*Effects of moisture stress on functional composition*

In our hypothesis H2 we predicted a functional reorganization in communities driven by the reduced precipitation. As we expected, the applied moisture stress scenario caused a modification in the density distribution of the six variant functional traits both for PFTA and for TBA (Fig. 3). For all the traits, the shape of the curves changed considerably, with dissimilarity index close to 1 (Table XXX), which indicates that they became functionally different with the new climatic condition. A clear change in the pattern of traits distribution was observed: dominance reduction (decrease in the curves peaks) of a previously restricted range of values, and density increase of other trait values that were previously rare (very low density), or absent, enabling their co-occurrence in the trait space (Fig. 3). The occurrence of a small subset of trait combinations with the reduced precipitation due to the stronger environmental filtering was not so evident, as expected by our hypothesis H2. However, this functional reorganization was different when comparing the modeling approaches: when considering traits separately, the PFTA showed a trimodal distribution, with three clear and discrete peaks along the trait space when the precipitation is reduced, while in TBA the distribution showed a higher diversity of values that had their density increased, resulting in a much more diffuse distribution within the functional space. This pattern can also be seen when considering all traits together through the hypervolumes: for the PFTA it is possible to observe three clear data grouping under drought (Fig. 4a), and a much less discretized data distribution from the TBA (Fig. 4b).

Also, corroborating with our conjectures based on optimal partitioning theory (Cannell & Dewar, 1994; Metcalfe et al., 2010; Thornley, 1972)*⁠,* TBA showed an increase in density towards higher values of carbon allocation in fine roots and towards lower values of carbon allocation in leaves and, especially, in ABGW (Fig. 3a-c), and an increase in residence time for leaves and for fine roots but a decrease for ABGW (Fig. g-i). Despite our results showing a change in the values’ occurrence patterns along the trait space for PFTA in the applied low precipitation scenario, the magnitude of this change in values throughout the functional space is much lower than for TBA, i.e., with almost no alteration in the range of values (see x axis in Fig. 3). These differences support our assumptions (H1) that a trait-based model show a higher capacity to functionally reorganize the community under the changes in environmental conditions.