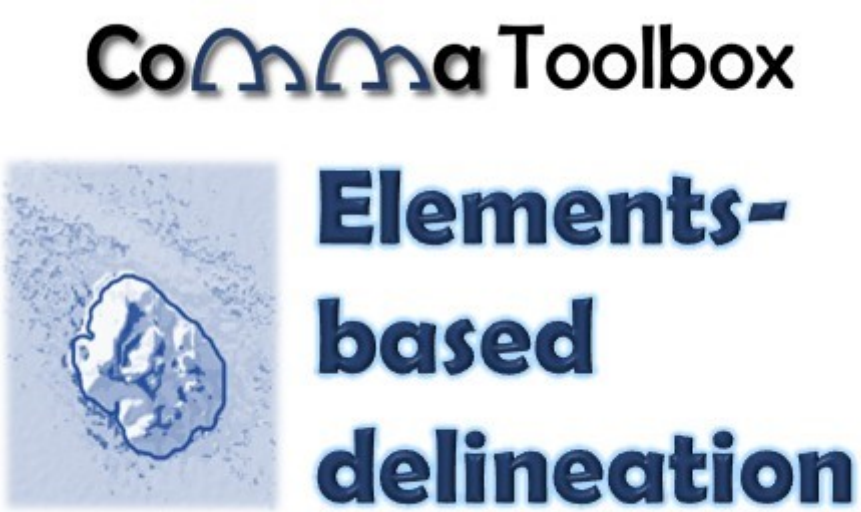
Elements-based delineation

Title Elements-based delineation

Description

The **"Elements-based Delineation"** defines the limits of the targeted features based on the spatial arrangement of homogeneous surfaces and relies on surface units created by the geomorphons algorithm.

Illustration



Usage

The **"Elements-based Delineation"** tool allows the delineation of confined features by using the geomorphons classification generated directly from the DEM or from an LPT-derived raster.

This tool will merge and reclassify the landform type depending on whether the targeted features are positive (peaks, ridges, shoulders, spurs and possibly slopes) or negative (pits, hollows, valleys and possibly footslopes), and then converted into polygons. The tool can be applied to the bathymetry or an LTP.

Syntax

Delineate_geomorphons_ (inputDEM, inputGeom, in_fill_direc, minVR, minWidth, minRatio, delBuffer, workspace, outFeat, {extra_class}, {delHoles}, {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
inputGeom	Dialog Reference The input classified landforms raster, generated directly from the DEM or from an LPT-derived raster. Every cell of this raster will have an integer value corresponding to a specific landform type: Flat—cell value 1, Peak—cell value 2, Ridge—cell value 3, Shoulder—cell value 4, Spur—cell value 5, Slope—cell value 6, Hollow—cell value 7, Footslope—cell value 8, Valley—cell value 9, Pit—cell value 10. There is no python reference for this parameter.	Raster Layer

in_fill_direc	Dialog Reference This defines the type of features that will be mapped by identifying the targeted features' vertical relief. The user can choose between: POSITIVE (e.g., mounds, drumlins) or NEGATIVE (e.g., pockmarks, sinkholes). There is no python reference for this parameter.	String
minVR	Dialog Reference Only features with a vertical relief greater than the Minimum Vertical Relief value will be mapped. There is no python reference for this parameter.	Double
minWidth	Dialog Reference Minimum Width threshold allows to exclude features based on their size. Only features with a width greater than the Minimum Width value will be mapped. There is no python reference for this parameter.	Double
minRatio	Dialog Reference The Minimum Width/Length Ratio threshold allows to exclude features based on their shape. Width and Length are defined by the features' Minimum Bounding Geometry (MBG) It should be noted that the Minimum Width/Length Ratio value can range from 1 (for a circle-shaped feature) to almost 0 (for a very elongated feature). There is no python reference for this parameter.	Double
delBuffer	Dialog Reference The Buffer Distance value is applied to the initial polygons created based on the feature's internal contour line correspondent to the Vertical Cutoff. The Buffer Distance should reflect approximately the distance, in plan view, from the reference internal contour line delineated to the actual rim/edge of the features. There is no python reference for this parameter.	Double
workspace	Dialog Reference Geodatabases cannot be used in this version of the CoMMa Toolbox. There is no python reference for this parameter.	Workspace
outFeat	Dialog Reference The name of the output shapefile with the delineated features. There is no python reference for this parameter.	String
extra_class (Optional)	Dialog Reference When checked, both slopes and footslopes are also merged to delineate respectively positive or negative features. If not checked, the positive features will only include the peaks, ridges, shoulders and spurs, whereas the negative features will only pits, hollows and valleys.	Boolean

	There is no python reference for this parameter.	
delHoles (Optional)	Dialog Reference When checked, holes inside a delineated feature are removed. There is no python reference for this parameter.	Boolean
delTemp (Optional)	Dialog Reference When checked all the files within the temp folder will be deleted. It should be noted that some of these “intermediate” files could be useful to understand the reason behind an unexpected output. If the tool is run multiple times the temp files will be overwrite, to avoid excessive use of disk space. If is required to compare the temp files created with different parameters, then different workspaces should be selected. There is no python reference for this parameter.	Boolean

Code Samples

There are no code samples for this tool.

Tags

Features delineation; Geomorphons.

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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