Buffer Without Overlaps Ver 0.2

QGis 3.22

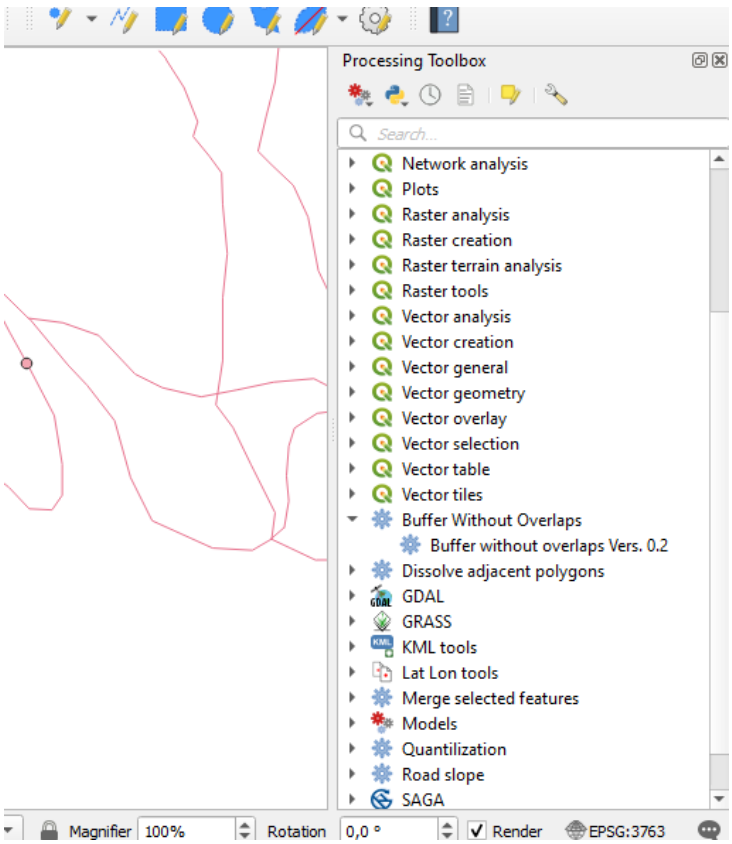
1. Introduction

The current algorithms on the QGis environment (QGis, GDAL, SAGA and GRASS) perform the "buffer" operation causing the appearance of overlaps, which can lead to more or less gross errors in the evaluation of the total area of the resulting buffer layer.

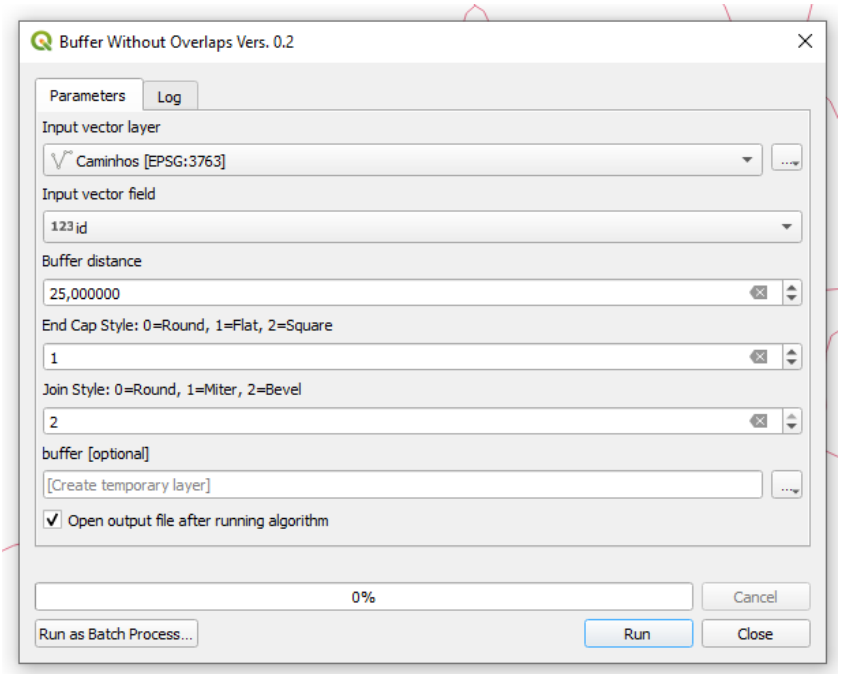
This plugin avoids this situation, dissecting the overlapping features and correctly calculating the total area of the resulting layer.

2. Using the plugin

Run the plugin by double clicking Processing Toolbox -> Buffer Without Overlaps like the following image:

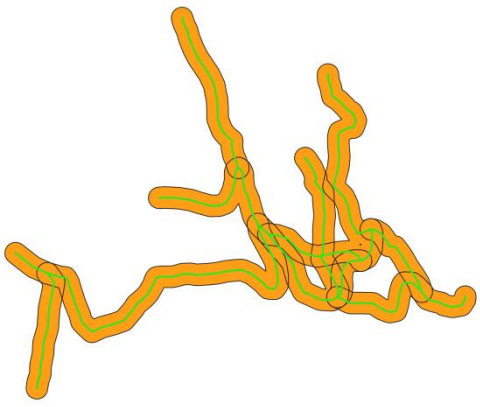


This action opens the following plugin parameters window:

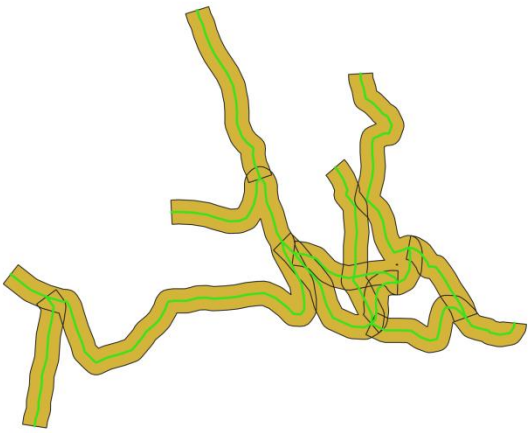


Where:

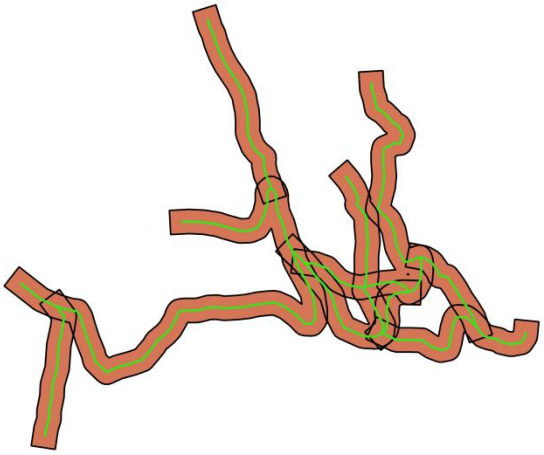
- *Input vector layer*: user must choose a vector layer in order to create a buffer around its features, according to options chosen below;
- *Input vector field:* user must choose a field in order to have a reference between input layer and result (buffer) layer features; this field should preferably be a sequentially numbered Id reference field;
- *Buffer distance:* user must choose a buffer distance, in map units; using a buffer distance of 0 (zero) will produce a void layer;
- *End cap style*: options for the end cap style are Round (0), Flat (1) or Square (2); see example images below;
- *Join style*: options for the join style are Round (0), Miter (1) or Bevel (2).



End cap style = 0, Join style = 0



End cap style = 1, Join style = 0



End cap style = 2, Join style = 0

3. Results

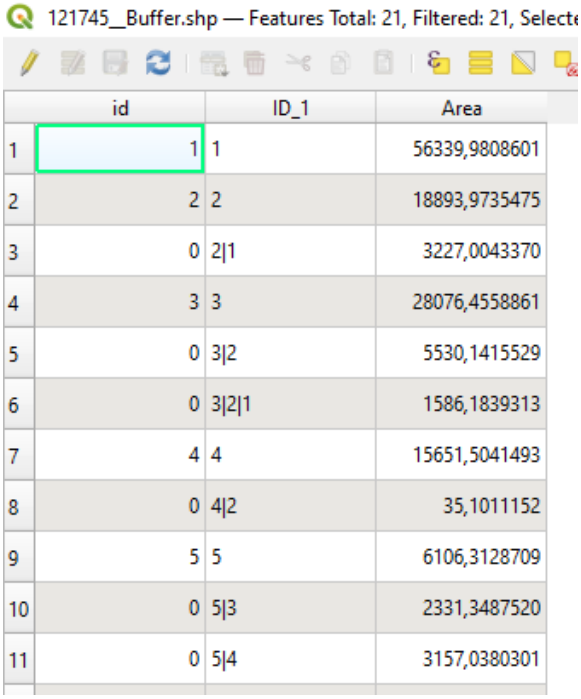
Running the plugin will produce a new polygon layer – the *buffer* – around the input layer features, according the buffer distance and the other options the user have selected.

This new polygon layer is saved in the Processing Output folder as a shapefile, with the name "_Buffer.shp" preceded by a time stamp (**H**our**M**inute**S**econd) like "121745_Buffer.shp", so the user can retrieve the previous buffer shapefiles when trying several options.

The Processing Output folder can be accessed at the menu Settings -> User Profiles -> Open Active Profile Folder, and then going to folder processing/outputs.

The buffer shapefile attribute table has a new field, named "ID" (or "ID_1" if an ID field already exists, and so on), which exhibits the relation of the buffer features to the input layer. In the following excerpt of a buffer

attribute table, the “id” field is related to the same “id” input layer sequentially numbered field (chosen by the user in the plugin parameters window), and the “ID_1” field, created by the plugin, relates each buffer feature with the input layer.
A value like “3|2|1” means that this feature of the buffer layer was an overlap of three features of the input layer with “id” values of 3, 2 and 1, respectively. In the case of overlays, the “id” value in the buffer attribute table is 0 (zero). Hence, the buffer layer has no overlaps.



	id	ID_1	Area
1	1	1	56339,9808601
2	2	2	18893,9735475
3	0	2|1	3227,0043370
4	3	3	28076,4558861
5	0	3|2	5530,1415529
6	0	3|2|1	1586,1839313
7	4	4	15651,5041493
8	0	4|2	35,1011152
9	5	5	6106,3128709
10	0	5|3	2331,3487520
11	0	5|4	3157,0380301

The Area values, in square map units, are calculated at the last stage of the plugin algorithm, giving a correct value of both feature a total areas of the buffer layer.
Any previous selection on the input layer is discarded while creating the buffer.