**10.20.19 Question Answers**

1. Fix the reciprocal suitability scripts to have the distribution polygon area as the denominator. - DONE and pushed. Updated on the latest version of the draft as well.

Table 3. Reciprocal suitability of arboreal and terrestrial species for each classification scheme.

|  |  |  |
| --- | --- | --- |
| Classification | Arb Poly, Terr ENM | Terr Poly, Arb ENM |
| 6-M | 35.57% | 11.72% |
| 6-L | 33.75% | 12.82% |
| 7-M | 35.39% | 11.75% |
| 7-L | 35.44% | 12.69% |
| 6-McM | 32.17% | 11.74% |
| 6-McL | 18.72% | 76.02% |

2. Could I also ask you to find the right citations to put into this sentence: "ENM is most often used to define a species’ potential range based on observed localities, but many other important applications have been explicated (e.g. CITE, CITE, CITE)."

- These papers use SDM to predict population density

- <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2664.2012.02138.x>

- <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1472-4642.2012.00892.x>

- This papers use SDM to predict if species is generalist or specialist

- <http://archive.li.suu.edu/docs/ms130/AR/evangelista2.pdf>

- This paper uses SDM to predict the impact of invasive plants

- <https://www.nature.com/articles/s41598-018-25437-1>

3. Clarify the full citations for the following papers

Elith et al. 2006

Elith, J., C. H. Graham, R. P. Anderson, M. Dudík, S. Ferrier, A. Guisan, R. J. Hijmans, F. Huettmann, J. R. Leathwick, A. Lehmann, J. Li, L. G. Lohmann, B. A. Loiselle, G. Manion, C. Moritz, M. Nakamura, Y. Nakazawa, J. McC. M. Overton, A. T. Peterson, S. J. Phillips, K. Richardson, R. Scachetti-Pereira, R. E. Schapire, J. Soberón, S. Williams, M. S. Wisz, and N. E. Zimmermann. 2006. Novel methods improve prediction of species’ distributions from occurrence data. Ecography 29:129-151.

Ortega-Huerta and Peterson 2008

Ortega-Huerta MA, Peterson AT (2008). Modeling ecological niches and

predicting geographic distributions: a test of six presence-only

methods. Revista Mexicana De Biodiversidad 79: 205-216.

Phillips et al 2004

Phillips, S. J. and M. Dudík. 2004. A maximum entropy approach to species distribution modeling. Proceedings of the 21st International Conference on Machine Learning, Baniff, Canada.

Phillips et al 2006

Phillips, S. J., R. P. Anderson, and R. E. Schapire. 2006. Maximum entropy modeling of species geographic distributions. Ecological Modelling 190:231-259.

Rodder and Engler 2011

Rödder D, Engler JO (2011) Quantitative metrics of overlaps in Grinnellian niches: advances and possible drawbacks. Glob Ecol Biogeogr 20: 915–927.

Wisz MS et al. 2008

Wisz, M.S.; Hijmans, R.J.; Li, J.; Peterson, A.T.; Graham, C.H.; Guisan, A. NCEAS Predicting Species Distributions Working Group. Effects of sample size on the performance of species distribution models. Diversity Distrib. 2008, 14, 763–773.

**Nov 20th 2019 Questions**

1. Figure update.

November - Make a couple and upload them into a figure folder. Make 2 clear panels: A as the top map and inset, B as the bottom map and inset. This will add a little space between the top and bottom map. Place the insets covering up a bit of the top right corner of each full map. Fix the percentages to match the appropriate reciprocal suitability tests. Add a label for which suitability map is displayed. Thicken the lines of species distributions. Add the attachment labeled recipsuit.jpeg as panel C – code to change this attached. Make 3 panels stacked vertically

Dec 3 - I like the changes you made for Figure3\_panels.jpg (which has become figure 2 now), and I just have a few more edits and we'll call it a day. 1st, you and I have slightly different values for the reciprocal suitability score, presumably because our computers came up with every so slightly different models when we ran them separately. Not a problem, but as I have these numbers elsewhere in the manuscript, please change the numbers to be 37.21% and 11.25%. 2nd, pull the labels of the panels ("A", "B", and "C") inside the dark outlining box of each panel. 3rd, move the percentage values to sit just above the MAXENT suitability script. Finally, please add back the black boxes on the zoomed out map that show where the insets are zooming into (those were on the original figures but you have since deleted them).

Dec 4 - I think we should now just delete the inset and zoom in a bit on the map, cutting out a little more of South America. I've taken a screen shot and boxed in what I think should be the new limits of both maps. Make the whole panel that bit of the map, no inset, and we should be able to see the map details pretty well.

Chapter3/Docs/Figures/Figure2\_panels\_noinset.pdf

2. Cloud cover manipulation clarification

Paper that uses IPCC data (<https://onlinelibrary.wiley.com/doi/full/10.1111/j.1466-8238.2007.00347.x>)

Paper that uses IPCC cloud cover data - <https://www.sciencedirect.com/science/article/pii/S0304380016304665#bib0195>

Cloud cover data download from - <https://www.ipcc-data.org/>

IPCC data manual - <https://www.ipcc-data.org/docs/tyndall_working_papers_wp55.pdf>

Units: The data has units of percent, but you have to convert it to be so. The raw data download when directly uploaded into R will have values from 0-255 which is an artifact of the raster file pixel size. You have to scale the raster to the units intended and as instructed from the manual which is percent so 0-100 or 0-1 for exact percent.

2.a: What are the old values measured in?

2.b. Is this a yearly average of cloud cover taken once every day? Every hour? And I assume each of the 12 separate tif files are separate months?

It is the 1991-2000 time chunk and it gives us the yearly average so there are 12 files for the 12 months.

3. Re-label code and update TOC

4. Wisz 2007 or Wisz 2008 paper?

It is the Wisz MS et al. 2008 paper and NOT the 2007 one

Wisz, M.S.; Hijmans, R.J.; Li, J.; Peterson, A.T.; Graham, C.H.; Guisan, A. NCEAS Predicting Species Distributions Working Group. Effects of sample size on the performance of species distribution models. Diversity Distrib. 2008, 14, 763–773.

5. Polygons IUCN or Polygons Lauren (Chap3/Scripts/Polygons/LM+IUCN\_Polys)

- Which ones did I make and which ones did I add to other species

- Final dataset is only 302 sp but was originally written as 311. So which sp were excluded from the part that says 293 NA sp and constructed 18 additional sp

- 18 species but 23

- Which species I constructed polygons from scratch where there was no IUCN data

- Which species you added extra parts to the distribution already provided by IUCN

- Lolo findings

Where did you get the 302 number?

6. Resolution AUC table. In each of the cells below enter the AUC score for the arboreal model and the terrestrial model as indicated below. Have the resolution go low and high enough to show a good variance across the resolutions that ended up being best for each scheme.

6.a: Do you have an old version of that table that has all the AUC scores across resolutions? What has changed since you having to run new tests? Quote from paper “Other classification schemes resulted in similar resolutions, ranging from 0.275 to 0.375”

This is referring to the cutoff of when it hits 0.8 AUC score. I highlighted in here when they switch so the sentence could be adapted to 0.300-0.380 but more precisely the lowest resolution is 0.275 (for 6L) and 0.375 (for 6McL). All of the lenient classifications varied… weird. Also, AUC scores are somewhat of an artifact of the points used. I have an excel doc that documents all the testing I did Chapter3/Docs/CV\_RESOLUTION\_TESTS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Resolution | 6-M | 6-L | 6-McM | 6-McL | 7-M | 7-L |
| 0.200 | 0.912/0.692 | 0.899/0.737 | 0.901/0.693 | 0.688/0.914 | 0.912/0.692 | 0.897/0.740 |
| 0.300 | 0.939/0.771 | 0.916/0.817 | 0.933/0.775 | 0.765/0.946 | 0.942/0.774 | 0.930/0.815 |
| 0.340 | 0.941/0.792 | 0.930/0.836 | 0.935/0.797 | 0.788/0.948 | 0.942/0.793 | 0.931/0.833 |
| 0.360 | 0.946/0.801 | 0.920/0.841 | 0.930/0.801 | 0.792/0.947 | 0.944/0.802 | 0.935/0.842 |
| 0.380 | 0.948/0.811 | 0.933/0.853 | 0.942/0.817 | 0.803/0.954 | 0.946/0.810 | 0.931/0.850 |
| 0.400 | 0.949/0.815 | 0.939/0.856 | 0.940/0.824 | 0.809/0.951 | 0.945/0.817 | 0.939/0.857 |
| 0.500 | 0.943/0.843 | 0.930/0.878 | 0.936/0.848 | 0.837/0.958 | 0.944/0.843 | 0.931/0.879 |