

Weekly Journal

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October 6, 2021

1 Work Update

This week I was really unsure of what I wanted to do this fall/winter term so I mainly focused on setting goals for myself for me to complete by the end of this semester. I set 4 goals that I really want done for this term, and maybe along the way I find more but for now, these are what I am going to move forward with.

1.1 My Goals for Fall/Winter

These are the 4 things I really want to focus on for this year:

- Create a public repo for the R k-means clustering ecoregion delineation process that can be replicated by calling a few lines of code.
- Research more into the important variables and data (talk with Soham and Ryan) that we should be inputting into the clustering code and run it on Compute Canada.
- Help with writing the publication (not going to lie, I am really excited to have my name featured as a co-author :D)
- Look into the effects of climate change on happiness and meet Dr. Soo Min Toh to help provide help for you two.

It sounds realistic to me, but if you can provide input by providing other goals or narrowing them down or saying "you're crazy" then that would be helpful.

2 Literature Review

Last week, Ryan mentioned an article by Potter and Hoffman [2] that I was interested in reading more about! So, I read the article and looked for any interesting sources they might have used. In the literature review section of the Introduction, I saw they referenced three articles of evidence that as result of climate change, tree species are exhibiting changes in phenology and distribution.

After reading the articles, it seems to be of the agreement that different species that range anywhere from grass to trees are "shifting in the direction expected on the basis of known physiological constraints of species" [3]. One of the articles by Parmesan and Yohe [1] hybridized two approaches of the economists' model with reasonable data (in the eyes of a biologists) and finds that with 279 species, they show an increasing confidence in a climate change fingerprint. The final articles [4] also found that there has been a change in the distribution of trees in the eastern United States over time and about 70% of the northern tree species they studied were exhibiting a northern migration. Southern species did not demonstrate a significant shift northward although there was greater regeneration success in northern latitudes. This is interesting since in the past half century, higher latitudes have warmed more than lower latitudes which means that phenological responses might be stronger near the poles rather than that near the equator [3].

References

- [1] Camille Parmesan and Gary Yohe. A globally coherent fingerprint of climate change impacts across natural systems. *nature*, 421(6918):37–42, 2003.
- [2] Kevin M Potter and William W Hargrove. Determining suitable locations for seed transfer under climate change: a global quantitative method. *New Forests*, 43(5):581–599, 2012.
- [3] Terry L Root, Jeff T Price, Kimberly R Hall, Stephen H Schneider, Cynthia Rosenzweig, and J Alan Pounds. Fingerprints of global warming on wild animals and plants. *Nature*, 421(6918):57–60, 2003.
- [4] CW Woodall, CM Oswalt, JA Westfall, CH Perry, MD Nelson, and AO Finley. An indicator of tree migration in forests of the eastern united states. *Forest Ecology and Management*, 257(5):1434–1444, 2009.