Stbtel

Validation Manual

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1. adcirc

1.1 Purpose

This example illustrates the conversion from a mesh file generated with ADCIRC to a Serafin file.

1.2 Description

This is just a basic conversion.

2. refinement

2.1 Purpose

This example illustrates the manipualtions that can be done within a Serafin file.

2.2 Description

The computation refine the mesh by splitting each triangle into 4.

2.3 Results

The figure 2.1 shows the initial mesh and the figure 2.2 shows the newly refined mesh:

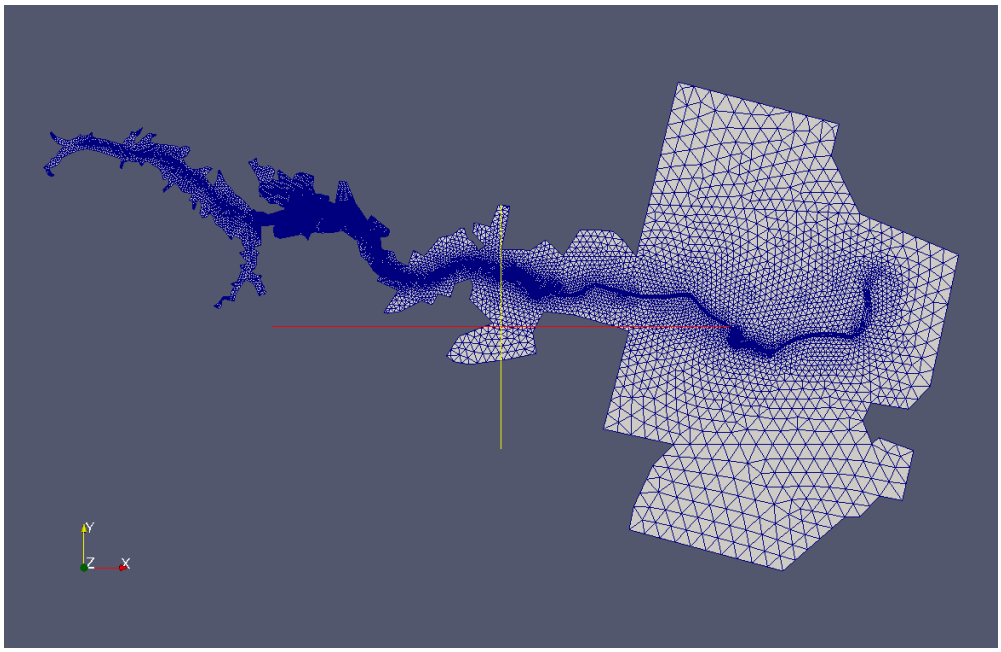

Figure 2.1: The initial mesh

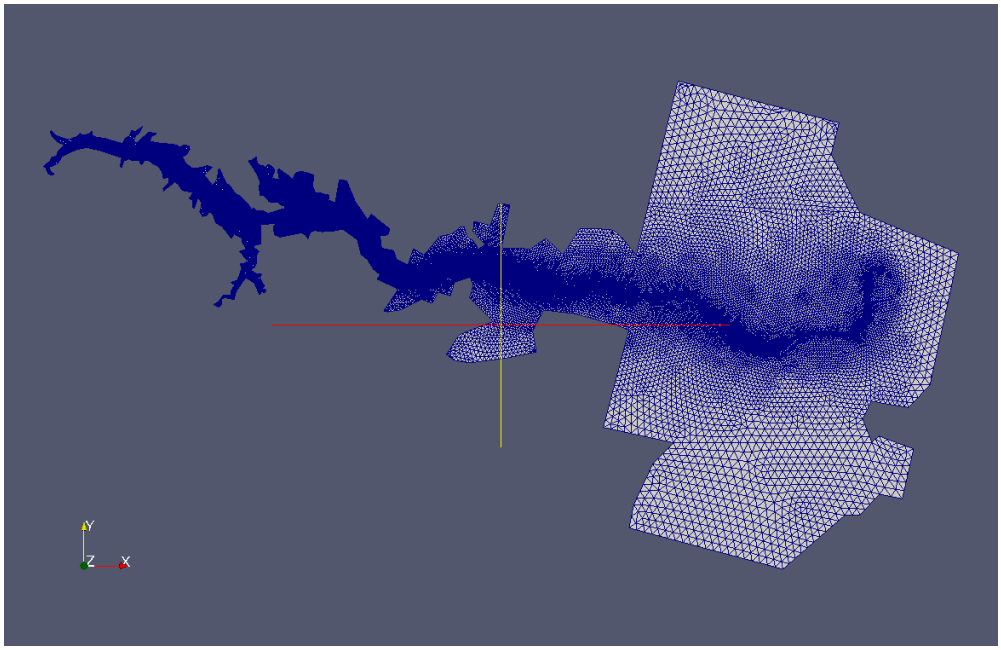

Figure 2.2: The refined mesh

3. selafin

3.1 Purpose

This example illustrates the manipualtions that can be done within a Serafin file.

3.2 Description

The computation removes dry elements as using a TELEMAC-2 simulation result and remove of the partially dry elements.

3.3 Results

The figure 3.1 shows the water depth in the initial mesh and the figure 3.2 shows the new mesh without the dry elements:

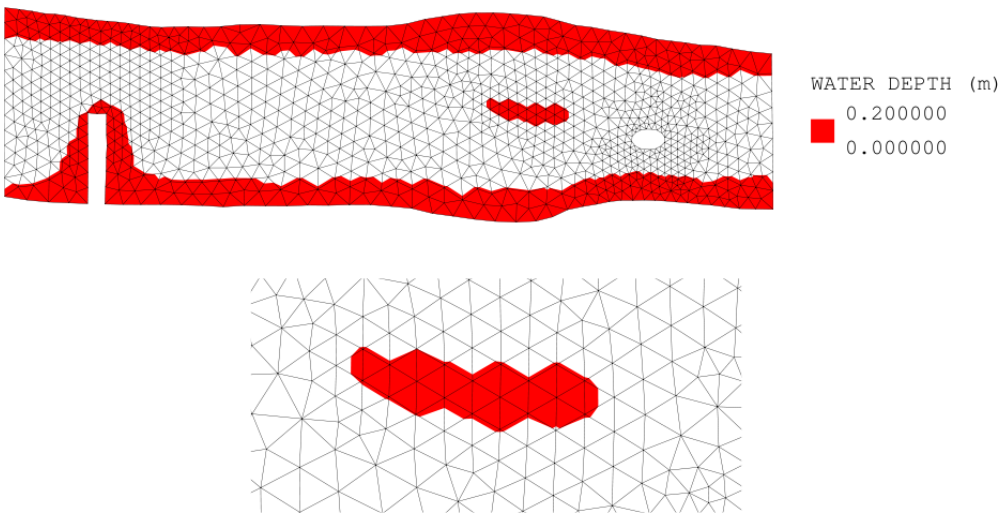

Figure 3.1: The initial mesh

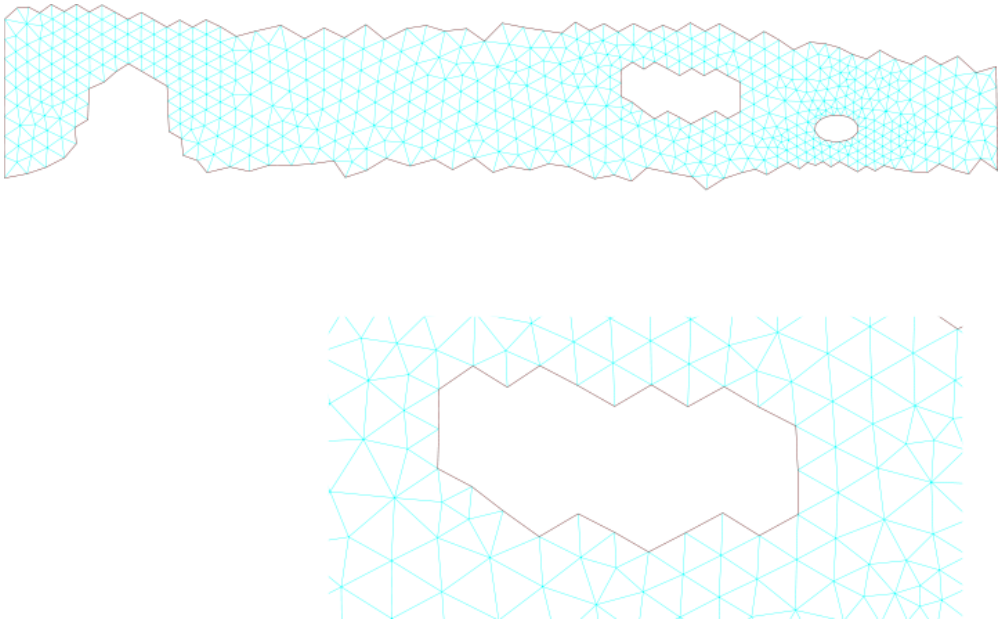

Figure 3.2: The modified mesh

4. selafindate

4.1 Purpose

This example test that STBTEL works with a Serafin file containing a date.

4.2 Description

This is just a basic test.

5. Supertab

5.1 Purpose

This example illustrates the conversion from a mesh file generated with SUPERTAB to a Serafin file.

5.2 Description

This mesh has been realised with "quadrangle" elements. Then, it is no use to eliminate the overstressed triangles.
Knowing that SUPERTAB software does not understand the bathymetry and that the STBTEL computation is made without any bottom topography files, there is consequently no variable BOTTOM on the final mesh file.
In the steering file, the user indicates the name of the files to be used, specifies the used mesh software and finally push on the elimination of the backward dependencies. (The TELEMAC-2 computation will be done on a vector machine with 128 bytes vector length).

5.3 Results

The resulted mesh is shown in figure 5.1:

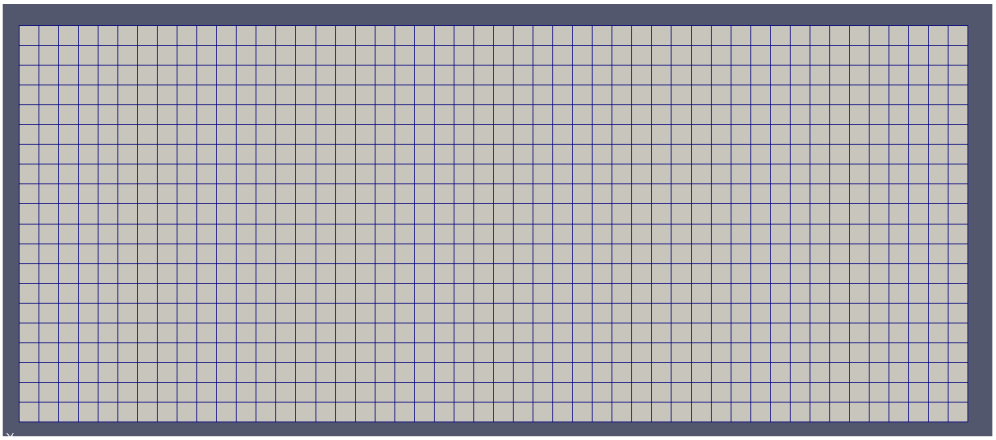

Figure 5.1: The mesh

6. trigrid_mail_det

6.1 Purpose

This example illustrates the conversion from a mesh file generated with TRIGRID to a Serafin file.

6.2 Description

The first computation (**stb_det1.cas**) executes a mesh extraction near to the bridge pier, with projection through segments of the polygon used to extract the mesh. The second computation (**stb_det2.cas**) is of the same type as the first one, but without the projection after the mesh extraction.
At any rate, the bathymetry found in the TRIGRID file is used to inform the variable BOTTOM of the geometry file generated by STBTEL. In the same way, the colour codes located along the boundaries points during the TRIGRID session allow STBTEL to create a boundary condition file which makes appear a boundary with a imposed flowrate on the left side and a imposed water level on the right side.

6.3 Results

The resulted mesh is shown in figure 6.1 and the bathymetry in figure 6.2 for the first computation (**stb_det1.cas**):

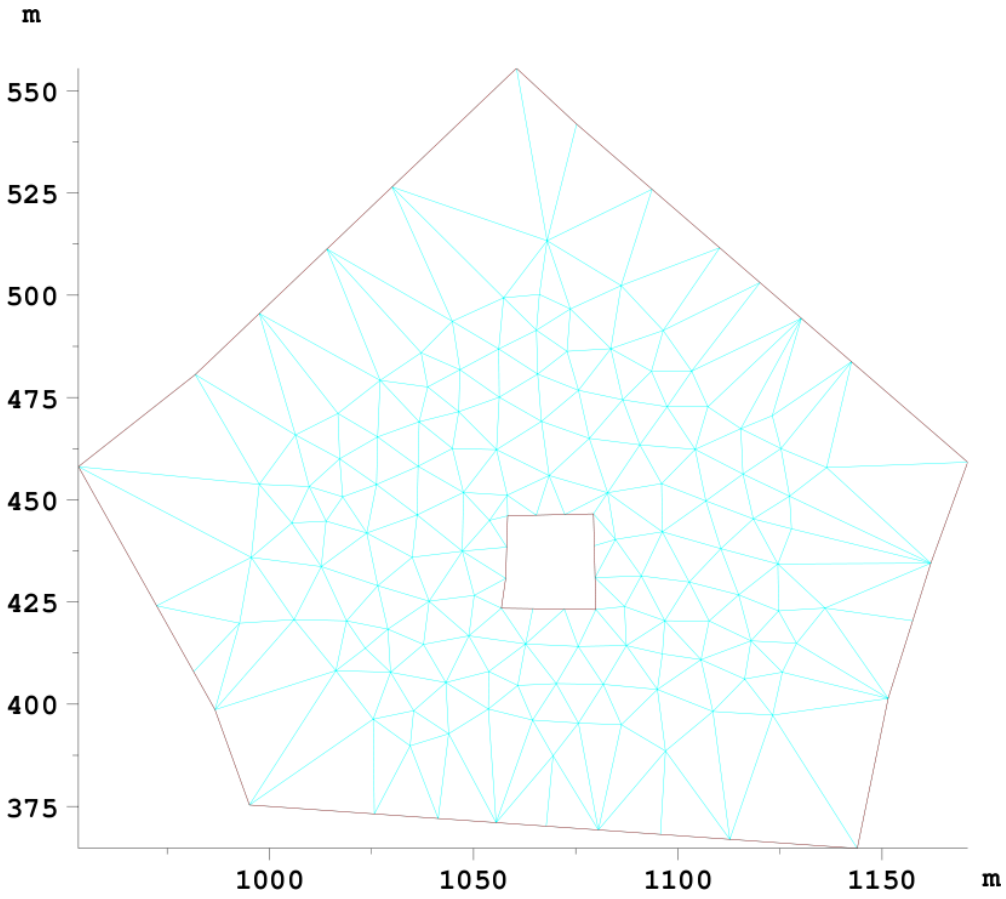

Figure 6.1: The mesh

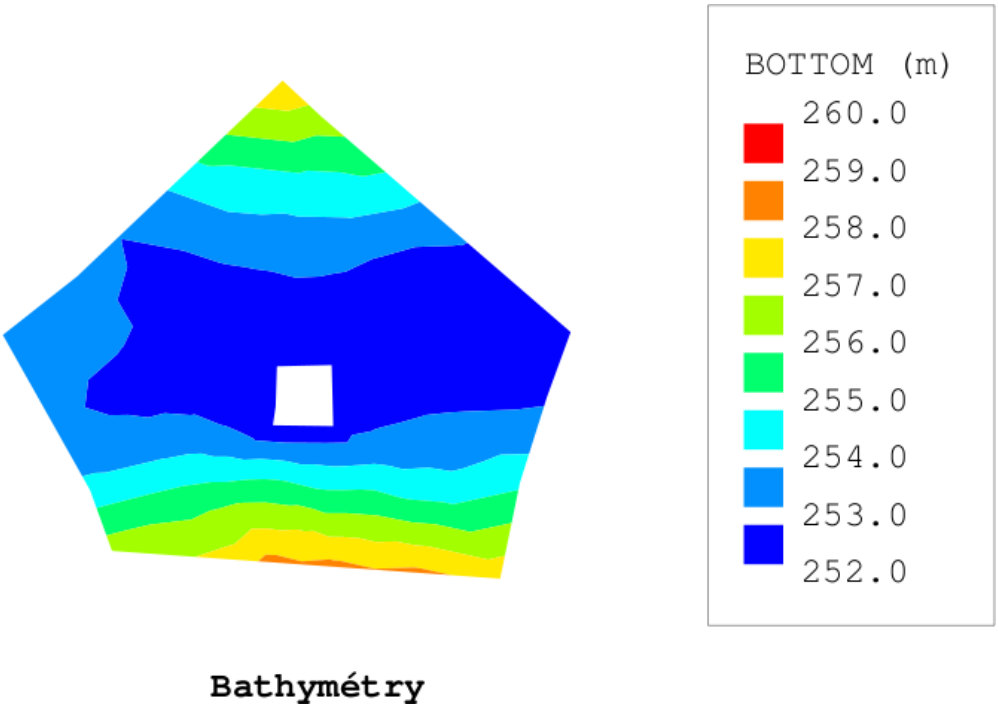

Figure 6.2: The bathymetry

The resulted mesh is shown in figure 6.3 and the bathymetry in figure 6.4 for the for the second computation (**stb_det2.cas**):

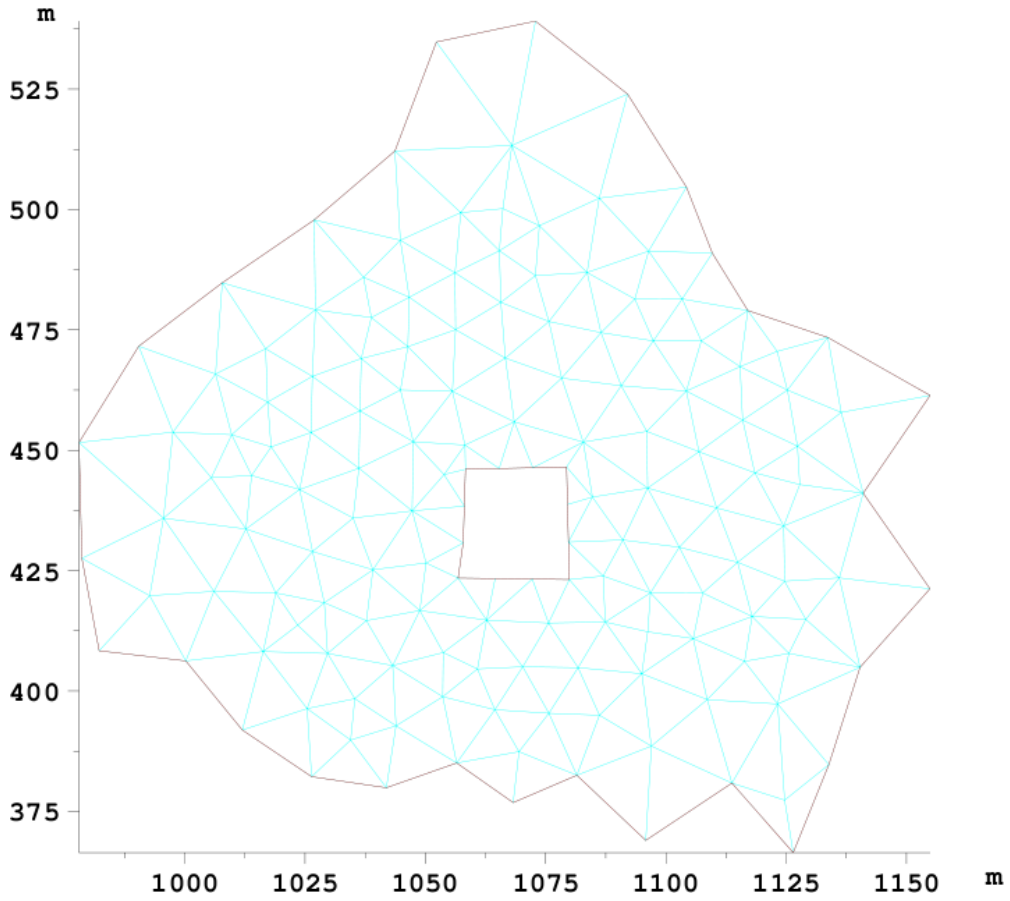

Figure 6.3: The mesh

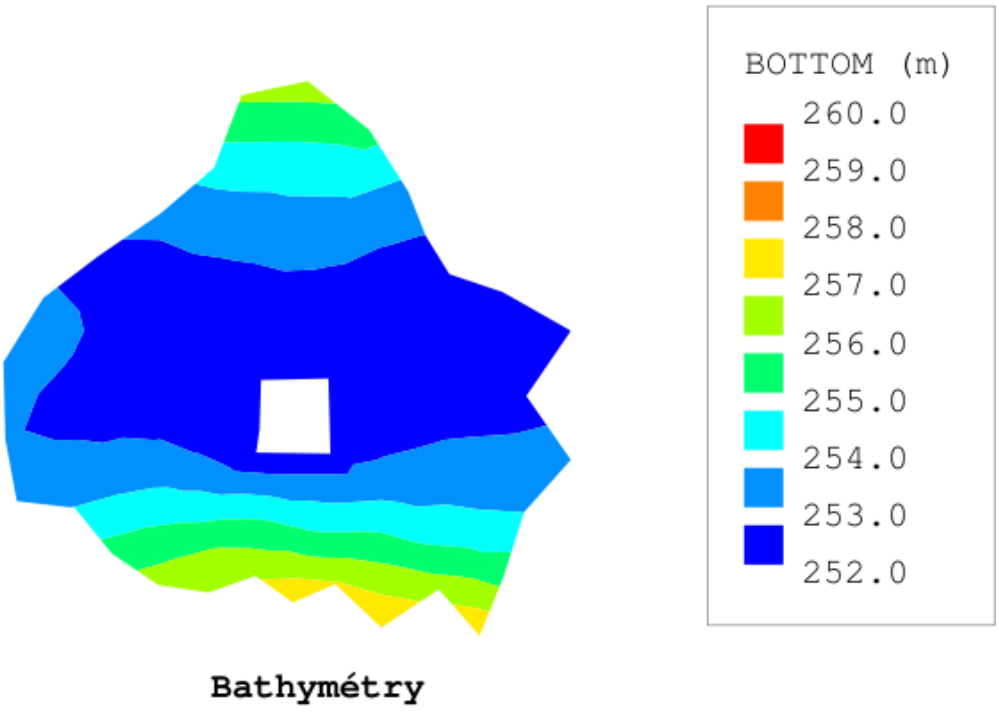

Figure 6.4: The bathymetry

7. trigrid_mail_tot

7.1 Purpose

This example illustrates the conversion from a mesh file generated with TRIGRID to a Serafin file.

7.2 Description

The computation deals with the elimination of the overstressed triangles within the entire mesh. At any rate, the bathymetry found in the TRIGRID file is used to inform the variable BOTTOM of the geometry file generated by STBTEL. In the same way, the colour codes located along the boundaries points during the TRIGRID session allow STBTEL to create a boundary condition file which makes appear a boundary with a imposed flowrate on the left side and a imposed water level on the right side.

7.3 Results

The resulted mesh is shown in figure 7.1 and the bathymetry in figure 7.2:

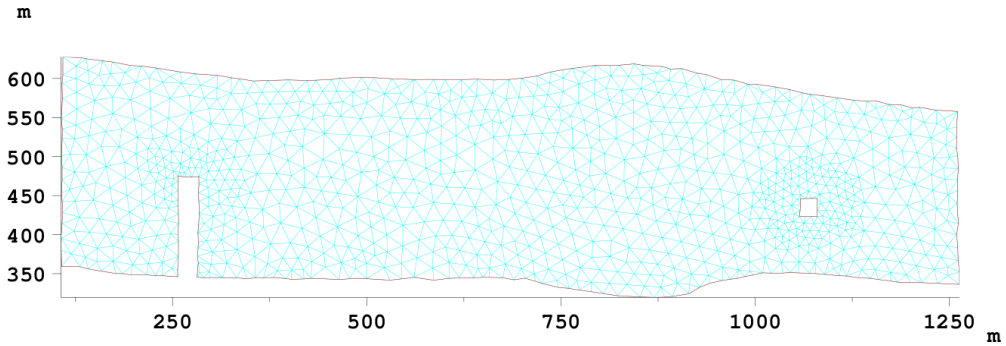

Figure 7.1: The mesh

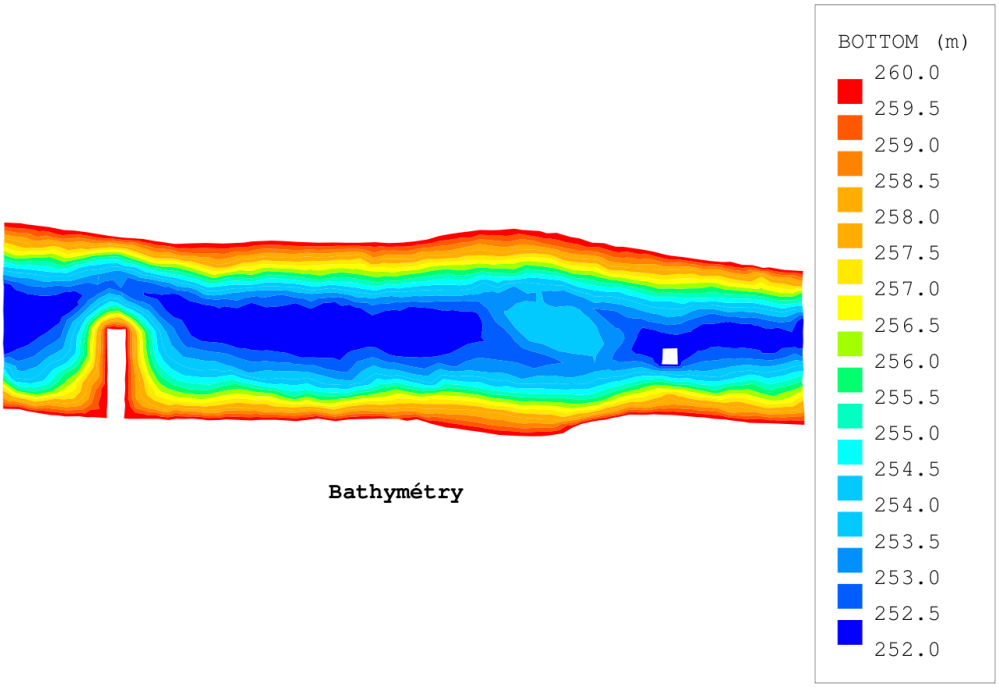

Figure 7.2: The bathymetry

[1]

[1] HERVOUET J.-M. *Hydrodynamics of Free Surface Flows. Modelling with the finite element method.* Wiley, 2007.