# Deltares

## Memo

**To**
To whom it may concern

| Date | Our reference | | Number of pages |
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| **Contact person** | **Direct line** | **E-mail** | |
| Jan Mooiman | — | jan.mooiman@deltares nl | |

**Subject**

Manual to plot result files of D-Flow FM in QGIS 3.28 (map- and history-files)

## Version control information

**Git repository**      **:**   https://github.com/Deltares/qgis_umesh

**Git branch**      **:**   master

**Git revision (short)**   **:**   b206a20

## Contents

## 1   Release Notes

| Release | Description |
|---|---|
| 0.21.00 | - Update for the menu option 'Trials', w.r.t. 1D structures. |
| | - Fixed wiers set into one layer-group. |

## enabling delta life

| 0.20.01 | - If no start_index is given in the netCDF-file, assume zero. |
|---------|---------------------------------------------------------------|
| 0.20.00 | - Name of the 'Current View' in the layer panel changed to 'Variable' name. |
| 0.19.00 | - Using the spinbox for layers will invalidate (uncheck) the view of a layer. |
| 0.18.00 | - Determine the mesh 1D edge length after all variables are read. Other wise sometime a crash will appear. |
| 0.17.00 | - Transfer 3D layer data to QGIS vector layer. |
| 0.16.00 | - The unit after selection text of combobox for scalar in **Map Output Animation** window added. |
| 0.15.00 | - Set support point value(s) of colorramp in **Map Output Animation** window. |
| 0.14.00 | - Improved performance, no debug information anymore in release mode |
| 0.13.00 | - Showing 1D and 2D results at the same time if they are in one map-file. |
|         | - Drawing 1D2D contact mesh |
| 0.12.00 | - Opacity can be set by color ramp slider. |
| 0.11.00 | - Reading $<*\_net.nc>$ file repaired. |
| 0.10.00 | - Export to QGIS layer enabled for scalar quantities. |
| 0.00.00 | - No information available. |

# 2 Menu bar
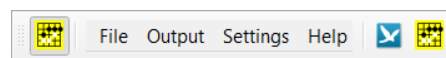


**Figure 1:** *The menu bar of the QGIS_UMESH plugin*

## 2.1 File
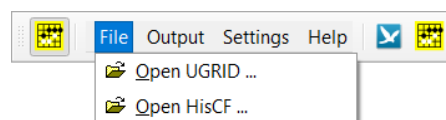


**Figure 2:** *Menu →File*

### 2.1.1 Open UGRID

When selecting this option you are able to select netCDF files which are meet the UGRID standard. Example files are the mesh- and map-file of the D-Flow FM program ($<*\_net.nc>$, $<*\_map.nc>$). Only the map-file could contain time series.

### 2.1.2 Open HisCF

When selecting this option you are able to select netCDF files which are meet the climate and forecast history file standard. Example files are the history output files of the program D-Flow FM ($<*\_his.nc>$).
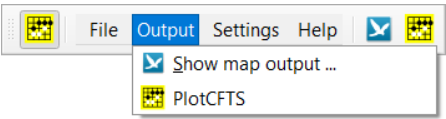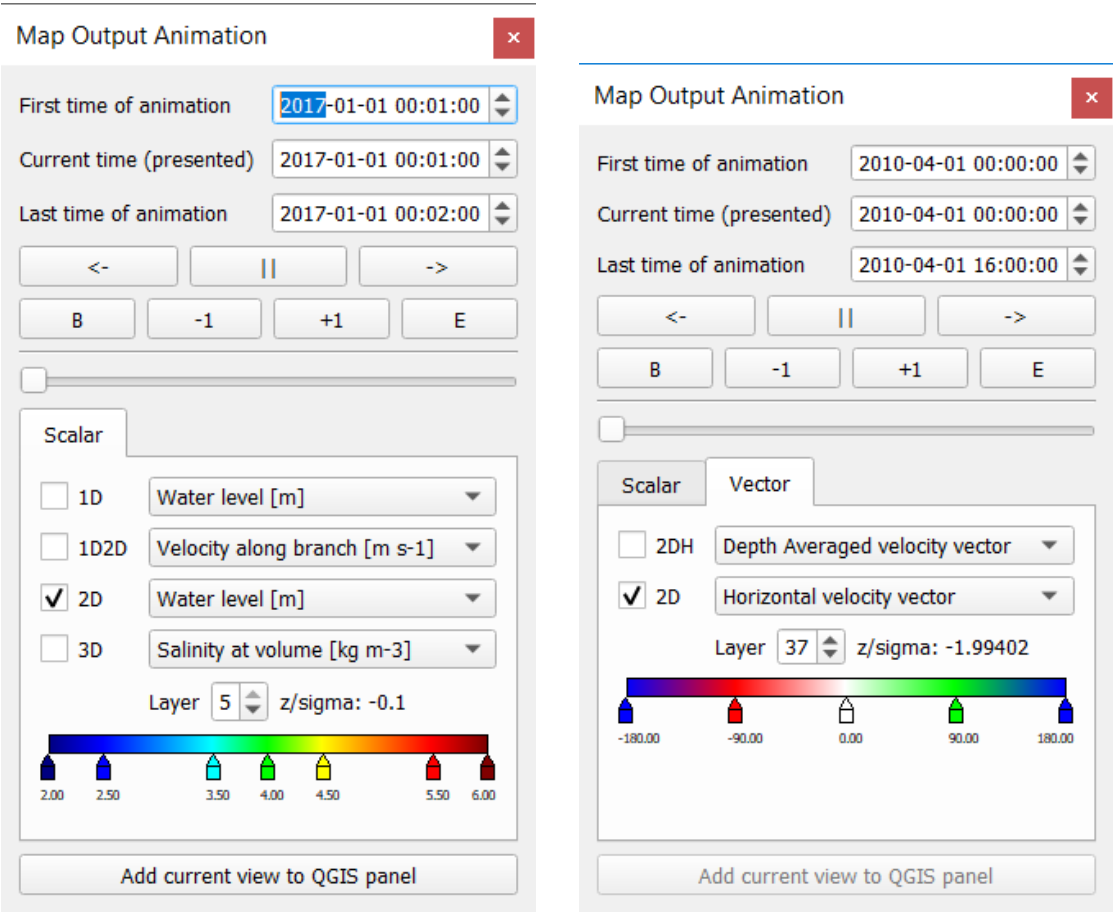
## 2.2 Output



**Figure 3:** *Menu →Output*

### 2.2.1 Show map output

After selecting *Output→Show map output* the window **Map Output Animation** will open, see as example Figure 4a.



**(a)** *Layout scalar quantities; sigma layer at $\sigma = -0.1$ (near the surface)*



**(b)** *Layout vector quantities; fixed layer at $z = -1.99402$ (near the surface).*

**Figure 4: Map Output Animation** *window for scalars and vector.*

After pressing the right mouse button in this window, the window **Map Output Settings** will appear (see section 2.3 and Figure 9).

After pressing the right mouse button on a square of the colorramp support point the window **Set Colorramp Value** appear. With this window you are able to change the value of the colorramp support points (see **??**).
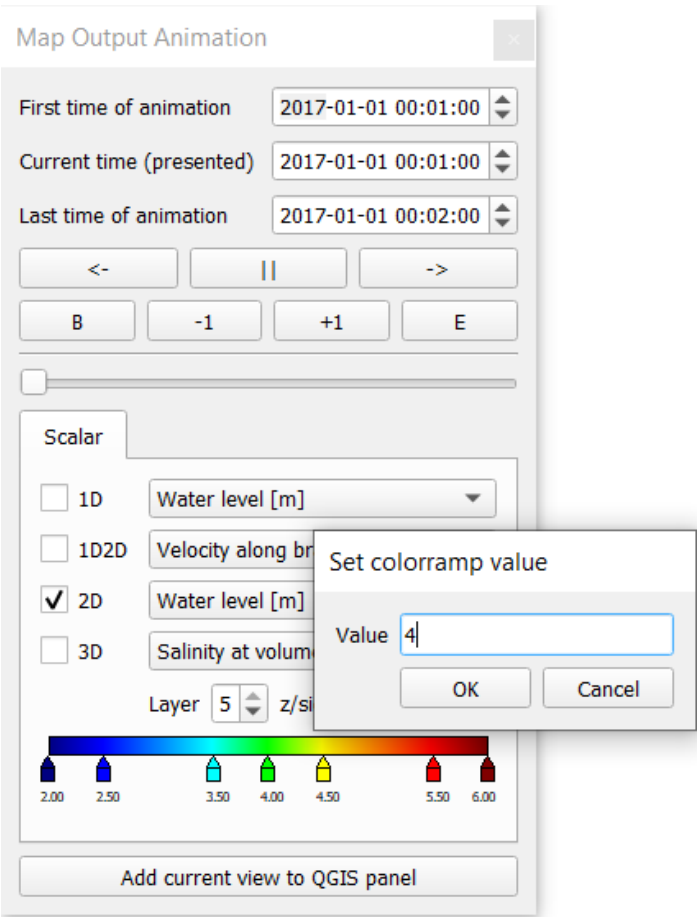
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*Figure 5:* Window **Set Colorramp Value**

*Add current view to QGIS layer panel*
**Note:** This button is only enabled for scalar quantities.

After pressing the button *Add current view to QGIS panel* a window **Add current view to QGIS layer panel** will appear. In this window you can specify the layer name which will be presented in the QGIS layer panel, see Figure 6
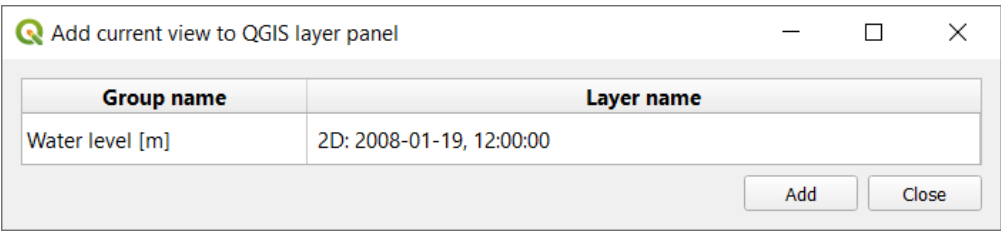


*Figure 6:* Window **Add current view to QGIS layer panel**

After pressing the button *Add* the layer will be added to the layer panel. Pressing the *Quit* button will close the window.
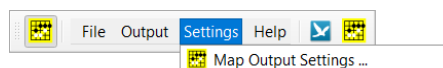
2.2.2    PlotCFTS

After selecting *Output→PlotCFTS* the program PlotCFTS will start, see as example Figure 7. Select from the menubar of the PlotCFTS program menu option *Help →User Manual* to open the user manual for the program PlotCFTS.
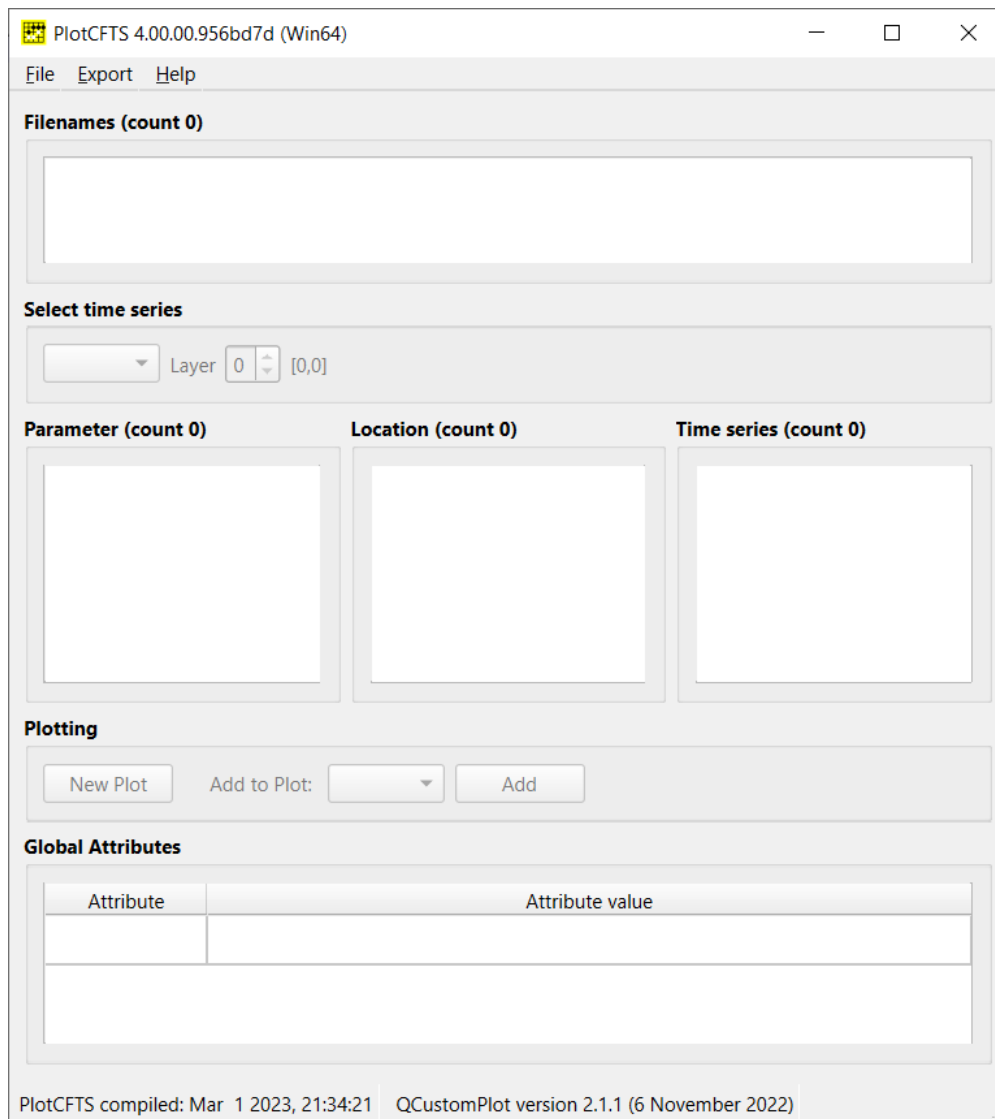


*Figure 7: Main window of the PlotCFTS program.*

## 2.3    Map output settings

Settings for the presentation of scalars and vectors.



*Figure 8: Menu →Settings*

When selecting this option some settings for the presentation of the variables via the window **Map Output Animation** can be set. This window will also pop up when using the right mouse button within the window **Map Output Animation**.
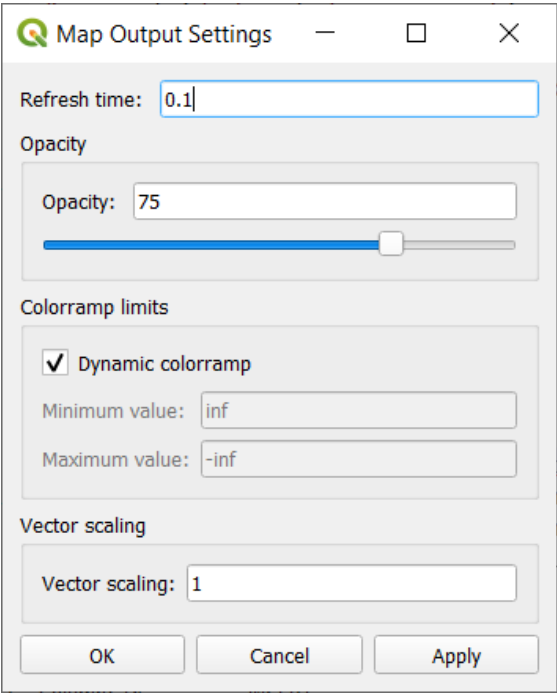
**Figure 9:** *Window* **Map Output Settings**

The following quantities can be specified in the window presented by Figure 9:

| | |
|---|---|
| Refresh rate | Specify the refresh rate, in seconds, of the images during animation. |

**Opacity**

| | |
|---|---|
| Opacity | Specify the opacity of the iso patches for the scalars by a integer number [%] or by the slider, the range of the permitted values is: 0 - 100 [%]. Zero means fully transparent. |

**Colorramp limits**

*Dynamic colorramp*

| | |
|---|---|
| <u>checked</u> | Colorramp limits are determined by the minimum and maximum value of the scalar. These values reach their extreme values after all timestep are visualised. |
| <u>unchecked</u> | Minimum value:   specify the minimum value for the scalar.<br>Maximum value:   specify the maximum value for the scalar. |

**Vector scaling**

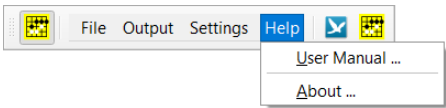| | |
|---|---|
| Vector scaling | The vector of length 1 (ex. $1\,\mathrm{m\,s^{-1}}$) is scaled with this factor. The drawing length is based on the averaged cell size. |

## 2.4 Help



**Figure 10:** *Menu →Help*

### 2.4.1 User Manual
Shows the user manual



*Figure 11:* QGIS_UMESH user manual

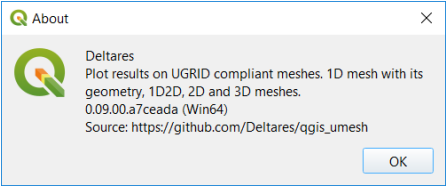### 2.4.2 About
Shows the about box.



*Figure 12:* About box

# 3 QGIS panels

Some QGIS panels are shown after reading a netCDF map-file.
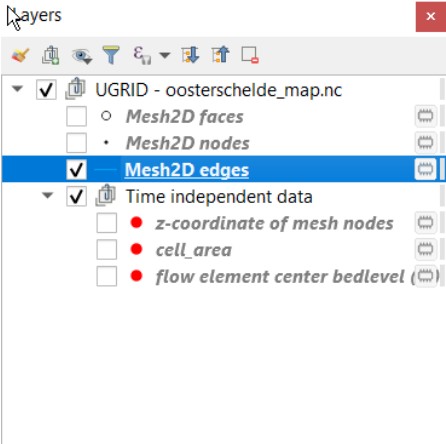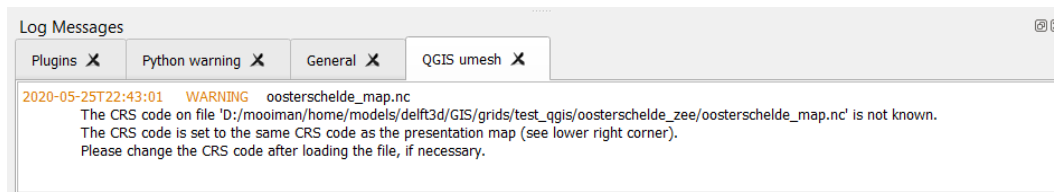
## 3.1 Layer panel



*Figure 13:* The QGIS layer panel after reading a netCDF map-file.

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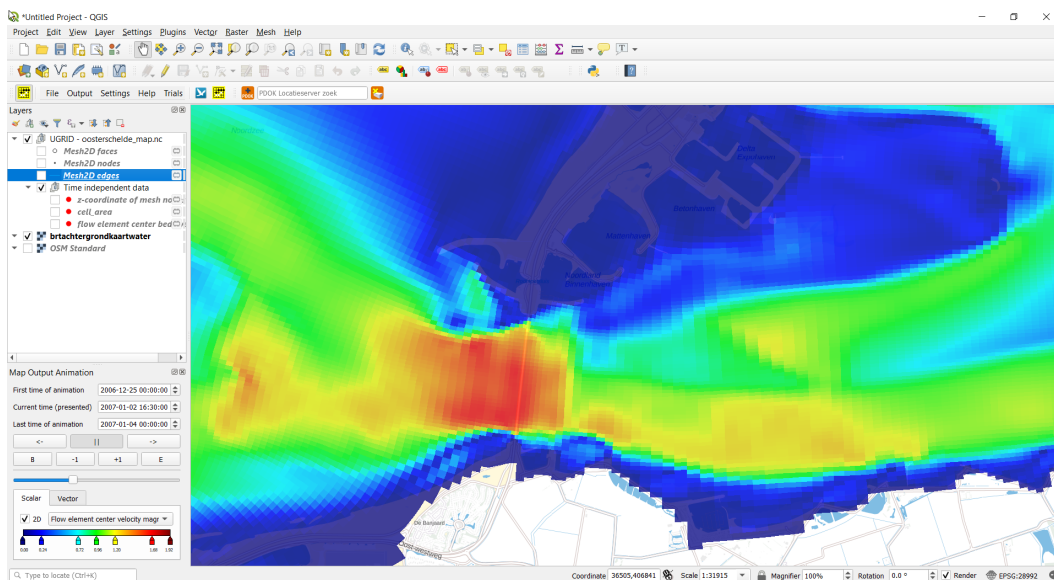8 of 9

## 3.2 Log messages panel



**Figure 14:** *The QGIS layer panel after reading a netCDF map-file.*

# 4 Examples figures

Examples are given for a scalar field (Depth averaged velocity magnitude) and the corresponding vector field (arrow and direction).

## 4.1 Example scalar field

These fields are given on the output files of D-Flow FM.



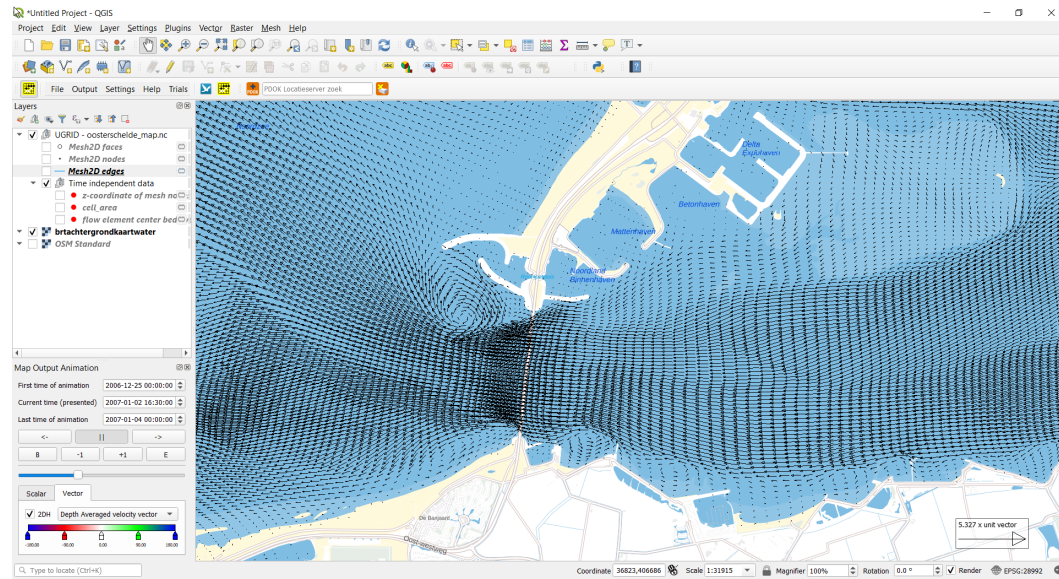**Figure 15:** *Depth averaged velocity, magnitude.*

## 4.2 Example vector field

These fields are not given on the output files of D-Flow FM. So the postprocessing program (QGIS_UMESH) need to compute the quantities of the vector field, like vector arrows and vector direction.
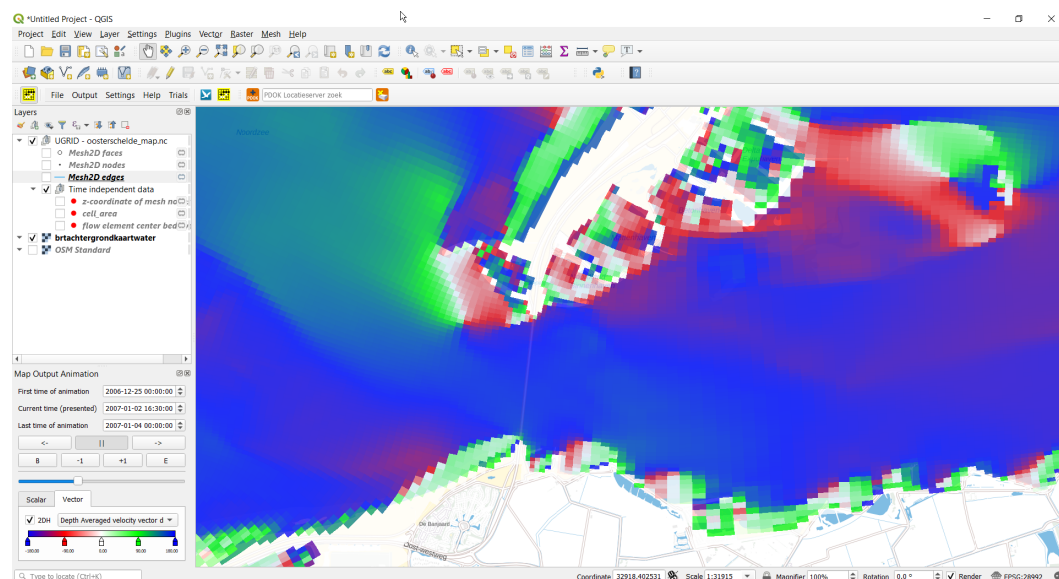
**Note:** the "velocity magnitude" is given on the output file of D-Flow FM and thus computed by D-Flow FM. The quantity "velocity magnitude" is therefor available in the tab *Scalar*

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**Figure 16:** *Depth averaged velocity, vector.*



**Figure 17:** *Depth averaged velocity, direction.*

# 5    Source

The source code is available on GitHUB:

https://github.com/Deltares/qgis_umesh