**How to match the grids on .tif files**

**From instructions by Chloe Marin -fearless leader**

Weather data are usually raster

**Mapping bee data in ArcGIS**

Open ArcGIS

Open a map

Create new project

Attach folder

Need a driver to read .msp files

<https://www.microsoft.com/en-us/download/details.aspx?id=54920>

Select which downloads you need (we only needed the x64 version for your device, but this may vary depending on the device) Then just open the appropriate .exe file, follow the prompts, and you'll be good to go!

**Loading Data**

1. Download ʻrasterʻ folder from the [Google Drive Folder](https://drive.google.com/drive/folders/1d_zk3aiCJG-b7MdJUsrMTE6Jc0urteoq?usp=share_link) under ʻDataʻ

Adding Folder Connection to Bee Data

1. Catalog Pane > Folders > Add Folder Connection > Select the ʻrasterʻ folder, click OK, and confirm the folder and correct shapefiles have appeared in the Catalog Pane.
   1. If Catalog Pane isnʻt showing up on the right side of the screen: View < Windows < Catalog Pane
   2. ʻrasterʻ folder should have three files with the same name but different extensions. Ensure that the folder has ALL three files in order for it to work and appear correctly in ArcGIS Pro

To get the data out of the ocean

Open View

Open geoprocessing window

Search for define projection

Click on Define Projection

Use dropdown and select file

Click on coordinate system

Type in California

Click on Projected Coordinate sytem

Click on state systems

Pick NAD 83\_2011(Teale) Albers (Meters)

Then run it.

Save using ctrl-S

**Getting data:**

Go to climateengine.org

Visualization layer - Raster

Variable

Type

Dataset – Prism 4km monthly

Variable PPT – monthly

Statistic – Total

Calculation – Average

Custom range

Start month – Mar

End month– Oct

Year range

1998-2023

Zoom into California

Click on Download

Rectangular region

Drag and drop rectangle to cover California

Reopen Download

Give the filename

Download Map layer

**To combine datafiles**

Add to project

How to match it with CWE layer

1. Fix resolution by re-sampling

a. Geoprocessing pane

b. Resample

c. Input raster – climate…

d. Output raster - gets new name

e. Output cell Size – CWE.tif

f. Sampling technique – Nearest

g. Set extend coordinate system as the same crs

h. Snap to CWE.tif

2. Analysis pane

a. Check that the output coordinates are set

i. EnvironmentsOutput coordinate system – NAD 1983 Albers

b. Go back to geoprocessing and re-run

i. Check the values of the new and old

3. Clip

a. Search on clip raster

i. Open Clip Raster

1. Resample file

2. Output

a. Download from living atlas

i. Us boundary

ii. Select California

iii. Export California boundary

ii. Use California clip in output raster dataset

iii. Be sure to check input features for clipping geometry

1. Run

iv. Change color ramp from contents on right – there is one for precipitation

v. To get data

1. Find sample tool

2. Input new layer (can put more than one thing in there)

3. Input CWE.tif

4. Name it

b.

4. Extract