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smile consult software suite

Running the Marina Example Projects

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1 Running the example projects

Marina comes along with a bundle of demo projects. Each of the project consists of a steering file with the extension „.xml“ e. g. Current2D.xml and a number of different input files for different problems.

INPUT FILES	
Function	***Example***
steering file	Current2D.xml or CurrentHeat2D.xml
domain (FE-mesh)	system.dat (text file – Ticad-Ascii file) or system.jbf (binary file - janet binary file)
boundary conditions	rndwerte.baw or watertemprndwerte.baw
initial conditions	StartWaterLevel.jbf maxerosion.dat sediment.dat heatergStart.bin
meteorology conditions	wind.dat

At least the following files have to be available in order to start a simulation:

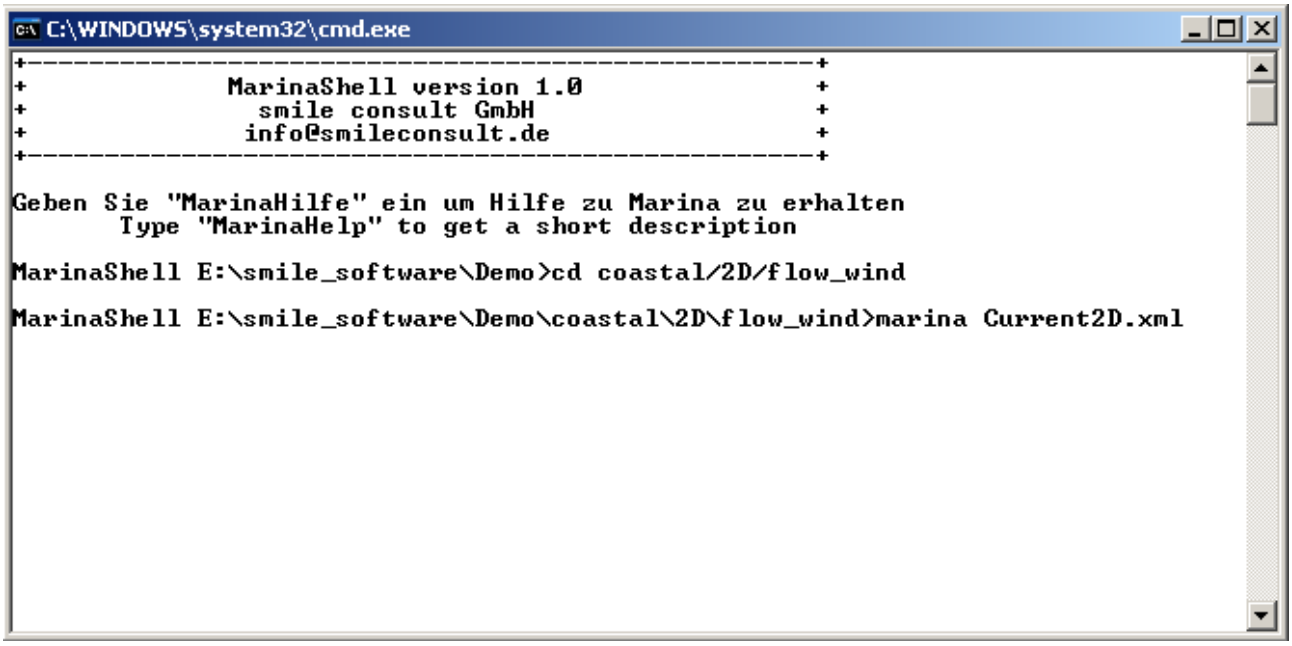
- steering file Current2D.xml
- domain (FE-mesh) system.dat (text file) or system.jbf (binary file)
- boundary conditions rndwerte.baw (ASCII-file)

If no grain size, no maximum erosion depth or no bottom friction are in the input files specified, the following assumptions are made:

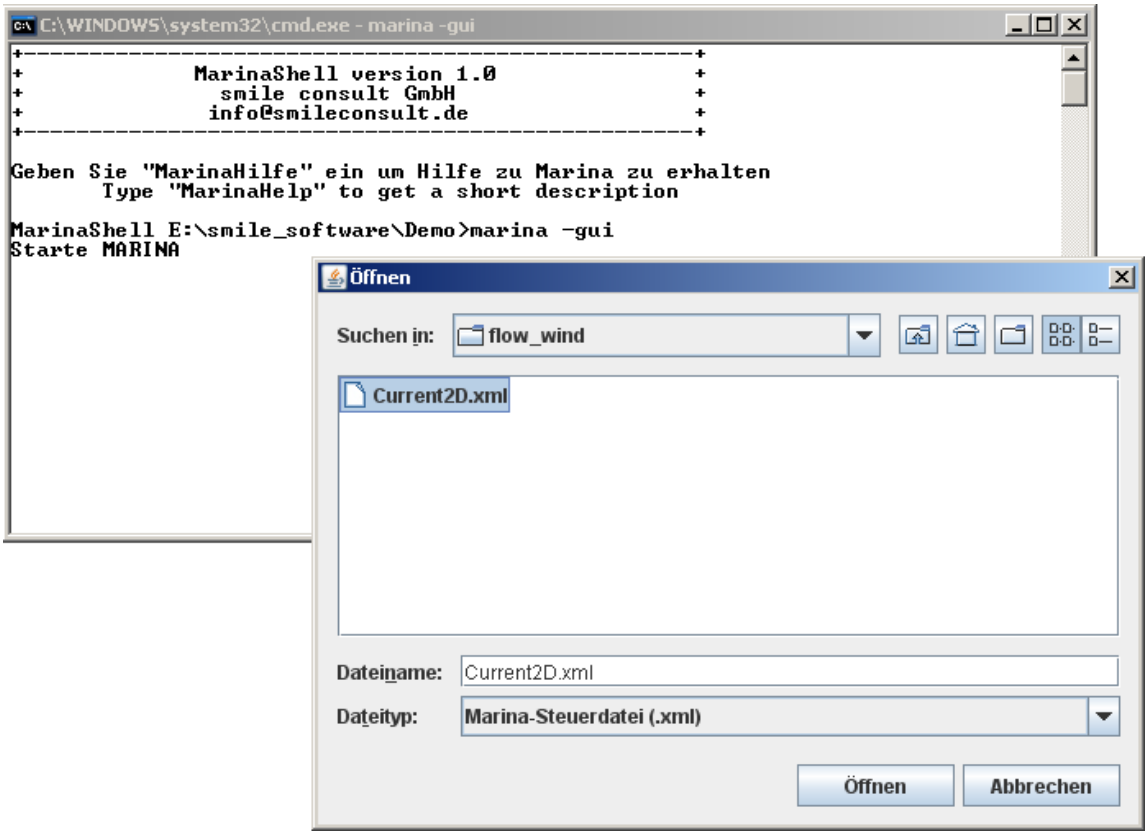
- grain size d50 = 0.42 mm
- maximum erosion depth = 100 m
- bottom friction k_{st} = 48 $m^{1/3}/s$ (Manning-Strickler)

The simulation will be started by using a special terminal. Via the batch file “marina_shell.bat” the terminal can be open. Now, you browse to the directory path, where the project files are stored. It is possible to change the directory by standard procedure or by entering the command “marina -gui”.

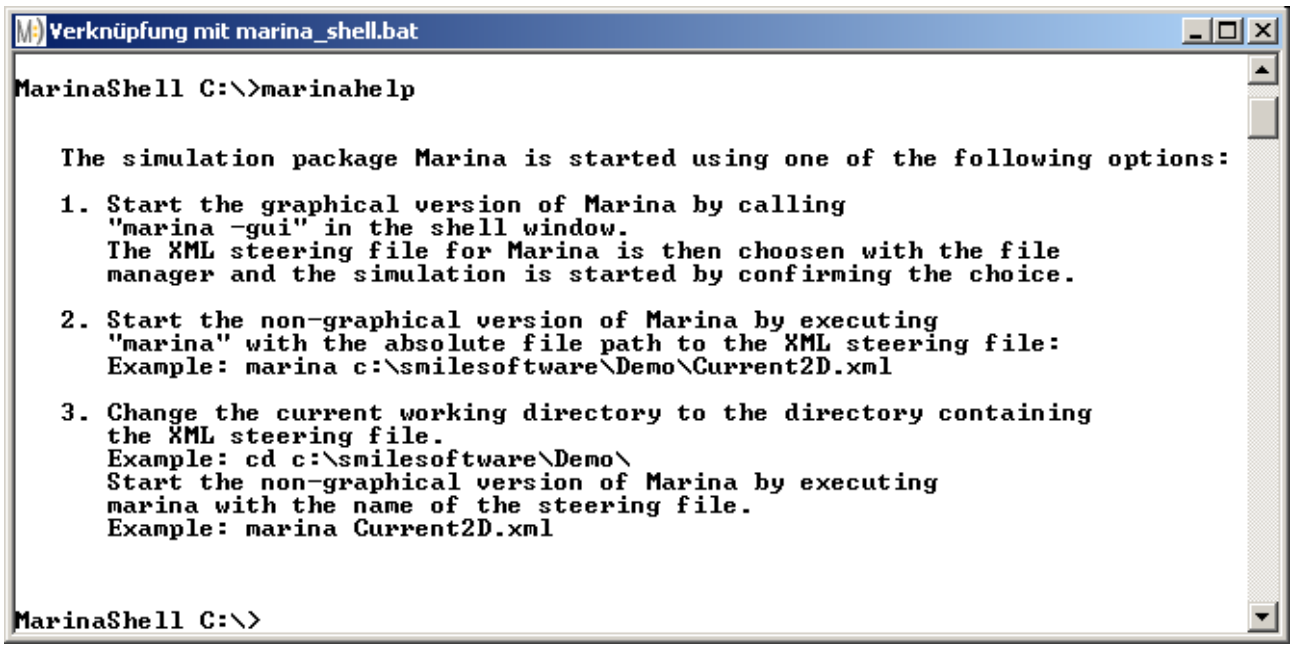
With the command “marina”, followed by the name of the steering file e. g. marina Current2D.xml , the simulation starts after pressing “enter”.



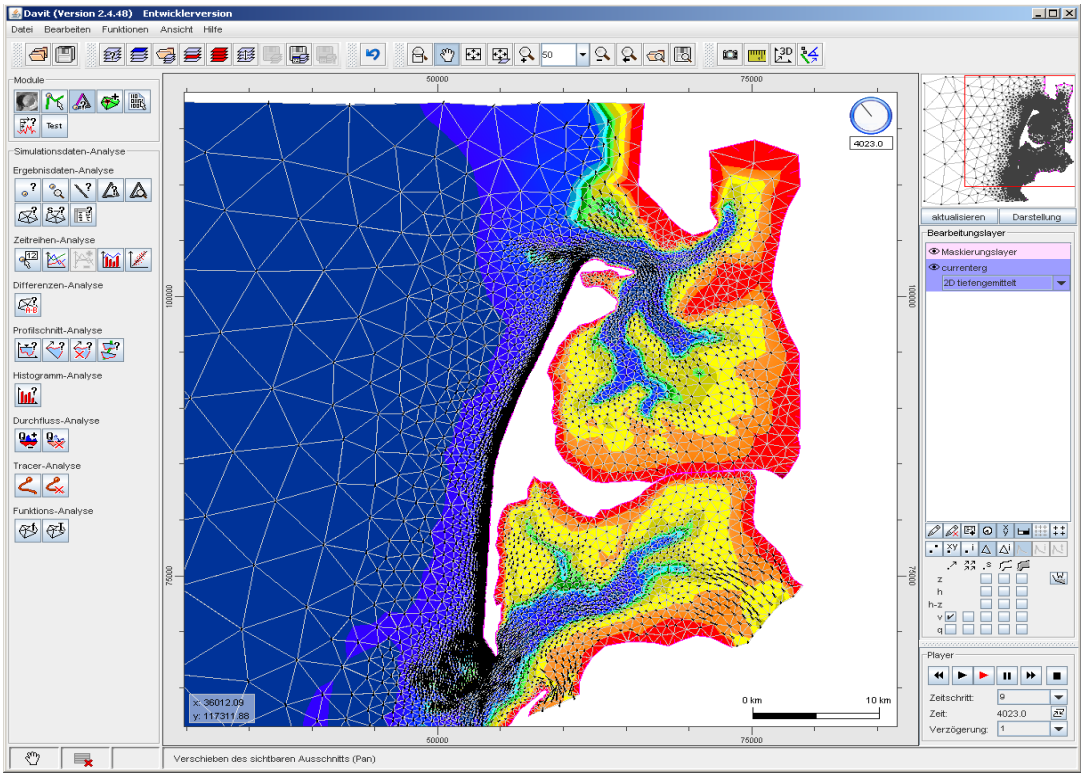
It is also possible to use a graphical user interface to select the steering file. Therefore, enter the command "`marina -gui`" in the marina shell terminal. A dialogue window appears. With the aid of this dialogue window it is also possible to choose the desired xml-file (steering file).



By entering the command "`marinahelp`" you get an overview about the different options to start a simulation.



The generated result file (e. g. `currenterg.bin`) can be visualized and analyzed by using the postprocessor Davit, as presented in the following figure.



1.1 Examples for 2-dimensional flow

1.1.1 Tidal Current and Wind

2-D	*Tidal Current and Wind*
ⓘ	This example considers the tidal current with an influence of wind.
🗁	`coastal/2D/flow_wind`
🖫	`Current2D.xml` (steering file) `system.jbf` (binary file - contains the mesh) `rndwerte.baw` (boundary conditions, steering the bc via ASCII-file) `StartWaterLevel.jbf` (initial condition) `wind.dat` (meteorology condition)

1.1.2 Waves and Wind

2-D	*Waves and Wind*
ⓘ	This example considers coastal waves (using the hyperbolic wave model) with an influence of wind.
🗁	`coastal/2D/wave_wind`
🖫	`WaveHyp.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `waverandn.dat` (boundary conditions, steering the bc via text-file) `wind.dat` (meteorology condition)

1.1.3 Flow and Groundwater

2-D	***Flow and Groundwater***
ⓘ	This example considers the flow in riverine systems and the influence of groundwater.
🗁	`river/2D/flow_groundwater`
🖫	`CurrentGroundWater2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `groundrndwerte.baw` (boundary condition) `rndwerte.baw` (boundary condition) `currentergStart.bin` (initial condition) `startGroundWaterLevel.dat` (initial condition) `impLayer.dat` (impermeable layer depth)

1.1.4 Flow, Sediment Transport and Wind

2-D	***Flow, Sediment Transport and Wind***
ⓘ	This example considers the flow in riverine systems, the sediment transport and the influence of wind.
🗁	`river/2D/flow_sediment`
🖫	`CurrentSediment2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `currentergStart.bin` (initial condition) `sediment.dat` (grain size) `maxerosion.dat` (maximum erosion depth) `wind.dat` (meteorology condition)

1.1.5 Tidal Current, Coastal Waves and Wind

2-D	*Tidal Current, Coastal Waves and Wind*
ⓘ	This example considers the tidal current, the coastal waves and an influence of wind.
🗁	`coastal/2D/flow_wave_wind`
💾	`WaveHypCurrent2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `waverandn.dat` (boundary condition) `currentergStart.bin` (initial condition) `wind.dat` (meteorology condition)

1.1.6 Tidal Current, Sediment Transport and Wind

2-D	*Tidal Current, Sediment Transport and Wind*
ⓘ	This example considers the tidal current, the sediment transport and the influence of wind.
🗁	`coastal/2D/flow_sediment_wind`
💾	`CurrentSediment2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `maxerosion.dat` (maximum erosion depth) `sediment.dat` (grain size) `wind.dat` (meteorology condition)

1.1.7 Tidal Current, Salt Transport and Wind

2-D	***Tidal Current, Salt Transport and Wind***
ⓘ	This example considers the tidal current, the salt transport and the influence of wind.
🗁	`coastal/2D/flow_salt_wind`
🖫	`CurrentSalt2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `saltrndwerte.baw` (boundary condition) `currentergStart.bin` (initial condition) `wind.dat` (meteorology condition)

1.1.8 Tidal Current, Heat Transport and Wind

2-D	***Tidal Current, Heat Transport and Wind***
ⓘ	This example considers the tidal current, the heat transport and the influence of wind.
🗁	`coastal/2D/flow_heat_wind`
🖫	`CurrentHeat2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `watertemprndwerte.baw` (boundary condition) `currentergStart.bin` (initial condition) `heatergStart.bin` (initial condition) `wind.dat` (meteorology condition)

1.1.9 Tidal Current, Coastal Waves, Sediment Transport and Wind

2-D	***Tidal Current, Coastal Waves, Sediment Transport and Wind***
ⓘ	This example considers the tidal current, the coastal waves, sediment transport and the influence of wind.
🗁	`coastal/2D/flow_wave_sediment_wind`
💾	`WaveHypCurrent2D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `waverandn.dat` (boundary condition) `currentergStart.bin` (initial condition) `sediment.dat` (grain size) `maxerosion.dat` (maximum erosion depth) `wind.dat` (meteorology condition)

1.2 Example for 3-dimensional flow

1.2.1 Tidal Current and Wind

3-D	***Tidal Current and Wind***
ⓘ	This example considers the tidal current and the influence of wind. To consider a 3-dimensional flow depth layers are defined in the steering file `Current3D.xml`.
🗁	`coastal/3D/flow_wind`
💾	`Current3D.xml` (steering file) `system.dat` (text file - contains the FE-mesh) `rndwerte.baw` (boundary condition) `current3dergStart.bin` (initial condition) `wind.dat` (meteorology condition)