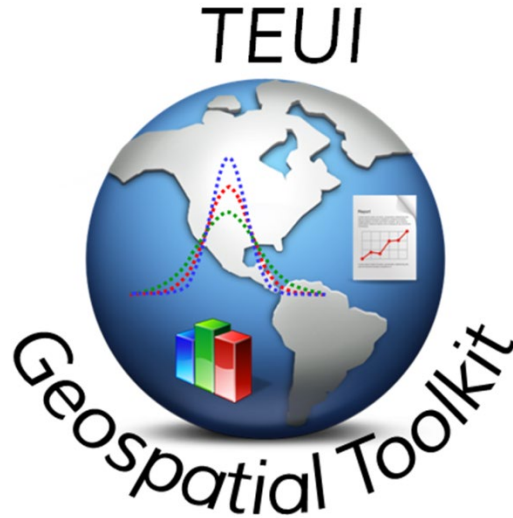# Climate Resampler Tool

The climate resampler tool is designed to downscale climate rasters (i.e. precipitation and temperature layers) to resolutions fine enough for GIS-based ecological analysis and modeling.

Required Data:

- TEUI_Training | Climate_Resampler_Data folder files (**DEM_30m.img, Precipitation_800m.img, DEM_800m.img**)
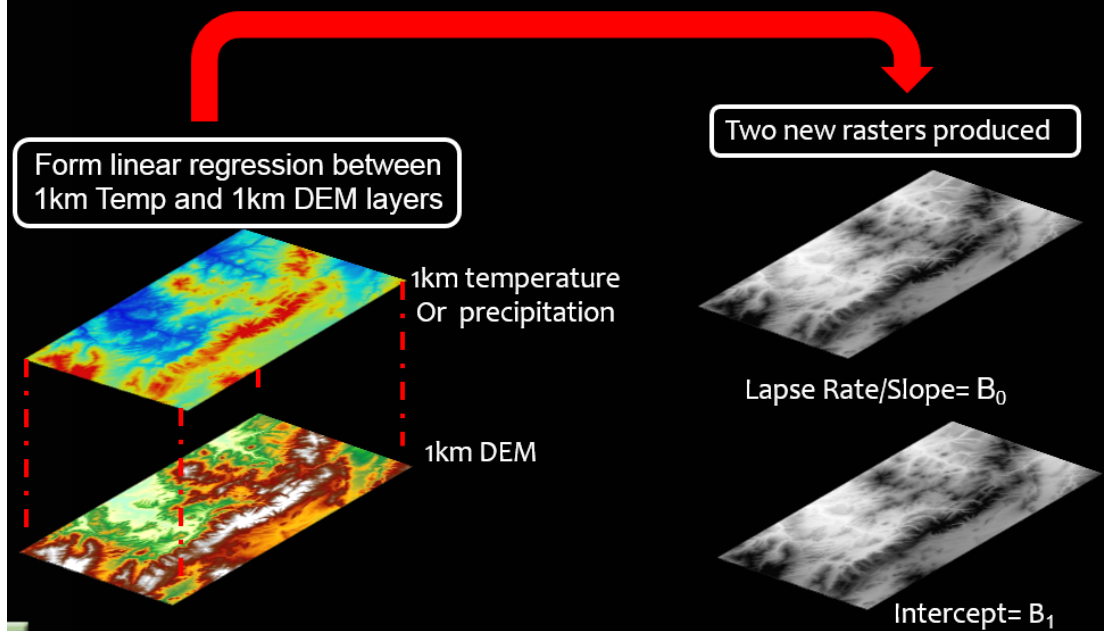
Training Objective:

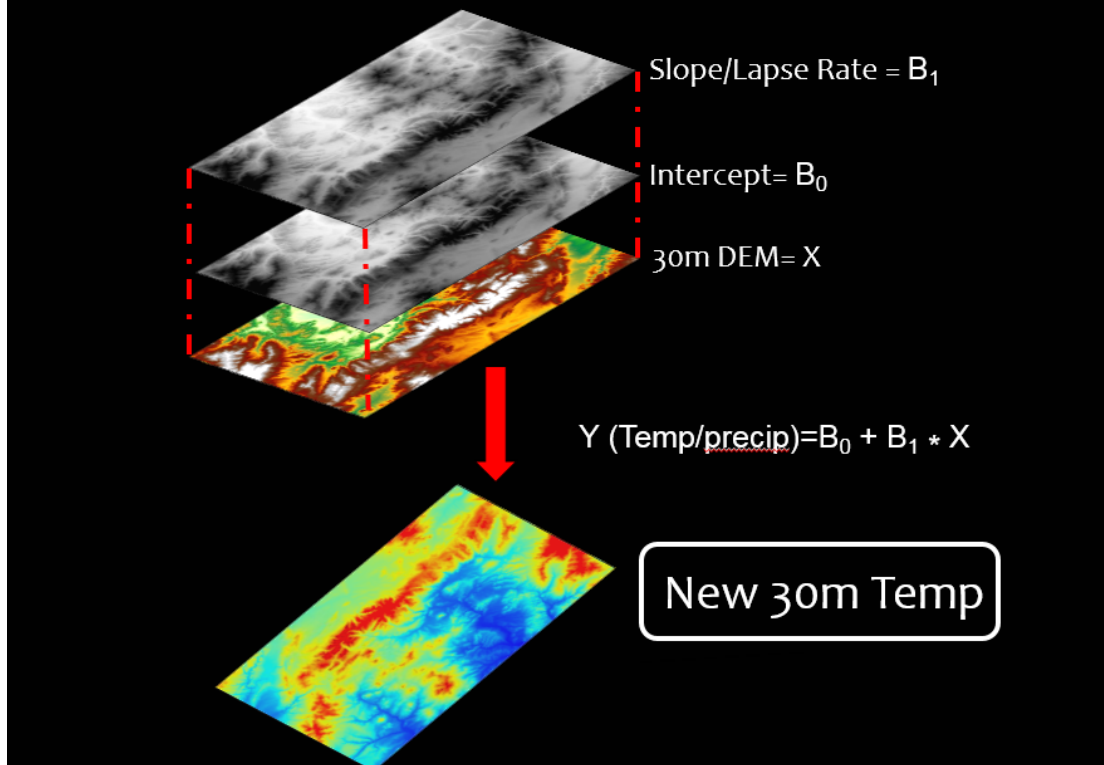Downscale a precipitation raster from 800 meter to 30 meter resolution.

Contents

How Climate Downscaling Works

Form linear regression between 1km Temp and 1km DEM layers

Two new rasters produced

1km temperature Or precipitation

1km DEM

Lapse Rate/Slope= B_0

Intercept= B_1

New Climate Raster

Slope/Lapse Rate = B_1

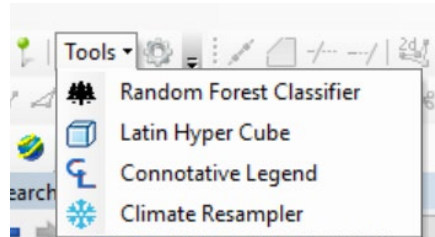Intercept= B_0

30m DEM= X

$Y (Temp/precip)=B_0 + B_1 * X$

New 30m Temp

Part 1: Run the Climate Resampler Tool

A. Select input rasters

1. On the Toolbar, click the **Tools** menu then **Climate Resampler**.

2. In the Climate Resampler dialog, click the yellow folder button next to the **Climate Raster** field. Navigate to the **Climate_Resampler_Data** folder and select the **Precipitation_800m.img** raster**.**


3. In the **DEM Raster** field, add the **DEM_800m.img** raster.

4. In the **Downsized Raster** field, add the **DEM_30m.img** raster.

> *If you are working with your own data, remember that **all rasters must be in the same projection**. Also, **make sure the rasters have an extent at least one block size wider than your final area of interest**. This will ensure that the full extent is covered by the tool.*

B. Set output parameters and run the tool

1. Set the **Block Size** field.

   - When reading a source raster, the tool breaks it up into blocks (with the user defined size) so that the application won't use too much memory and crash. Reduce the block size parameter if you experience crashing.

2. Set the **Percent Error Threshold** field.

   - As the resampler iterates through a block, it keeps track of the no data count for the current block. If that no data count exceeds the percent error threshold, a no data value (-9999) is written to the resulting raster.

3. Choose your **Output** file location.
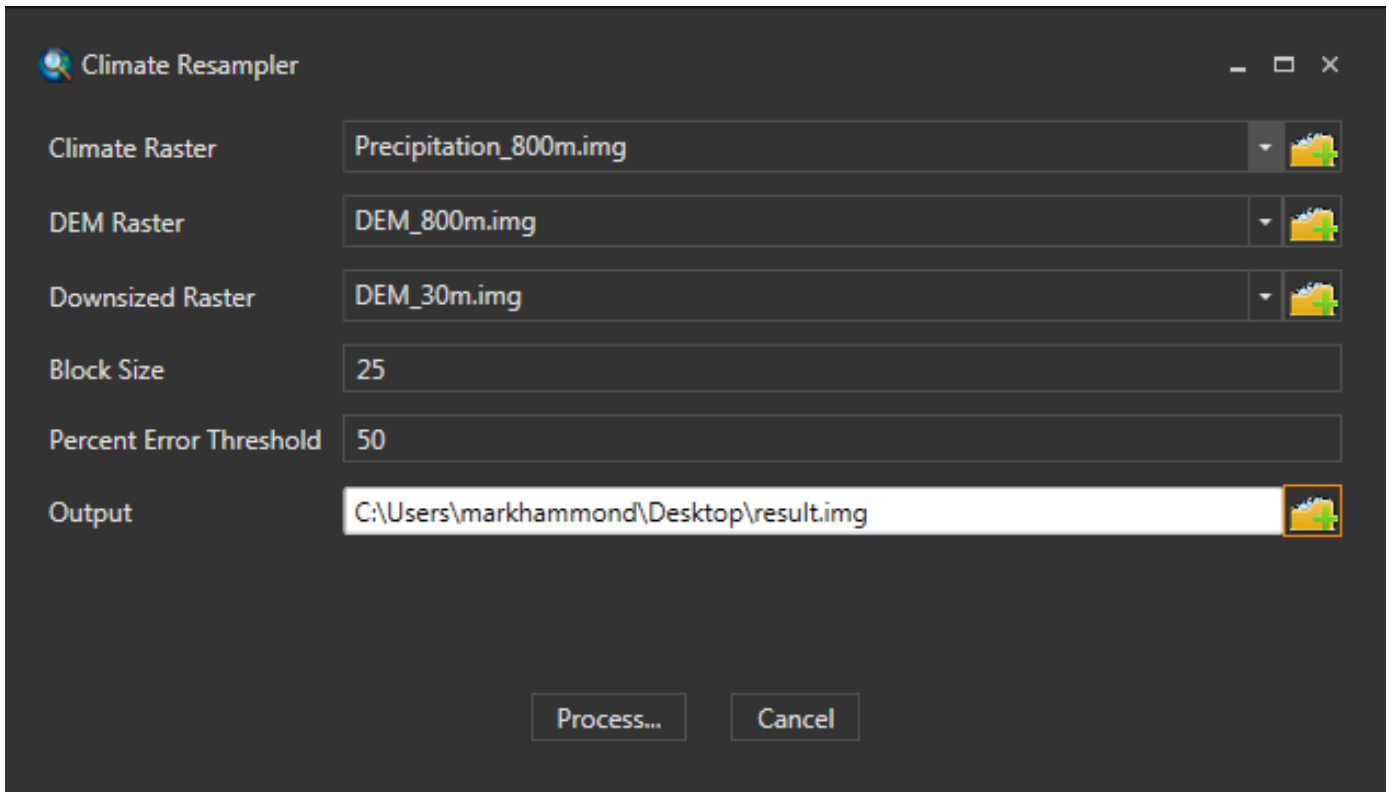
4. Click **Process**.

5. Compare the **Precipitation_800m.img** raster to the output downscaled raster in ArcMap.