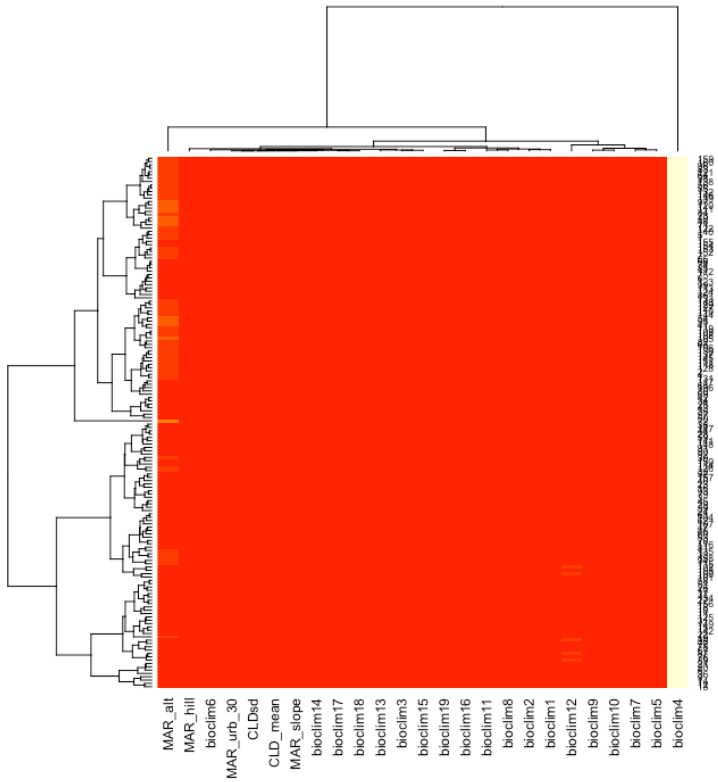
Exercise 4

Q1) What would you say it is an appropriate buffer extent for sheeps?

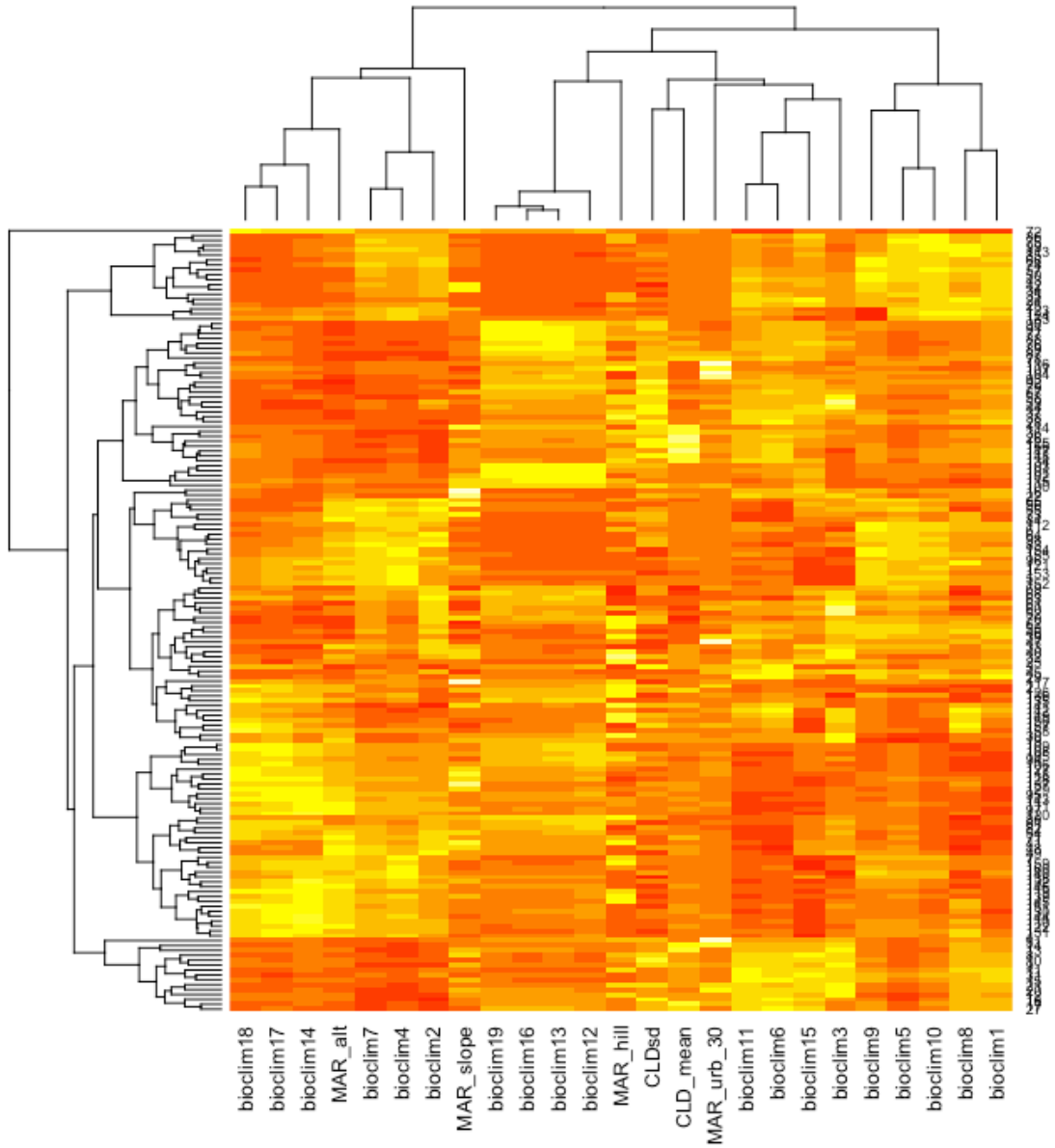
Sheep of Morocco are semi-wild animals, so they can roam a few km.

RQ1) Can you tell which variables are more or less correlated? What is the problem?



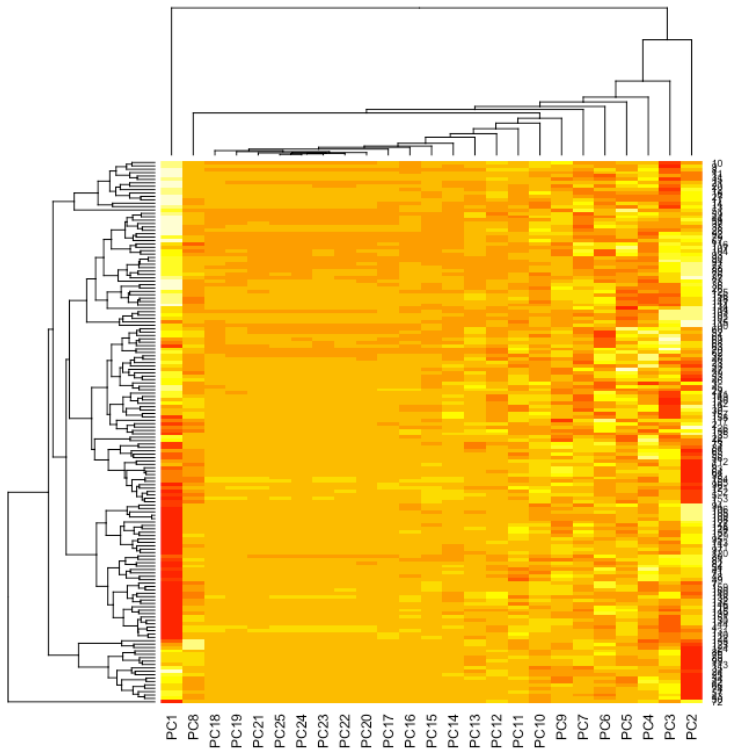
Hard to tell, since the calculations are based on Euclidean distance, variables with larger range will drive the clustering results.

RQ2) What environmental variables are more strongly correlated? Try to explain why.



Variables related to average temperatures are correlated, which is trivial since cold and hot places tends to be the same in winter or summer. Same for rainfall.

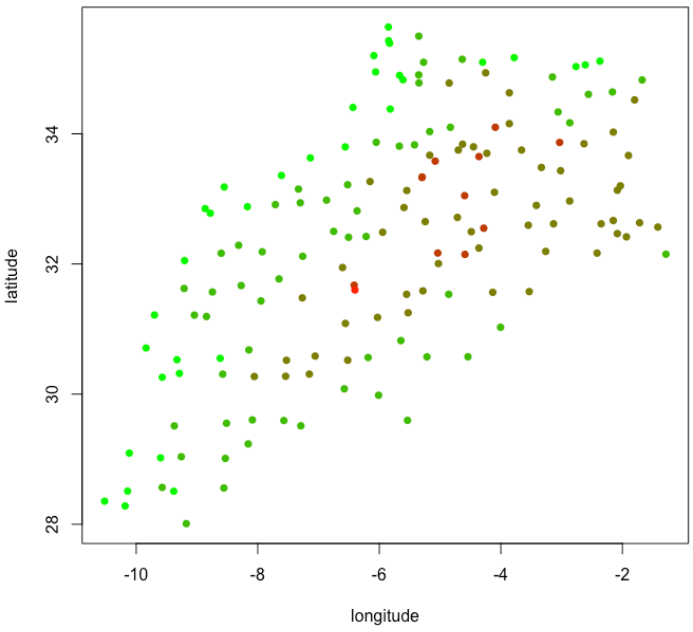
RQ3) First of all, have a look on a heatmap of the Principal Components matrix. What do you observe? Why?



There is no correlation between principal components. This is exactly why principal components are useful, they create surrogated variables of correlated descriptors, and none of this surrogate variable is correlated.

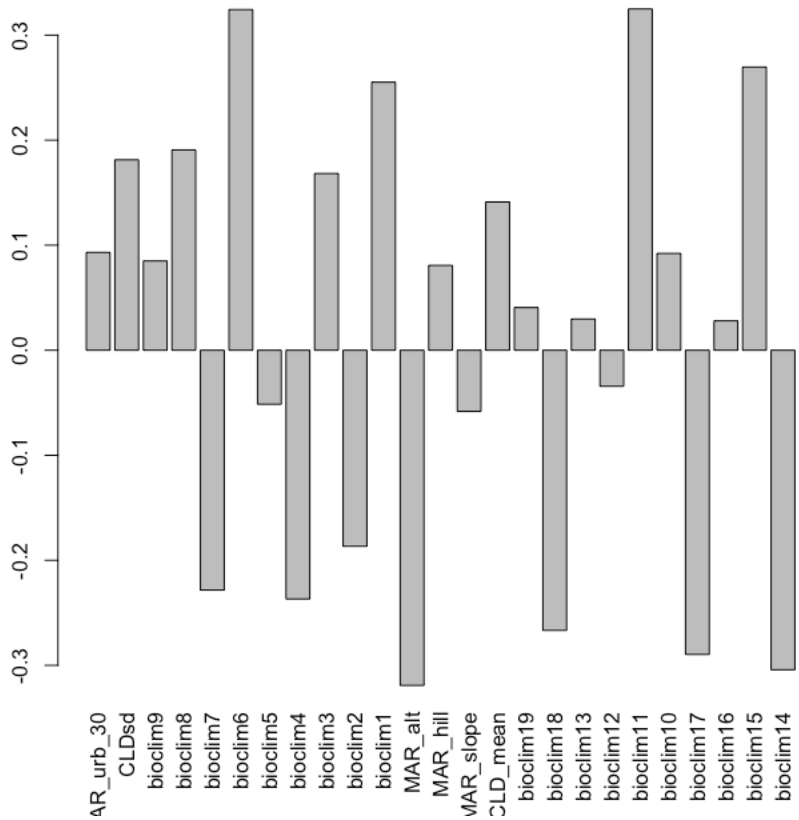
RQ4) What regions appear as contrasted? (Hint: think of Morocco topography)

The major contrast concern mountain versus the rest of the country.

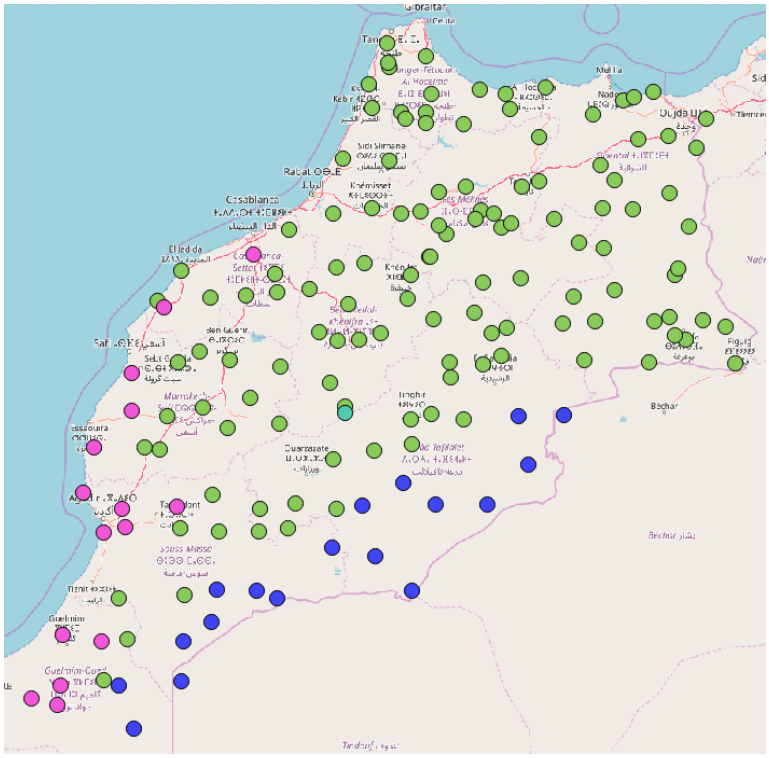


RQ5) What variables are involved? By looking at their geographic distribution, does that make sense?

There are several variables involved in this contrast. This makes sense since many environmental conditions changes with altitude (for instance rainfall and temperature).



Q2) How do the environmental clusters distribute across the study area? What is the meaning of this separation?



The four clusters separate according to the overall landscape characteristics. One cluster is found on the Atlantic coast and one on the desert, probably because these two areas have very distinct environmental conditions compared to the rest of the country, that also forms a cluster. There is also a cluster that covers one point: this is the one found at the highest elevation (more than 3000 m!).