*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 (Figure 3). For all the traits, the shape of the curve changed considerably, with the the dissimilarity index approximating to 1 (Table XXX), which indicates that they became functionally different with the new climatic condition. A clear pattern was observed in traits distribution: dominance reduction (decrease in the curves peaks) of a restricted range of values enabling other trait values that were previously rare (very low density), or absent, to co-occur in the trait space or to increase their density (Fig. 3). It contradicts part of our hypothesis H2 in which we expected a small subset occurrence of trait combinations with the reduced precipitation due to the stronger environmental filtering. 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 (Figure 4a), and a much less discretized data distribution from the TBA (Figure 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). In spite of our results show a change in the patterns of values occurrence along the trait space for PFTA with the applied disturbance, these changes occur in a much smaller order of magnitude throughout the functional space when compared to TBA, 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.