

sDiv working group meeting summary

“sREplot II – Upscaling of individual species dynamics to community trends in biodiversity and composition using vegetation change data sets”

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The overarching aim of both sREplot workshops is to quantify the temporal changes in individual species (winners and losers, colonization and extinction), link these changes to various human impacts, and scale up from individual species dynamics to community trends in biodiversity. Identifying the species that show consistent changes over time, the traits they share, and their evolutionary relationships, can advance our fundamental understanding of both the causes and consequences of biodiversity change.

After focusing with the first workshop on a large database of forest understorey resurvey studies across temperate forests (forestREplot), the main goal of the second workshop was to extend the abovementioned approaches to cross-biome analyses. To reach this goal the participants were representatives of different research networks dealing with resurvey data (forestREplot, Gloria, SummitFlora, ITEX, GRACE, BioTime), and/or of different sDiv working groups focusing on temporal changes (sMon, sPlot, sTundra, sChange, SUMMITDiv).

During the workshop we focused on three main tasks:

The **first task** of the workshop was to inform each other on the data available in the different networks (spatial and temporal range, random or clumped distribution of plots, experimental treatments, observations studies, etc.). Such informations are fundamental for the development of research proposals. As all the different networks have their own rules concerning the use of the data (mostly owned by a large amount of different persons) and resulting co-authorships rules, we spent some time to develop terms of use for joint analyses. We established communication strategies from the sREplot group towards the different networks towards the respective data owners for the realization of joint research projects (for data use allowance and co-authorship rules).

The **second task** was the development of specific research proposals making use of the available resurvey data. As a starting point we recapitulated the ongoing paper projects from the first workshop and discussed potential extensions of these towards cross-biome analyses. We identified four paper projects:

- Species pool / dark diversity versus local richness change
- Changes in functional diversity and composition of plant communities worldwide
- Species ranges and extinction risks across biomes

- Cross-biome

thermophilization

The data used for the four projects have a large overlap. We discussed a common structure and work plan to harmonize across biomes and data extraction from external sources in a separate subgroup (tasks were distributed there).

The **third task** was a strategic discussion on the future of the sREplot group. One of the objectives of the meeting was to bring different networks and data together for the first time and forming a network of networks built around temporal vegetation data across biomes. One session was devoted to discussing the functioning of the working group and whether we see benefits in forming a true network of networks.

We started with a characterization of the different networks. The networks represented at this workshop are independently developed initiatives, which developed in (informal) research networks (existing collaborations, data sharing, data use and authorship agreements, joint publications, etc.). One specificity is that all these networks are composed of specialists from different ecosystems around the world. Based on this, we decided not to join all data in one data base/ repository, but to establish pipelines for joining of data for joint analyses – the advantage will be that we always include the most actual data and the expertise of the biome specialists which potentially increases the quality of publications. Beside this, we learned from Helge Bruelheide that sPlot will include temporal data in the future. Thus, again we highlighted that we do not want to establish a competitive database within sREplot. Instead we should make use of synergies between different initiatives (like the communication strategies).

For our intended way of collaboration we discussed how to establish pipelines for joining and sharing data for joint analyses. We will make a first trial of these pipelines using the abovementioned paper projects. Meanwhile, paper projects have been made available to all relevant data contributors of the different networks to collect feedback.

Overall, we were very pleased with the very open and friendly atmosphere in which we could discuss ongoing and new ideas. Besides the scientific discussions during the various scientific sessions, the conversations we had during lunch and dinner were essential to create a group spirit of trust and enthusiasm. Finally, the great support from the sDiv staff and stimulating environment at iDiv was certainly a big help in making this meeting a success.