

MIKE URBAN+

Guide to existing MIKE URBAN Users

Migration



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CONTENTS

1	Introduction	1
2	Release and License Information	1
2.1	Releases	1
3	Getting Started with MIKE URBAN+	
3.1	Open MIKE URBAN+ model and explore MIKE URBAN+ GUI	
3.2	Project Info: provides a general information on the project contents	
3.2.1	Find about editors functionality	
3.2.2	Editor Functionality	
3.3	Project info	
3.4	Boundary conditions	
3.4.1	Boundary Conditions Editor	
3.5	Result specification	
3.5.1	Result Files	
3.5.2	Network summary	
3.6	Simulation setup	
3.6.1	'Identification' box and function buttons	
3.6.2	'General' TAB	
3.6.3	Module TABS	
3.6.4	'Results' TAB	
3.7	Results	
3.7.1	Loading result files	
3.7.2	Results in the map	
3.7.3	Results TS Plot & table	
3.7.4	Results in Long profile	
3.7.5	Results in Bar-chart	
3.7.6	Results: LTS reports	
4	Import MIKE URBAN model to MIKE URBAN+	
4.1	Modules Overview	
4.2	Prerequisites	
4.3	File New	
4.3.1	Module Selection	
4.3.2	Coordinate System	
4.3.3	General settings Modules	
4.4	File Import	
4.5	Status after import	
4.6	MIKE URBAN+ unsupported features in first release	35





1 Introduction

MIKE URBAN+ is the new and future modelling platform for modelling all urban water systems. It is introduced as a full featured urban modelling package for modelling Water Distribution and Collection System. MIKE URBAN+ is the successor of the current MIKE URBAN.

The MIKE 2020 Release will include both MIKE URBAN+ and MIKE URBAN. MIKE URBAN 2020 will be the last release of MIKE URBAN.

The current document targets existing MIKE URBAN users with the aim of informing about the current contents and features of MIKE URBAN+ as well as outlining the main steps involved in migrating from MIKE URBAN to MIKE URBAN+.

2 Release and License Information

MIKE URBAN+ is our primary urban software product for sale with the MIKE URBAN+ Release 2019 and forward.

MIKE URBAN will be included with MIKE URBAN+ until the last release of MIKE URBAN 2020. New purchases of MIKE URBAN+ model licenses will include access to both MIKE URBAN+ and MIKE URBAN. The MIKE URBAN+ and MIKE URBAN can coexist on the PC and run simultaneously.

MIKE URBAN+ comes in two versions:

- MIKE URBAN+
- MIKE URBAN+ ArcGIS

The difference between the two version is that the MIKE URBAN+ ArcGIS includes license for ArcGIS Pro, ArcGIS and one seat for ArcGIS Online as well as installation files for ArcGIS Pro.

In both MIKE URBAN+ and MIKE URBAN+ ArcGIS, there is an ArcGIS integration option by which integration with ArcGIS Pro is possible. This integration requires a license for ArcGIS Pro.

Existing users of MIKE URBAN with a valid Service and Maintenance Agreement (SMA) will get access to MIKE URBAN+ ArcGIS version without additional fees.

2.1 Releases

MIKE URBAN+ will be released in two parts:

- the first release in May 2019, MIKE URBAN+ 2019 includes for water distribution and collection systems
- the second release in November 2019, MIKE URBAN+ 2020 includes:
 - o 2D Overland flood modelling
 - o Culvert Structures



- Sediment Transport
- Import of existing MIKE URBAN Scenarios
 Enhanced LTS functionality
- o Improved result presentation workflow



3 Getting Started with MIKE URBAN+

This chapter provides a quick introduction to MIKE URBAN+. MIKE URBAN+ supports both Collection System and Water Distribution modelling.

Examples files for both Collection System and Water Distribution is provided with the installation in both SI and US units.

In the following illustration of a Collection System model, Sirius is used as an example.

3.1 Open MIKE URBAN+ model and explore MIKE URBAN+ GUI

) the Px ·				MIKE URBAN+							(a) _ 0 X
File Map												\$
Q. Zoom + ⊕ Pan It Zoom to selection № Pan selection It Zoom ful extent ⊕ Refresh	Scale:	✓ Show compass ✓ Show scale bar	Selection method:	\mathcal{P}_{\Box} Select by shape * \mathcal{P}_{A} Special selections * \mathcal{P}_{0} Select by operation *		₽ Selection filtering	Selection manager	Selection to highlight		Profile manager 1 ⁹ Tracing forward 1 ⁹ Tracing backward		Distance 6
N	avigate				Selection				Profile a	ind tracing	Background / layers	Snapping _
Setup Layers and symbols Resu	ults											
Startup time = 8.29300260700813s												

1. Start MIKE URBAN+

Figure 3.1 Start screen

- 2. Open the model Sirius.mupp
 - a. File/Open

_	ile	¥	× [™] × <i>▼</i>		
₿.	New	Ctrl+N	New (Ctrl+N)	Show compass	Selection method:
(f)	Open	Ctrl+O	ear highlighted		*
	Recent projects		•	V Show scale bar	New selection 🔻
鐐	Global settings	Ctrl+F, Ctrl+G			
⊎	Install examples	Ctrl+F, Ctrl+E			
	About				
€	Exit	Alt+F4			

Figure 3.2 File | New



🚠 Open						×
← → × ↑ 📙 « Collec	tion Syst	em > Sirius	~ Ö	Search Siri	us	Q
Organize 🔻 New folder					≣ ≣ ▼ □	?
💻 This PC	^	Name	Date mo	dified	Туре	Size
🧊 3D Objects		🚠 Sirius.mupp	04-04-20	019 18:26	MIKE URBAN+	
E Desktop						
🗄 Documents						
🖶 Downloads	- 11					
👌 Music						
Pictures						
🙀 Videos						
🏪 OSDisk (C:)						
🐂 Libraries	~	<				>
File name	Sirius.	mupp	~	MIKE URE	AN+ project file(*.r	nu 🗸
				Орег	n Cance	el

b. Browse to the MIKE URBAN+ project file Sirius.mupp and click "Open"

Figure 3.3 Browse for MIKE URBAN+ project file, *.mupp

c. Review the application window

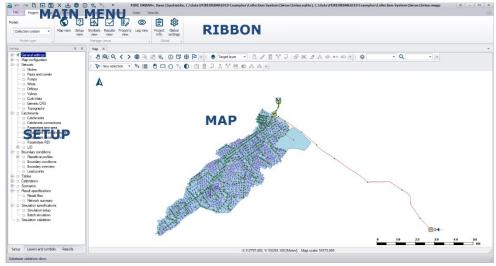


Figure 3.4 Overview application window

MAP: map view of the model with default symbology



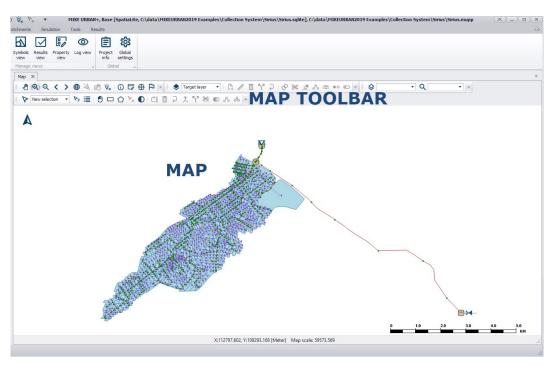


Figure 3.5 Map and toolbar window

The map is per default 'docked', but can be 'floated' (right 'click' + Float).

The map is brought to the front by clicking on the 'Map' tab)

Setup: One of three 'Table of contents':

- Setup: Access to model setup editors
- Layers and Symbols: Configuring map symbols
- **Results**: Result presentation

Context-sensitive contents – only editors associated with currently active modules are shown (controlled by 'Modules' editor)

Setup 4 X	Map Modules ×
🖃 🖬 General settings	Model type
Modules	Model: Collection system V Unit system: MU_CS_SI
□ Description □ Map configuration	
Coordinate system	Collection system
Background map	Conclude system
□ Network	V Hydrodynamic (HD)
Nodes	Real time control (RTC)
Pipes and canals	
···· Pumps	Long term statistics (LTS)
Weirs	Water quality (AD)
Orifices	
Curb inlets	Water quality (MIXE ECO Lab)
Generic CRS	
Topography	
Catchments	Rainfall runoff (RR)
Catchments	Stormwater runoff WQ (SWQ)
Catchment connections	Stormwater runon wo (swo)
Parameters time-area	Catchment discharge
Parameters kinematic wave	Catchment discharge WO
Parameters RDI	Containent und nige my
Boundary conditions	
Boundary conditions	
Boundary overview Load points	
Tables	
Calibrations	
III	



Figure 3.6 Modules selection

Logical workflow sequence, entries organised in modules and groups

Data validation: Green: all OK

Red: Some data is incomplete or incorrect

3.2 Project Info: provides a general information on the project contents

Simulation Tools	Results				
	view Project Global info settings Global				
Modules 🗙					
Collection system	Project information Project	X		_	
odynamic (HD)			amples \Collection System \Sirius \Sirius.mupp		
Real time control (RT	Connection info SpatiaLi	te, C:\data\MIKEURB/	AN2019 Examples \Collection System \Sirius \Sirius .sqlite		
ong term statistics (Analysis type		Special allarysis		
er quality (AD)	Runoff simulation				
Water quality (MIKE I					
Stormwater runoff W	Component informations				
nment discharge	The number of nodes	568	The number of patterns	1	
Catchment discharge	The number of pipes	596	Sum of user defined pipe length	65880.95	[m]
	The number of tanks	2	Sum of geometrical pipe length	76749.73	[m]
	The number of reservoirs	9	Sum of pipe volume (user defined pipe length)	209930.53	[m^3]
	The number of valves	0	Sum of pipe volume (geometrical pipe length)	204898.68	[m^3]
	The number of pumps	12		,	

Figure 3.7 Project information

3.2.1 Find about editors functionality

General features

A click on any group entry folds/unfolds a group.

A click on any low-level entry opens an editor and per default docks it as a tabbed document.

'Docked' editors are displayed one at a time. Any editor can be brought to the front by clicking on its tab.

When 'Floated', editors are displayed in a stack, with the active editor on top.

MIKE URBAN+ GUI with 'floating' editors:



ж																		
Q	Q	< > ⊕	🗟 🔊 🛱 🛈	☞ 🕀 P -	🔷 Tar	get laye	r • [1 / ō Y	Ç	\$ 8	< _ ^	● ● 0	• • •		•	Q	•	
New	selectio	n 🔹 🏷 💡		⊳ _× ● C: 🗊	いた	η 8	s 🛛 🖇	- o°o -										
4	ID Geome N D	ode type ameter	Flow regulation		95821.00 103061.6 node So and level [tom level [000976 Pipes a	56 [m] F nd canals ntification C202117		tion lo	From no To node	Ade C202117 2 C202128	03	······································			nsert		□ X
	Bi	asin geometry		✓ Edit		1	nk type	CRS	~		Enabled		200 poor					
							iameter	CK3	3		Length		168.5	[m]	1	167.08 [m]		
						н	eight		3	[m]	Upstream leve	9	-1.4	[m]		[m]		
						V	/idth		4.5	[m]	Downstream le	evel	-1.512	[m]		[m]		
	<					C	ross section	CRS_450x300	\sim	Edit	Slope			[%]	Calculate	:		
			ID V ALI	. ∨ Clei	ar 🗌	Т	opoID				Max dx			[m]				
		ID	X coordinate [m]	Y coordinate [m]	Node typ													
		C14150801	95821.0001220703	103061.600097656					_									
	-	C14150802 C14154801	95856.7000732422 95888.0001220703	103005.00012207 103468.100097656				ID N	ALL		 Clear 	s	how selected	Show	w data errors		, 0 selected	
		C15152001	96072.1000976563	103238.400085449			ID	From node	То	node	Enabled	Туре	Height (m)	V	Vidth [m]	Diameter [m]	Length (m)	Geom ^
	5	C15152401	96435.7000732422	103249.200073242	Manhole	▶ 1	C20211701	.1 C2021170	1 C	20212803	V	CRS	•	3	4.5		3 168	.5

Figure 3.8 Dialogs floating

MIKE URBAN+ GUI with all editors 'docked'. Only the active 'Catchment Connections' editor is visible:

Map Catchment co	onnections × Catch	ments				
Identification Catchment ID	0801	k		Insert Delete		
Location						
Node	Node ID	C14150801	📐			
 Entire link 	Link ID					
O Link chainage	Chainage start/end		[m]		[m]	
Catchment load allocat	tion					
Load type		Standard \checkmark				
Fraction of catchme	ent runoff	100	[%]			
Fraction of catchme	ent discharge	100	[%]			

		ID	~ All		~ 0	Clear	Show selected 🗌 Sh	ow data errors 1/86			
	ID	Catchment ID	Туре		Node ID	Link ID	Start chainage [m]	End chainage [m]	Load type	RR fraction [%]	PE fraction [%]
▶ 1	3453	S14150801	Node	•	C14150801				Standard ·	· 100	100
2	3454	S14151901	Node	•	C14150801				Standard	· 100	100
3	3455	S14152801	Node	•	C14150801				Standard ·	· 100	100
4	3456	S14150802	Node	•	C14150802				Standard	· 100	100
5	3457	S15150001	Node	•	C14150802				Standard ·	• 100	100

Figure 3.9 Dialogs docked



3.2.2 Editor Functionality

Error validation

ietup A X	Map Nodes ×
	Identification X 95821.0001220703 [m] Insert ID C14150801 Y 103061.600097656 [m] Delete
Coolinate system Background map X Network X Nodes	Geometry Cover Flow regulation Head loss Pressure node Soakaway Description
 Pipes and canals 	Node type Manhole V Ground level
Pumps	Diameter 1 [m] Bottom level 22.82 [m]
Orifices Valves	Basin geometry Cit
Curb inlets	
Topography Catchments	
Catchments	
Catchment connections Parameters time-area Parameters kinematic wave	
Parameters linear reservoir Parameters RDI	ID V ALL V Clear Show selected Show data errors 1/568 rows, 0 selected
🖈 🗉 LID	ID X coordinate [m] Y coordinate [m] Node type Diameter [m] Ground level [m] Bottom level [m] Basin geometry
Boundary conditions	▶ 1 C14150801 95821.0001220703 103061.600097656 Manhole ▼ 1 22.82
Repetitive profiles Boundary conditions	2 C14150802 95856.7000732422 103005.00012207 Manhole • 1 28.02 23.35
	2 C141E4001 0E000 0001200202 1004E0 100002EEE Marbala - 1 27.20 22.49

Figure 3.10 On-the-fly data validation

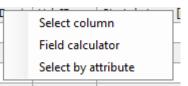
Filtering

Cato	itification	S14150801			k			Insert Delete				
Loc	ation											
(Node	Node ID				C1415080	1 📐					
() Entire	link Link ID					📐					
(🔵 Link d	ainage Chainage	e start/e	nd			[m]	[m]				
	Fraction o	catchment disclare	ge ALL			10 lear			53 rows, 0 sele	cte	1	
			Type		Node ID	Link ID	Start chainage [m]	End chainage [m]	Load type Standard	•	RR fraction [%]	PE fraction [%]
	ID	Catchment ID			044450051							100
	3453	S14150801	Node	•	C14150801					_		10
2	3453 3454	S14150801 S14151901	Node Node	•	C14150801				Standard	•	100	
2 3	3453	S14150801	Node Node Node	•					-	•		10
1 2 3 4 5	3453 3454 3455	S14150801 S14151901 S14152801	Node Node Node Node	•	C14150801 C14150801				Standard Standard	• •	100 100	10
3 4	3453 3454 3455 3456	S14150801 S14151901 S14152801 S14150802	Node Node Node Node	• •	C14150801 C14150801 C14150802				Standard Standard Standard	• •	100 100 100	10



Other functions







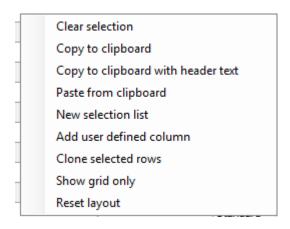


Figure 3.13 Grind functions (2)

3.3 Project info

Provides some basic information about project contents.

Image: Solution of the sector of the sect	
Modules X	
Collection system Project information	x
ystem Project File name C:\data\MIKEURBAN2019 Examplea\Collection System\Sirius\Sirius\mupp	
odynamic (HD) Connection info SpatiaLite, C:\data\MIKEURBAN2019 Examples\Collection System\Sirius\Si	
Real time control (RT Standard simulation Special analysis	
.ong term statistics (Analysis type	
r quality (AD) Runoff simulation	
Water quality (MIKE)	
fall runoff (RR)	
Stormwater runoff W Component informations	
nment discharge The number of nodes 568 The number of patterns 1	
Catchment discharge The number of pipes 596 Sum of user defined pipe length 65880.95 [m]	
The number of tanks 2 Sum of geometrical pipe length 76749.73 [m]	
The number of reservoirs 9 Sum of pipe volume (user defined pipe length) 209930.53 [m^]
The number of valves 0 Sum of pipe volume (geometrical pipe length) 204898.68 [m ^3]
The number of pumps 12	

Figure 3.14 Project Info



3.4 Boundary conditions

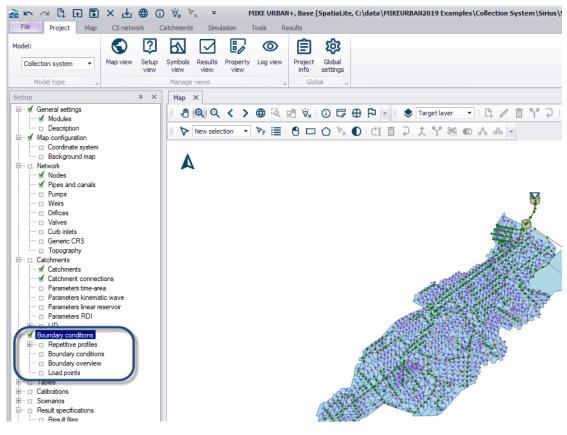


Figure 3.15 Boundary Conditions

3.4.1 Boundary Conditions Editor

'Identification' box

BC 'passport': Identifier (name), Type, Activity

Serves all types of BC.



Map	Boundary condit	ions 💥										
	tification											
						Insert						
I	D Rainfall_1_year		Туре	Rainfall Rainfall	~							
6	Apply Catchmer	nt Loads			Delete							
Spatia	al extent Temporal	/ariation Limite	ed interval	e per area De	escription							
	_			Catchment discharg	e per PE							
() All			Load point discharge Load point discharge								
(🔿 List			Inflow to node								
				 Inflow to link Inflow from result fil 	e							
(🔵 Individual			Outlet water level Exfiltration from not								
	Geo-coded			Exfiltration from link								
	Geo-coded	1: Domestic W	W	Stormwater loads(su Stormwater loads(R								
(🔵 Data source locatio	n X		[m] Y	[m]							
(Grid distributed we	ghts										
(○ Grid distributed wei	ghts										
(-			weeksted . D ober		c/7 0ltd					
(Grid distributed we	ghts V ALL		Clear Sho	w selected Shov	w data errors	6/7 rows, 0 selected					
		-		Clear Sho	Apply Boundary	w data errors Load type	6/7 rows, 0 selected Connection type	List Name				
1	ID	V ALL Boundary type			Apply Boundary							
1 2	ID	V ALL Boundary type Outlet water lev	vel 🔻	Group No	Apply Boundary	Load type	Connection type					
	ID SiriusRiver_Node_13	V ALL Boundary type Outlet water lev Outlet water lev	vel • vel •	Group No Outlet Levels	Apply Boundary	Load type	Connection type					
2	ID SiriusRiver_Node_13 SiriusRiver_Node_14	V ALL Boundary type Outlet water lev Outlet water lev Outlet water lev	vel • vel •	Group No Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual - Individual -					
2 3	ID SiriusRiver_Node_13 SiriusRiver_Node_14 SiriusRiver_Node_15	V ALL Boundary type Outlet water lev Outlet water lev Outlet water lev	vel • vel • vel • vel •	Group No Outlet Levels Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual • Individual • Individual •					
2 3 4	ID SiriusRiver_Node_13 SiriusRiver_Node_14 SiriusRiver_Node_15 SiriusRiver_Node_16	ALL Boundary type Outlet water lev Outlet water lev Outlet water lev Outlet water lev Load point disch	vel • vel • vel • vel • harge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual • Individual • Individual •					

Figure 3.16 Boundary Conditions



'Spatial extent' TAB

Linking of the actual BC with the model

- All entire model
- List (selection): reference to a sub-set of model elements, defined in a 'selection manager' (in MU Classic: '*.mus' file)
- Individual: reference to individual model element
- Geo-coded: applies for load points associated with individual model elements
- Data source location: applies for meteorological stations (e.g. rain gauges)
- Grid-distributed weights: applies for rainfall supplied as RADAR grid data

'Temporal variation' TAB

Мар	Boundary cond	itions ×												-
Ide	ntification					_	_							
	ID Rainfall_1_year		Type	Rainfall	~	Insert								
	Apply Catchm					Delete								
	Appiy Catchm	ent Loads				Delete								
Spat	ial extent Tempora	Variation Limite	d interval	Scaling factor	Distributed Weights	Description								
0	Constant		Cydic		Time	e series								
V.	alue	[mm/h]	Value		[mm/h] File n	ame Sirius_	JDF_rainfal							
	Gradual start up		Pattern		Time :	series ID	F=1							
			rauem											
Fi Fi	om	[mm/h]			Data	type Rainfi	all Intensity							
I II	me	60 [sec]												
┝	ID	~ ALL		V Clear	Show selected S	how data errors	6/7 rows, 0 selected							
	ID	✓ ALL Boundary type		Clear	Show selected S	how data errors	6/7 rows, 0 selected	List Name	Load category	X coordinate [m]	Y coordinate [m]	Catchment ID	Node ID	Link ID
1		Boundary type				Load type	Connection type		Load category 1: Domestic WW		Y coordinate [m]	Catchment ID	Node ID Node_13	Link ID
1 2	ID	Boundary type 3 Outlet water lev	el 🕶	Group No	Apply Boundary	Load type	Connection type	List Name			Y coordinate [m]	Catchment ID		Link ID
-	ID SiriusRiver_Node_1	Boundary type 3 Outlet water lev 4 Outlet water lev	el • el •	Group No Outlet Levels	Apply Boundary	Load type	Connection type Individual Individual	List Name	1: Domestic WW	•	Y coordinate [m]	Catchment ID	Node_13	Link ID
2	ID SiriusRiver_Node_11 SiriusRiver_Node_14	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev	ଧ • ଧ • ଧ •	Group No Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual Individual	List Name	1: Domestic WW 1: Domestic WW	•	Y coordinate [m]	Catchment ID	Node_13 Node_14	Link ID
2 3	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1:	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev	el • ୧୦୦୦ ୧୦୦୦ ୧୦୦୦ ୧୦୦୦	Group No Outlet Levels Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual Individual Individual Individual Individual Individual	List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	•	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1:	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 5 Outlet water lev 7 Load point disch	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 5 Outlet water lev 7 Load point disch	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID
2 3 4 5 1 6	ID SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: SiriusRiver_Node_1: Wastewate Rainfal_1_yea	Boundary type 3 Outlet water lev 4 Outlet water lev 5 Outlet water lev 6 Outlet water lev 7 Load point disch r Rainfall	el • el • el • arge •	Group No Outlet Levels Outlet Levels Outlet Levels Outlet Levels Network Loads Catchment Loads	Apply Boundary	Load type	Connection type Individual Individual Individual Geo-coded All	List Name List Name	1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW 1: Domestic WW	• • • • •	Y coordinate [m]	Catchment ID	Node_13 Node_14 Node_15	Link ID

Figure 3.17 Temporal Variations

Provides information about quantities and temporal variation

- Constant
- Cyclic
- Time series

'Limited interval' TAB

Per default, a BC applies during entire simulation period. Activating 'Limited interval' restricts the BCs activity for the specified time interval only



Map Boundary conditions 🗙	
Identification ID Rainfall_1_year Type I Apply Catchment Loads	Rainfall ~ Delete
Spatial extent Temporal Variation Limited interval	Scaling factor Distributed Weights Description
Use limited validity interval Start: 01-01-1900	End: 01-01-2100 🗐 v 00:00:00 主
Figure 3.18 Limited interval	

Scaling factor 'TAB'

'Scaling factor' other than '1' scales the specified BC quantity up or down.

Map Boundary conditions X				
Identification				Treast
ID Rainfall_1_year	Туре	Rainfall	~	Insert
Apply Catchment Loads				Delete
			~	
Spatial extent Temporal Variation L	imited interval	Scaling factor	Distributed Weights	Description
Scale factor	1 [0]			

Figure 3.19 Scaling factor

'Distribute weights' TAB

Contains user-specified or automatically computed 'weighting factors', i.e. contributions of RADAR grid cells to each catchment in the model. Note that the sum of weights for each catchment must be one. Data validation automatically controls that the data are correct.



Мар	Boundary conditions	х					
-Identifica ID ☑ A	Rainfall_1_year	ads	Туре	Rainfall	~	Inse	
Spatial exi	tent Temporal Variat	ion Limite	ed interval	Scaling factor _IDF_rainfall.dfs	ted Weights	Description F=1	
*	Catchment ID	I	J	Weight			
				All		~	Compute

Figure 3.20 Distributed Weights

'Description' TAB

Contains user-specified description of the actual BC. Good as a reminder!

Map Bou	ndary conditions 🛛 🗙					
Identification ID Rainf	fall_1_year Catchment Loads	Туре	Rainfall	~	Insert Delete	
Spatial extent	Temporal Variation	Limited interval	Scaling factor	Distributed Weights	Description	
Descriptio	n					

Figure 3.21 Boundary Conditions - Description



3.5 Result specification

3.5.1 Result Files

Map Result files	×																Ŧ
Identification																	
	lt_Surface_runoff	Mo	del type	Catchments		\sim		Copy									
Content type Surfa	ce runoff	~ For	mat	.res1d		\sim		Delete									
Save all RR Items	SWQ AD Items SV	VQ ST Items	LID Item	ns CD Items CD AD	Items												
Basic items			Addition	nal items													
Total runoff				Actual rainfall													^
Net rainfal				Actual evaporation													
				Total infiltration													
			- E1	Total Loss													
			D F	RDI: Overland flow													
			E F	RDI: Interflow routed from	m secon	d reserv	oir										
			🗆 F	RDI: Base flow													
			_	RDI: Interflow and base fl	low												
				RDI: Rootzone storage													
				RDI: Surface storage													
			L F	RDI: Groundwater depth													¥
ID	✓ ALL	~	Clear	Show selected	Shov	/ data e	rrors	1/6 rows, 0 selected	Inser	t Delete	Сору	1/1 rows, 0 sel	ected				
			Result	files			_							selections			
ID		Model type		ntent type	F	ormat				ID	Location type	Subset ty	pe	Individual type	Selection ID	Individual ID	Grid poi
▶1 De	fault_Surface_runoff		_		÷ .n	es 1d	•		▶ 1	CATCHMENT_RR	Save all	 Selection 	-	Node 🝷			All grid p
2	Default_RDII					es 1d	_										
3	Default_LIDs		_			es 1d	_										
	Catchment_discharge				_	es 1d	_										
				chment discharge quality	_	es 1d	_										
6	Default_Network_HD	Network	+ Hydr	rodynamic	re	es 1d	-										

Figure 3.22 Result files

'Identification' box

Identification						Treat
ID	Default_Surface_runoff		Model type	Catchments	\sim	Insert
		_				Сору
Content type	Surface runoff	\sim	Format	.res1d	\sim	Delete
						Delete

Figure 3.23 Identification box

Contains basic information about the result file:

- ID: ResultFileID is a part of the unique result file name, which is created as: SimulationID+ScenarioID+ResultFileID+format extension
- Model Type: Makes a distinction between 'Catchments' model and 'Network' model. This distinction controls possible contents types and formats.
- Content type: Each of the above model types can generate various contents. Result file
 may contain just one type of contents (keeps various types of results in separate files), or
 the contents may be mixed (puts various types or results in one result files)
- Format: various types or results may be saved in various formats: res1d and dfs0

Default result files

For each model type, MIKE URBAN+ database contains several definitions for default result file contents for each type of simulation.

Simulation results are distinguished as 'basic items' and 'additional items'

Default content may be user-modified to include or exclude specific result items.



Default result files contain results for the entire model.

List of accessible default result file definitions adjusts dynamically, depending on the activate modules.

Map Result files ×			Ŧ
Identification			
	Model type Catchments Insert Format .res1d Delete		
Save all RR Items SWQ AD Items SWQ ST Items Basic items	ns LLD Items CD Items CD AD Items Additural Items		
☑ Total runoff ☑ Net rainfall	Actual ranfal Actual evaporation Total Loss Additional		Î
Basic Items	RDI: Overland flow RDI: Therflow rouled from second reservoir RDI: Base flow RDI: Interflow and base flow RDI: Interflow and base flow RDI: RDI: Roottone stroage RDI: Scottone stroage RDI: Scottone stroage RDI: Scottone stroage		v
ID V ALL V	Clear Clear Chest Copy Clear Show selected Show data errors 1/6 rows, 0 selected Insert Delete Copy 1/1 rows, 0 selected Result files Result select	tions	
ID Model type		vidual type Selection ID	Individual ID Grid poi
Default Surface runoff Catchments			All grid g
2 Default_RDII Catchments			
3 Default_LIDs Catchments	nts 🕶 LIDs 🔹 🔹 .resid 📼		
4 Default_Catchment_discharge Catchments	nts • Catchment discharge • .res1d •	the set f	
5 Default_Catchment_discharge_quality Catchments	nts Catchment discharge , resid , nts Catchment discharge quality , resid , Spatial ex	xtent f	ΟΓ
6 Default_Network_HD Network	Hydrodynamic Ins1d		
List of defa	ault results files saving	results	

Figure 3.24 Result files

User-specified result files: Contents type

The default list of result files can be extended to include any number of result file definitions, distinguished by the format, contents type and geographical extensions.

User-specified result files may include mixed-contents from the same model type. E.g., a mixedcontent result file may include both runoff and surface pollutant results in one file. Of course, user-specified result file may be limited to include only one type of content.



Мар	Result	files	x										
Identificati	ion												
ID		Defau	ult_Surface_runoff	F	Мо	del type	Catchments		\sim	Insert			
Content ty	ne s	Surfa	ce runoff	~	For	ormat .res1d			~	Сору			
content cy	Surface ranom						10310		·	Delete			
		_											
	RR Iten	ns	SWQ AD Items	SWQ ST I	tems	LID Items	CD Items	CD AD Items					
-Basic items -						Additiona	items						
🗸 Totalı	runoff					Ac	tual rainfall						
🗸 Net ra	ainfall					Ac	tual evaporatio	n					
						🗌 То	tal infiltration						
						То	tal Loss						
							I: Overland flo	w					
							I: Interflow ro	uted from second	l reser	voir			
							I: Base flow						
							I: Interflow an	d base flow					
							I: Rootzone st	orage					
							I: Surface stor	age					
							I: Groundwate	r depth					
							I: Infiltration t	o groundwater					
							I: Overland fire	st reservoir flow	from fi	rst to second reservoir			
							I: Interflow fire	st reservoir flow	from fi	rst to second reservoir			
							I: Capillary flux	x					
							I: Overland fire	st reservoir stora	ige				
							I: Overland se	cond reservoir st	orage				
							I: Lower base	flow					
						Sn 🗌	owStorage						
							I: Snow ZoneT	emperature					
							I: Snow ZoneR	lainfall					
							I: Snow ZoneV	VaterRetention					
							I: Snow ZoneM	1eltingCoefficient					
							I: Snow ZoneA	-					
							I: Snow ZoneM						
							neArea: InitialL						
							M: Excess Rair						
							/ Runoff [Impe						
							/ Runoff [Impe						
							/ Runoff [Pervi						
							KW Runoff [PerviousMedium] KW Runoff [PerviousLarge]						
1						I I KW	/ Runoff [Pervi	ouslargel					

Figure 3.25 Additional Results

Various result items are accessible through currently active TABS. The TABs activity depends on the selected model type, contents type and active modules.

User-specified result file: Location

All specified results will be saved only as the specified locations



Map Result files X	
Identification	
ID Result file 1 Model type Catchments	
Content type Mixed catchment contents V Format ,res1d V	
Content type: Protect cardinant contents * Fornicit intestant * Delete	
Location RR Items SWQ AD Items SWQ ST Items LID Items CD Items CD AD Items	
O Save all	
Save subset Selection outlets	
O Save individual	
Save within polygon Insert Delete 0/0 rows, 0 selected	
Draw on map X [m] Y [m]	
× fuil i fuil	
ID V ALL V Clear Show selected Show data errors 1/7 rows, 0 selected Inser	A MARKET AND A MARKET
Result files	Result selectio
ID Model type Content type Format	ID Location type Subset type Individual type Selection Sel 1 Save subset Sel 1 Save subset Sel 1 Save subset Selection Node
I Result_file_1 Catchments Mixed catchment contents . resid . 2 Default_Surface_runoff Catchments • Surface runoff • .	Sel_1 Save subset Selection Node
3 Default_Surface_funor Catchments • Surface runor • .resito •	
4 Default_LIDS Catchments v LIDS v .resid v	
5 Default_Catchment_discharge Catchments • Catchment discharge • .res1d •	
5 Default_Catchment_discharge catchment discharge res1d 6 Default_Catchment_discharge_quality Catchment discharge quality res1d	

Figure 3.26 Result files location

Saving result may be specified at:

- Save All: saves the wanted results at all model elements
- Save subset: saves the wanted results for model elements included in the chosen selection
- Save individual: saves the wanted results for the specified individual model element
- Save within polygon: saves the wanted results for the model elements located within a polygon drawn on the map

'Location' for one result file may be defined by any number of location definitions. Overlapping location definitions are ignored (the results are saved only once).

3.5.2 Network summary

Any number of summary contents can be specified and associated with network model simulations



Мар	Netv	vork summar	y 🗙							
Iden	tification						Insert			
IC) Summ	_1					Delete			
Tab	les with mi	in, max and a	accumulated values fo	or						
6	Nodes		Grid points,	water levels						
Ð	🗹 Weirs a	and orifices	Grid points,	discharge						
E	Pumps		🗹 Links, veloci	ity						
E	🗹 Links ar	nd structures	5							
-Sum [mary of in Links ar	nput data	s							
Use [to reduce su election	mmary tables							
[Link sel	ection								
		ID	✓ ALL	~ C	lear 🗌	Show selected	Show data	errors 1/1 rows, 0 sele	ected	
	ID	Nodes	Weirs & orifices	Pumps	Links	Grid points, water l	evels G	rid points, discharges	Links, velocity	Link
▶ 1	Summ_1	V	V		V			7	V	

Figure 3.27 Network summary



3.6 Simulation setup

3.6.1 'Identification' box and function buttons

Мар	Simulation setup	х					
-Ider ID	ntification Sirius_RR	_and_HD		Active project	Insert	Сору	
S	cenario Base		\sim		Delete	RUN	
	ral Catchments H ation Type Catchments Rainfall-Runoff (RR)		Simulation Period	1/01/2019 00:00:00)		
	Catchment Discharge Catchment Discharge CD Water Quality Network (HD)	ity (SWQ) ≘ (CD)	Duration 1 End 02	00	0 [dddd][hh	Boundary Info.][mm][ss] Set max. time	
	Pollution Transport (Description				
	ID	~ ALL	∽ Clea	ar 🗌 Show se	elected 🗌 Sho	w data errors 1/4 rows, 0 selecte	ed
	ID	Scenario	Active Project	Catchments	Runoff(RR)	Stormwater runoff WQ (SWQ)	Catchment Discharg
▶ 1	Sirius_RR_and_HD	Base	~	2	V	Г	Г
2	Sirius_CDS_1_yearHD	Base	Г	Г		Γ	Г
3	Sirius_CDS_1_yearRR	Base	Г	v	N	Г	Г
4	DWF network	Base					

Figure 3.28 Simulation setup

- ID: Unique simulation ID, used in the result file name
- Scenario: Scenario to be used for the current simulation. In some cases, model setup based on selections (e.g. requested result outputs, boundary conditions, etc.) may conflict with the contents of the selected scenario
- Active project: Automatically set to the last simulation setup executed.
- Insert button: Inserts a new simulation setup
- Copy button: copies a specified simulation setup (increased productivity)
- Delete button: deletes actual simulation setup record
- RUN button: Executes the actual simulation setup record

Access to various functionalities related to executing simulations, under 'Simulations'

File	Project	Map CS ne	twork Catchr	ments Simulatio	n Tools	Res	ults			
~	Ē	E.	14	Set active simulati	on:	Þ	C _A	Ľ ₀	Ê	串
Simulation setup	Batch simulation	CS engine configuration	Parallelization configuration	Sirius_RR		n active Iulation	View log	View summary	Model and result report	Boundary overview
Setu	p "	Configu	ration 🔺		Exe	cution		4	Reporting 🔒	Boundaries 🦼





3.6.2 'General' TAB

Мар	Simula	ation setup	х					
Ide	entification							
I	D	Sirius_RR	_and_HD		Active project	Insert	Сору	
	Scenario	Base		~		Delete	RUN	
	Sechario	base						
Gen	eral Catch	ments HD) Results					
Simu	lation Type			-Simulation Period				
	Catchments	5						
	✓ Rainfall-F	Runoff (RR)		Start 01	1/01/2019 00:00:00)	■▼ Boundary Info.	
	Storm	Water Quali	ity (SWQ)	Duration 1		0 [dddd][hh		
	Catchme	nt Discharge	e (CD)	Duration			Set max. time	
	CD Wa	ater Quality		End 02	2/01/2019 00:00:00)		
	Network (H	D)						
	Long-Ter	m Simulation	n (LTS)					
		Transport (A		Description				
	MIKE E	ECO Lab (WO	2)					
		ID	~ ALL	~ Clea	ar Show s	elected Sho	w data errors 1/4 rows, 0 selecte	d
	ID		Scenario	Active Project	Catchments	Runoff(RR)	Stormwater runoff WQ (SWQ)	Catchment Discharg
▶ 1	Sirius_F	R_and_HD	Base	V	2	V	Г	Г
2	Sirius_CDS	_1_yearHD	Base			Г	Г	
3	Sirius_CDS	_1_yearRR	Base	Г	~	v	Г	Г
4	DV	/F_network	Base	Γ				

Figure 3.30 Simulation setup

- Simulation Type: Choice of modules to be included in the simulation. Accessible modules depend on module activation, model setup data and module dependency
- Simulation Period: start and end time for the simulation, limited by the active boundary conditions (note some exceptions!)
- Description: user-specified reminder information about the actual simulation
- Boundary Info: provides overview of the extent of the active boundary conditions
- Set max. time: sets the maximum extent of the simulation (the earliest possible start time and the latest possible end time), based on active boundary conditions

3.6.3 Module TABS

- Catchments TAB: Contains data for any catchment simulation (runoff, SQW, catchment discharge)
- HD TAB: Contains data for network hydraulics simulation setup
- AD and WQ: Contains pollution transport and WQ specific data for network simulation setup
- LTS: Contains LTS-specific simulation setup data



ID Scenario	Sirius_F Base	RR_and_H	HD	~	Active project	Insert Delete	Copy RUN	
eneral Catd	hments	HD Re	esults					
me Step								
Surface runoff Time-Area Kin. wave UHM	models	60 [se	c] c]	Linear reservoir Wet weather Dry weather	60 [sec] 300 [sec]	RDII — Catchmer	nt discharge	4 [h] 600 [sec]
DII hot start -								
Apply								
dditional Param	neters							

Figure 3.31 Simulation setup

'Results' TAB 3.6.4

Мар	Simulation setup	×								
Iden	tification									
ID	Sirius_RR_a	and_HD		Active project	Insert	t Copy				
					Delete	RUN				
So	enario Base	\sim			Delete	KUN				
Gener	al Catchments HD	Results								
Outpu	it folder									
🔘 🔊 Sa	ave results in default fold	er								
O Sa	ave results in this folder									
-										
Collec	tion System Summary									
						 ✓ Edit : 	summary			
				Pro	ject outputs				Result files	,
	ID	Туре	Format	Save every		Default save period	Start saving	End saving	Indu	ide
▶1	Default_Surface_runoff	Surface runoff	.res1d	60	seconds 🔹	N	01-01-2019 00:00:	00 02-01-2019 12:00:00		
2	Default_Network_HD	Hydrodynamic	.res1d	60	seconds -	₹	01-01-2019 00:00:	00 02-01-2019 12:00:00	Induc	ie all
									Ed	it
									Rem	ove
									Use de peri	
									pen	Ju -
	ID	~ ALL	✓ Clear	Show se	ected S	how data errors 1/4 ro	ws, 0 selected			
L	10		Ciedi				may o selected	Simulation	setun	
	ID	Scenario Active	e Project	Catchments	Runoff(RR)	Stormwater runoff W	Q (SWQ) Catd	ment Discharge (CD)	CD Water quality	Network(HD)
▶1	Sirius_RR_and_HD	Base		V	V	Г	-	Г	Г	N
2	Sirius_CDS_1_yearHD	Base	Г	Г	Г	Г		Γ	Г	2

Figure 3.32 Results specifications

- Output folder: Default (= Project folder) or user-specified location Summary: reference to a network summary definition •
- •
- Result files: List of selected result files. Initially, the output list include default result files for • all modules included in the simulation. This list can be modified by deleting the unwanted result files and including user-specified result files.



3.7 Results

Result presentation supports 'ordinary' time series result presentation, as well as LTS statistics.

3.7.1 Loading result files

Per default, results from current simulations are automatically loaded for the presentation. This feature can be toggled ON/OFF in 'General Settings':

File Project Map	CS netwo	ork (Catchments	Simu	lation	Tools R	esults		
Model:	\bigcirc	?	5		đ	0	Ê	繱	
Collection system	Map view	Setup view	Symbols view	Results view	Property view	Log view	Project info	Global settipos	
Model type 🔒			Manage	views			Glo	bal 🛛 🖌	
Setup		д х	Map 2	x					
General settings Modules Description				ହ ହ			r	0 6	
 Map configuration Coordinate system Background map Network Network Pipes and canals Pumps Weirs Orifices Valves Curb inlets Generic CRS Topography Catchments Catchments Catchments Parameters time-are Parameters kinema 	ea tic wave				Show Auto-fo Auto-fo Report ma 200	ngly editor s	tyle undo buffe es after sim s when op t per table j	ulation finish en project preview	ed

Results are accessible through 'Result View'.



Results				щ	x
Add	file		Refresh		
🖃 🗆 Siriu	us_CDS_1_ye	arRRBas	eDefault_	Surfa	~
=	Catchment To	otal Runo	ff		
=	Catchment Ne	et Rainfal	I		
🚊 🛛 🗖 Siriu	us_RR_and_H	DBaseD	efault_Su	face	
=	Catchment To	otal Runo	ff		
	Catchment Ne				
🚊 🗠 📋 Siriu	us_RR_and_H	IDBaseD	efault_Ne	twor	
	Node Water I	_evel			
	Node Flood				
	Node Depth				
	Node Water r		ical Level		
	Link Water Le				
—	Link Discharg				
	Link Flow velo	ocity			
	Link Flood				
	Link Depth				
	Link Watermi				
	Link Absolute	Discharg	je		
	Link Filling				
	Link Pressure				
	Weir Water le				
	Weir Discharg	je			
	Weir Flood				
	Weir Depth Weir Water m	ious Critic	l l aval		
	Weir Water m				
—	Pump Water I		ye		
	Pump Discha				
	Pump Flood	ige			
	Pump Depth				
	Pump Water	minus Crit	ical Level		
	Pump Absolut				
	Orifice Water		ge		
	Orifice Discha				
	Orifice Flood				
	Orifice Depth				
	Orifice Water		tical Leve		
1 1	Orifice Absolu				
	us_CDS_1_ye		-	Netv	
	Node Water I		-		
	Node Flood				
	Node Depth				
	Node Water r	ninus Criti	ical Level		
	Link Water Le				
=	Link Discharg	e			
=	Link Flow velo	ocity			
=	Link Flood				
	Link Depth				4
<				>	_
Setup	Layers and sy	/mbols	Results		
					-

Figure 3.34 Results selection



3.7.2 Results in the map

- Animation •
- Minimum •
- Maximum •
- Average •
- Single time step LTS results •
- •

Result Items		_ D X
	Animation Minimum Maximum Average Single time step item Recurrence interval for Max. discharge exceedance of Manning discharge	
	Edit existing	~
< >	Edit alias OK Cancel	

Figure 3.35 Results presentation



3.7.3 Results TS Plot & table

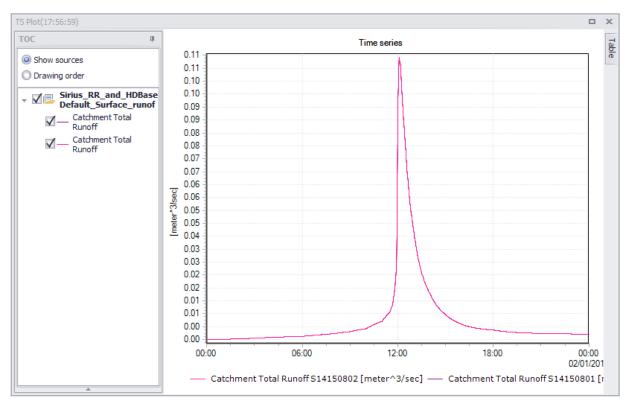


Figure 3.36 Time series plot



	D		All	~			Search	Search Clear	Search Clear
_	ID	Туре		Node Wate.					
•	C14150801			22.851572					
	C14150802			23.368041					
	C14154801			23.510080					
	C15152001			21.724218					
				22.389865					
	C15152401 C15153101								
				20.846149					
	C15154301		-	19.902170					
	C15155001			22.885961					
	C15155101			22.595947					
	C15155401			19.366319					
	C15155701		-	22.697895					
	C15156101			22.628671					
	C15156501			18.845485					
	C15156602			18.378391					
	C15156701			21.057430					
	C15157401		-	22.801229					
	C15157501	Node	2	22.405593					
	C15157701	Node	2	18.092987					
	C15158201	Node	2	22.991365					
	C15158301	Node	2	23.080783					
	C15158703	Node	2	17.960773					
✓	58 of 568 rec Statistics	Node -3.44 23.1 8.66	rius_RR_a Wate 358014 510080 529198 0.5384		efa	9	ult_Network_H	ult_Network_HD.res1d	ult_Network_HD.res1d
	Overall sta	Node	e Wate						
Þ	Min	-4.10	088314	_					
	ID	PS_T	o_WWTP						
	Time	01-0	1-2019						
	Max	28.3	81422						
	ID	C14	150802						





3.7.4 Results in Long profile

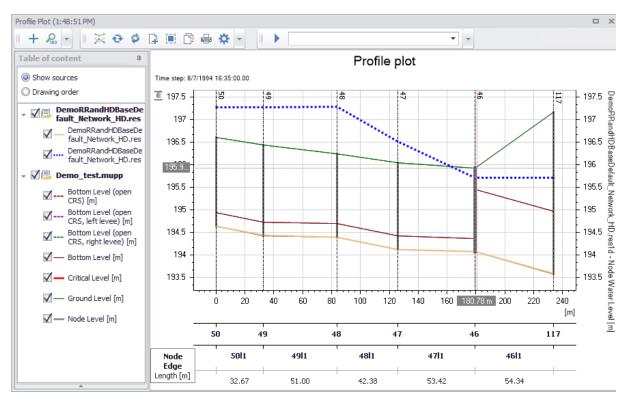


Figure 3.38 Longitudinal profile and results

3.7.5 Results in Bar-chart

Used for LTS chronological results (annual and monthly statistics)

3.7.6 Results: LTS reports

Used for reporting LTS statistics results in tabular form.



4 Import MIKE URBAN model to MIKE URBAN+

A step-by-step description is provided on how to import existing models into MIKE URBAN+.

The first step is to open MIKE URBAN+ and then follow the steps described in the following.

4.1 Modules Overview

A modules overview of MIKE URBAN+ is provided in the figure below

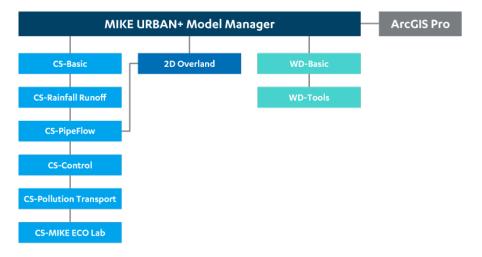


Figure 4.1 MIKE URBAN+ module overview

The MIKE URBAN+ supports in its first version the MIKE 1D and DHI EPANET hydraulic engines. The 2D Overland module is included in the MIKE URBAN+ 2020 release and the SWMM5 is planned to be added to the CS-Basic module in a later release.

4.2 Prerequisites

As the first step, before importing existing MIKE URBAN models to MIKE URBAN+, the MIKE URBAN model needs to be updated to MIKE URBAN 2020 version. This is the case for both MIKE URBAN Water Distribution, MIKE URBAN Collection System and Urban flood models.

4.3 File | New

Under File you have various options available:

- New (project)
- Open (an existing project)
- Recent projects,
- Global Settings (i.e. chose language)
- Install Examples



- About
- Exit (application)

Chose File | New to create a new project.

		🛃 🌐 🛈 🛱 x	⊳× ±		
₿.	New	Ctrl+ New	(Ctrl+N)	🗹 Show compass	► Selectio
ſt	Open	Ctrl+O	ear highlighted	Show scale bar	News
	Recent projects	÷.		N. Show scale bai	THEW S
鐐	Global settings	Ctrl+F, Ctrl+G		4	
⊎	Install examples	Ctrl+F, Ctrl+E			
	About				
€	Exit	Alt+F4			

Figure 4.2 File | New

4.3.1 Module Selection

In the Module Selection tab, you have the following options:

- Model type: Water Distribution or Collection System
- Unit system:
 - Selection of unit system for the model, SI or US.
- Database type: Two options available
 - SQLite (installed with MIKE URBAN+)
 - PostGIS (installed separately please follow the installation guide)
- Database setting: File path for model database
- Project setting: Project file (*.mupp)



New module setup Module selection	MODE		×
Coordinate system	Model type Unit system	Collection system V MU_CS_SI V	
Description	Database type Database type	SQLite (single file)	
	Database setting File path	C:\data\TEMP\TEST.sqlite]
	Project setting Project file	C:\data\TEMP\TEST.mupp	
			OK Cancel

Figure 4.3 Selection of module, unit and database

4.3.2 Coordinate System

At the Coordinate System tab, the local coordinate projection can be set or it is possible to choose to use the projection set to the projection for the MIKE URBAN being imported or another MIKE URBAN.

New module setup	p		×
Module selection	Coordinate sys	tem	
Coordinate	Projection	Local Coordinates \checkmark	
system		Use projection from model	
Description			_
		OK	Cancel

Figure 4.4 Selection of projection or use from existing model (to be imported or another model)



4.3.3 General settings | Modules

In the General settings, Modules, the different modules available for Collection System or Water Distribution can be activated for the model to get the complete overview of the data groups available.

Modules			• •			
Model type						
Model: Collection system \checkmark	Unit system:	MU_CS_SI	\checkmark			
Collection system						
Hydrodynamic (HD)						
Real time control (RTC)						
✓ Long term statistics (LTS)						
☑ Water quality (AD)						
Water quality (MIKE ECO Lab)						
Rainfall runoff (RR)						
Stormwater runoff WQ (SWQ)						
Catchment discharge						
☑ Catchment discharge WQ						
gure 4.5 Modules selection for the proje	et Can ha taggla	d on/off only time				

4.4 File | Import

The File | Import provides a quick access to import existing models:

5	Import	•	5	Import MU classic model (mdb)	Ctrl+l, Ctrl+M
G	Export	×	6	Import MU classic model (gdb)	Ctrl+l, Ctrl+G
	Recent projects	۲	5	Import EPANET model	Ctrl+I, Ctrl+E

Figure 4.6 Fast import options of existing models

- Import MU Classic model (mdb) requires that MIKE URBAN is installed.
- Import MU Classic model (gdb) does not require that MIKE URBAN is installed.
- Import EPANET model just import

These imports have been developed to make it is easy for users to import existing MIKE URBAN models. If customised imports are required, then the general Import and export found under Tools tab can be used.

When clicking on i.e. 'Import MU Classic model (mdb)', the dialog below appears for selecting the MIKE URBAN.



📸 Import MDB						×
\leftarrow \rightarrow \checkmark \uparrow \square « CollectionSystemMOUSE \Rightarrow Demo			~ Ō	Search Demo		Ą
Organize 🔻 New folder					•	2
😻 Dropbox	^	Name	^		Date m	odified
ConeDrive		TS_DB			14-11-2	2018 16:17
Chebrive		🛃 Demo.mdb			21-09-2	2018 12:04
🗥 OneDrive - DHI	н.					
💻 This PC						
🧊 3D Objects						
🔜 Desktop						
🖆 Documents						
🕂 Downloads						
👌 Music						
	۷	<				>
File name: Demo.mdb			\sim	mdb files (*.mdb)		\sim
				Open	Cano	el

Figure 4.7 Browser for selecting MIKE URBAN+ model

The import process starts after clicking Open.

After import of the MIKE URBAN model, then it could look like this.

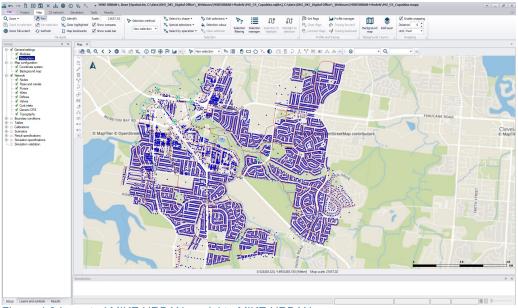


Figure 4.8 Imported MIKE URBAN model to MIKE URBAN+

At the right side in the setup tree, data has been grouped and instant data validation is performed. If there are any errors in the data, a red cross will appear. If there are no errors in the data, a green check mark or no marker will be displayed.

4.5 Status after import

All features in Water Distribution except from Water Hammer is supported in MIKE URBAN+, so all models that run in MIKE URBAN 2019 or EPANET 2.0 should be imported into MIKE URBAN+ without data errors and ready to run.



For Collection System and 2D Urban Flood models, it is expected that most running MIKE URBAN 2019 models based on either MOUSE or MIKE 1D will be running in MIKE URBAN+ MIKE 1D with the exception of models including features listed in 4.6.

Collection System models based on MIKE URBAN SWMM5 cannot be imported in MIKE URBAN+ yet.



4.6 MIKE URBAN+ unsupported features in first release

In Table 4.1, the features which are not supported in MIKE URBAN+ are listed.

Feature	Status			
SWMM5	Not supported - Expected in later release.			
Water Hammer	Not supported in MIKE URBAN+.			
MOUSE UWC (User Written	If MOUSE UWC has been applied, this cannot			
Control)	be transferred to MIKE 1D. Those UWC			
	controls needs to be recoded into MIKE SDK.			
	The MIKE 1D is in general much more open for			
	user control than MOUSE.			
MOUSE Storage Nodes	Not supported in MIKE URBAN+.			
Special feature: MOUSE PCS	Not supported in MIKE 1D. Expected to be			
	developed later.			
Special feature: Pump Emergency	Not supported in MIKE 1D. Expected to be			
Storage (.adp file)	developed later.			
MIKE 1D – RTC	Imports existing models using RTC. However,			
	if some Actions have been reused, then they			
	have to be added manually as individual			
	Actions. This is an improvement of how			
	Actions are handled in the model with unique			
	ids, but it is impossible to update the model			
	automatically.			
MIKE 1D - SWQ	SWQ is brand new with a new concept for			
	flexible definitions of different land uses etc.			
	Models having used the previous concepts in			
	SRQ and SWQ needs to be converted			
	manually. The data amount that needs to be			
	converted is limited.			

Table 4.1 Overview of features have limited support in MIKE URBAN+

