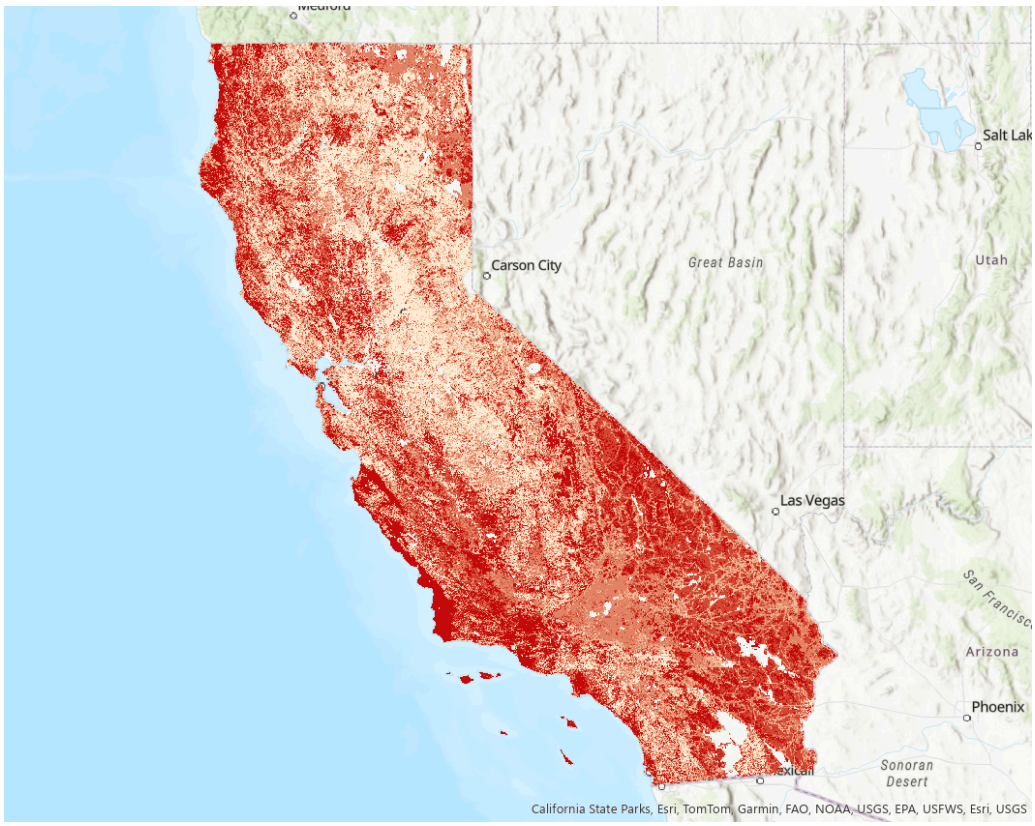
Settings

1. Beta diversity script: https://github.com/levisimons/CIB/blob/main/CIB_BetaDiversity.R
2. Primer: ITS1_Fungi
3. Taxonomic agglomeration: None
4. Beta diversity metric: chao
5. Filtering
    a. Decontamination
        i. Remove taxa with fewer than two reads
        ii. Remove samples with fewer than two reads
    b. Remove empty samples after decontamination.
    c. Remove samples without location/date information.
    d. Retain taxa within the genus Pyronema
6. Final filtered data set statistics
    a. 41 samples
    b. 5 taxa
    c. 11 projects
7. Percent variation attributed to principal components:
    a. PC1: 8.5%
    b. PC2: 3.5%
    c. PC3: 2.5%
8. Environmental layers used
    a. CIB_EnvironmentalLayers
9. Random forest modeling to predict the values of the first three principal components using environmental variation.
    a. 80/20 training/testing split
    b. 100 models with results averaged
10. Beta diversity PC maps.
    a.




Pyronema_PC1.tif
Principal component 1

Top five important variables

1. NBRTVariance (Variance on burn ratio)
2. CHILI (Continuous Heat-Insolation Load Index)
3. Walking_Friction (How inaccessible locations are on foot)
4. BIO03 (Isothermality)
5. BIO15 (Precipitation Seasonality)

Pearson correlations between predicted and actual principal component values
0.25 +/- 0.23

b.




Pyronema_PC2.tif
Principal component 2

Top five important variables

1. BIO03 (Isothermality)
2. NBRTVariance (Variance on burn ratio)
3. Sentinel2Mean_B10 (Mean in the 1373.5nm (S2A) / 1376.9nm (S2B) band)
4. BIO02 (Mean Diurnal Range (Mean of monthly (max temp - min temp)))
5. CHILI (Continuous Heat-Insolation Load Index)

Pearson correlations between predicted and actual principal component values 0.22 +/- 0.28

c.



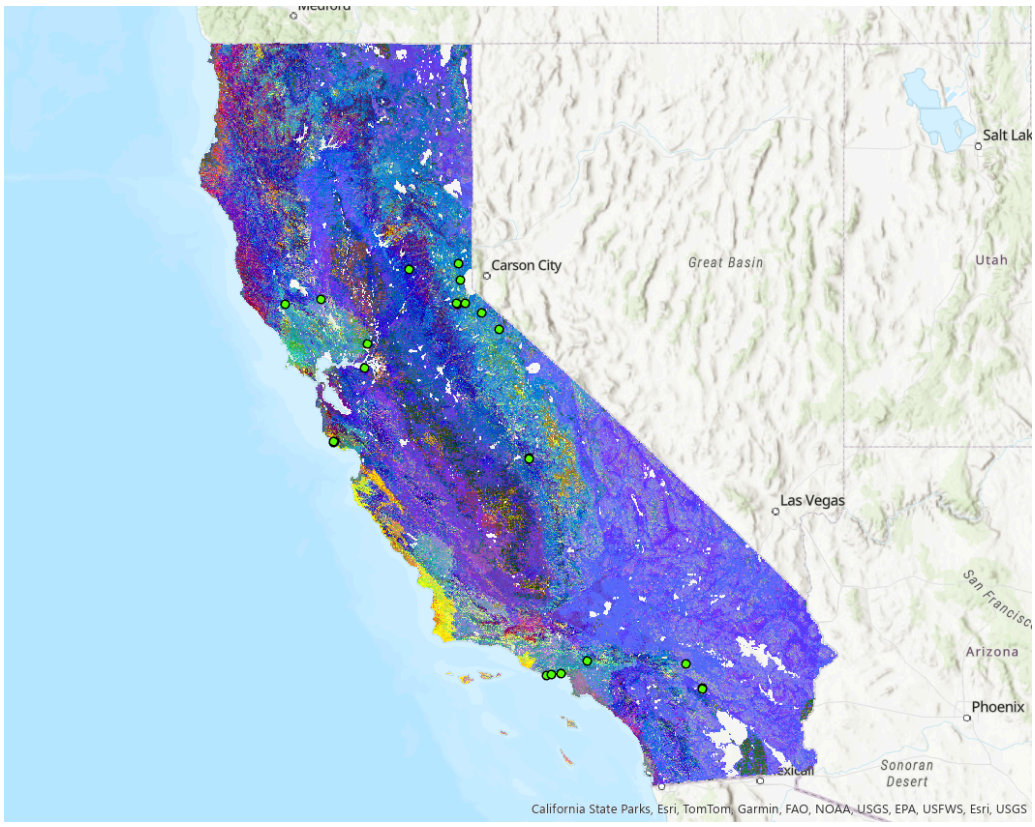

Pyronema_PC3.tif
Principal component 3

Top five important variables

1. BIO03 (Isothermality)
2. BIO02 (Mean Diurnal Range (Mean of monthly (max temp - min temp)))
3. BIO15 (Precipitation Seasonality (Coefficient of Variation))
4. EVIVariance (Variance on the Enhanced Vegetation Index)
5. CHILI (Continuous Heat-Insolation Load Index)

Pearson correlations between predicted and actual principal component values 0.33 +/- 0.28

d.




Pyronema_BetaDiversity.tif
All 3 PCs stacked on each other with eDNA sample points.

e.