6 Processing

6.4 GMT

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GMT (Generic Mapping Tools) is an open source collection of more than 60 tools for manipulating Geographic and Cartesian data sets. It can produce *Encapsulated Postscript File* illustrations ranging from simple x-y plots, via contour maps, to artificially illuminated surfaces and 3D perspectives views. *OpendTect* supports an open source plugin that uses GMT tools to create scaled maps.

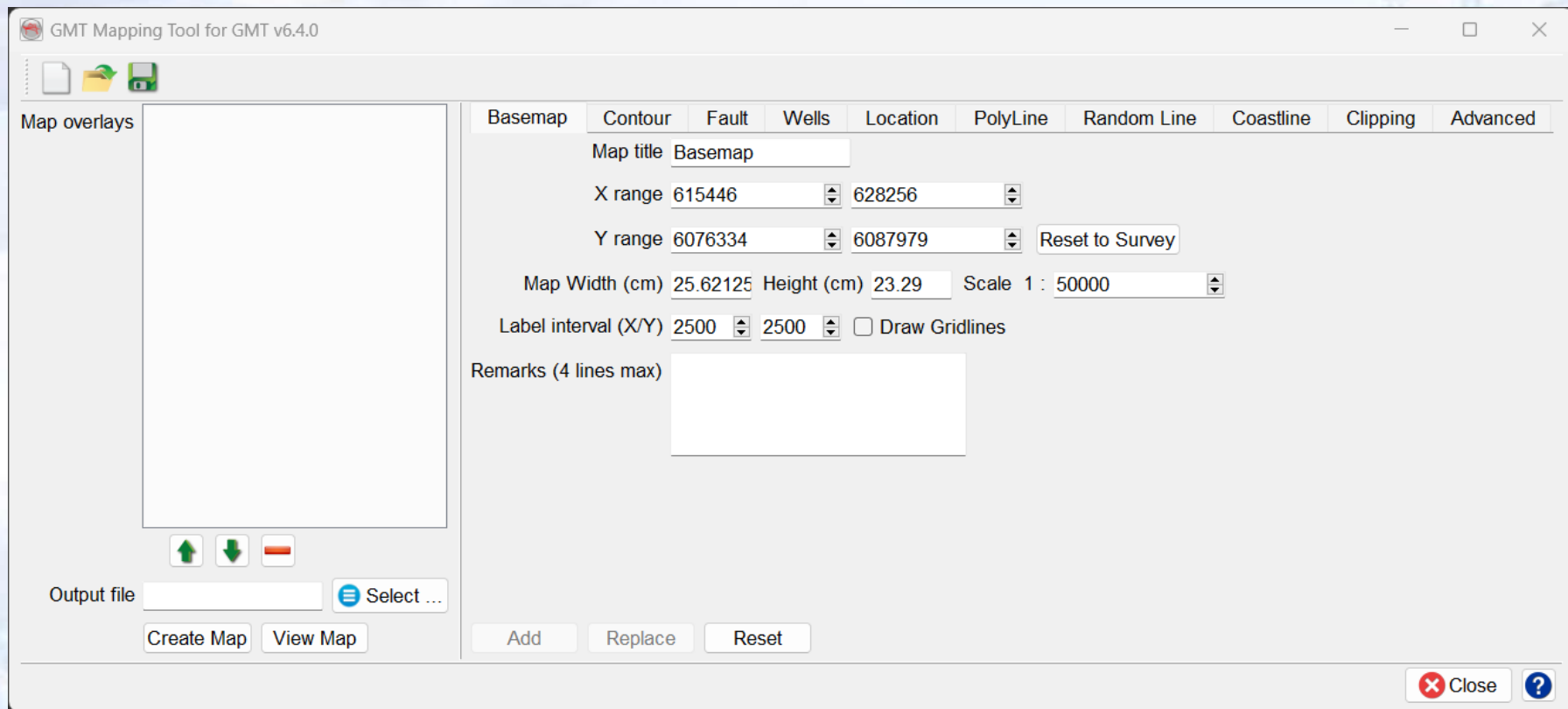For more details please visit the official GMT website.

6.4.1 Initial Setup

To launch *GMT* tools, click on the icon ⊕ in the OpendTect main toolbar. The first time you launch the *GMT* mapping tools, a warning message will pop up, if *GMT* is not already installed on your computer. This can be downloaded from the GMT website.

GMT Mapping Tool

You need to install the GMT mapping tool package
before you can use this utility
Also make sure that the environment variable GMTROOT is set to the GMT installation directory
and your PATH variable includes the GMT bin directory

Download GMT

Continue

Cancel

After successful installation of the package, the *GMT* user interface will be launched:

GMT界面

6.4.2 Create Postscript Maps

Several tabs have been arranged to specify the respective settings. The later part of this section shows a typical OpendTect example of a postscript map.

- Basemap: This tab is used to set the scale of the map and other map settings.
- Contours: It is used to create a horizon contour map.
- Faults: It is used to post the intersection of faults with constant times or the intersection with a surface.
- Wells: It is used to post wells in the map.
- Locations: It is used to post pointset data in the map overlay.
- Polyline: It is used to add polygons (e.g. lease boundaries) in the map overlay.
- Random Lines: It is used to post Random Line(s) in the map.
- 2D Lines: It is used to post 2D-Line(s) in the map.
- Coastline: It is generally used to draw coastal lines.
- Clipping: It is used to set up polygonal clip paths.
- Advanced: It is used to use customized GMT commands.

For all the sections it is possible to *Reset* the parameters and thus go back to the default ones. For all the section (except Basemap), *Add* will add the defined object to the map overlays and *Replace* will update it if the object has been previously defined.

In the *Map overlays* are listed all the elements that have been defined to be displayed on the final Basemap. You can modify the ↕ order in using the icons or remove an object using the ✗ icon. The map will be created only when clicking on *Create Map*.

底图设置

| Basemap | Contour | Fault | Wells | Location | PolyLine | Random Line | Coastline | Clipping | Advanced |

Map title Basemap

X range 615446 628256

Y range 6076334 6087979 Reset to Survey

Map Width (cm) 25.62125 Height (cm) 23.29 Scale 1 : 50000

Label interval (X/Y) 2500 2500 ☐ Draw Gridlines

Remarks (4 lines max)

The basemap tab is filled with default parameters including the X/Y range from the Survey setupSurvey setup. You can go back at any point to the default X/Y range in clicking on *Reset to Survey*.

The map can be renamed. The scale can be modified. Scale, map width and height are linked : any change of the scale, map width or height will affect the other two parameters.

The label interval can be also be modified. The grid lines can be shown if you toggle on *Draw Gridlines*.Optionally you can also add *Remarks*.

Once the different parameters defined, give an appropriate name to *the output file* and specify the disk location and press *Create Map* button. *View Map* will display the map.

Create a Contour Map

In Contour Map tab, first of all, select the horizon on which you want to create contours. The different parameters are then filled by default. It is possible to edit the value range and/or the number of contours. This will change the step. If you modify the step, it will automatically change the number of contours.

It is possible to change the display parameters. The contours can appear as simple contour lines or the space between the contours can be filled using a selected colourbar.

Once the parameters all defined, press *Add* button: the selected 2D data set(s) will appear on left *Map overlays* panel.

'*Attribute*' allows the user to select either Z-values (default option) or any of the *Horizon Data* saved to this horizon. Insert faults
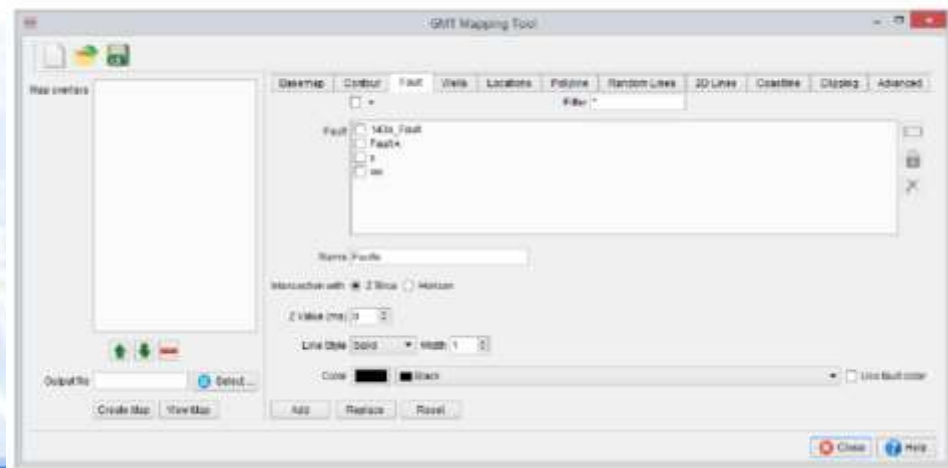
In Wells tab, specify:

1. Select OpendTect *Wells*
2. Optionally, edit the settings (symbols, size, color etc)
3. Press *Add* button... the selected Wells will appear on left *Map overlays* panel.
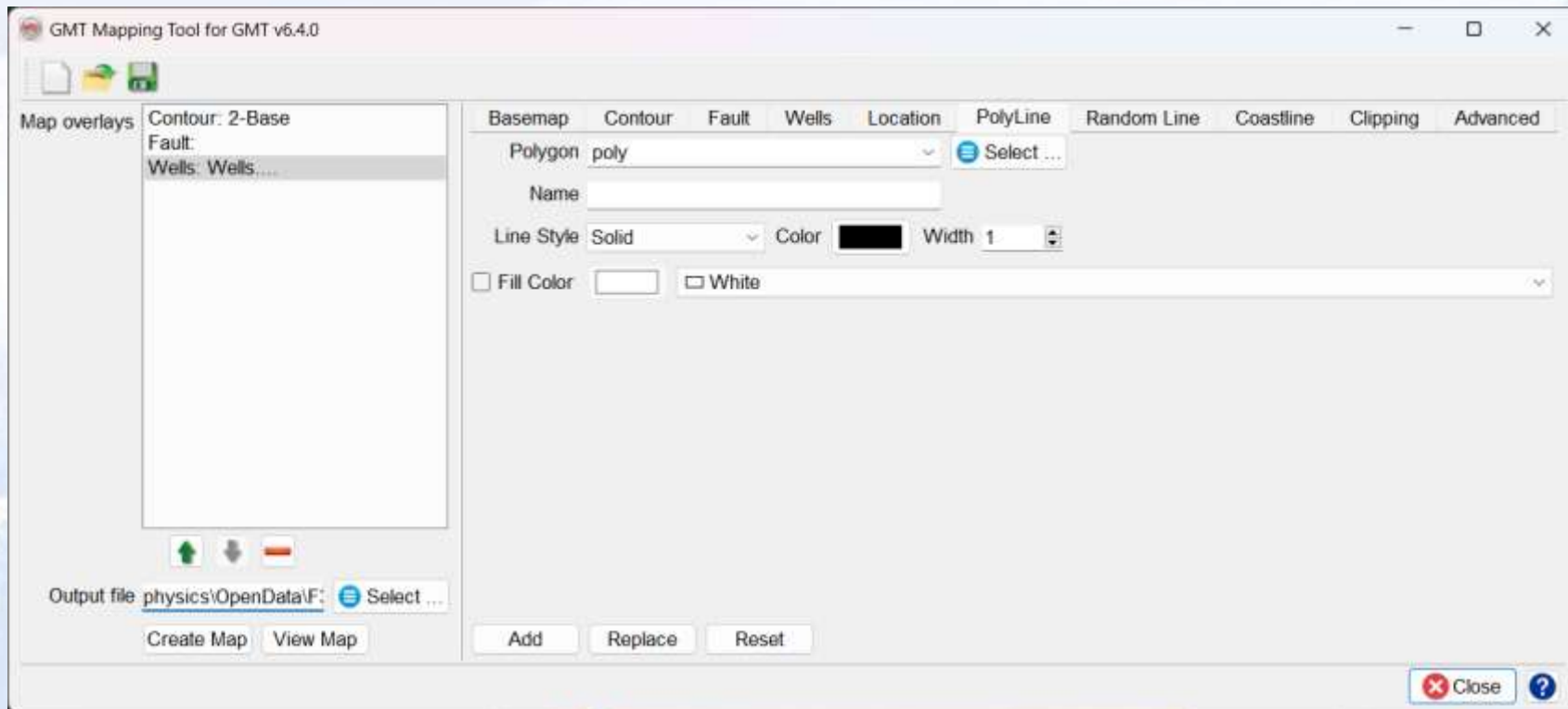
Insert locations

Insert Well Location

In Polyline tab, specify:

1. Select *Polygon*
2. Give a *Name* to the Polyline
3. Optionally, edit the settings (symbols, size, color etc)
4. Press *Add* button... the selected Polygon will appear on left *Map overlays* panel.

Insert random lines

In 2D Lines tab, specify:

1. Select *2D line(s)*
2. *Name* the line(s) (group).
3. Edit the settings (symbols, size, color etc)
4. Press *Add* button... the selected 2D line(s) group name will appear on left *Map over-lays* panel.

Insert 2D lines
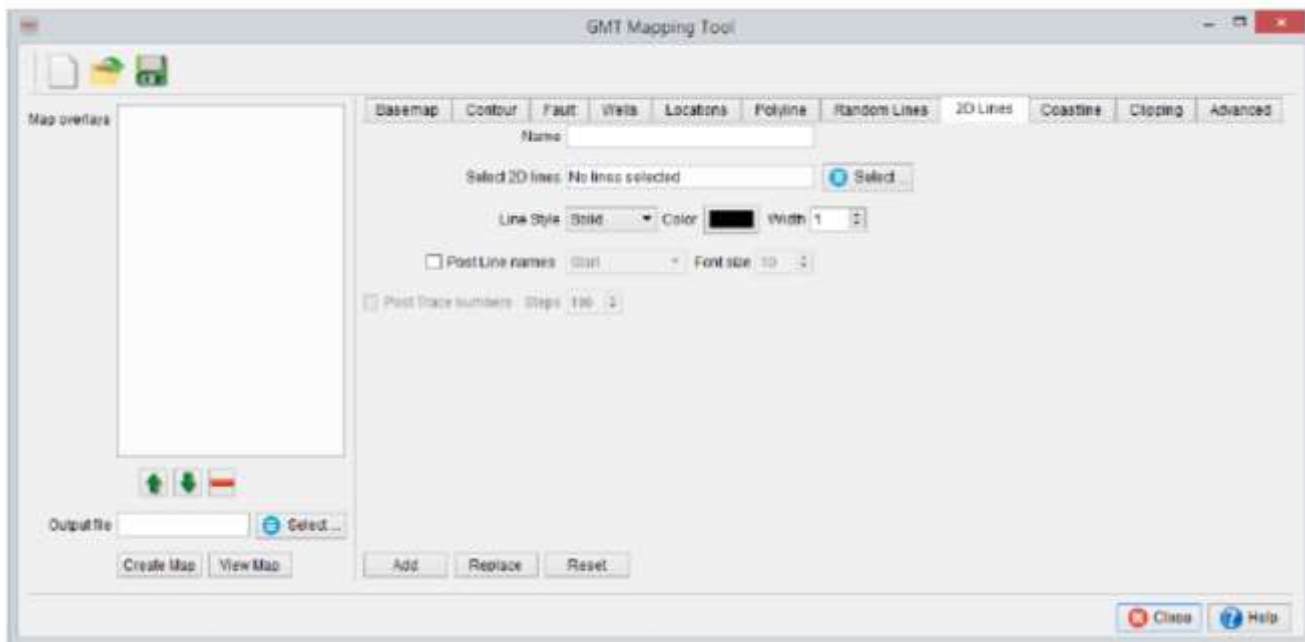
Insert coastline

GMT Mapping Tool

Map overlays

| Basemap | Contour | Fault | Wells | Locations | Polyline | Random Lines | 2D Lines | Coastline | Clipping | Advanced |

UTM zone / CM Zone 31 3 deg ⦿ East ◯ West

Resolution Full

Line Style Solid   Color ▮ Width 1

☐ Fill wet regions PaleTurquoise

☐ Fill dry regions DarkKhaki

⬆ ⬇ ➖

Output file [Select ...]
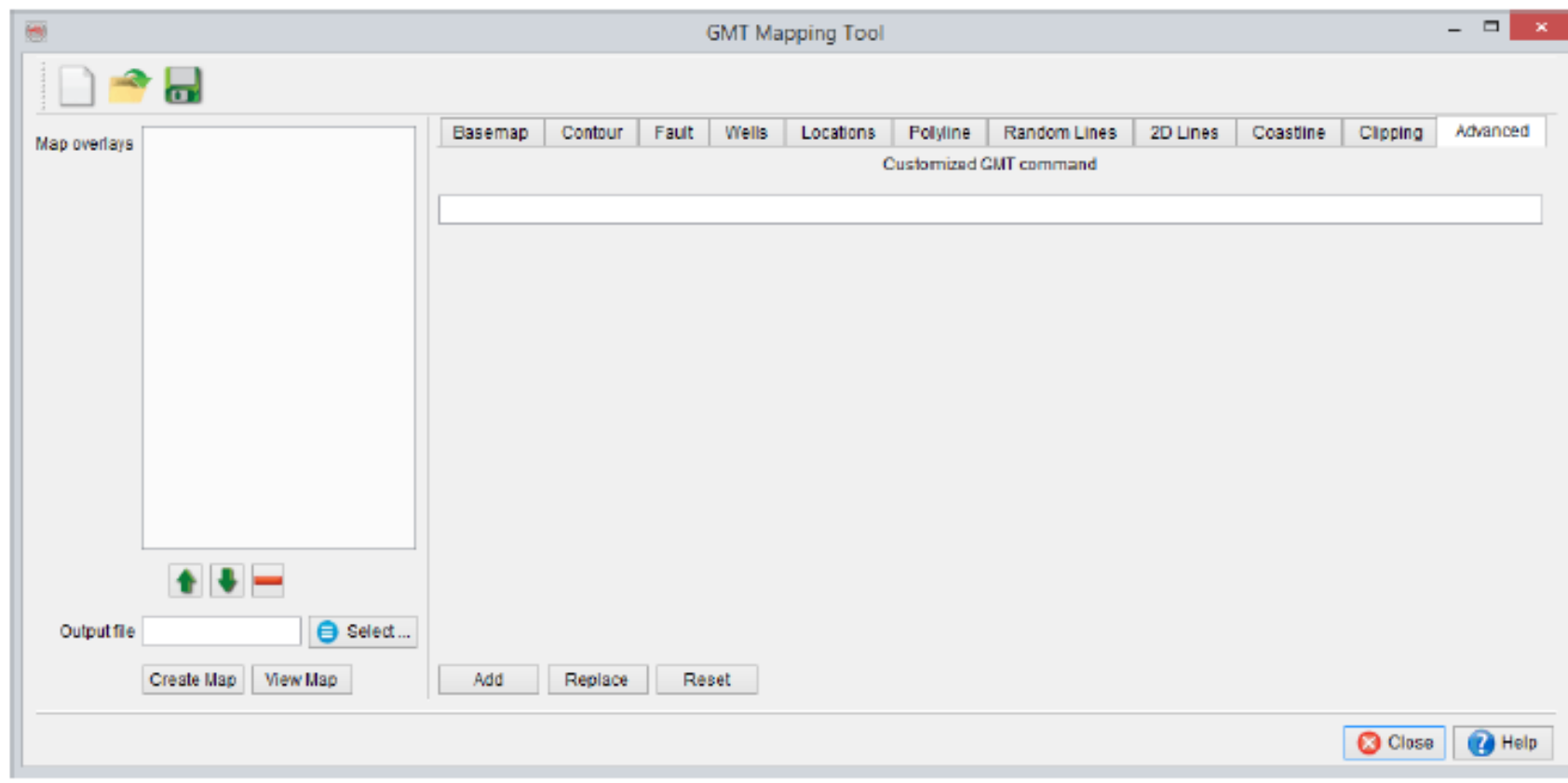
Create Map View Map

Add Replace Reset

Close Help

Clipping

The final map will be restricted to the *inside* or *outside* of a given polygon.

Insert advanced commands

Typical output:

Basemap