Lab Notebook

Chapter 1 – single species SDM/geodiversity analysis

Goal - As single species SDMs are often used for IUCN assessments, it is imperative that we improve the reliability of these models, especially for data poor species. I will use derived bioclimatic variables from remotely sensed products and also incorporate cloud cover and topography as predictors for the single species SDMs. I will search for measures of geodiversity with consistently high relevance for multiple data poor species with the aim of generating a vetted set of environmental variables that can be used by conservation groups to make applied SDMs. Further, I will compare IUCN metrics calculated from models using remotely sensed geodiversity variables in addition to bioclimatic variables, remotely sensed bioclimatic variables only, and the proposed AOH (upper bound of EOO; Brooks et al. 2019) approach towards generating range maps – highlighting the impact of modeling method taken when calculating these measures.

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Abstract NACCB: small version of larger project (comparing 2 species instead of 30).

Candidate species

The objective of the study requires a comparison of data rich and data poor species. To choose species fitting these categories, I assessed the Biomodelos website for species that had been modeled in Maxent and refined by expert opinion and have all been thoroughly vetted. I chose two primate species with both a small and large ranges:

*Plecturocebus ornatus* – 201 occurrences; 34 after filtering <- smaller ranged (1 habitat type, lowland moist forest)

*Alouatta seniculus* - 2330 occurrences; 582 after filtering <- broad ranger (multiple habitat types; lowland, montane, dry deciduous etc.)

Have differing feeding patterns, with *P. ornatus* focusing primarily on fruit and leaves. *A. seniculus* mostly on leaves.

Workflow for this process

1) Find species on Biomodelos that have been modeled and refined with expert opinion

2) Look on GBIF for these species

3) Download GBIF data and spatially thin occurrences by 10km to reduce bias (SDM best practice)

4) Choose species that is less than 35 occurrences after filtering for data poor candidate; choose species > 100 occurrences post filtering for data rich