Advanced Exercise 1: Diagram Correction – Data Consistency

Goal

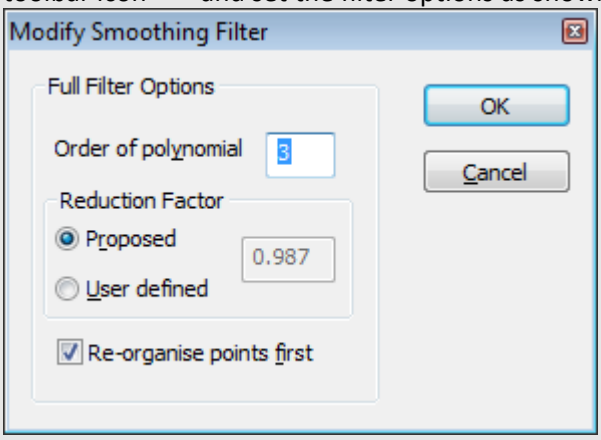
Get acquainted with the various GXT validation errors and the use of the filter tool to correct them

Task 1: Correct crossing contours

Gain contours may not cross each other. GIMS ensures that this does not happen when you use the digitizer. However this could happen in a GXT file that was generated from other sources.

Usually there is no simple way of correcting this problem. One can use the integrated GXT editor (see Exercise 8: GXT Manipulation) to manually change points coordinates. Some crossings can also be corrected with the GIMS filter tool, which is what we are going to experience in this task.

- Startup GIMS and import the file crossing.gxt
- Select the -2dB contour
- We are going to use the Smoothing Filter whose parameters should be first adjusted. Click on the toolbar icon  and set the filter options as shown on this picture.



- Click OK
- Use the smooth contour filter by clicking on the filter toolbar icon 
- Compare the blue, filtered, contour with the original one.
- Right-click on the diagram window and select **Accept** or press the **Enter** key
- Apply the filter a few times until the diagram is correct.
- In the menu **Diagram** select **Validate**, to ensure that the diagram is correct. The GXT editor is activated and does not show any errors.

Task 2: Correct loops

Neither gain contours nor service areas can loop, i.e. they cannot cross themselves. This often occurs at the contour's ends. If this is the case, you can use the GXT editor to change the points' coordinates. Filtering can sometimes help as we will see in this task.

- Startup GIMS and import both the gain contour and the service area diagram from the file loop.gxt.
- Double-click on the map to view the display characteristics and change the satellite projection to Plate Carrée.
- The service area point indicates where there is a loop in the gain contour. Zoom in that area.
- Select the contour to filter

- Use the Reorganize Points filter by clicking on the filter toolbar button 
- Right-click on the diagram window and select **Accept**
- In the menu **Diagram** select **Validate**, to ensure that the diagram is correct. The GXT editor is activated and does not show any errors.

Task 3: Correct open contours

An open contour is a contour whose end points are not matching. This is valid as long as the end points are clipped to the visible earth horizon.

Let us see how one can easily fix open contours with end points that are not on the horizon.

- Startup GIMS and import the file “open contours.gxt”
- Double-click on the map to view the display characteristics and change the satellite projection to Plate Carrée. Invalid open contours are now clearly visible.
- Select *all the invalid contours* that we are going to filter
- Extend the line by clicking on the filter toolbar button 
- Press the Enter key to accept all the filtered contours[2]
- In the menu **Diagram** select **Validate**, to ensure that the diagram is correct. The GXT editor is activated and does not show any errors.

[2] The “Delete” key cancels the filter.