CoDeS

Welcome to CoDeS!

Coastal Design and Support tools (CoDeS tools) are a set of integrated and interactive tools, aimed to support engineers when designing coastal engineering solutions and with their communication towards clients and stakeholders. CoDeS tools integrate relatively simple engineering tools that provide quick insights for a range of different disciplines. This helps to arrive at promising solutions during early design stages. An easy to use Graphical User Interface (GUI) makes them accessible for a range of users (e.g. engineers, managers, reviewers), providing opportunities for interactive design sessions. CoDeS tools are under continuous development through a Joint Industry Project between Deltares, Witteveen+Bos and Royal HaskoningDHV.

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This wiki-page provides a background of CoDeS, the User Manual, a disclaimer and the acknowledgements. An overview of the total contents can be found below.

Contents

An overview of the contents of this wiki-page is provided below:

Video Guide

A video introduction to CoDeS tools, including short applications, is presented below:

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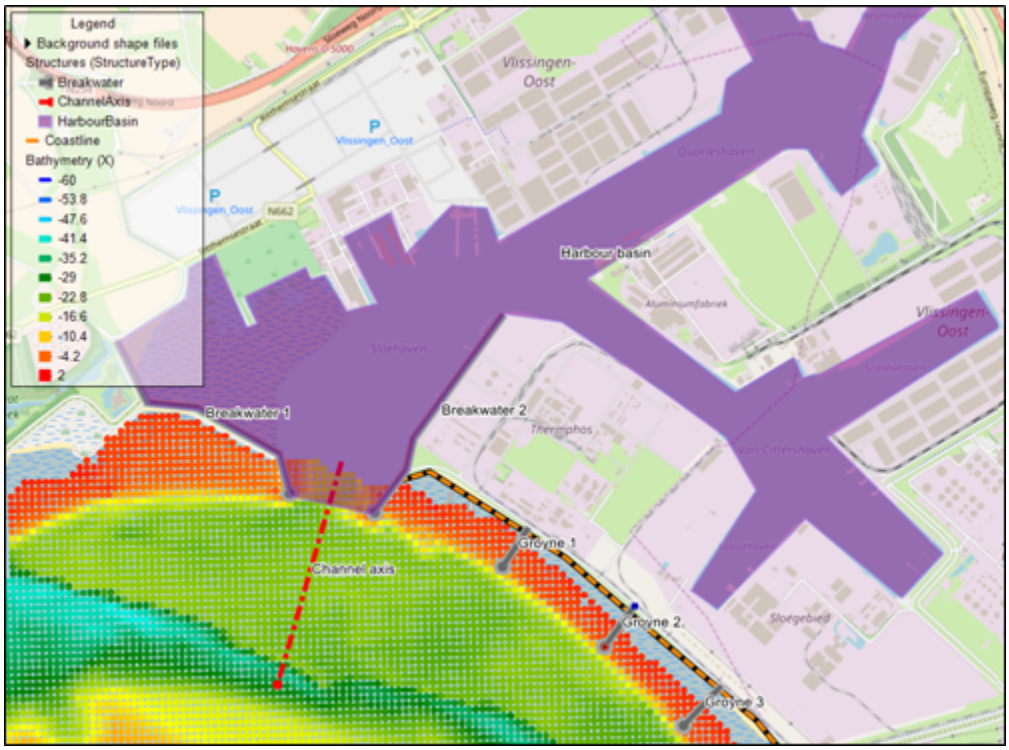
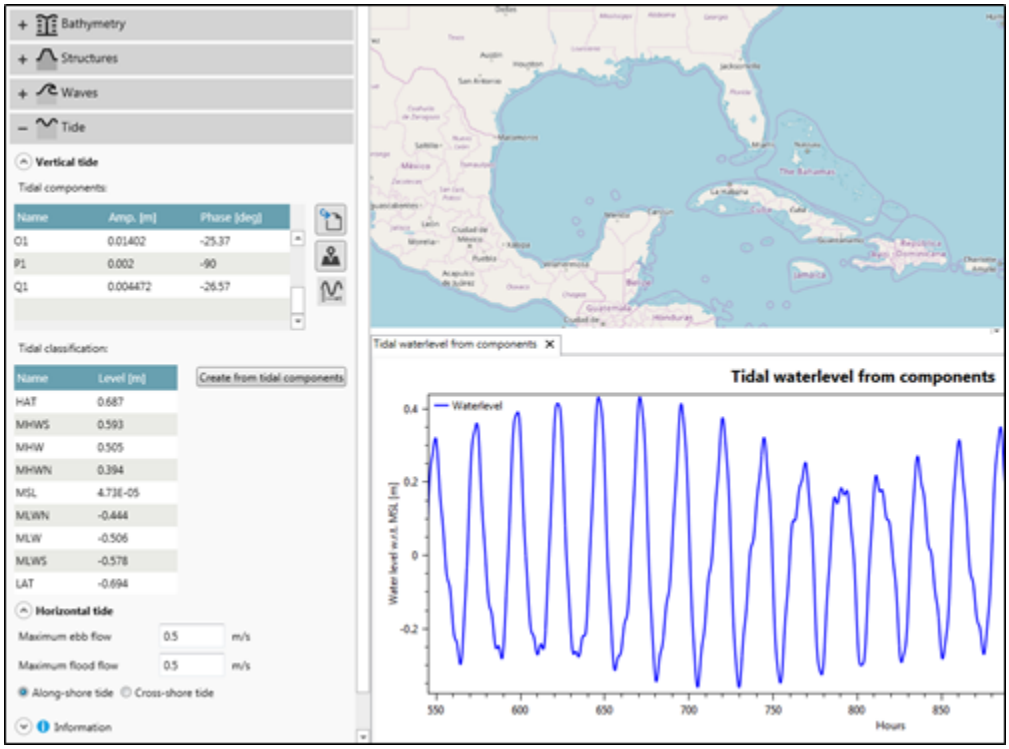
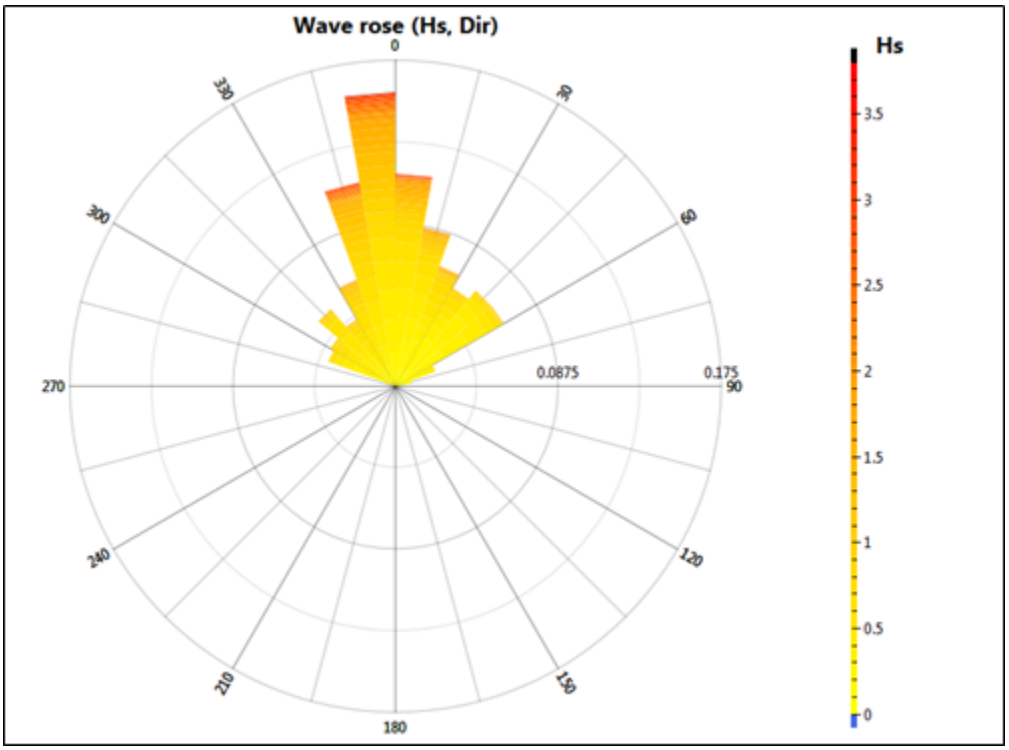
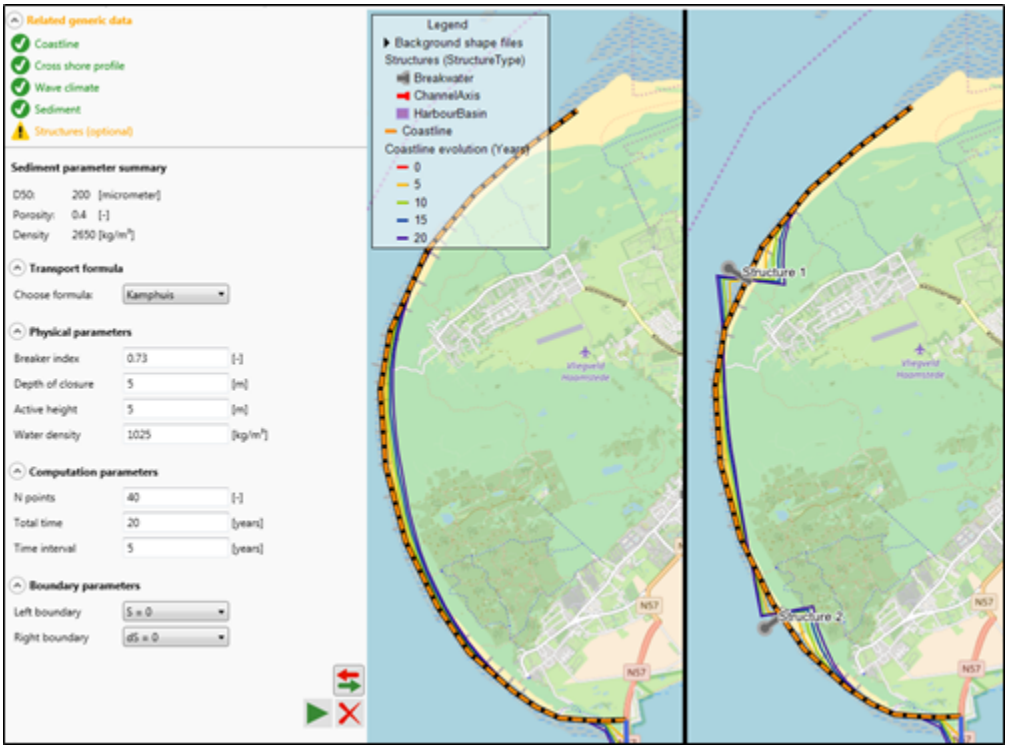
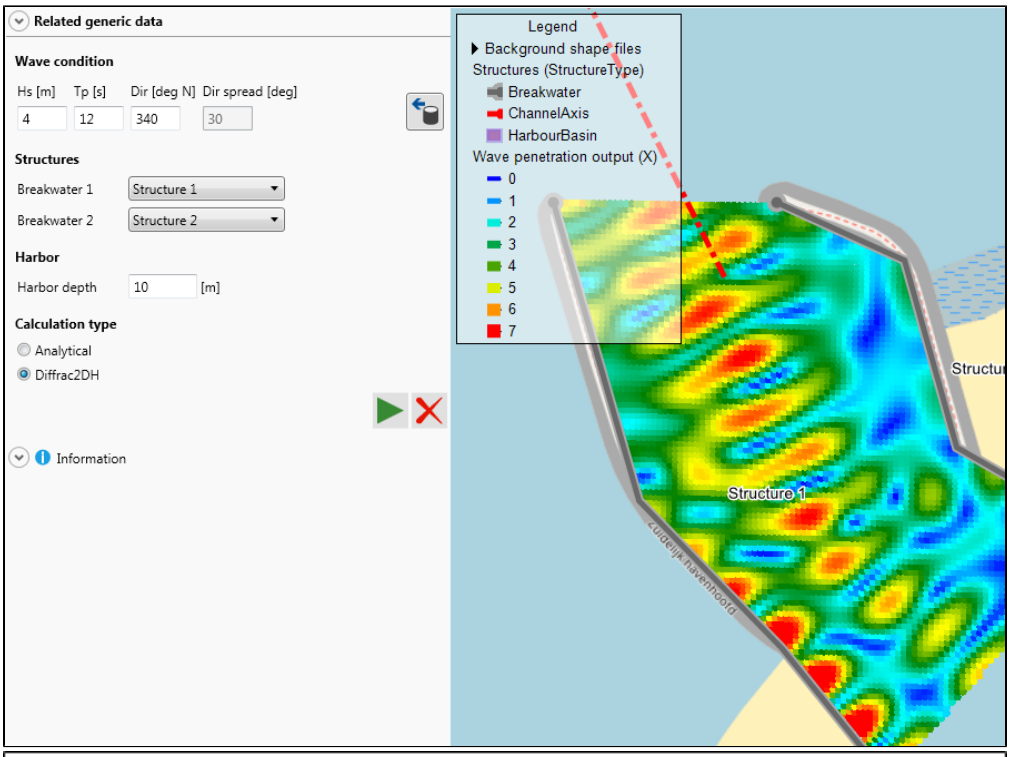
Visual impression

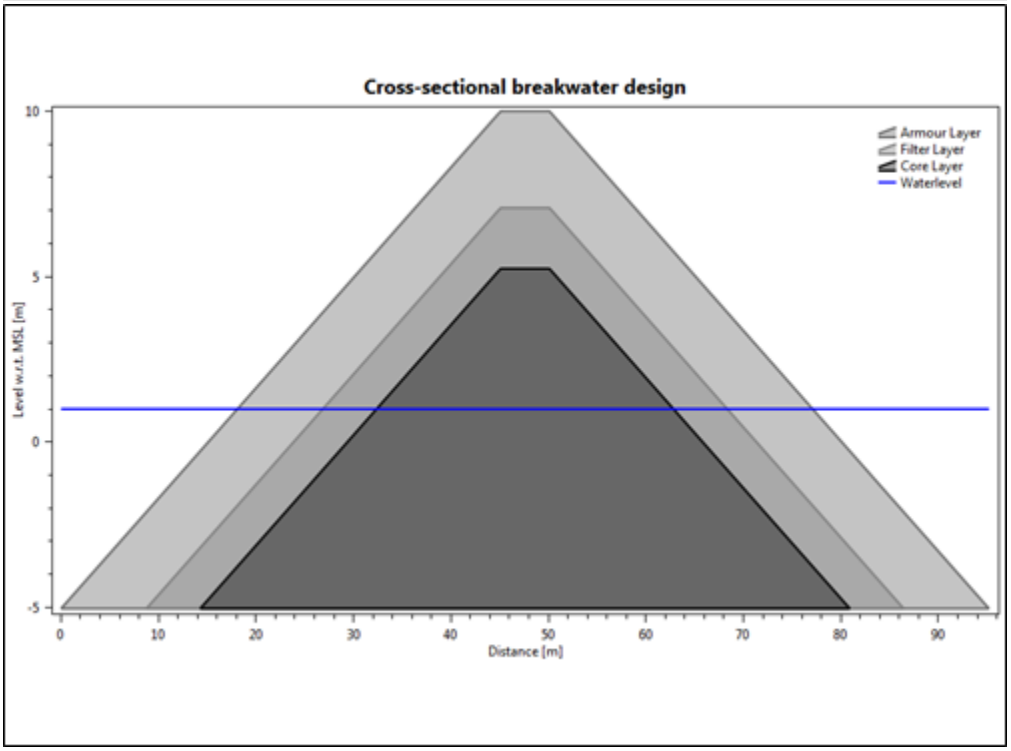

Legend
Background shape files
Structures (StructureType)
Breakwater
ChannelAxis
HarbourBasin
Coastline
Bathymetry (X)
-60
-53.8
-47.6
-41.4
-35.2
-29
-22.8
-16.6
-10.4
-4.2
2
Harbour basin
Breakwater 1
Breakwater 2
Groyne 1
Groyne 2
Groyne 3
Channel axis
Vlissingen-Oost

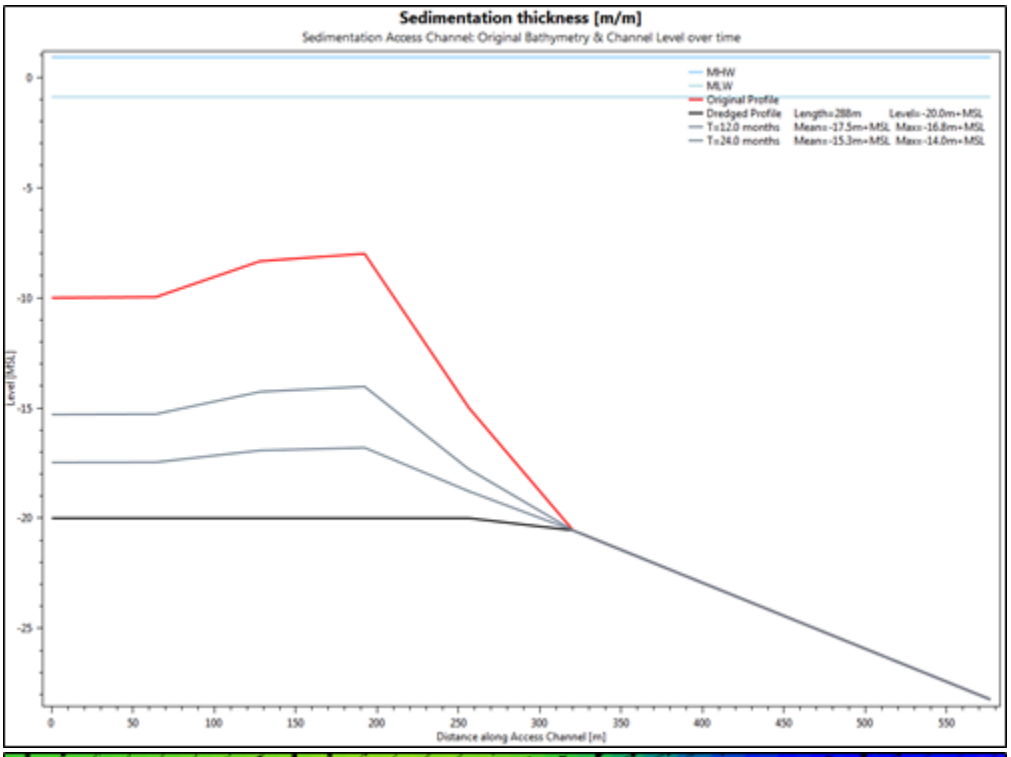

Bathymetry
Structures
Waves
Tide
Vertical tide
Tidal components:
Name | Amp. [m] | Phase [deg]
O1 | 0.01402 | -25.37
P1 | 0.002 | -90
Q1 | 0.004472 | -26.57
Tidal classification:
Name | Level [m]
HAT | 0.687
MHWS | 0.593
MHW | 0.505
MHWN | 0.394
MSL | 4.73E-05
MLWN | -0.444
MLW | -0.506
MLWS | -0.578
LAT | -0.694
Create from tidal components
Horizontal tide
Maximum ebb flow 0.5 m/s
Maximum flood flow 0.5 m/s
Along-shore tide
Cross-shore tide
Information
Tidal waterlevel from components
Waterlevel
Water level w.r.t. MSL [m]
Hours

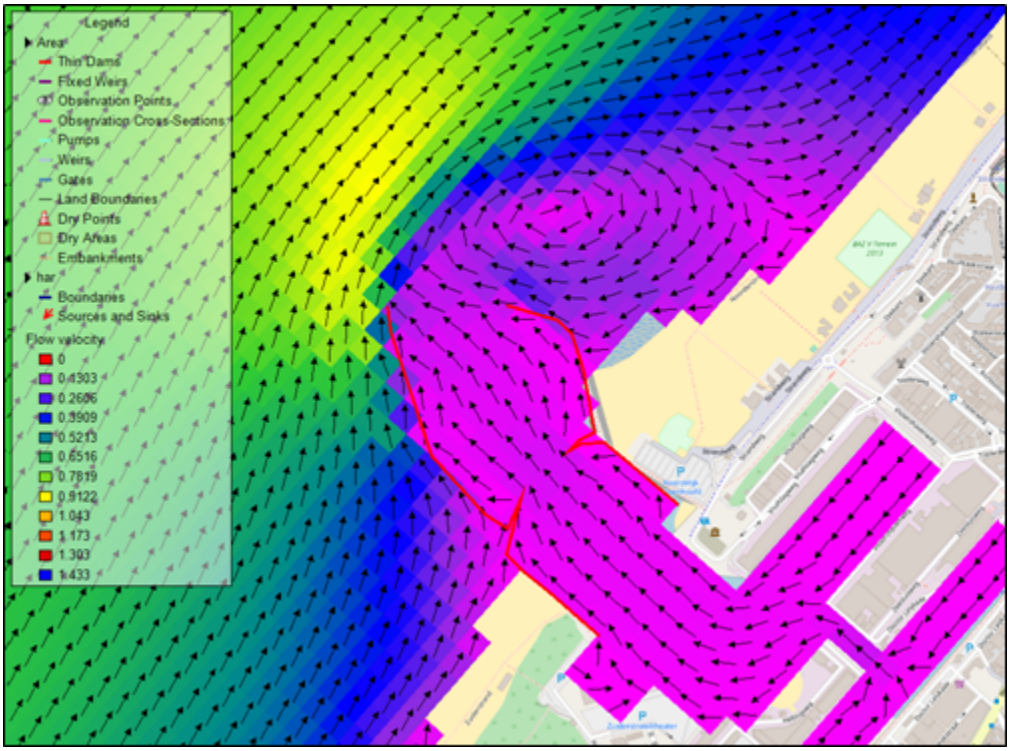

Wave rose (Hs, Dir)
Hs
0
30
60
90
120
150
180
210
240
270
300
330
0.0875
0.175
3.5
3
2.5
2
1.5
1
0.5
0

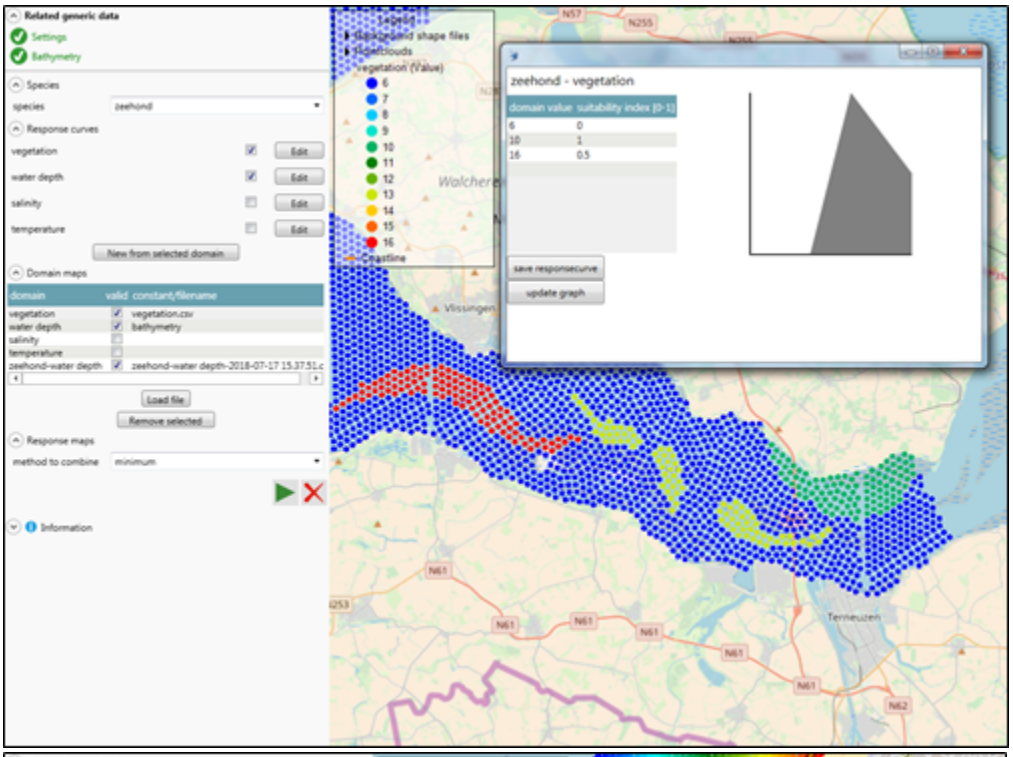

Related generic data
Coastline
Cross shore profile
Wave climate
Sediment
Structures (optional)
Sediment parameter summary
D50: 200 [micrometer]
Porosity: 0.4 [-]
Density 2650 [kg/m³]
Transport formula
Choose formula: Kamphuis
Physical parameters
Breaker index 0.73 [-]
Depth of closure 5 [m]
Active height 5 [m]
Water density 1025 [kg/m³]
Computation parameters
N points 40 [-]
Total time 20 [years]
Time interval 5 [years]
Boundary parameters
Left boundary S = 0
Right boundary dS = 0
Legend
Background shape files
Structures (StructureType)
Breakwater
ChannelAxis
HarbourBasin
Coastline
Coastline evolution (Years)
0
5
10
15
20
Structure 1
Structure 2
N57

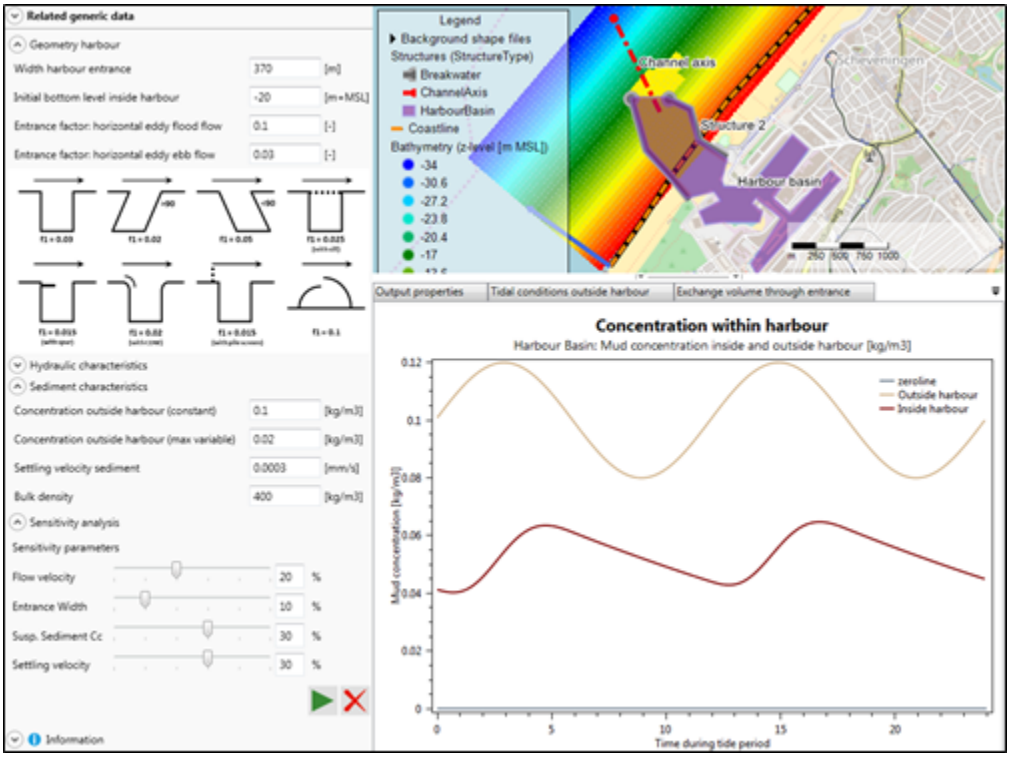

Related generic data
Wave condition
Hs [m]
Tp [s]
Dir [deg N]
Dir spread [deg]
4
12
340
30
Structures
Breakwater 1
Structure 1
Breakwater 2
Structure 2
Harbor
Harbor depth
10
[m]
Calculation type
Analytical
Diffrac2DH
Information
Legend
Background shape files
Structures (StructureType)
Breakwater
ChannelAxis
HarbourBasin
Wave penetration output (X)
0
1
2
3
4
5
6
7
Structure 1
zuidelijk havenhoofd


Cross-sectional breakwater design
Armour Layer
Filter Layer
Core Layer
Waterlevel
Level w.r.t. MSL [m]
Distance [m]
10
5
0
-5
0
10
20
30
40
50
60
70
80
90


Sedimentation thickness [m/m]
Sedimentation Access Channel: Original Bathymetry & Channel Level over time
MHW
MLW
Original Profile
Dredged Profile Length=288m Level=-20.0m+MSL
T=12.0 months Mean=-17.5m+MSL Max=-16.8m+MSL
T=24.0 months Mean=-15.3m+MSL Max=-14.0m+MSL
Level [MSL]
0
-5
-10
-15
-20
-25
0
50
100
150
200
250
300
350
400
450
500
550
Distance along Access Channel [m]


Legend
Area
Thin Dams
Fixed Weirs
Observation Points
Observation Cross-Sections
Pumps
Weirs
Gates
Land Boundaries
Dry Points
Dry Areas
Embankments
har
Boundaries
Sources and Sinks
Flow velocity
0
0.1303
0.2606
0.3909
0.5213
0.6516
0.7819
0.9122
1.043
1.173
1.303
1.433





Overview visual impression	
Generic data - Structures	Generic data - Tide
Generic data - Waves	Coastline dynamics
Wave penetration	Breakwater design
Channel sedimentation	Interactive flow fields
eCoDeS	Harbour basin siltation