sDiv working group meeting summary

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

We had our fourth meeting in December of 2022. Most participants were able to attend in person, in addition to three remote European participants and one remote US participant. We were able to seamlessly hand work off between these two time zones and had a very productive week.

The week was structured to maximize time spent working on 5 manuscripts, all in various stages of preparation. The first day, and the first hour of the second day, was spent with a presentation on each paper and then general discussion on goals and progress to be made. Additionally, on the first day we had a presentation and an hour discussion on the continuous trait data and possible ways to improve our dataset. Following these main presentations, each morning we had a brief check-in on the progress of each paper and tasks to be completed that day, and each afternoon we had a brief check-in, going over problems encountered during the day. In addition to our twice daily check-ins, our week was informal, with everyone working in the same room allowing impromptu meetings to tackle problems as they arose.

We continue to be excited about the main research question motivating this work: how will global change impact plant species and communities? Leveraging the extensive trait database, we created earlier in the working group, we now focus our research efforts on 5 papers, detailed below.

1) *Winners and losers under global change scenarios* – Led by Meghan Avolio
   a. *Focal Areas of Discussion* – Much progress has been made on this paper. We focused most of our time on how to best present the results and how to format the paper.
   b. *Main results* – Lineages that either benefit or are harmed by global change depend on what is being altered. For example, while nitrogen fixers fare poorly with nitrogen addition, they fair well with water addition.
   c. *Next steps* – Meghan will work on a draft in the coming months.

2) *Global change and shifts in phylogenetic and functional diversity* – Led by Kim Komatsu
   a. *Focal Areas of Discussion* – We spent a considerable amount of time going over different measures of functional and phylogenetic diversity. We wanted to use comparable measures.
   b. *Main results* – Changes in functional and phylogenetic diversity can contradict one another.
   c. *Next steps* – Kim will work on finalizing the results and then a subset of co-author will meet before she starts writing the paper.

3) ***Community converge and divergence based on traits and species*** – Led by Tim Ohlert
    a. *Focal Areas of Discussion* – We spent time discussing what additional analyses to include and the best approaches to detecting beta diversity patterns based on traits and species. We wanted to use similar methods.
    b. *Main results* - There is divergence in species composition and traits in response to drought and nutrient additions.
    c. *Next steps* – Tim will work on additional analyses and a subset of co-authors will discuss next steps before he continues writing the paper.

4) ***Species responses to background global change*** – Led by Adam Langley & Emily Grman
    a. *Focal Areas of Discussion* – We spent time discussing whether this paper had too much overlap with Meghan's paper, deciding that it did not. We also wanted to explore what new information was being presented here.
    b. *Main results* – There is substantial change of species in the control plots alone, with interesting trends based on certain traits.
    c. *Next steps* – Get data on long-term precipitation and temperature trends for all sites to match the data. Finalize approach to analyzing the data.

5) ***Applying community assembly theory winners and losers in response to global change*** – Led by Tamara Münkemüller & Magda Garbowski
    a. *Focal Areas of Discussion* – We have known the conceptual framing of this paper for some time, and we spent this week doing preliminary analyses to see what the data show.
    b. *Main results* – This seems to be a promising approach to studying how similar species that are faring well or poorly are to the overall plant community.
    c. *Next steps* – Magda and Tamara are going to start regular meetings to keep this work going forward.

Finally, we had a wonderful time at iDiv and in Leipzig. In particular, we appreciated the vegan lunches, being able to spend evenings together continuing our scientific discussions over dinners, and the ability to interact with the broader scientific community at iDiv. Additionally, the AV system that allowed for remote participants was phenomenal, making it seems as though the people who couldn't join us in person were right there with us the entire week.