Tried and compared two methods for retrieving data from the climatSERV website for the ESI (evaporative stress index) values at 18 specific point locations. The first method involved downloading the .tif files and then getting the ESI values. The second option was to get the ESI values directly from the website by creating a tiny polygon around each point of interest. WARNING: I'm not really sure that the ESI data is intended to be used at this small of a scale.

Method 1: Download .tif files.

SCRIPT: get_ESI_tif.py
OUTPUT: ESI_tif.zip

Create a single box around all points of interest.

Next step is optional.
Clips the .tif files to desired shape. i.e. clip the tif to AL state boundary.
Used to be able to do this in the first step, but got error message when I tried to repeate it.

SCRIPT: ESI_tif_clip.py
OUTPUT: <date>_CLIP.tif files

Next step gets ESI data from .tif files using point locations. Uses x,y coordinates.
i.e. get ESI data for SCAN stations locations

SCRIPT: tif2select_pts.py
OUTPUT: ESI_tif2select_pt.csv

Method 2: Create polygon around each point of interest

SCRIPT: get_ESI_select_pt.py
OUTPUT: poly_ESI_df.csv

This gets the average ESI value around the pt. location. Hence, if the point is on the edge of a pixel, it may end up taking an everage ESI value across 2 pixels.

Compare outputs from the two methods from above.

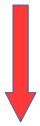
Use command line extension of python library raster2xyz. Converts all pixels in the tif files to xyz data (long, lat, ESI) where long and lat (x, y) are centroids, or center of the pixel values.

SCRIPT: tif2xyz.sh
OUTPUT: <date>_CLIP.csv

```
for FILE in /path/to/clipped_files/*.tif; do
    BASE=$(basename $FILE .tif)
    NEWNAME=$BASE.csv
    raster2xyz $FILE $NEWNAME
done
```

OPTIONAL STEP:
- Probably just a one-use script, so didn't make this a stand-alone script.
- Merges all the .csv files from tif2xyz.sh into a single csv file.

SCRIPT: merge_esi_csv.py
OUTPUT:master_ESI_CLIP_xyz.csv



Compare ESI values from the 8 closest pixels to polygon and tif files (row/col) methods as described above. So, far, I just have a print out .txt file. Not sure how I want this script to go yet…..IN PROGRESS.

SCRIPT: ESI_output_comparison.py
OUTPUT: comparison_output.txt

BEWARE: This script is still in the making...hence, may not be fully functional yet.