**CLIMATE LAYER PROCESSING**

**Setup**

**QGIS**

* QGIS (version: 3.16)
  + MacOS: <https://qgis.org/downloads/macos/qgis-macos-ltr.dmg>
  + Windows: <https://qgis.org/downloads/QGIS-OSGeo4W-3.16.8-4.msi>
  + Other: <https://qgis.org/en/site/forusers/download.html>

**Activity**

This activity was made by Rhett Rautsaw. Files for this activity can be found in *“Demo/Manual/Climate\_Layer\_Processing/”* folder.

\*\*QGIS version has to be 3.16; if not, this will not work\*\*

QGIS (version: 3.16)

1. Open QGIS.
2. Drag the layers (.tif files) found in the *“data/climate\_processing/bioclim/”* folder into QGIS. They should automatically appear. The box on the left lists the different layers not the layer is displayed.
3. Add occurrence records from text-delimited file (Layer Menu > Add Layer > Add Delimited Text Layer…). Nagivate to “*data/cleaning\_demo/maxent\_ready/diapensiaceae\_maxentready\_20220625.csv*”. X field is “longitude” and Y field is “latitude”. Make sure the CRS is EPSG:4326 – WGS 84. Graphical user interface, table

   Description automatically generated
4. Create an alpha hull/shape, using the Processing Toolbox Concave Hull Tool. Set the threshold to 1. Graphical user interface, application

   Description automatically generated
5. Calculate the greatest distance using the Processing Toolbox Distance Matrix Tool. Then open the Attributes Table for that matrix and use the last column to calculate the 80th quantile to find the suggested buffer distance. Graphical user interface, application

   Description automatically generated
6. Reproject your alpha hull to a CRS in meters using the Reproject tool in the Processing Toolbox. Convert from EPSG:4326 to EPSG:3857.Graphical user interface, application

   Description automatically generated
7. Buffer your reprojected layer by the suggested buffer distance using the Buffer tool in the Processing Toolbox. Graphical user interface, text, application

   Description automatically generated
8. Next you can clip your rasters by your buffered layer using the “Clip raster by mask layer” in the Processing Toolbox. Scroll to the Clipped (mask) box and save this output to a ASCII (.asc) formatted raster.Graphical user interface, text, application, email

   Description automatically generated

Repeat for the remaining raster layers.