

# User Guide

## GMPGIS\_main.py

Step1: You need to prepare latitude and longitude of sampling points for analysis species in advance, and then, import the excel file and export to a *.shp* file, as show in figure1.

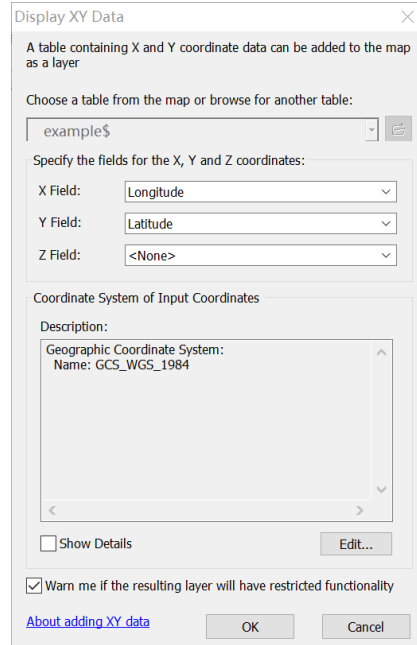


Figure1.

Step2: You need to build a tool based on our algorithm. A special tips: input2 should set multivalue, and others set default, as show in figure2.

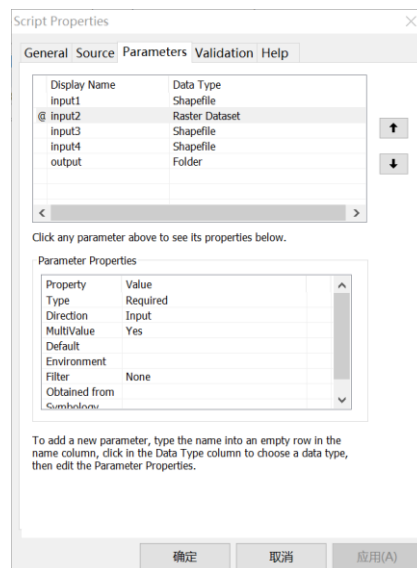


Figure2.

Step3: You need put the soil raster (hwsd), HWSD\_SUM and HWSD\_DATA in table of contents. These data are freely available at <http://www.fao.org/soils-portal/soil-survey/soil-maps-and-databases/harmonized-world-soil-database-v12/en>, as show in figure3.

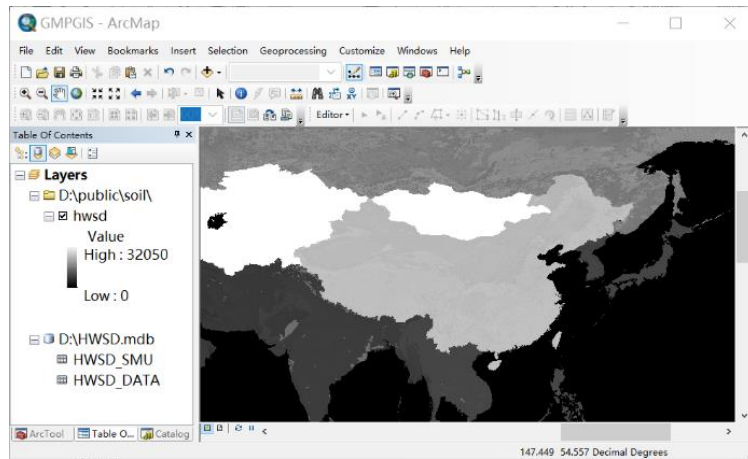


Figure3.

Step3: You need download climate database from a folder named PCAstd and add in tool. These data are freely available at <https://github.com/gmpgis/distribution>. China.shp and Country.shp can be download from above website as well, in addition, if you need other regions .shp file, you can download from <https://www.gadm.org>, click ok to execute the GMPGIS.As show in figure 4.

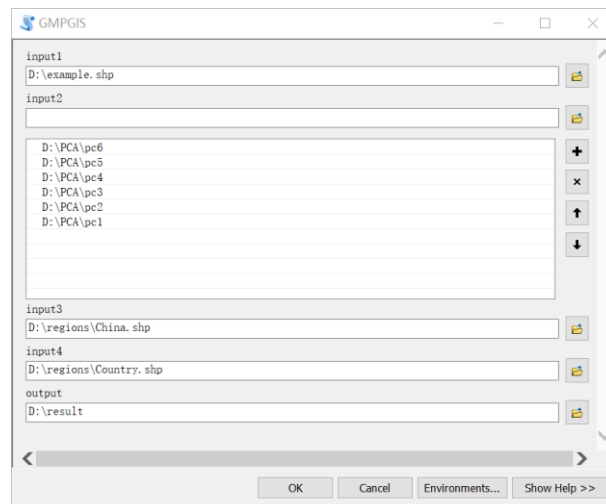


Figure 4.

The final distribution file is fin, tables of areas are CountAreas1and CountAreas2.

### **GMPGIS\_ecoFactor.py**

Step1: You need to build a tool based on our algorithm. A special tips: input2 should set multivalue, and others set default, as show in figure5.

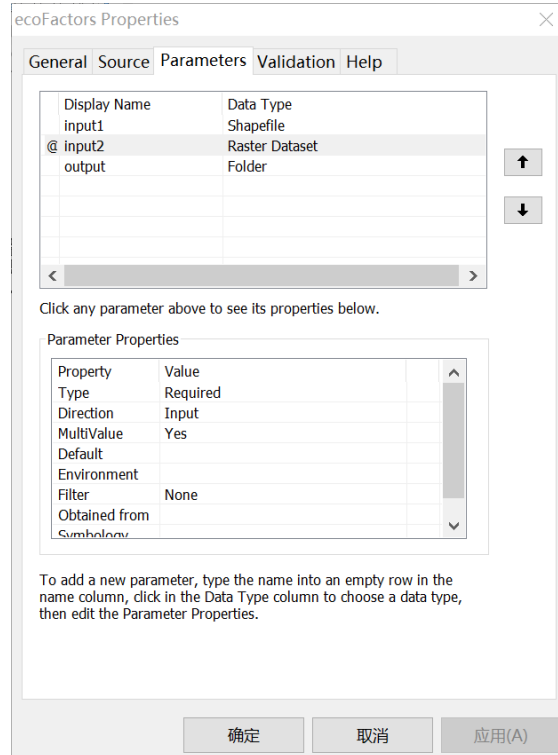


Figure 5.

Step2: You need download climate database from a folder named wc2.0\_30s\_bio and add in tool. These data are freely available at <http://www.worldclim.org>, click ok to execute the GMPGIS, as show in figure 6.

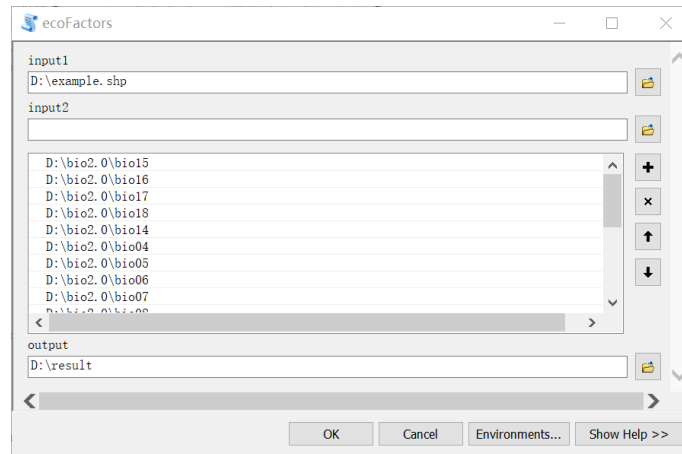


Figure 6.

The final result is ecoFactor.xls

If you have any questions about GMPGIS, please don't hesitate to let me know, I will reply your email as soon as possible.

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