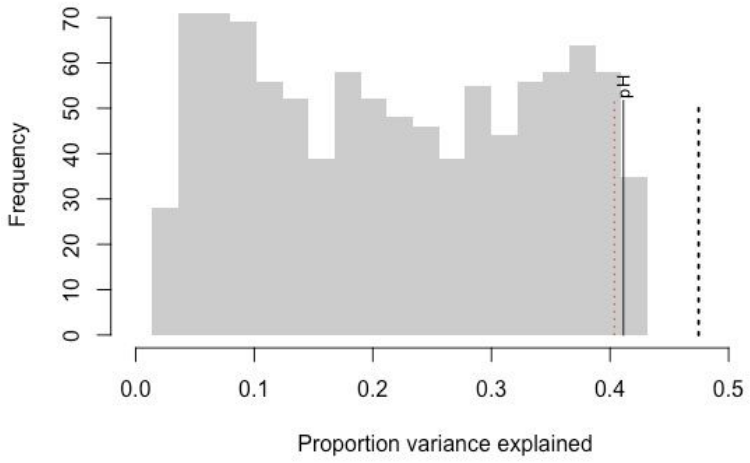
Allie Jensen
GEOG 920
Lab #11

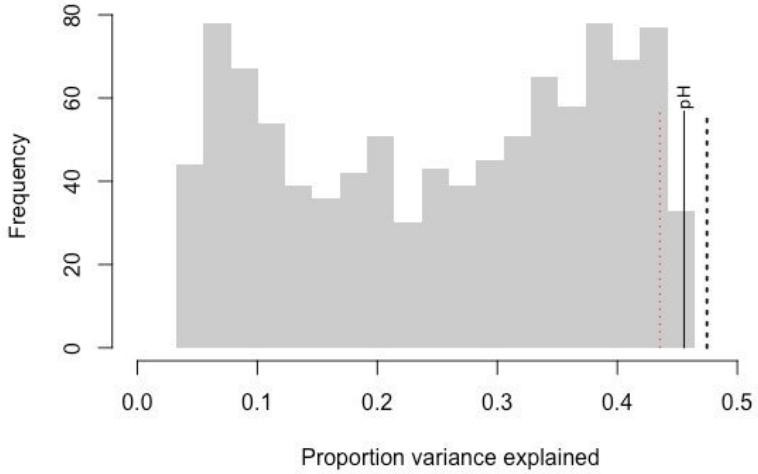
1). Significance of pH Reconstruction

MAT



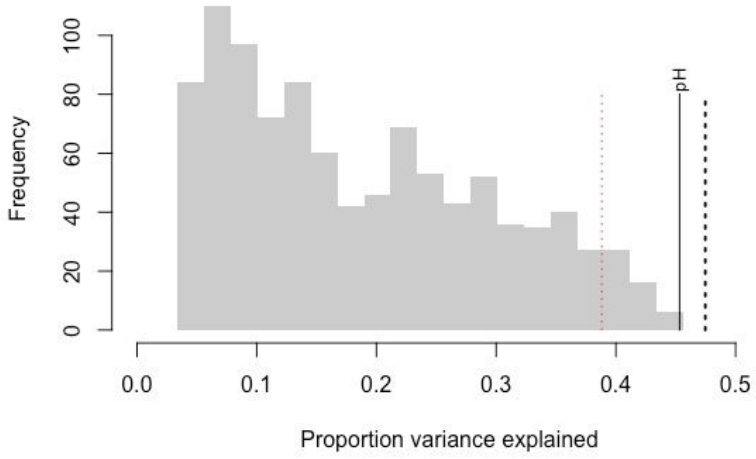
From this plot, it is clear that the pH reconstruction explains about 41% of the variance and the first axis of the unconstrained ordination explains about 47% of the variance.

WA



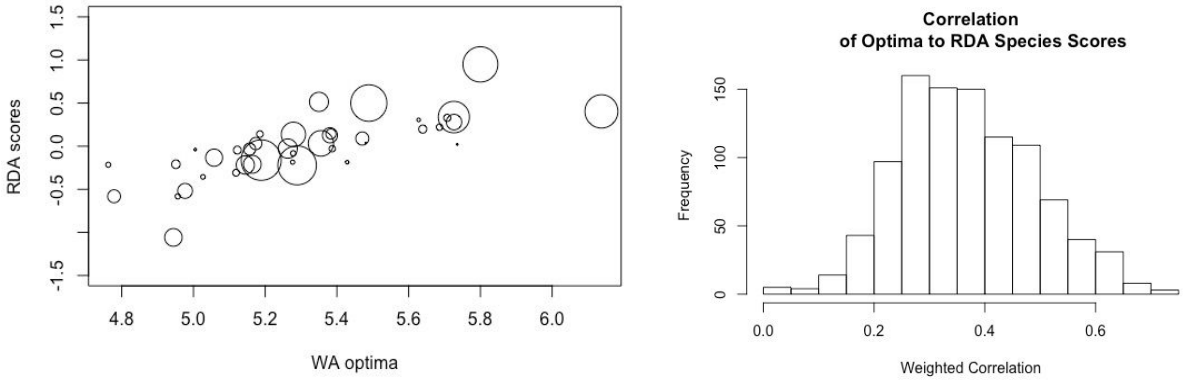
Using the WA method, the pH reconstruction explains about 46% of the variance and the first axis of the unconstrained ordination explains about 47% of the variance. This shows that pH explains about the maximum amount of variation that any single environmental variable can explain.

WAPLS



Using the WAPLS method, the pH reconstruction explains about 45% of the variance and the first axis of the unconstrained ordination explains about 47% of the variance. This pH reconstruction is very similar to the WA pH reconstruction.

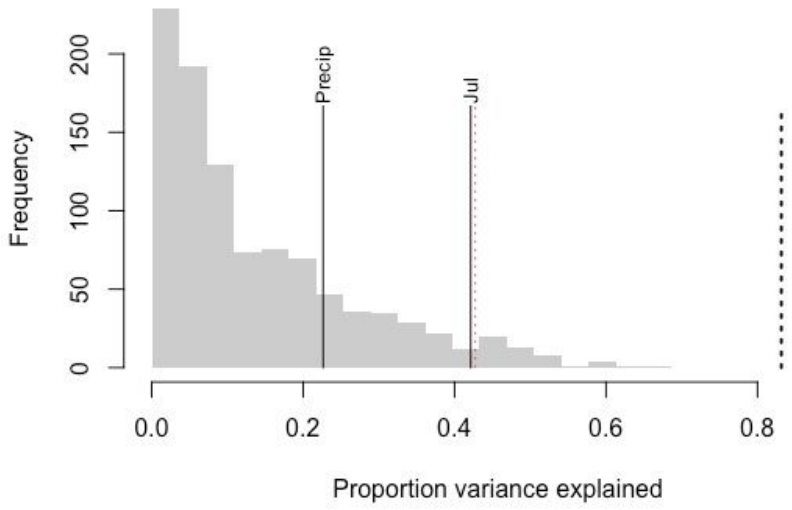
ObsCor on WA/WAPLS



There appears to be some positive relationship between species WA optima from the calibration set and the species ordination axis one scores in the fossil set. The correlations between the species optima and species ordination scores is centered at 0.35.

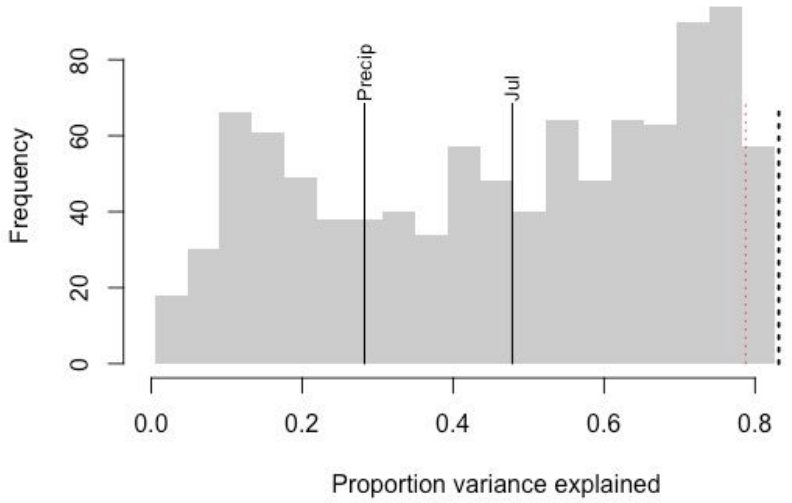
2). Significance of Pollen Based Reconstructions for Hyde Park, NY (July temp and mean annual precip)

MAT



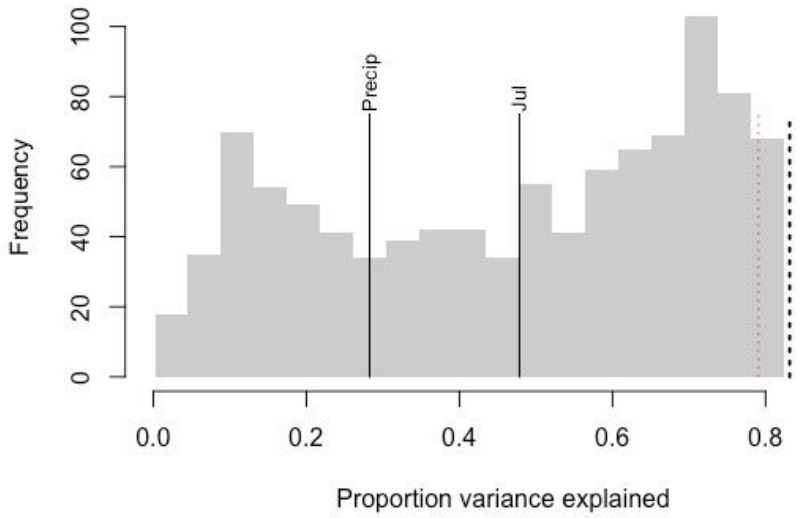
Using the MAT method, mean annual precip explains about 23% the variance and July temp explains about 42% of the variance in the fossil pollen data, so the temperature reconstruction explains a greater amount of the variance.

WA



Using the WA method, mean annual precip explains about 28% of the variance and July temp explains about 48% of the variance, so once again the temperature reconstruction explains a greater amount of variance.

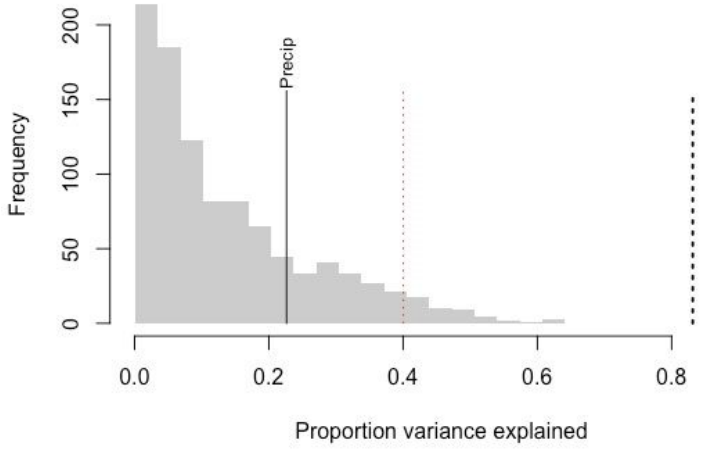
WAPLS



Using the WAPLS method, mean annual precip explains about 28% of the variance and July temp explains about 48% of the variance, just like in the WA reconstruction.

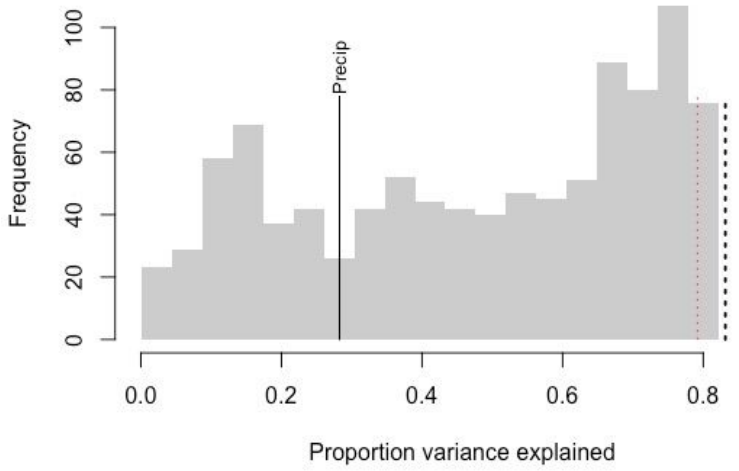
Removing the most significant environmental variable (July temp)

MAT



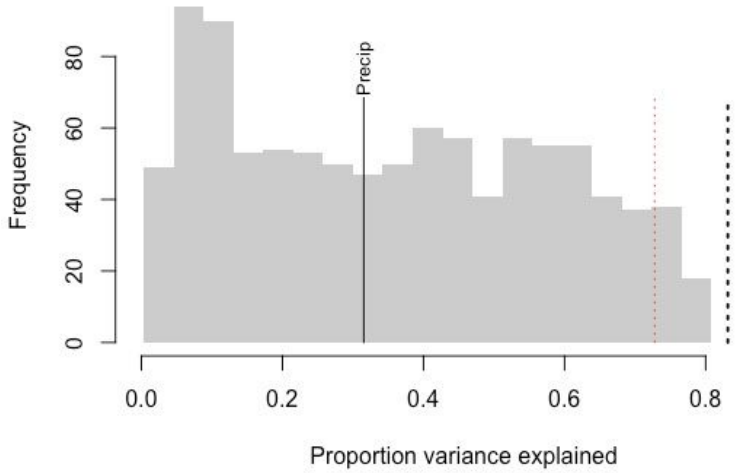
When July temp is removed from the MAT reconstruction, mean annual precip explains 23% of the variance in the fossil pollen data.

WA



When July temp is removed from the WA reconstruction, mean annual precip explains 28% of the variance in the fossil pollen data.

WAPLS



When July temp is removed from the WAPLS reconstruction, mean annual precip explains 32% of the variance in the fossil pollen data, similar to the WA reconstruction.

3). Bayesian Inference

	Disease (0.0001)	No Disease (99.9999)
Test Positive	67	14
Test Negative	33	86

Event A = Having the Disease
Event X = Getting a Positive Diagnosis (whether it is a true or false positive)

Need to find P(A|X) = P(X|A)*P(A)/P(X)
P(X|A) = 0.67
P(A) = 0.000001
P(X) = (0.14)*(.999999) + (0.000001)*(.67) = 0.1399999 + 0.00000067 = 0.1400006
Probability = (0.67*0.000001)/(0.1400006) = 0.00000478
Percent = 0.00000478*100 = 0.0005%

There is a 0.0005% of actually suffering from the disease after receiving a positive diagnosis.