

sDiv working group meeting summary

"sANDES2"

The focal areas of discussion of the second sANDES working group were: i) methods, analyses and results concerning the identification of biogeographical units across the Andes; ii) quantifying and explaining taxonomic turnover along elevational gradients; iii) assessing the potential of Andean tropical montane forests for carbon storage; and iv) analysing the spatial distribution of tree functional traits across Andean tropical mountain forests. For the first discussion topic, we had already obtained some preliminary results prior to the meeting, so during the meeting we discussed the suitability of different methodological approaches, and agreed to use a combination of methods to conduct the bioregionalization, namely: 1) NMDS ordination and UPGMA cluster analyses on plot data; and 2) environmental niche models of species based on GBIF data using infoMap (<http://bioregions.mapequation.org/>) and UPGMA cluster analyses. For the second topic, we had also made some progress prior to the meeting, so we presented the results of turnover based on a selection of 11 elevational gradients. Contrary to our expectations, we did not observe a decrease in turnover with latitude. Yet turnover was unexpectedly high in all gradients, with ca. 80% of species replacement with an altitudinal change of 500 m. For the third topic, which we had not addressed in the previous meeting, we discussed the scope of a potential research paper combining our Andes dataset with African forest plots as part of an initiative lead by Dr. Aida Cuni-Sánchez. We discussed during the meeting the importance of having accurate measurements of tree height (laser or hypsometer) in order to provide reliable estimates of above-ground biomass. Finally, we introduced a new goal into this working group related to the analyses of functional trait variability across altitudinal and latitudinal gradients. Previous to the meeting we had compiled a database of functional traits and we used some of the sessions to outline a draft of a paper analysing the spatial distribution patterns of these traits.

Besides brief presentations by the working group members, we had three 30 minutes presentations about topics related to the research questions to be addressed by this working group. The first one was about above-ground biomass, structure and diversity of African tropical montane forests, by Aida Cuni-Sánchez (University of York, UK). The second presentation, by Kenneth J. Feely (University of Miami, USA), was about changes in Andean forest composition across space and time. A third presentation, by J. Sebastián Tello (Missouri Botanical Garden, USA), addressed the topic of mountain uplift and the evolutionary assembly of communities across elevations in the Central Andes. Finally, Hanna Tuomisto (University of Turku, Finland) gave a 1hour open seminar on the effects of soil on species composition in

Amazonian forests and the use of remote sensing to predict species assemblages.

Out of the discussion, we outlined four draft proposals (target journal yet to be defined), identified methodological procedures to address the research questions, and defined the data needed, the expected results and the timeline for making progress on manuscripts before the next meeting.

This second meeting focused mostly on outputs (ca. 60%), but there was also time for general brainstorming/information exchange (25%) and participants presentations (15%). The meeting was truly inspiring and motivating, and it was the intention of some of the working group participants (including the PIs) to apply for further funding to different European and non-European funding agencies in order to foster collaboration and research on related topics to those addressed in this proposal (some of these collaborations are already in progress). The general atmosphere at the sDiv center was superb and the sDiv staff provided continuous support and assistance during all the meeting. We found the entire experience really enjoyable and productive. At present, we are conducting some final analyses and preparing drafts of three out of the four papers planned to be reviewed by co-authors during early 2021.