sDiv working group meeting summary

" sCoRRE – Assessing functional consequences of community changes with global change using trait-based and phylogenetic approaches"

We had our third meeting in December of 2021. Despite our strong desire to be in person, we were again unable to due to the pandemic. Instead, we had a remote meeting for those participants in European time zones and an in-person satellite meeting for US collaborators. To start the meeting, each continental group – the EU remote participants and the US in-person participants – group watched presentations. The first presentation was by the PIs and brought everyone up to speed on the state of the database and overall progress. Next, everyone group watched an additional 6 presentations on our key papers. In each presentation, the lead author reviewed the main questions, methodological approach, and preliminary results when available. After each presentation there was discussion of progress and next steps.

In addition to the presentations on the first day, each day we had a 1.5 hour all hands-meeting with all participants to keep both continents working seamlessly together. During these all hands meetings, there were progress updates on relevant papers when appropriate. During the bulk of the day, each continental group broke into smaller groups to make progress on our six papers simultaneously.

At this meeting we used our now complete extensive categorical and continuous trait database for all 2875 plant species in the CoRRE database. We completed our database prior to the third meeting. To compile this database, we first used the TRY database to gather any data we could on all species in the CoRRE database. For categorical traits, we then assigned each working group member ~150 species to find traits for, resulting in a complete categorical trait database with tracible reference links for each trait. Additionally, we double checked 10% of the data and have error rates below 2% for all categorical species. For continuous traits, we are using a gap-filling algorithm that was developed by working group member Franzi Schrodt. This method gives a confidence interval around the value of each trait for each species enabling pruning of questionable data. Both databases are now complete and final, and we discussed its publication as a data paper in the coming months with all working group members as co-authors.

Depending on the paper being worked on, we spent different amounts of effort between brainstorming (papers in the earlier phases), data analysis (papers in the later phases), and discussions about the publication process. On the whole, roughly 50% of our discussion was dedicated to brainstorming, 40% to data analysis, and 10% to publication.

Although it would have been ideal to be in person at sDiv, the virtual working environment across times zones worked well for us. In particular, the support of sDiv to bring together a satellite meeting in North America was a great help in making progress on our papers.

We aim to have the third meeting in-person in Leipzig in either December 2022 or January 2023 with all participants attending. The third meeting will have four primary goals:

iDiv is a research centre of the DFG Deutsche Forschungsgemeinschaft

(1) Work on any necessary revisions for our data paper, which we expect will have been submitted to Ecology by the summer 2022.

(2) Receive feedback on the draft of paper 1: *Winners and Losers under global change scenarios* from the working group members and finalize for submission to Science.

(3) Outline and begin writing for paper 2: *Global change drives shifts in phylogenetic and functional diversity in grasslands worldwide*, for which we currently have analyses nearing completion. The analyses for this paper will have be completed prior to the start of the meeting to help frame the discussion and begin the writing process. We aim to have a detailed outline and writing tasks for group members by the end of the working week.

(4) Discuss approach to our third and final primary paper: *Linking traits to function*. Preliminary analyses for our final main paper will be completed in time for our meeting so we can have detailed discussion related to next steps for analysis.

(5) In addition to working on our main proposed project we expect updates on additional papers: i) Do communities converge in trait responses to global change drivers across broad spatial scales?; ii) What is the effect of global change on trait covariance within communities?; iii) Species responses to background global change; and iv) Applying community assembly theory to global change-induced community changes.