

ESoWC 2019 Dissolve tool

Documentation

Concept

The ESoWC 2019 Dissolve tool has been implemented as three components:

- add a new partner region to existing partner regions
This tool adds a new partner region to existing partner regions. Partner regions are assigned to a dissemination center, and the purpose of this tool is to expand the area of the respective dissemination center. While adding a new partner region, topological cleaning is automatically performed to ensure topological consistency
- update grid points with all partner regions
A grid of points exists for the total area of interest. Each grid point has an attribute with the IDs of the partner regions that intersect with the basin where the grid point is located. This attribute is updated with this tool.
- update river basins with all partner regions
Each basin has an attribute with the IDs of the partner regions that intersect with the basin. This attribute is updated with this tool.

Implementation

The three tools have been implemented as GRASS GIS addons *v.ecmwf.addregion*, *v.ecmwf.gridpoints*, *v.ecmwf.riverbasins*. The GRASS addons are available at https://github.com/esowc/gis_dissolve_tool/tree/master/GRASS_addons. Additionally, QGIS plugins have been created as wrappers for the GRASS GIS addons. The respective QGIS plugins are *ECMWF add partner region*, *ECMWF update gridpoints*, *ECMWF update basins*. The QGIS plugins are available at https://github.com/esowc/gis_dissolve_tool/tree/master/QGIS_plugin. The QGIS plugins use GRASS GIS to execute the respective GRASS GIS addons.

In all cases, the original data are not changed. Instead, updated copies are created.

The tool to add a new partner region dissolves the new partner region with the existing partner regions, boundaries between partner regions are dissolved by dissemination center (field DISS_CENTR). Input data are partner regions dissolved by dissemination centers and a new partner region to be added. A minimum gap size can be defined in square meters to remove all gaps smaller than this size. The output will be new version of the partner regions dissolved by dissemination centers.

The tools to update gridpoints and basins create a copy of the gridpoints or basins, all fields and entries are copied as is, only the MOUIDs_all field is changed. Internally, the tables are transformed from dbf to sqlite back to dbf, on this way, dbf field definitions might change slightly. The original gridpoints and basins are not changed at all. Input data are partner regions (the original partner regions, not the ones dissolved by dissemination center), river basins, and grid points. The partner regions must have an ID set, default is in the field MOU_IDS. The gridpoints and the basins will have the IDs of the partner

regions collected in the field MOUIDs_all. For each basin, the IDs of all partner regions intersecting with the basin are collected. Grid points get the collected IDs of the basin they are located in.

Installation

Requirements

Both the GRASS GIS addons and the QGIS plugins require a Linux operating system. For both the GRASS addons and the QGIS plugins, GRASS GIS 7 is required. The recommended version is GRASS GIS 7.6 or higher. The QGIS plugins are compatible with QGIS 3. The recommended version is QGIS 3.6 or higher. If GRASS GIS is installed in a non-standard location like `/usr/local/apps/qgis/3.6.2/deps/bin/`, this location needs to be added to the PATH variable, or a link to the GRASS GIS startup script, e.g. `grass76`, must be created in a location that is included in the PATH variable. Such a link could be created e.g. in `/usr/local/bin` or in `${HOME}/bin`.

Installation of the GRASS GIS addons

The GRASS GIS addons `v.ecmwf.addregion`, `v.ecmwf.gridpoints`, `v.ecmwf.riverbasins` can be installed by starting a GRASS GIS session, then using e.g.

```
g.extension extension=v.ecmwf.addregion url=/path/to/v.ecmwf.addregion
```

The url must in this example point to the folder `v.ecmwf.addregion`.

Usage of the GRASS GIS addons

GRASS GIS addons, just like regular GRASS GIS modules, are available in a running GRASS GIS session. The addons can be invoked with a graphical user interface or on the commandline. The GRASS GIS addons have each a manual page, available within a GRASS GIS session with e.g. `“g.manual entry=v.ecmwf.addregion“`, explaining all parameters.

Installation of the QGIS plugins

The folders of the QGIS plugins available at https://github.com/esowc/gis_dissolve_tool/tree/master/QGIS_plugin must each be archived in a zip file, then installed within QGIS: Plugins → Manage and Install Plugins...

Usage of the QGIS plugins

Add partner region

The parameter “Minimum gap size”, units are square meters, should be left at its default and only be changed if the results are not as expected: too many small areas disappeared (decrease) or too many gaps are present in the output (increase).

The parameter “Folder with `v.ecmwf.addregion`” must point to the GRASS GIS addon folder “`v.ecmwf.addregion`”, this GRASS GIS addon will be installed by the QGIS plugin.

Update gridpoints

The parameter “Column with partner ID” refers to the column in the “Partner regions”. The parameter “Column with all partner IDs” refers to the column in the “Grid points”.

The parameter “Folder with `v.ecmwf.gridpoints`” must point to the GRASS GIS addon folder “`v.ecmwf.gridpoints`”, this GRASS GIS addon will be installed by the QGIS plugin.

Update basins

The parameter “Column with partner ID” refers to the column in the “Partner regions”. The parameter “Column with all partner IDs” refers to the column in the “River basins”.

The parameter “Folder with v.ecmwf.riverbasins” must point to the GRASS GIS addon folder “v.ecmwf.riverbasins”, this GRASS GIS addon will be installed by the QGIS plugin.