Topics for intro to support the hypothesis:

- PFT approaches can cause complete loss of vegetation and contribute to our uncertainty in what happens in the future.

- functional reorganization/insurance hypothesis and its role in ecosystems sensitivity to disturbances

Functional diversity is ightly connected to ecosystem functioning. The underlying mechanism is that functional traits that compose each plant respond to biotic and abiotic conditions and affect the ecosystem. Then, a change in the environment can have an impact at FD and consequently in ecosystem functioning.

it is widely accepted that more taxonomically and functionally diverse communities tend to be less impacted by environmental changes (Cadotte et al., 2011; Mori et al., 2013; Sakschewski et al., 2016; Schmitt et al., 2019). This can be attributed to the fact that higher variability of traits (and plant strategies) also provides higher diversity of responses under new environmental conditions (Mori et al., 2013; Yachi & Loreau, 1999)⁠. In that sense, our results contribute to reinforcing the “insurance hypothesis”, which postulates that the diversity of responses insures ecosystem functioning by providing a buffer effect against environmental fluctuations (Fauset et al., 2015; Lohbecket al., 2016; Yachi & Loreau, 1999).

From a functional perspective, such an effect is expected through a compensation process called “functional density compensation” when the composition (that is, the occurrence or abundance of trait values) of a community adjusts to the new conditions, enabling types of plants that previously exerted a less relevant functional role (that is, low density) to increase their dominance and vice versa (Mori et al., 2013).

Functional reorganization of the community compensates for losses or decreases in the dominance of strategies, thus insuring ecosystem functioning (Gonzalez & Loreau, 2009; Mori et al. 2013, , Furukawa, & Sasaki, 2013; Sakschewski et al., 2016)⁠.

Our model results also reinforce the importance of rare trait values, functional strategies or species for the maintenance of ecosystem processes in future environmental conditions, including tropical forests that commonly present a hyperdominance of species with specific functional traits (Jain et al., 2014; Morera-Beita et al., 2019; Mouillot et al., 2013; van der Sande et al., 2017).

-changes in functional composition derived from lower precipitation (previous studies showing it)

This highlights that understanding such shifts in carbon partitioning in response to climate change is of crucial relevance for future predictions of Amazon carbon stocks (Doughty et al., 2015; Friedlingstein et al., 2006; Koch et al., 2021)⁠

-change in carbon investment because of reduced water availability, already observed in previous studies (optimal partitioning theory).

This highlights that understanding such shifts in carbon partitioning in response to climate change is of crucial relevance for future predictions of Amazon carbon stocks (Doughty et al., 2015; Friedlingstein et al., 2006; Koch et al., 2021)⁠

-what is the ecological significance of the different FD components?

- How the different FD components can respond to climate change? There are previous studies?

- How the different components of FD can affect the response of ecosystems to disturbances

- Occupation/utilization of functional trait space