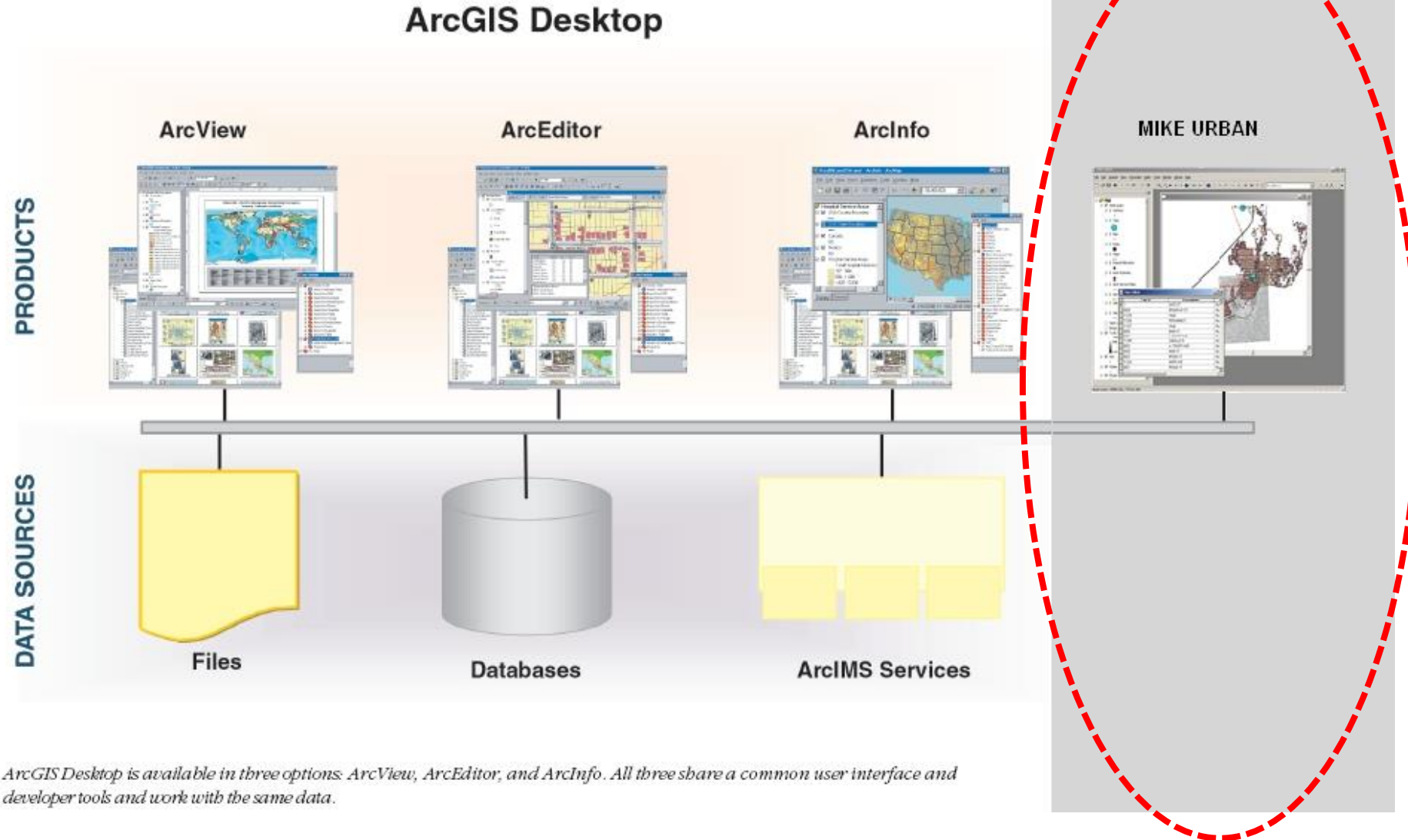
8.3 x 11.7 Inches | 736276.26 -103612.66 Unknown Unit 5.78 8.75 Inches

ArcGIS Data Structure



Model and GIS coupling

MIKE URBAN Architecture

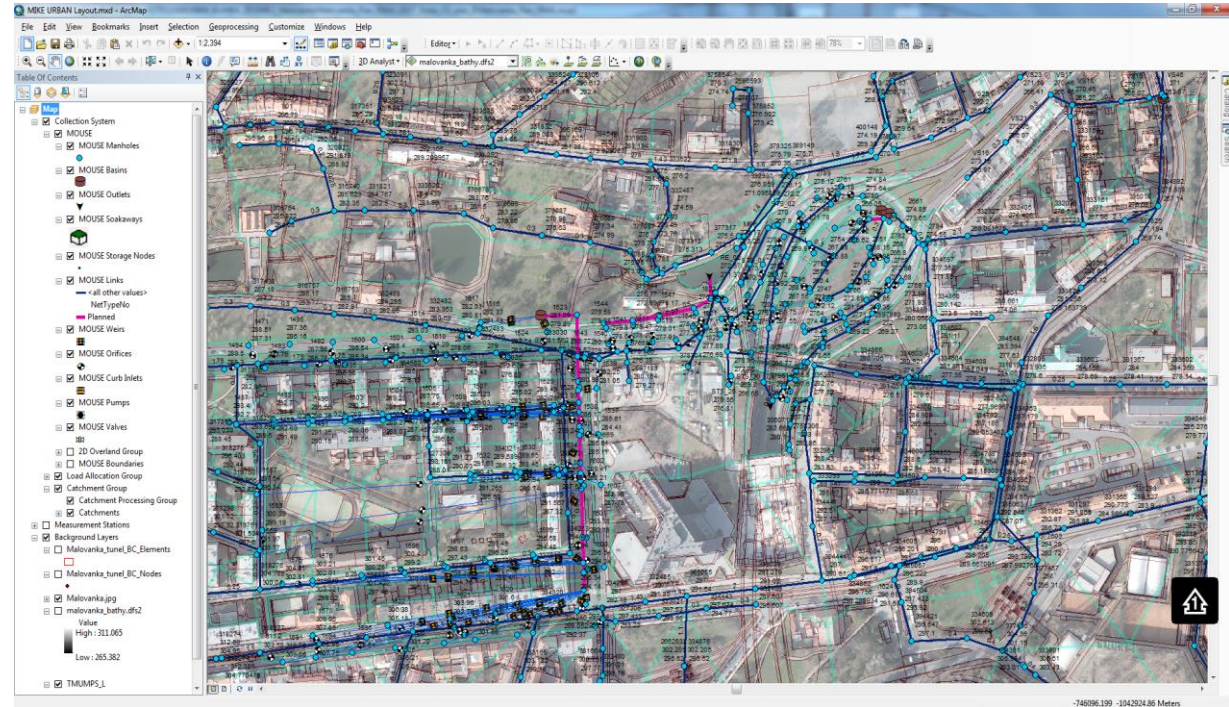
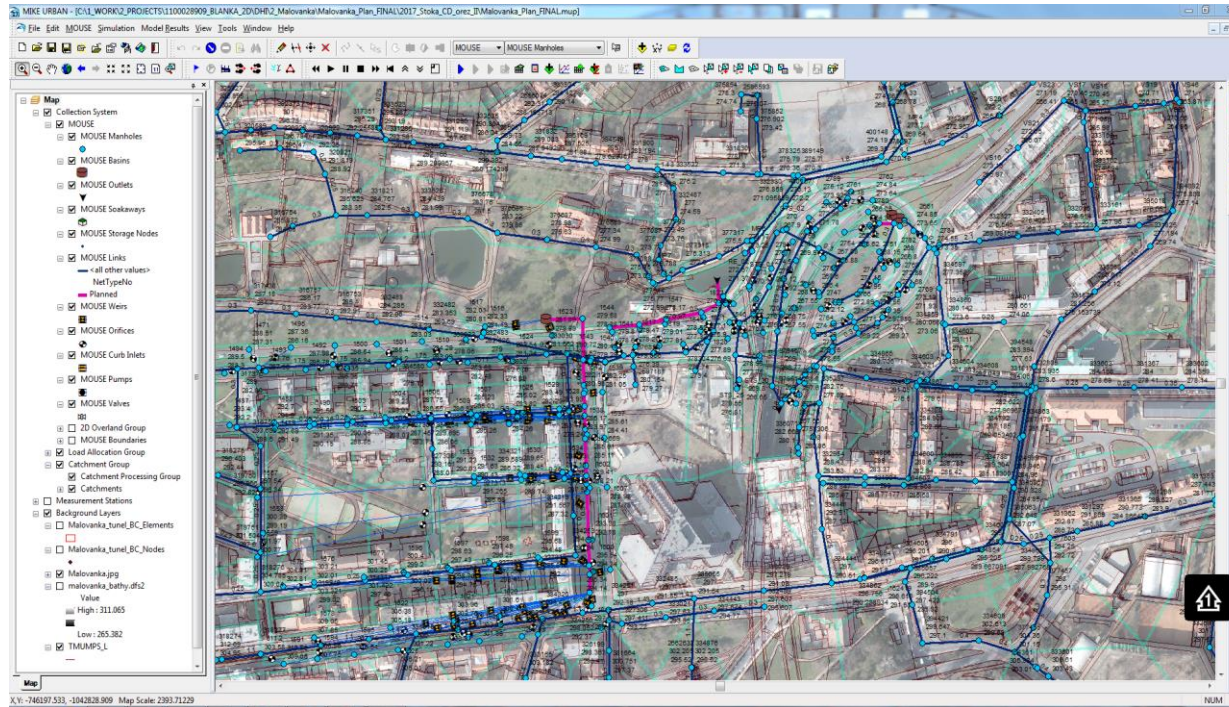


ArcGIS Desktop is available in three options: ArcView, ArcEditor, and ArcInfo. All three share a common user interface and developer tools and work with the same data.

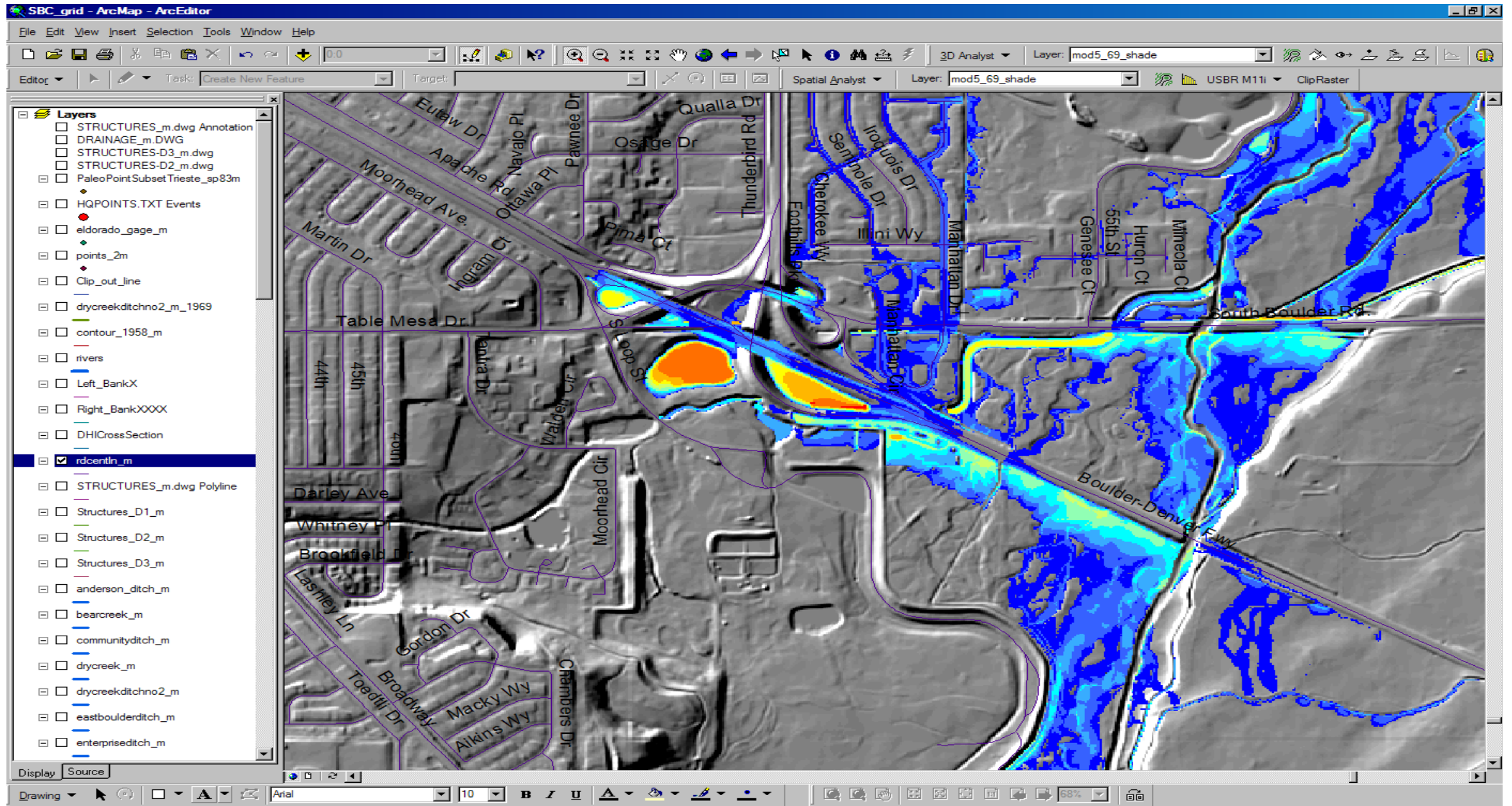
Model and GIS coupling

MIKE URBAN project

ARCMAP project

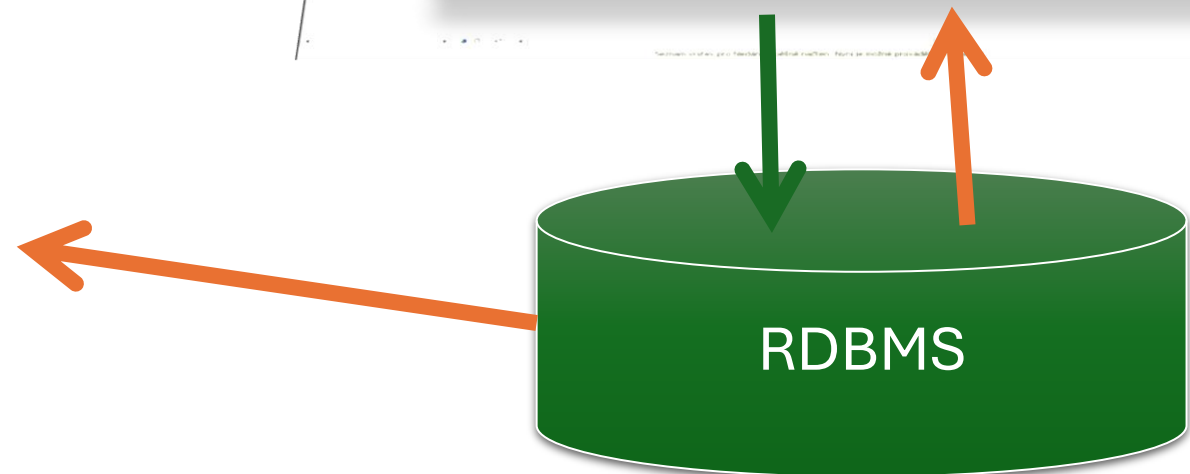
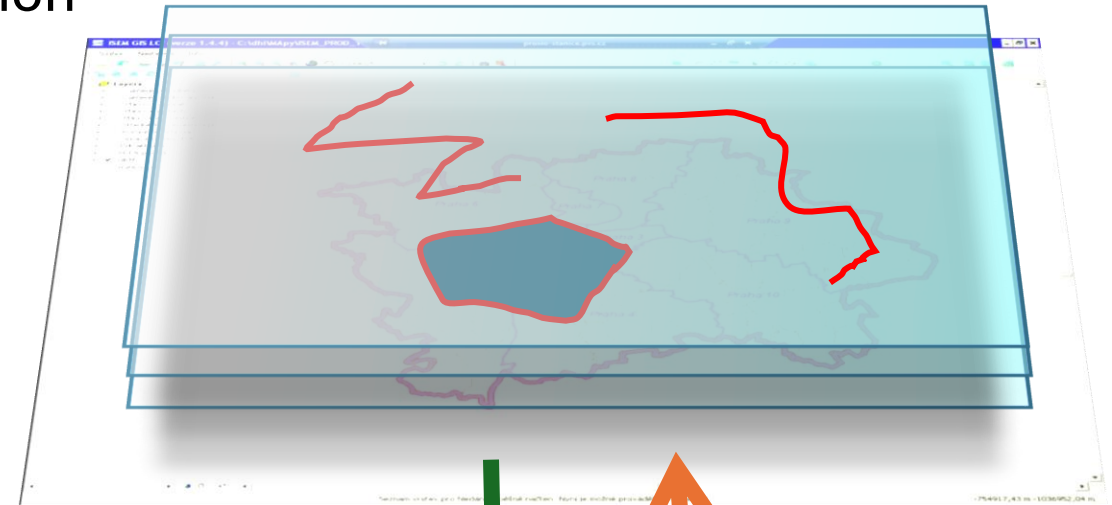


GIS + model Result analysis



GIS as service in the Internet

- Easy representation of geographically oriented data
- Easy combination of distinct data layers
- Combination of graphical and database information
- Advanced statistics
- Topological functions
- Connection to internet



Model on Internet

Nedbørstestator

Periode: Pumpedate Nedbørssimulation

Vælg tidsperiode
Tidsinterval type:

Faste datater:
Startdato: 10-08-2007 04:00:00
Slutdato: 10-08-2007 06:00:00

Tidsperiode: 10-08-07 04:00 - 10-08-07 06:00

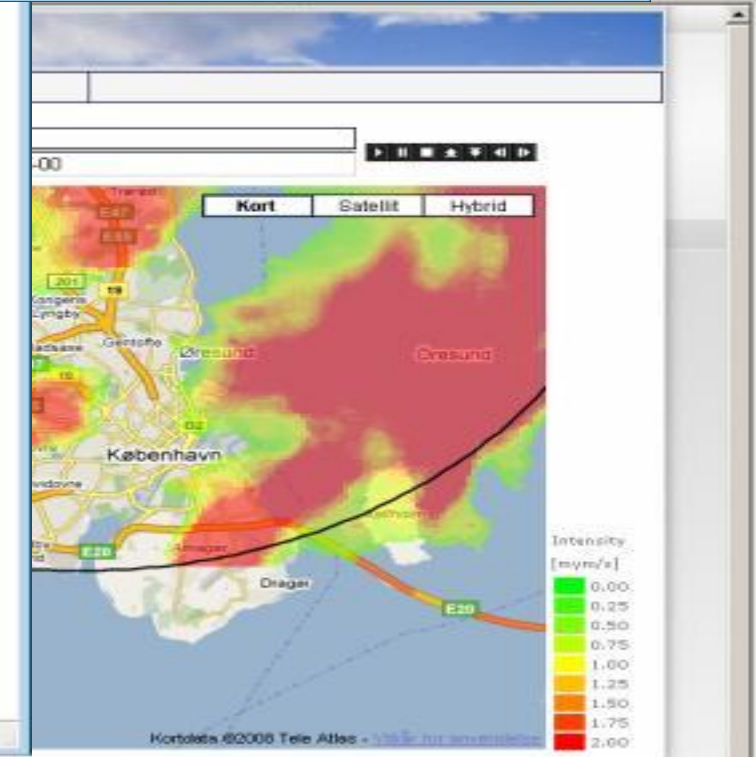
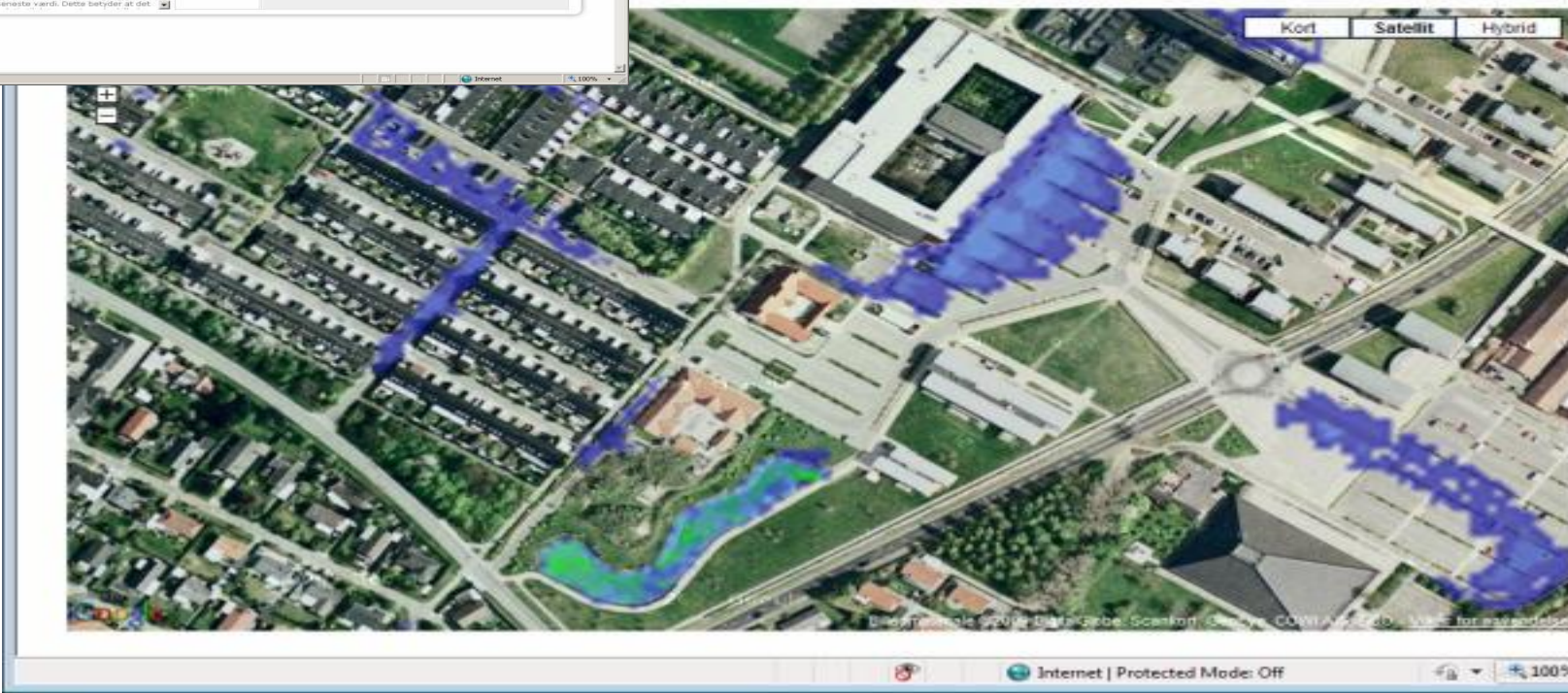
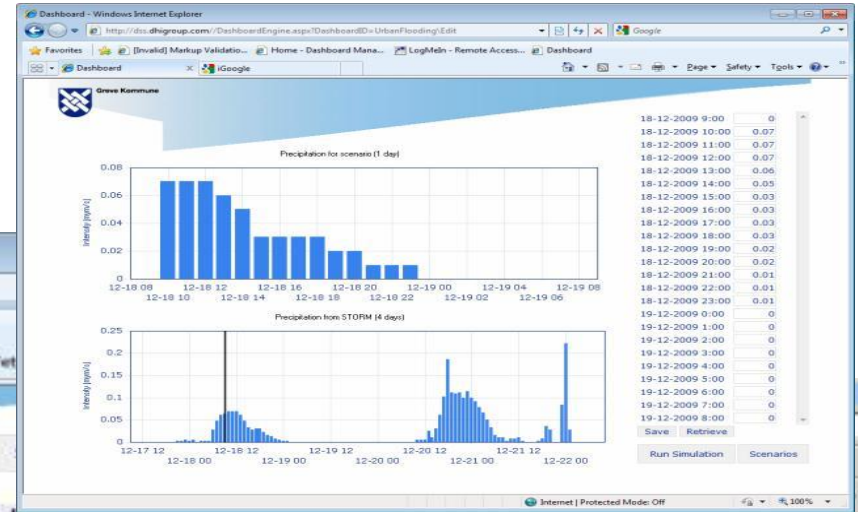
Polynomnavn	Middel [mm/s]	Maksimum [mm/s]	Akkumuleret [mm]
Egebjerg	0.068	1.5	2.31
Ballerup_Å	0.182	3.1	4.95
Hedemagleparken	0.19	2.7	4.76
Sivofunde	0.06	9	10.49
Målev	0.119	3.1	2.96
Tegneskov	0.222	4.6	5.54
Ballerup Bymidte	0.14	2.2	3.51
Serup	0.118	3.8	2.95
Søenise_Å	0.659	6.1	10.49
Skelgrøften	0.235	4.3	5.88

Information om Nedbørstestatorerne
Dette side viser information om Nedbørstestatorerne. Enhver af de forskellige testatorer kan anvendes til at undersøge, hvordan nedbørfaldet påvirker vandstanden i de forskellige testatorer. Deres størrelse og placering kan ses på kortet. Deres størrelse og placering kan ses på kortet. Deres størrelse og placering kan ses på kortet.

boardID=UrbanFlooding/Result

board Mana... LogMeIn - Remote Access... Dashboard

11-12 4:00



Loading dashboard complete

Model in Google Earth



Search

Fly To Find Businesses Directions

Fly to e.g., 1600 Pennsylvania Ave, 20006

MIKE Zero - [Project Map]

Map Explorer

- Layers
 - karup0.bmp
 - catchment_meter.shp
 - obswells.shp
 - karup.mwk11
 - drainlevel.dfs2
- DrainLevel [m]
 - Above 95
 - 90 - 95
 - 85 - 90
 - 80 - 85
 - 75 - 80
 - 70 - 75
 - 65 - 70
 - 60 - 65
 - 55 - 60
 - 50 - 55
 - 45 - 50
 - 40 - 45
 - 35 - 40
 - 30 - 35
 - 25 - 30

Add/Remove files

Image Files:	File type	File name
1	Image File	C:\Program Files\DH\MIKEZero\Examples\MIKE_SHEModel\Model Input
2	Shape File	C:\Program Files\DH\MIKEZero\Examples\MIKE_SHEModel\Model Input
3	Shape File	C:\Program Files\DH\MIKEZero\Examples\MIKE_SHEModel\Model Input
4	River File	C:\Program Files\DH\MIKEZero\Examples\MIKE_SHEModel\Model Input
5	Dfs File	C:\Program Files\DH\MIKEZero\Examples\MIKE_SHEModel\Model Input
6	Image File	

Legend

- Borders and Labels
- Traffic
- Weather
- Gallery
- Ocean

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2009 Europa Technologies
© 2009 MapData Sciences Pty Ltd, PSMA
Image © 2009 DigitalGlobe

Hydroinformatics Tools and Technologies



Technology providers



FlowMaster®
The Hydraulic Toolbox

SewerCAD® for AutoCAD
Sanitary Sewer Design & Modeling Software

MIKE BASIN
GIS-based river basin management

MIKE SHE
Integrated surface water and ground water

MIKE 11
Rivers, channels, reservoirs

HYPRESS
Water hammer simulation

FlowWorks

InfoWorks™

InfoNet

MIKE SWMM
Waste water and storm water

MIKE 21
Coastal and inland waters in 2D

MIKE NET
Water distribution network

DELFT FLS
Delft Flooding System



Sobek is named after the ancient Egyptian river god. Crocodiles were believed to have powers, as they were laying their eggs just before the level of the next Nile flood.

Click for next slide



Download your free trial copy here or send off for a CD ROM



DHI software products

LITPACK
Sediment transport and littoral processes



MIKE URBAN
Urban water distribution and collection



WEST
Wastewater treatment plants



MIKE BASIN
GIS-based river basin management



MIKE 11
Rivers, channels and reservoirs



FEFLOW
Groundwater systems



MIKE SHE
Integrated hydrology



MIKE FLOOD
Inundation and mapping



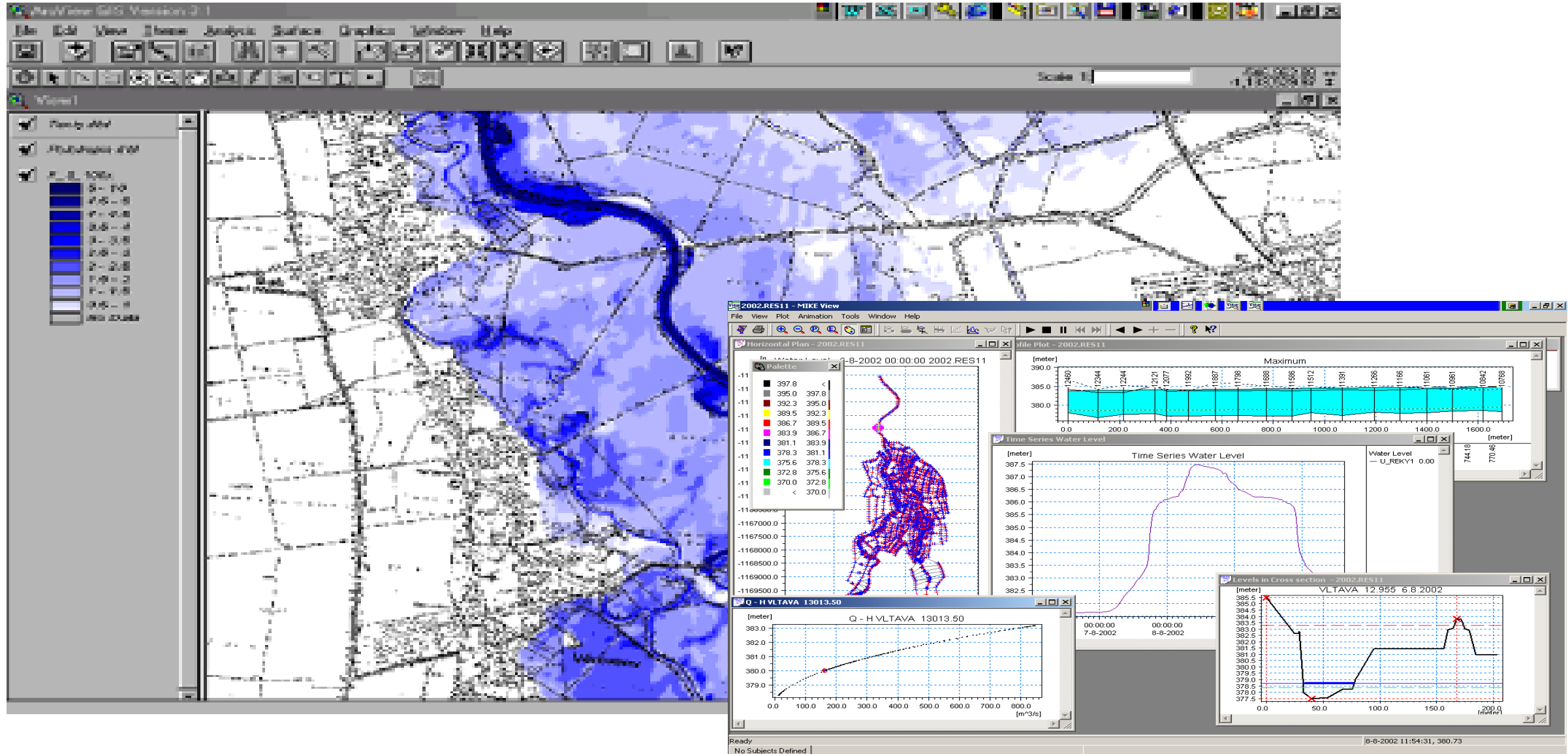
MIKE 3
Coastal and inland waters in 3D



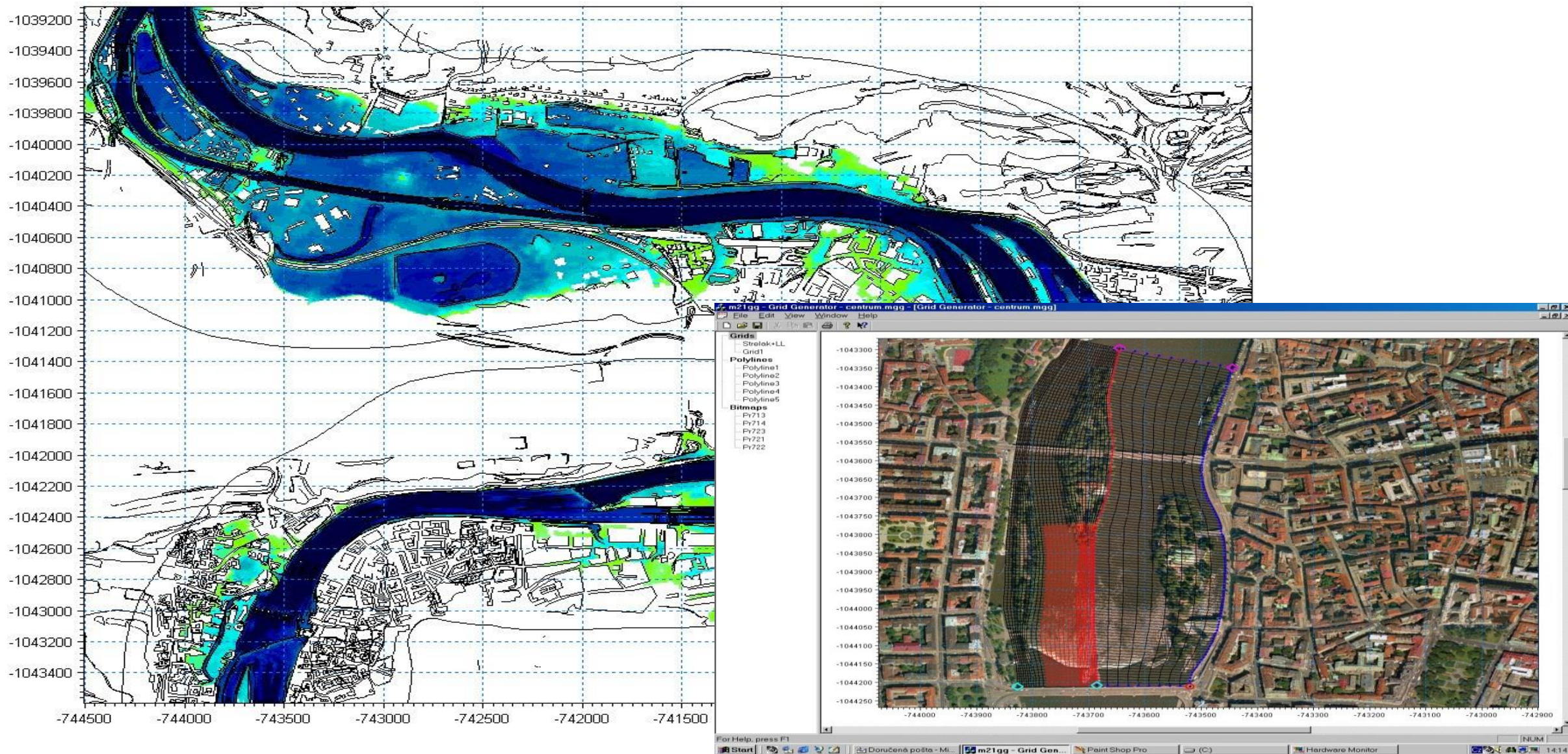
MIKE 21
Coastal and inland waters in 2D



MIKE 11 river model



MIKE 21 flood model



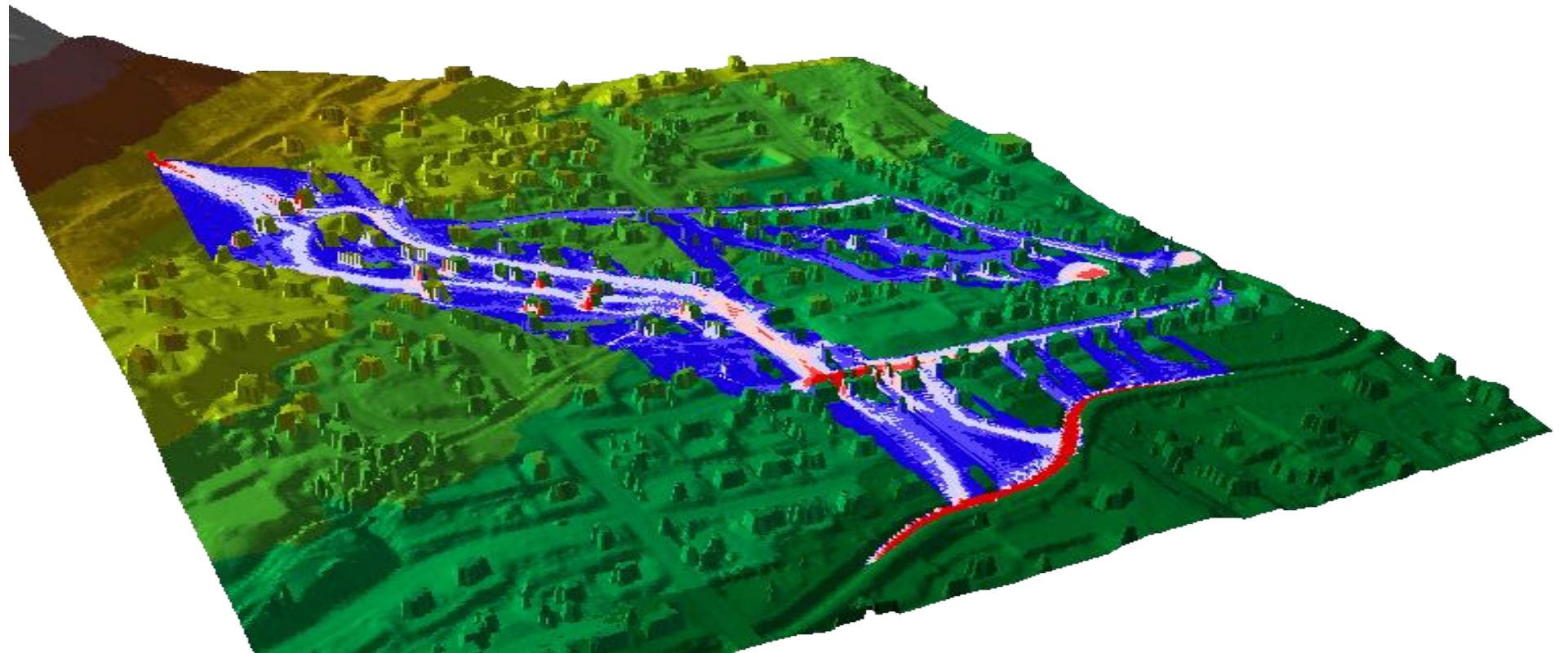
MIKE FLOOD

Flood plain and storm surge

MIKE 11



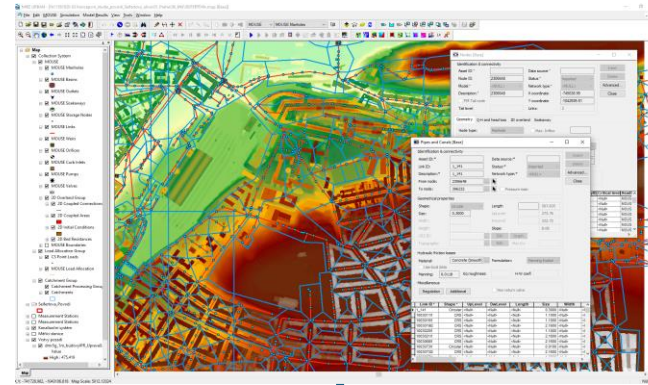
MIKE 21



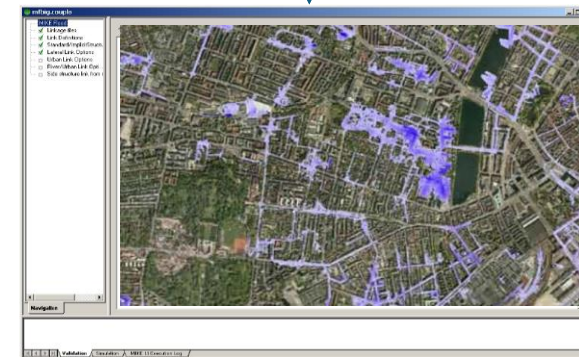
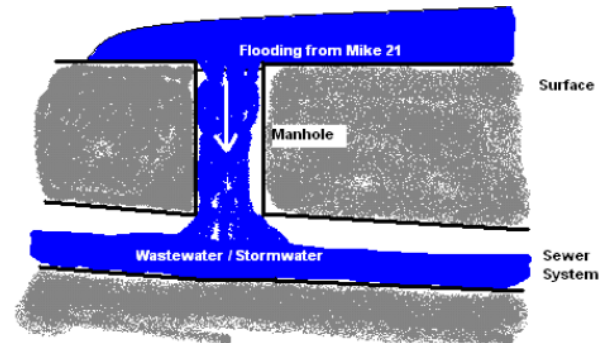
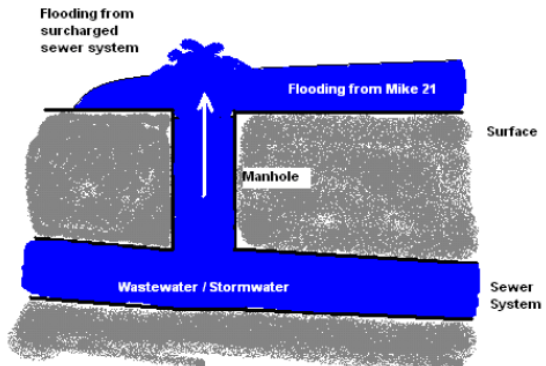
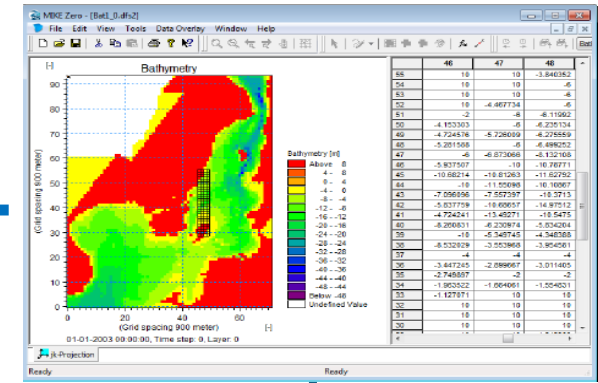
Urban Drainage Model Coupling

Need for assessment of mutual water
Exchange between surface and drainage

Coupled 1D + 2D model



+



MIKE URBAN

MIKE URBAN - [Untitled]

File Edit EPANET Simulation Model Results View Tools Window Help



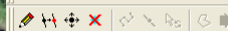
- Collection System
 - MOUSE
 - MOUSE Nodes
 - MOUSE Links
 - MOUSE Weirs
 - MOUSE Orifices
 - MOUSE Pumps
- SWMM5
- Asset CS
- Catchments
- Water Distribution
 - Model
 - Demand Allocation
 - Water Demand
 - Water Junction
 - Water Pipe Cor
 - Water Junctions
 - Water Emitters
 - Water Air Valves
 - Water Reservoirs
 - Water Tanks

Layer manager



MIKE URBAN - [Untitled]

File Edit EPANET Simulation Model Results View Tools Window Help



- Collection System
 - MOUSE
 - MOUSE Nodes
 - MOUSE Links
 - MOUSE Weirs
 - MOUSE Orifices
 - MOUSE Pumps
- SWMM5
- Asset CS
- Catchments
- Water Distribution
 - Model
 - Demand Allocation
 - Water Demand
 - Water Junction
 - Water Pipe Cor
 - Water Junctions
 - Water Emitters
 - Water Air Valves
 - Water Reservoirs



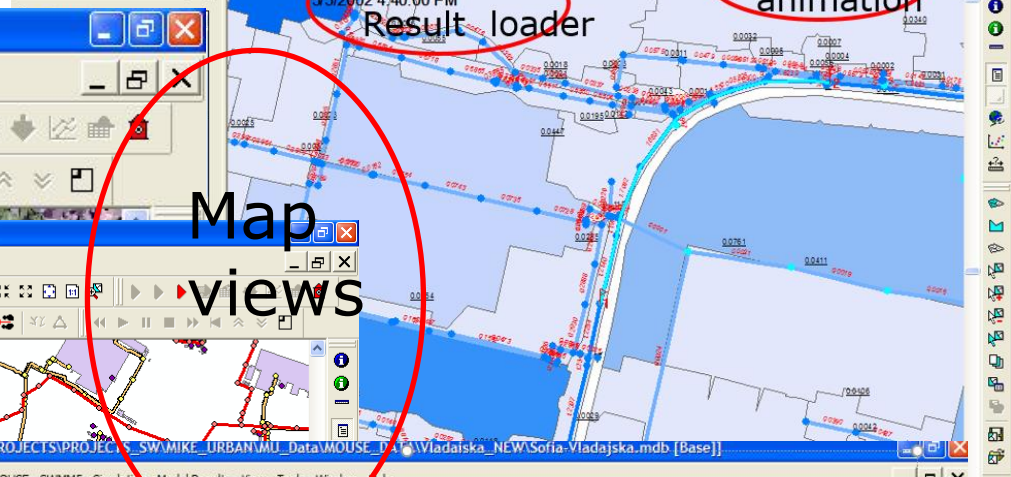
Q In Link

RESL	msm_RESL	msm_RESL	mmsm_RESL	mmsm
2611	0.000010450	8.038499852	592.0187034	1.2279
2607	0.000010480	8.024998440	591.7687964	1.0796
2541	0.000010470	9.680000230	591.6457039	1.3630
2477	0.000010520	8.814462306	602.3785915	0.9126
2473	0.000010130	0.032056137	600.4144191	0.8577
2486	0.000000540	6.191602470	597.2838781	1.3350
2488	0.000000550	9.675548514	591.5189992	1.4887
2483	0.000010720	2.488136880	599.5427055	1.6792
2455	0.000010740	2.165007570	599.5427055	1.6792
2447	0.000010790	2.899000453	617.7752097	0.9850
2457	0.000010850	4.883851706	601.0336395	0.4129
2464	0.000010890	4.837933132	602.2000518	0.7729
2481	0.000010920	1.372569313	601.0336395	0.7209
2515	0.000010930	1.369853426	600.1230780	0.8175
2518	0.000010940	1.343365483	598.5796484	0.7654
2527				
2533				
2525				
2503				
2495				
2506				
2513				
2539				
2768				
2750				
2723				
2732				
2769				
2779				
2766				

X,Y: -8596.246, 146734.582 Map Scale: 12011.72939

MIKE URBAN - [D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MIU_Data\MOUSE_DATA\Vladajska_NEW\Sofia-Vladajska.mdb [Base]]

File Edit Asset CS MOUSE SWMM5 Simulation Model Results View Tools Window Help



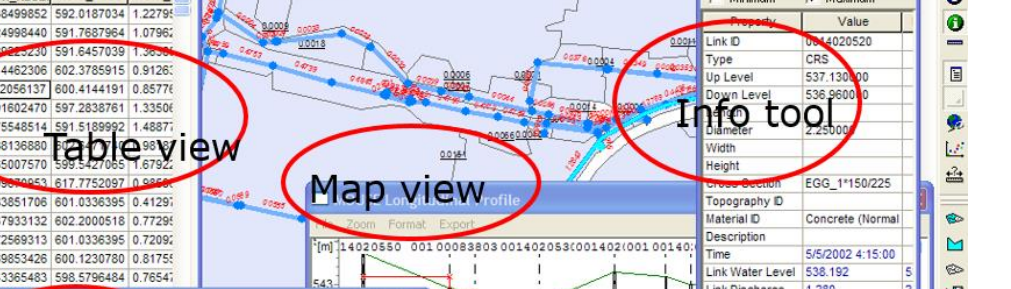
Result loader

animation

Map views

MIKE URBAN - [D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MIU_Data\MOUSE_DATA\Vladajska_NEW\Sofia-Vladajska.mdb [Base]]

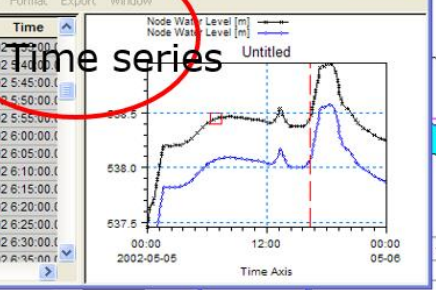
File Edit Asset CS MOUSE SWMM5 Simulation Model Results View Tools Window Help



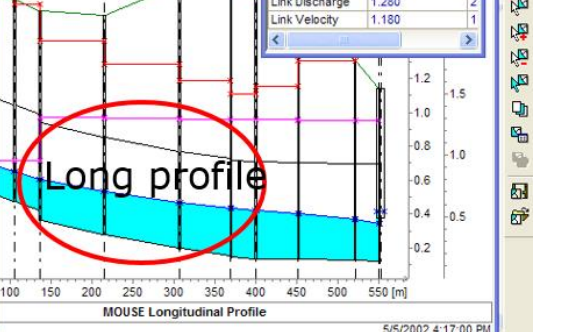
Info tool

Map view

Time Series (Active)



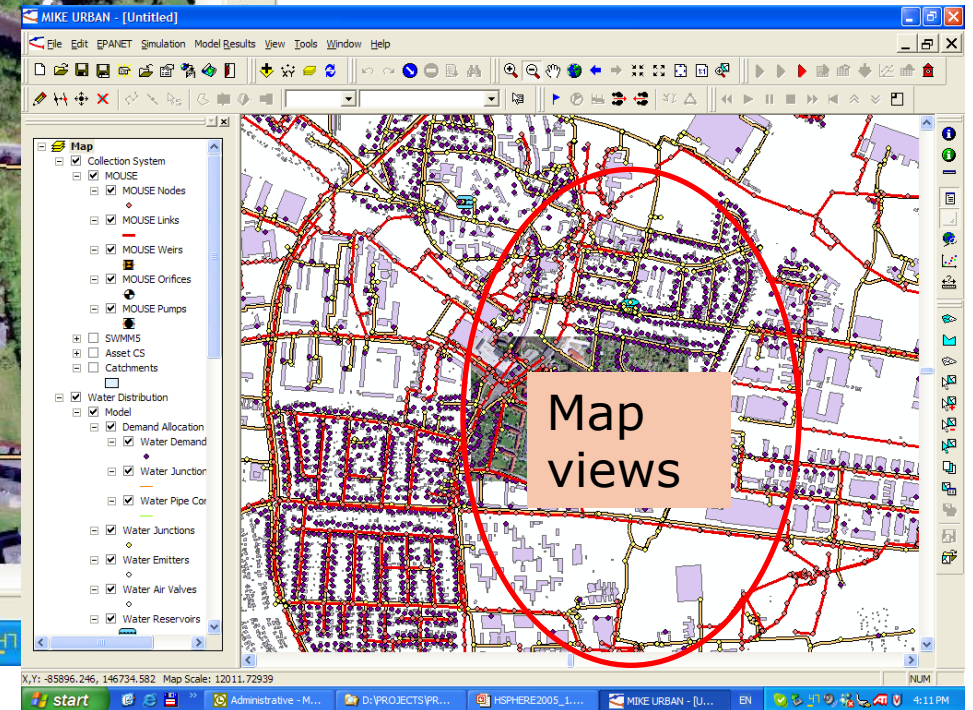
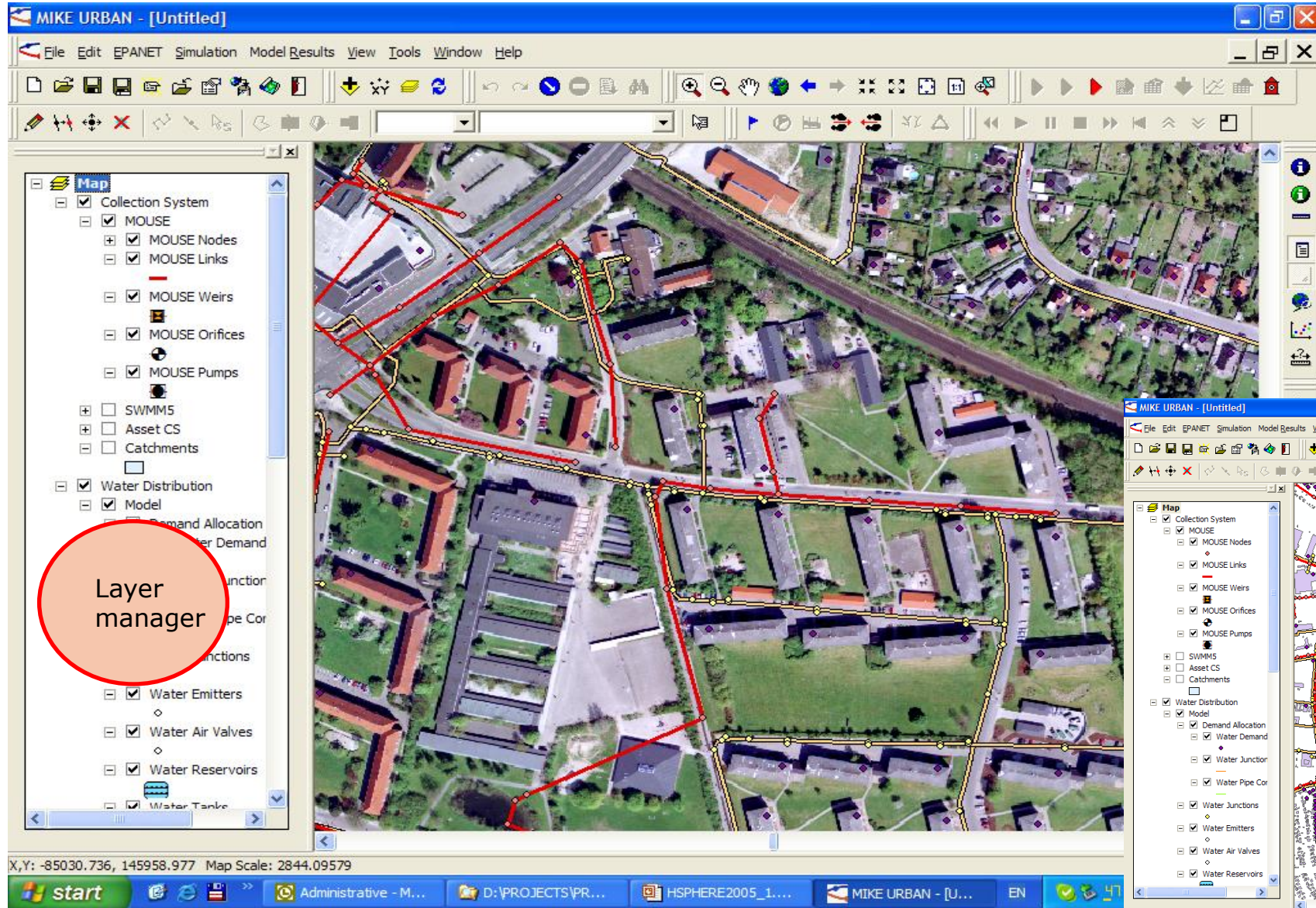
Time series



Long profile

X,Y: -85030.736, 145958.977 Map Scale: 2844.09579

Water & Sewer model coupling



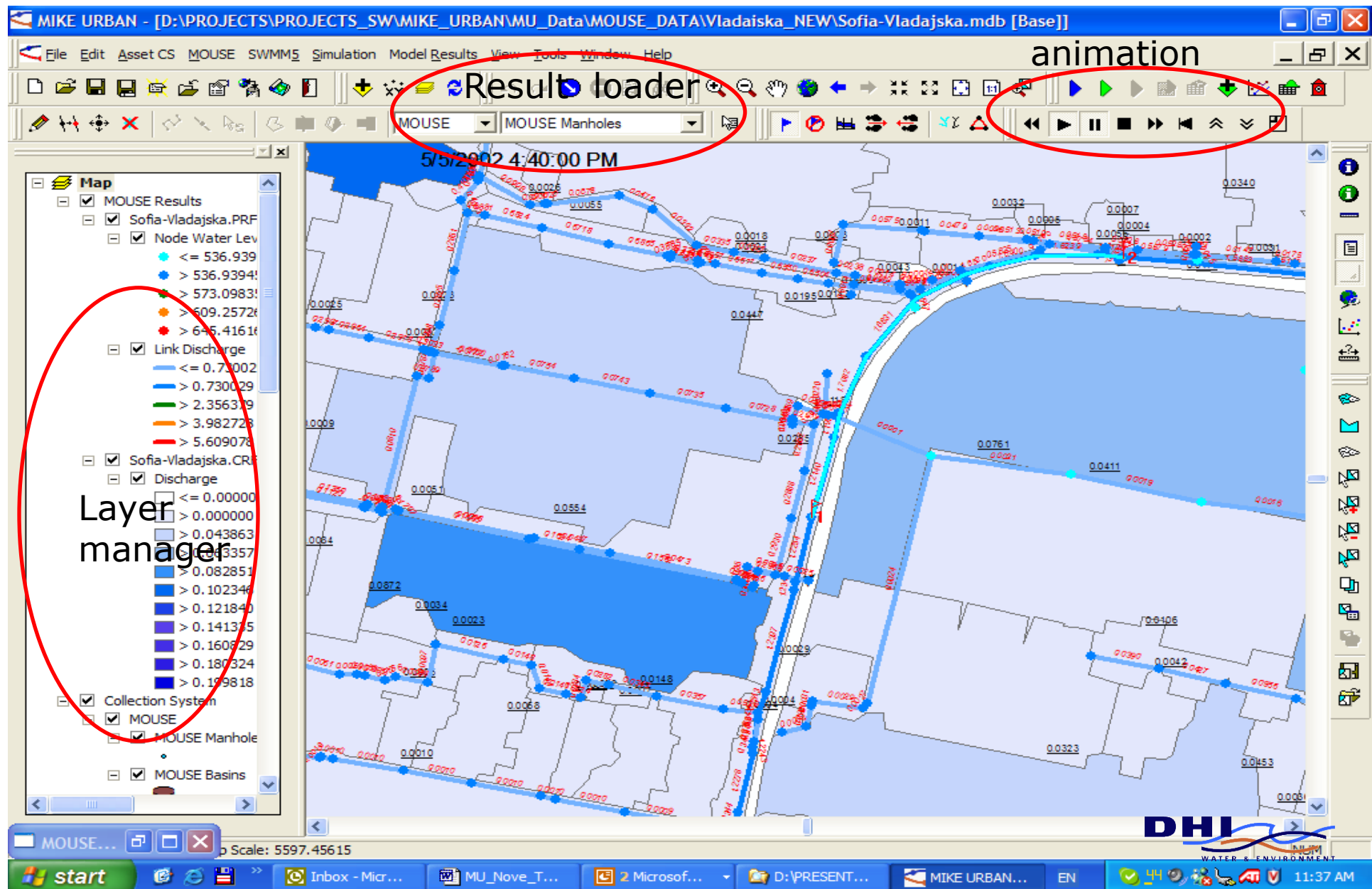
GUI and result visualisation

The screenshot displays the MIKE URBAN software interface with several key components highlighted by red circles and labels:

- Table view:** A data table on the left side of the interface. The table has columns labeled 'm_RESLi', 'msm_RESLi', 'msm_RESLi', 'msm_RESLi', and 'msm_RESLi'. It contains numerical data for various manholes.
- Map view:** A central map showing a network of manholes and pipes. The pipes are color-coded (blue and red) and labeled with IDs and flow directions.
- Info tool:** A 'Browser' window on the right showing properties for a selected manhole (M11DM). It includes a table of properties and values.
- Time series:** A 'Time series (Active)' window at the bottom left showing a graph of water levels over time. The x-axis is 'Time Axis' and the y-axis is 'Water Level [m]'. It shows two data series: 'Node Water Level [m]' (black line) and 'Link Water Level [m]' (blue line).
- Long profile:** A 'MOUSE Longitudinal Profile' window at the bottom right showing a cross-section of the pipe network. The x-axis is 'MOUSE Longitudinal Profile' (distance in meters) and the y-axis is 'Water Level [m]'. It shows the pipe profile and water levels at different points.

The software title bar indicates the project name: 'MIKE URBAN - [D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MU_Data\MOUSE_DATA\Vladaiska_NEW\Sofia-Vladajska.mdb [Base]]'. The status bar at the bottom shows coordinates, map scale, and the current time: '12:17 PM'.

GUI and simulation results



Layer manager



Language localisation

The screenshot shows the MIKE URBAN software interface. The title bar reads "MIKE URBAN - [D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MU_Data\MOUSE_DATA\Vladaiska_NEW\Vladaiska.mup [Base]]". The menu bar includes "Datei", "Bearbeiten", "Anlagen CS", "MOUSE", "SWMM5", "Simulation", "Ergebnisse", "Ansicht", "Werkzeuge", "Fenster", and "Hilfe". The "Werkzeuge" menu is open, showing options like "Elementbrowser...", "Maßeinheiten...", "Sprachauswahl", "Benutzerwerkzeuge", "Einrichten", "Allgemeine Einstellungen", "Auswahl", "Daten senden", "Szenario Manager...", and "Aufspüren". The "Sprachauswahl" sub-menu is also open, listing languages: English, French, Spanish, German (checked and circled in red), Japanese, Korean, Chinese, Polish, Russian, and Czech. The main window displays a map of a city with a sewer network overlaid. A table at the bottom left shows the following data:

Knoten ID*	Knotentyp	Sohlhöhe	Geländehöh	Durchmess	ID (Beckeng	Kritische Hö
0000010450	Schacht	591.81	596.64	1.0000	<Null>	<Null>

The Windows taskbar at the bottom shows the Start button, taskbar icons for "Inbox - Microsoft Out...", "MIKE URBAN - [D:\PR...", "Microsoft PowerPoint ...", and system tray icons for "EN", "51", and "6:03 PM".

Geocoding

The screenshot displays the MIKE URBAN software interface. The main map window shows a street network with blue nodes and red links, overlaid on a light blue catchment map. A 'Catchment connection' dialog box is open, showing the following fields:

- Catchment ID: [Empty]
- Connection type: Single Node
- Connection to node: 0000040220
- Connection to link: [Empty]
- Distance: [Empty]

Below the dialog box is a table listing catchment connections:

Catchment ID*	Connection type	Connection to no
FS02_0000230080_3	Single Node	0000230080
FS02_0000230090_4	Single Node	0000230090
FS02_0000240080_4	Single Node	0000240080
FS02_0000240150_2	Single Node	0000240150
FS02_0000240250_4	Single Node	0000240250
FS02_0000300110_3	Single Node	0000300110
FS02_0000300180_2	Single Node	0000300180
FS02_0000480010_4	Single Node	0000480010
FS02_0000480020_1	Single Node	0000480020

At the bottom of the screen, the status bar shows the coordinates: X,Y: 36571.737, 49115.127 and Map Scale: 69140.38918. The Windows taskbar at the very bottom shows the Start button, Microsoft Outlook, and the MIKE URBAN application window.

Time Series Management

The screenshot displays a software interface for Time Series Management. At the top, a blue title bar reads "Time Series (Active)". Below it is a menu bar with "File", "Edit", "Zoom", "Format", "Export", and "Window".

On the left, a tree view shows "TSTabular Item Selection" with two sub-items: "Sofia-Vladajska.PRF" and "Node Water Level".

In the center, a data table shows time series data:

	Time	Node Water
68	5/5/2002 5:35:00.000 AM	538.4594936
69	5/5/2002 5:40:00.000 AM	538.4594936
70	5/5/2002 5:45:00.000 AM	538.4594936
71	5/5/2002 5:50:00.000 AM	538.4594936
72	5/5/2002 5:55:00.000 AM	538.4594936
73	5/5/2002 6:00:00.000 AM	538.4594936
74	5/5/2002 6:05:00.000 AM	538.4594936
75	5/5/2002 6:10:00.000 AM	538.4594936
76	5/5/2002 6:15:00.000 AM	538.4594936
77	5/5/2002 6:20:00.000 AM	538.4594936

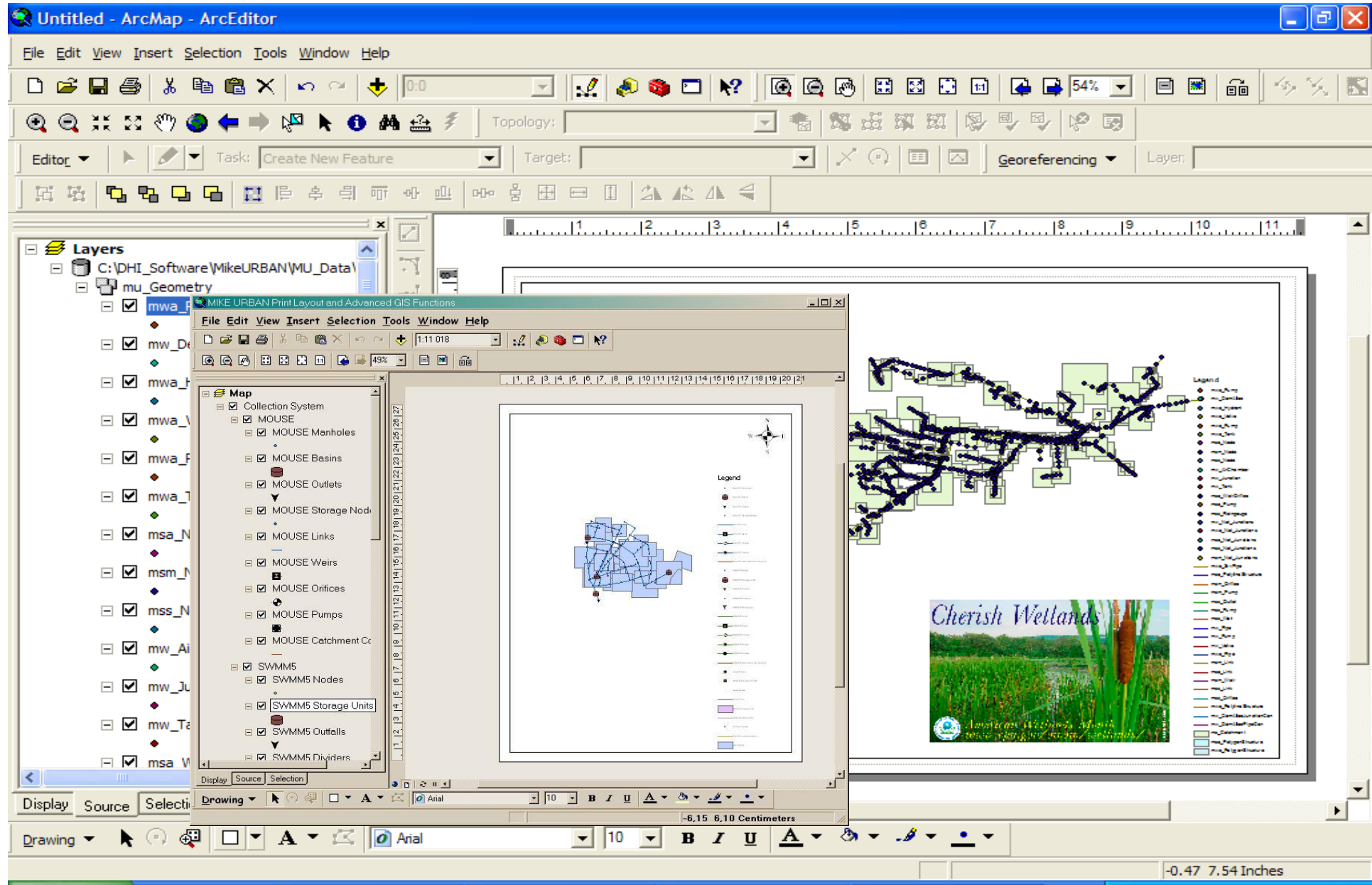
Two dialog boxes are overlaid on the interface:

- TimeSeries Plot Properties**: Shows "Item List" with two entries for "Node Water Level" on the "Primary" axis. It also has fields for "Value" (537.45500000), "From" (538.95645618), and "To".
- Graphic Settings**: Shows "Points Drawn as" with a checked "Display" box, "Color" (blue), "Point fill style" (White), and "Point size" (0.264583). It also has sections for "Lines/Polygons Drawn as" and "Flags Drawn as".

Two plots are visible:

- Top Plot**: A line graph titled "Untitled" showing a single data series with a sharp peak. The x-axis is time, and the y-axis is "Node Water Level [m]".
- Bottom Plot**: A multi-series bar chart titled "Untitled" showing data from 1991 to 1997. The y-axis ranges from 0 to 20. A legend on the left lists various years and values.

Advanced Labelling & Layouting



Catchment Delineation

The screenshot displays the MIKE URBAN software interface during a catchment delineation process. The main window shows a map of a sewer network with a purple catchment boundary. A 'Catchment Delineation Wizard' dialog box is open in the foreground, providing instructions and status information.

MIKE URBAN - D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MU_Data\MOUSE_DATA\Vladaiska_NEW\Vladaiska_310805_1.mdb [Base]

File Edit Asset CS MOUSE SWMM5 Simulation Model Results View Tools Window Help

MOUSE MOUSE Manholes

MOUSE

Map

- Collection System
 - MOUSE
 - MOUSE Manho
 - MOUSE Basins
 - MOUSE Outlet

D:\PROJECTS\PROJECTS_SW\MIKE_URBAN\MU_Data\MOUSE_DATA\Vladaiska_NEW...

Catchment Delineation Wizard

Completing the Catchment Delineation Wizard

You are now ready to proceed.

Input Layer: MOUSE Manholes

No of points selected for input: 1439

Remember to save your edits after delineation.

< Back Finish Cancel

X,Y: 43879.0: NUM

X,Y: 42837.106, 49971.868 Map Scale: 12344.52593

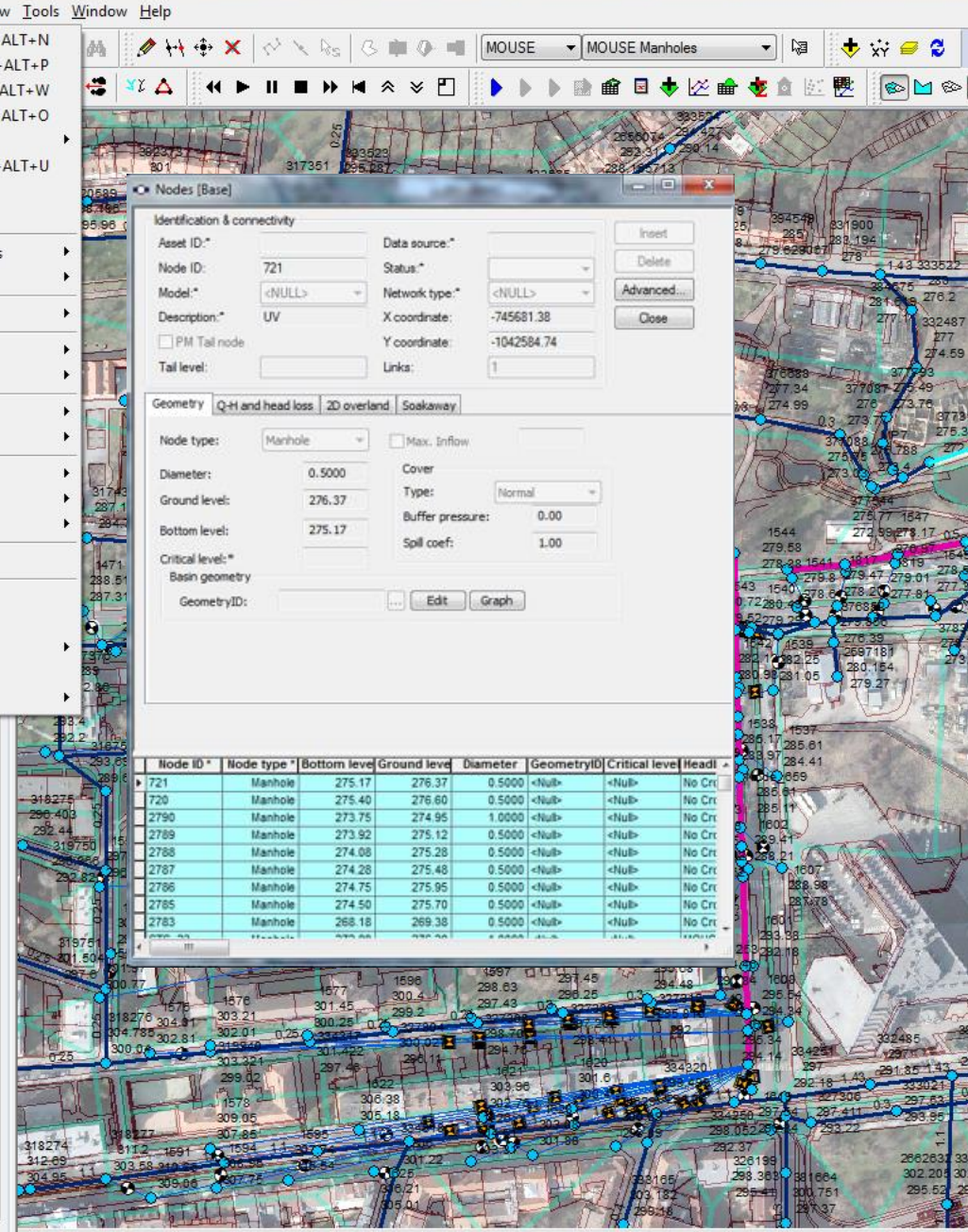
star start

Microsoft PowerPo... EN

Catchment Delinea... EN

4:14 PM

- Nodes and Structures... CTRL+ALT+N
- Pipes and Canals... CTRL+ALT+P
- Weirs... CTRL+ALT+W
- Orifices... CTRL+ALT+O
- Stormwater Inlets
- Pumps... CTRL+ALT+U
- Valves...
- Emptying Storage Nodes...
- Catchments & catchment parameters
- Catchment Tools
- Runoff Models
- Boundary Conditions
- Repetitive Profiles
- 2D Overland Flow
- 2D Overland Tools
- Control
- Water Quality
- Long Term Statistics
- Measurement Stations...
- Materials...
- Local Head Losses...
 - CRS & Topography
 - Curves & Relations...
 - Load Allocation
- 2D Overland Group
- MOUSE Boundaries
- Load Allocation Group
- Catchment Group
 - Catchment Processing Group
 - Catchments
- Measurement Stations
- Background Layers
 - Malovanka_tunnel_BC_Elements
 - Malovanka_tunnel_BC_Nodes
 - Malovanka.jpg
 - malovanka_bathy.dfs2
 - Value
 - High : 311.065
 - Low : 265.382
 - TMUMPS_L



Nodes [Base]

Identification & connectivity

Asset ID:* Data source:*

Node ID: 721 Status:*

Model: <NULL> Network type:* <NULL>

Description:* UV X coordinate: -745681.38

PM Tail node Y coordinate: -1042584.74

Tail level: Links: 1

Geometry Q-H and head loss 2D overland Soakaway

Node type: Manhole Max. Inflow

Diameter: 0.5000 Cover: Normal

Ground level: 276.37 Buffer pressure: 0.00

Bottom level: 275.17 Spill coef: 1.00

Critical level:*

Basin geometry

GeometryID:

Node ID *	Node type *	Bottom level	Ground level	Diameter	GeometryID	Critical level	Head
721	Manhole	275.17	276.37	0.5000	<Null>	<Null>	No Cr
720	Manhole	275.40	276.60	0.5000	<Null>	<Null>	No Cr
2790	Manhole	273.75	274.95	1.0000	<Null>	<Null>	No Cr
2789	Manhole	273.92	275.12	0.5000	<Null>	<Null>	No Cr
2788	Manhole	274.08	275.28	0.5000	<Null>	<Null>	No Cr
2787	Manhole	274.28	275.48	0.5000	<Null>	<Null>	No Cr
2786	Manhole	274.75	275.95	0.5000	<Null>	<Null>	No Cr
2785	Manhole	274.50	275.70	0.5000	<Null>	<Null>	No Cr
2783	Manhole	268.18	269.38	0.5000	<Null>	<Null>	No Cr

Pipes and Canals [Base]

Identification & connectivity

Asset ID:* Data source:*

Link ID: 11162 Status:* <NULL>

Description:* Network type:* <NULL>

From node: LPS1

To node: LSPF1 Pressure main

Geometrical properties

Shape: Circular Length: 1.812

Size: 0.3000 Unl level: 218.36

Weirs [Base]

Identification & connectivity

Asset ID:* Data source:*

Weir ID: 1504sw1 Status:* Inserted

Location: 1504 Network type:* Planned

To: Node_661 Weir type: Rectangular

Description:* Side_weirs_canal

Model data

Comp type: Weir Formula Flap

Crest level: 288.03

Discharge coeff.: 0.40

Crest width: 1.0000

Pumps [Base]

Identification & connectivity

Asset ID:* Data source:*

Pump ID: BZ_5_3_8 Status:* Model

Location: BZ_5_3_8 Network type:* Storm Water

To: LS4 Speed: Constant

Description:*

Model data

Oper. mode: No control Start level: 203.90

Cap. curve type: Constant Flow Stop level: 202.90

Wet well set-point: Acc. time: 10

Constant flow: 0.01000 Dec. time: 10

Capacity curve for RPMmax

Offset: 0.00

Capacity curve for RPMmin

Offset: 0.00

2D overland flow coupling

Coupling to 2D overland flow

Pump ID *	Cap. curve t	Speed	QmaxSetID	Offset	QminSetID	Offset
BZ_5_3_8	Constant Flo	Constant	<Null>	0.00	<Null>	0.00
CS_4_1_1	Constant Flo	Constant	<Null>	0.00	<Null>	0.00
CS_4_1_2	Constant Flo	Constant	<Null>	0.00	<Null>	0.00
CS_5_1_1	Constant Flo	Constant	<Null>	0.00	<Null>	0.00
Pump_3	Q-H	Constant	Malovanka_C	0.00	<Null>	0.00

Comp type	Crest level	Crest width	Q-H table
True Weir Formula	288.03	1.0000	<Null>
True Weir Formula	288.23	1.0000	<Null>
True Weir Formula	285.03	1.0000	<Null>
True Weir Formula	285.46	1.0000	<Null>
True Weir Formula	285.84	1.0000	<Null>
True Weir Formula	284.02	1.0000	<Null>
True Weir Formula	284.26	1.0000	<Null>
True Weir Formula	284.06	1.0000	<Null>
True Weir Formula	283.76	15.0000	<Null>

- File Edit MOUSE Simulation
- Map
 - Collection System
 - MOUSE
 - MOUSE Manholes
 - MOUSE Basins
 - MOUSE Outlet
 - MOUSE Soakaway
 - MOUSE Storage
 - MOUSE Links
 - <all other v
 - NetTypeN
 - Planned
 - MOUSE Weirs
 - MOUSE Orifices
 - MOUSE Curb Inlets
 - MOUSE Pumps
 - MOUSE Valves
 - 2D Overland Group
 - MOUSE Boundaries
 - Load Allocation Group
 - Catchment Group
 - Catchment Processing Group
 - Catchments
 - Measurement Stations
 - Background Layers
 - Malovanka_tunel_BC_Elements
 - Malovanka_tunel_BC_Nodes
 - Malovanka.jpg
 - malovanka_bathy.dfs2
 - Value
 - High : 311.065
 - Low : 265.382
 - TMUMPS_L

Parameters Time-Area

Parameter set ID: Belohorsa_2

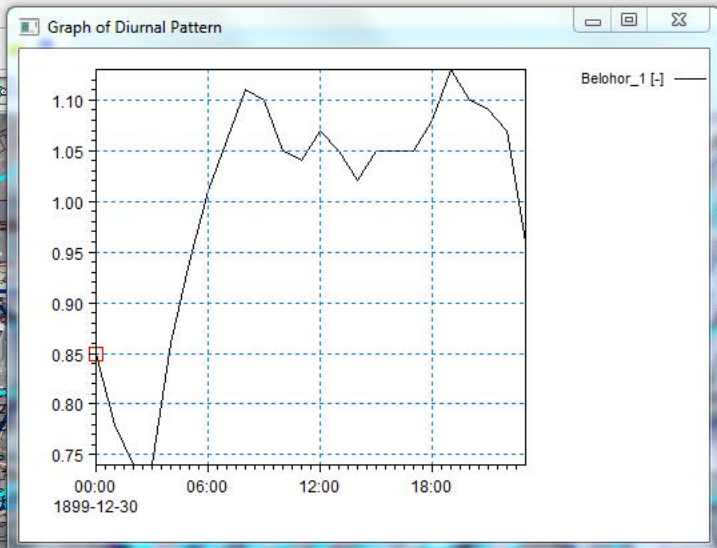
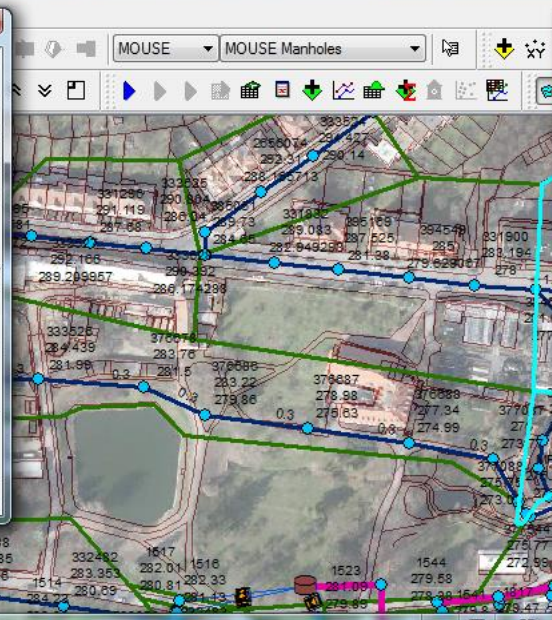
Time of concentration: 10

Initial loss: 1.10

Reduction factor: 0.90

Time-area curve: TACurve1

Parameter	Reduction f	Initial loss	Time of con	Time-area C	Time
Belohorsa_2	0.90	1.10	10	Time-Area C	TACu
-DEFAULT-	1.20	0.60	7	Time-Area C	TACu
Drenaze_Stra	0.90	0.60	120	Time-Area C	TACu
Gymnasticka	0.90	0.80	3	Time-Area C	TACu
holekova01	0.35	0.90	7	Time-Area C	TACu
Kutnauerovo	0.90	1.00	12	Time-Area C	TACu
MP_D1	0.90	0.60	7	Time-Area C	TACu
MP_D2	1.25	0.60	7	Time-Area C	TACu
MP_D3	0.95	0.60	1	Time-Area C	TACu



Diurnal Patterns [Base]

Pattern ID: Belohor_1

Delta T [min]: 60

From	To	Multiplier
00:00:00	01:00:00	0.85
01:00:00	02:00:00	0.78
02:00:00	03:00:00	0.74
03:00:00	04:00:00	0.74
04:00:00	05:00:00	0.88

Pattern ID	Delta T [min]
Belohor_1	60
Belohor_2	60
Gymnasticka	60
H3	60
Hladkova	60



Network loads [Base]

Boundary ID: BC5

Catchment load: []

Connection type: Individual

Node ID: Inflow Hydrogr

Individual Node ID: 333797

Boundary ID	Apply	Connection	Item type	Node ID *	Node load
BC3	True	Individual	Node	396252	Inflow Hy
BC4	True	Individual	Node	320733	Inflow Hy
BC5	True	Individual	Node	333797	Inflow Hy
BC6	True	Individual	Node	334523	Inflow Hy
Inflow_MP6	True	Individual	Node	MP6	Inflow Hy
Residential_1	True	<Null>	<Null>	<Null>	Inflow Hy
Residential_1	True	<Null>	<Null>	<Null>	Inflow Hy
Residential_1	True	<Null>	<Null>	<Null>	Inflow Hy
Residential_1	True	<Null>	<Null>	<Null>	Inflow Hy

Boundary items [Base]

Boundary ID: BC5

Item name: BC5_Discharge

Scaling factor: 1.000

Load type: Other

Temporal variation: Constant

Constant: 0.00100

Start from: 0.00000

Startup time: 30

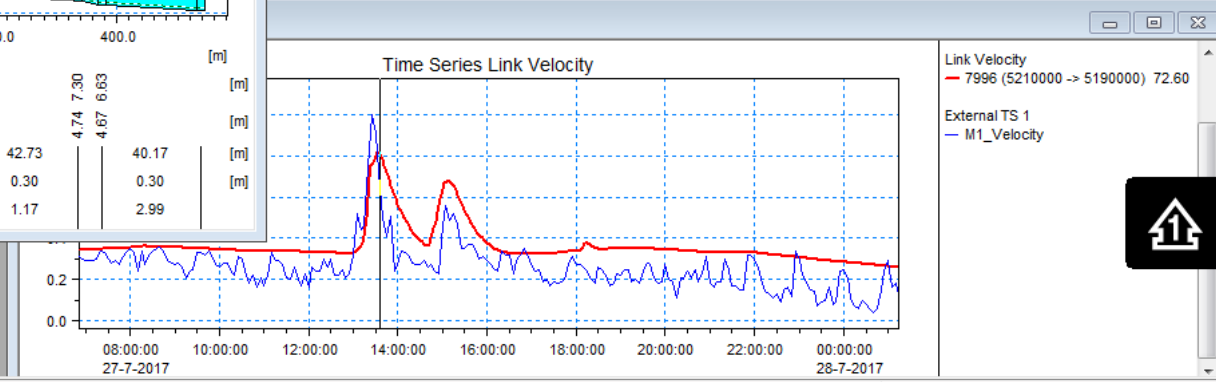
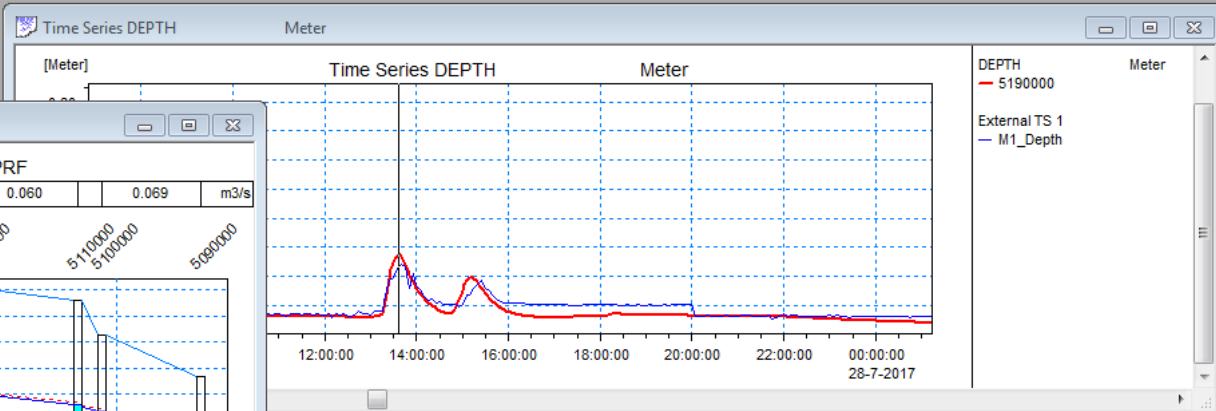
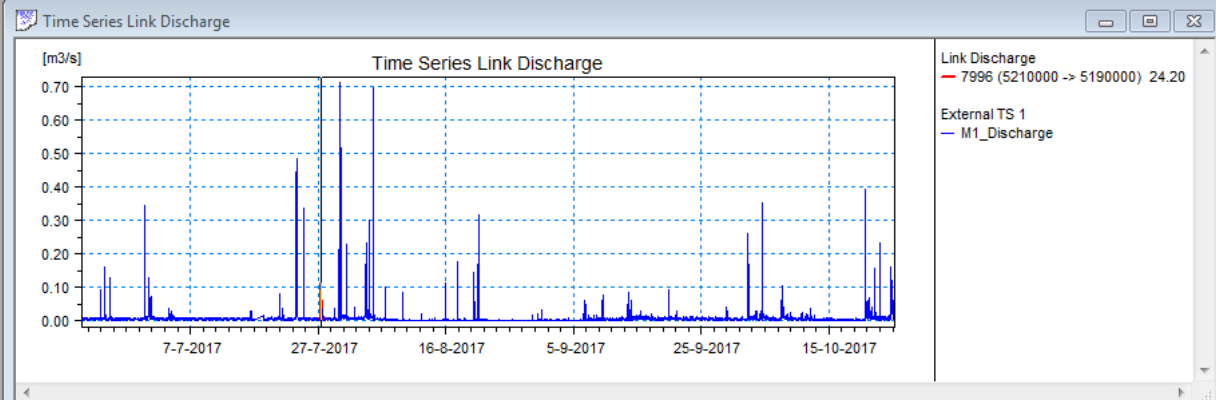
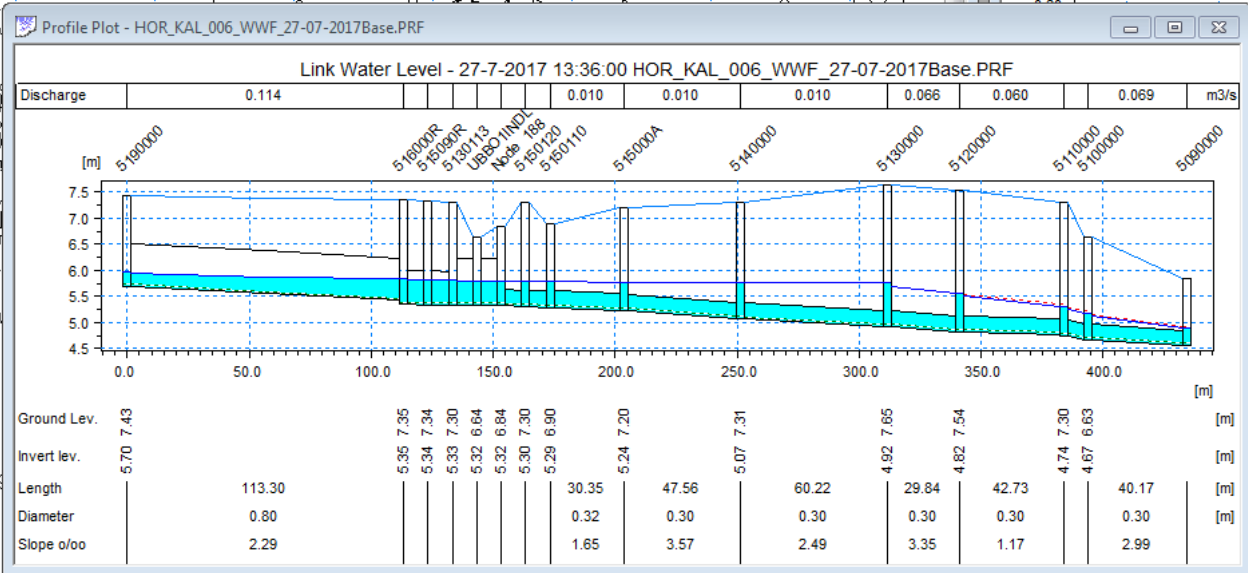
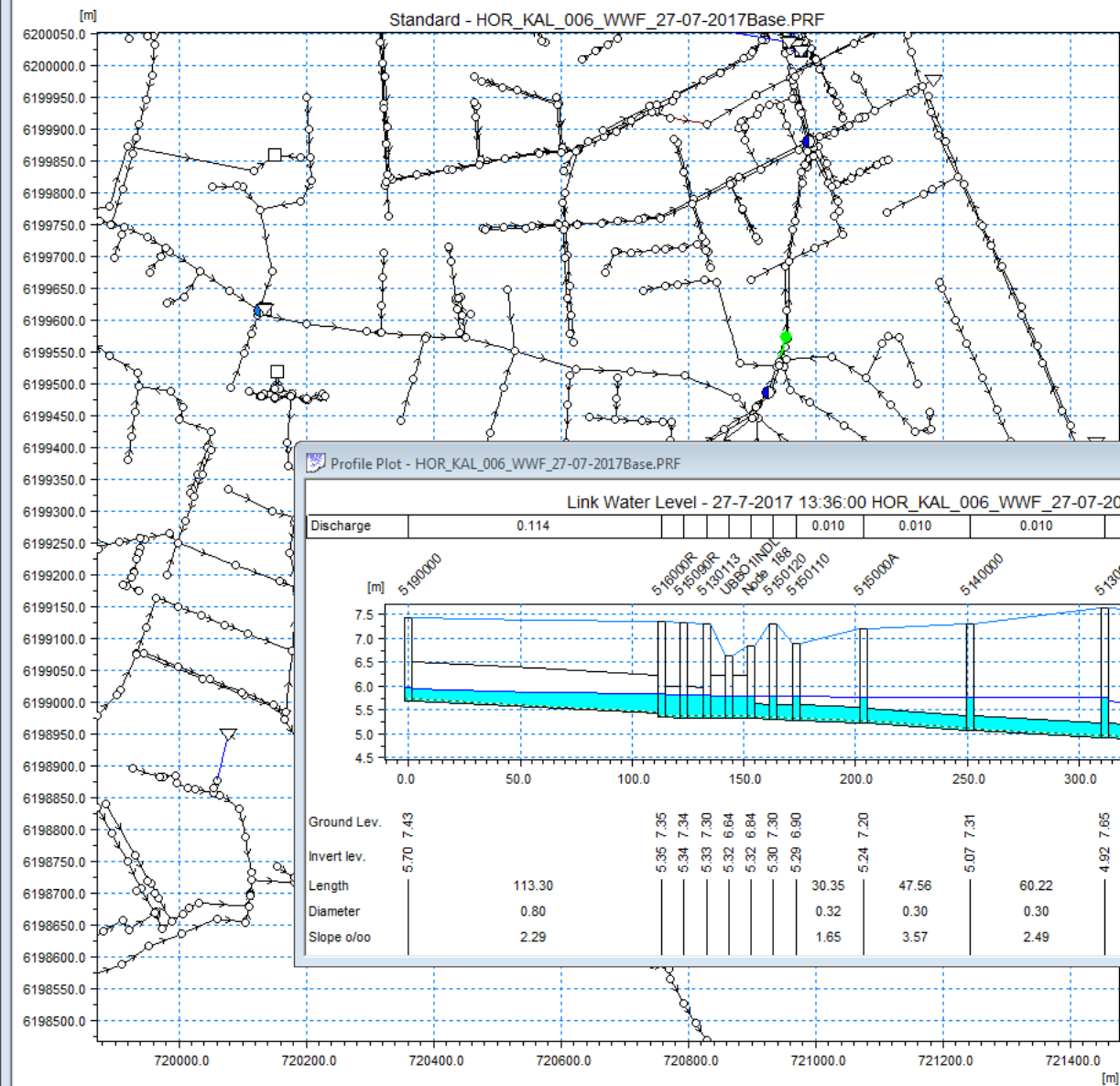
Time series: Source type: DFS0

Item name	Boundary ID	Item type	TRAP comp	TRAP fractio	Scaling fact	Load type	Temporal v	Mode
BC5_Dischar	BC5	Default	<Null>	<Null>	1.000	Other	Constant	<Null>

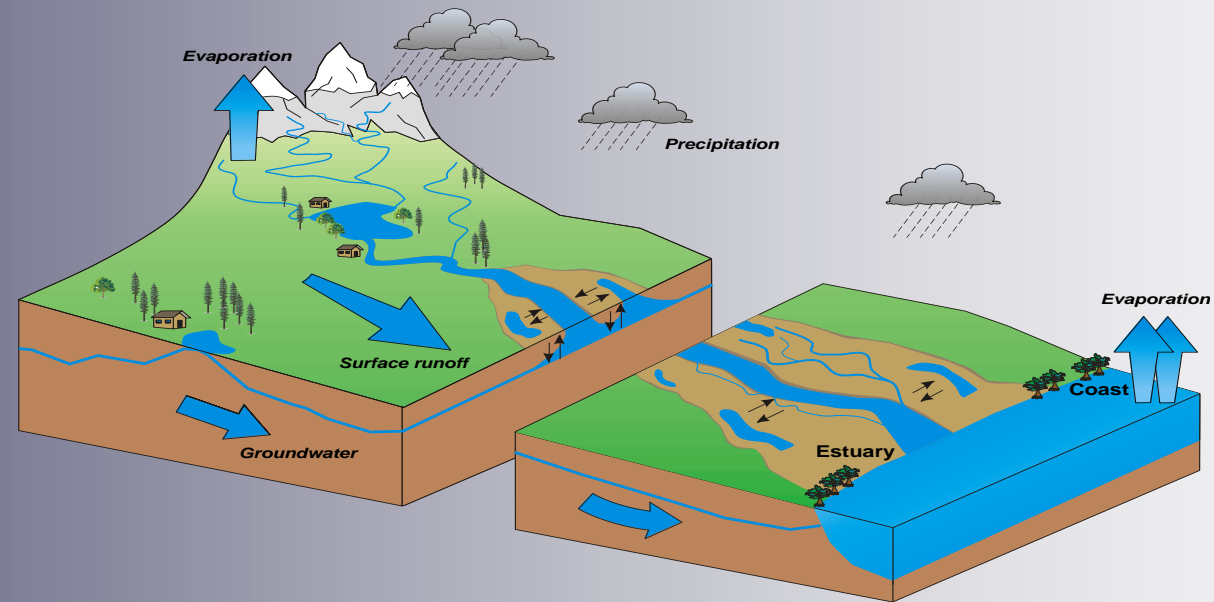




Horizontal Plan - HOR_KAL_006_WWF_27-07-2017Base.PRF



Integrated Modelling



Model Integration Needs

Estuaries



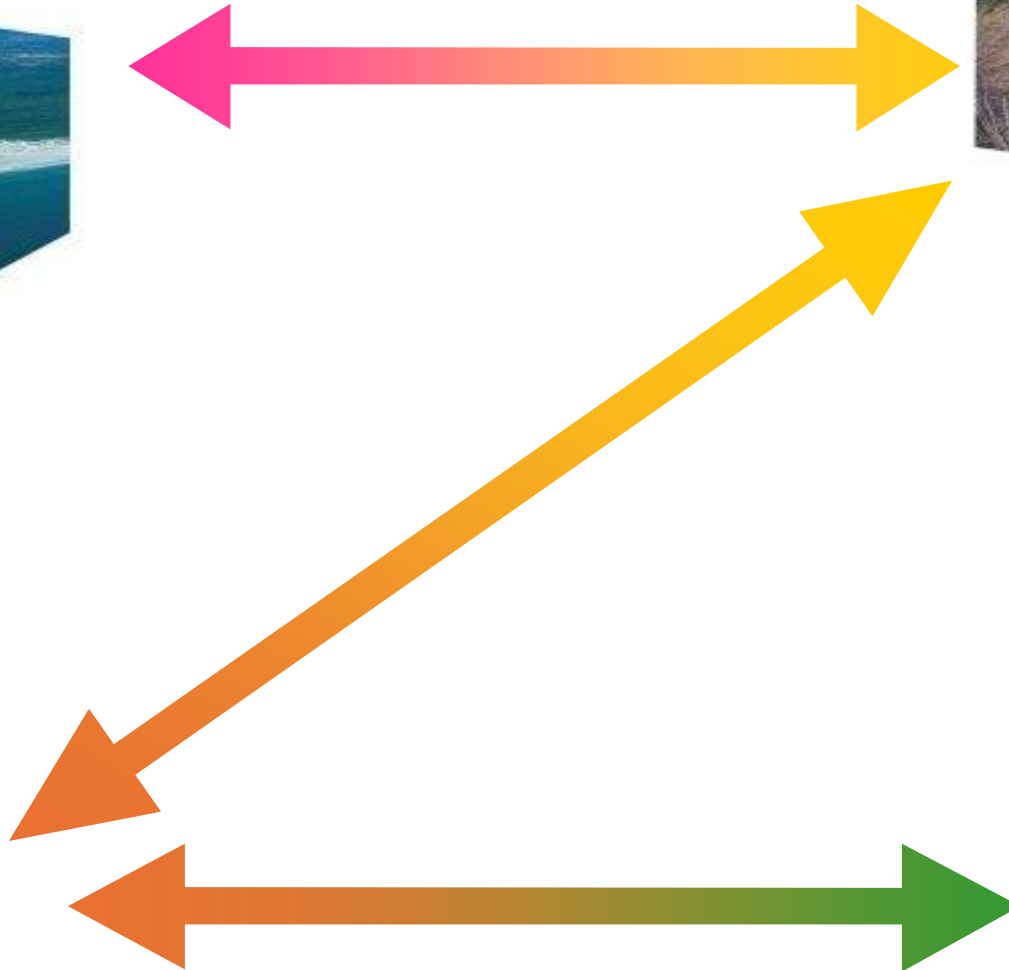
Rivers



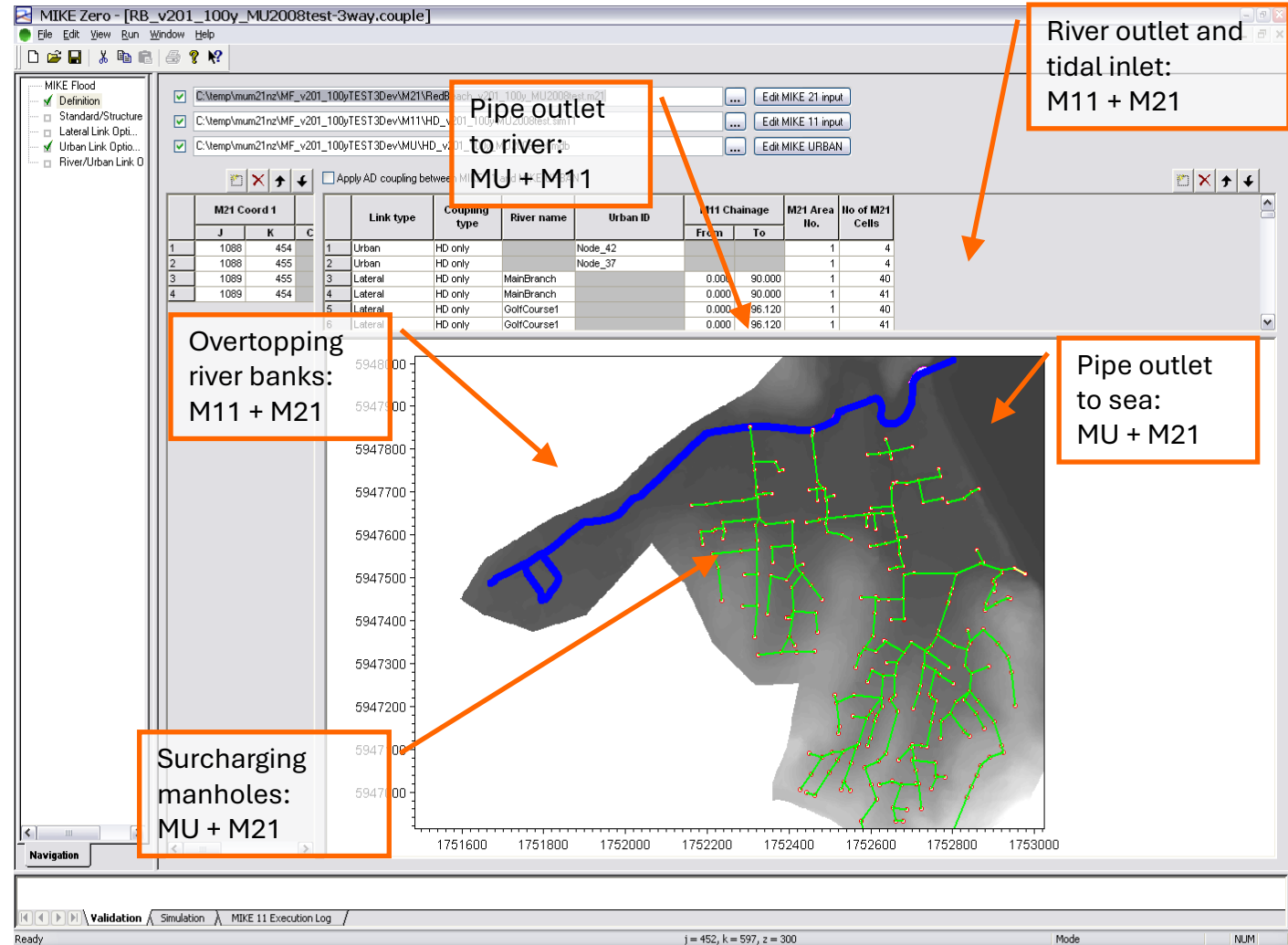
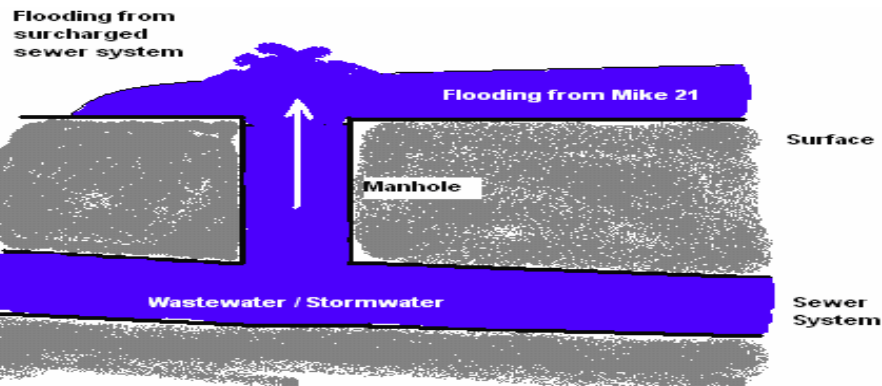
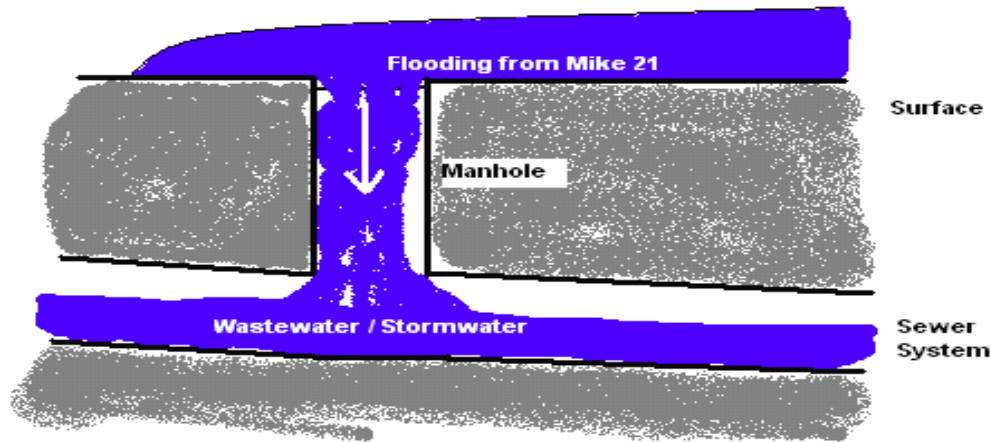
Urban



Basins



Coupled 1-2D model



3-Way Coupling

MIKE Zero - [RB_v201_100y_MU2008test-3way.couple]

MIKE Flood
 Definition
 Standard/Structure
 Lateral Link Opti...
 Urban Link Optio...
 River/Urban Link O

Apply AD coupling between...

M21 Coord 1	M21 Coord 2	Link type	Channeling	Flow direction	M21 Chainage	M21 Area No.	No of M21 Cells
J	K	C			From	To	
1	1088	454	1	Urban	HD only		4
2	1088	455	2	Urban	HD only		4
3	1089	455	3	Lateral	HD only	0.000 90.000	40
4	1089	454	4	Lateral	HD only	0.000 90.000	41
			5	Lateral	HD only	0.000 96.120	40
			6	Lateral	HD only	0.000 96.120	41

Pipe outlet to river: MU + M11

River outlet and tidal inlet: M11 + M21

Pipe outlet to sea: MU + M21

Overtopping river banks: M11 + M21

Surcharging manholes: MU + M21

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

CS MOUSE SWMMS Simulation Model Results View Tools Window Help

Nodes and Structures...
 Pipes and Canals...
 Weirs...
 Orifices / Gates...
 Stormwater Inlets
 Pumps...
 Valves...
 Emptying Storage Nodes...
 Catchments...
 Catchment Tools
 Runoff Models
 Boundary Conditions
 Repetitive Profiles
 2D Overland Flow...
 2D Overland Tools
 Couple nodes
 Un-couple nodes
 Show coupled 2D cells
 Show all coupled nodes
 Show ground level and DEM differences

MIKE FLOOD - [C:\temp\RB\MU\rb.mdb] (Base1)

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

MIKE URBAN - [C:\temp\RB\MU\rb.mdb] (Base1)

Concept OMI

1-D
River

Connection tool

3-D
Sea

2-D
Estuary

Graph tool

