sPlot – the new global vegetation-plot database for addressing trait-environment relationships across the world's biomes

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Background: The trait composition of plant communities is determined by abiotic, biotic and historical factors. However, the importance of macro-climatic factors in explaining trait-environment relationships at the local scale remains unclear. In March 2013, the first sDiv workshop (sPlot) assembled a unique group of vegetation-plot data holders and data analysts to address these questions. Our main objective is to assess the following questions: (i) to which extent are relationships between traits preserved across environmental gradients worldwide, irrespective of macro climate? (ii) to which degree is the effect of local (abiotic and biotic) drivers mediated by climate? Such knowledge is crucial for ecological theory but also highly relevant to devise local management measures to mitigate the negative effects of climate change.

Available data and the database: While hundreds of millions of distribution records from individual species can be retrieved via data portals such as GBIF (http://www.gbif.org) and there is now also a global database of plant traits (TRY; Kattge et al. 2011), global accessibility of plant community data is more restricted. However, during the last decade many vegetation-plot databases have emerged all over the world, although still the bulk of data in databases comes from Europe, as can be seen in the meta-database GIVD (Dengler et al. 2012). While GIVD provides knowledge about more than 200 vegetation-plot databases on all continents, it does not contain the actual data in a single uniform database. The first huge supranational database joining data from different sources was the European Vegetation Archive (EVA; http://euroveg.org/eva-database) that has been launched in spring 2014. With the sPlot database, we go a step further and build the first vegetation-plot database aiming at being globally representative. Using the same database system (Turboveg 3), sPlot combines the majority of the EVA content with major databases from other continents. Presently sPlot contains more than 500 000 plots from the Eastern Hemisphere (Europe, Asia, Africa) and is constantly growing. We plan to extend sPlot via collaboration with the BIEN3 project also to the Americas. For the planned trait analyses, sPlot will have an agreement with TRY to get average trait values for a set of ecologically relevant traits. According to the sPlot 'Governance and Data Property Rules', only members of the sPlot Consortium have access to the sPlot data for analyses and publications, providing a strong incentive to join sPlot with your own data.

Status and prospects: In this talk we will give an overview on the structure and present content of sPlot in terms of spatial distribution, data properties as well as trait coverage in TRY. We will explain future steps and perspectives and encourage database owners to join the sPlot Consortium. We will present the first cross-biome analyses of community-weighted mean traits, trait variability and trait diversity. Finally, we will highlight the wealth of ecological questions that can be addressed with sPlot in a novel way.

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