Filter and Clip tool

Title Filter and Clip tool

Description

In areas with complex seabed morphology or features connected by regional morphology (e.g. pockmarks in basins), it may be needed to prepare the data to allow the best results when running an automated mapping tool. The **"Filter and Clip Tool"** will clip the initial dataset, removing the flat or featureless areas in the DEM and preserving information only for areas of the seabed where the features are more likely to occur. The application of this tool is particularly useful to remove the effects of broad-scale topography on Fill based delineations, in situation like when mapping coral mounds on top of a reef.

Illustration

Usage

The regional morphology or the presence of overlapping features may affect the delineation tools' ability to map the smaller-scale features. These issues can be addressed by using the **"Filter and Clip Tool"**. This tool will clip the initial dataset, based on a user defined threshold, removing the flat or featureless areas in the DEM, and preserving bathymetric information only for areas of the seabed where the features are more likely to occur.

The **"Filter and Clip Tool"** uses both High Pass Filter and Low Pass Filter to define the areas of higher vertical variation. The High Pass Filter accentuates the comparative difference between a cell's values and its neighbours. The Low Pass smooths the entire input raster and reduces the significance of anomalous cells. The user-defined filter threshold sets the reclassify range. The threshold value will not have a direct relation to the elevation values of the input DEM and should be positive even when the targeted features are negative. The Clip tool is then used to preserve areas of the original DEM with filtered values higher than the threshold set and to exclude areas of the DEM with gentle local variations.

Syntax

Filter_and_clip_ (inputDEM, Filter_t, Buffer_s, workspace, outRas, {delTemp})

Parameter	Explanation	Data Type
inputDEM	Dialog Reference The DEM that will be used as input. There is no python reference for this parameter.	Raster Layer
Filter_t	Dialog Reference	Double

	Note that this threshold value does not have a direct relation to the values of the input DEM and that this should be positive even when the targeted features are negative. There is no python reference for this parameter.	
Buffer_s	Dialog Reference Buffer distance should be wide enough the cover the totality of the targeted features and not only the areas of higher vertical variations. Half of the width of the targeted features tend to be a safe buffer distance. There is no python reference for this parameter.	Double
workspace	Dialog Reference The location where the output raster will be stored. ***Geodatabases cannot be used in this version of the CoMMa Toolbox.*** There is no python reference for this parameter.	Workspace
outRas	Dialog Reference Output raster name. There is no python reference for this parameter.	String
delTemp (Optional)	Dialog Reference When checked all the files within the temp folder will be deleted. There is no python reference for this parameter.	Boolean

Code Samples

There are no code samples for this tool.

Tags

Data Preparation; Pre-processing;

Credits

Arosio, R., Gafeira, J. & De Clippele, L. (2023) CoMMa Toolbox - Version 1.0 (https://github.com/ricarosio/CoMMa/tree/main)

Riccardo Arosio (University College Cork) and Joana Gafeira (British Geological Survey) conceived the original idea of the new ArcGIS Pro based on a previous toolbox created by Joana Gafeira, the BGS Seabed Mapping Toolbox (Gafeira, J., 2017). Riccardo Arosio wrote the Python scripts while Joana Gafeira and Laurence De Clippele performed extensive testing.
The tools development was mainly funded by INFOMAR through the Irish Marine Institute's research grant PDOC 19/08/03. The British Geological Survey and iAtlantic have also supported the creation of the toolbox.

Use limitations

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