

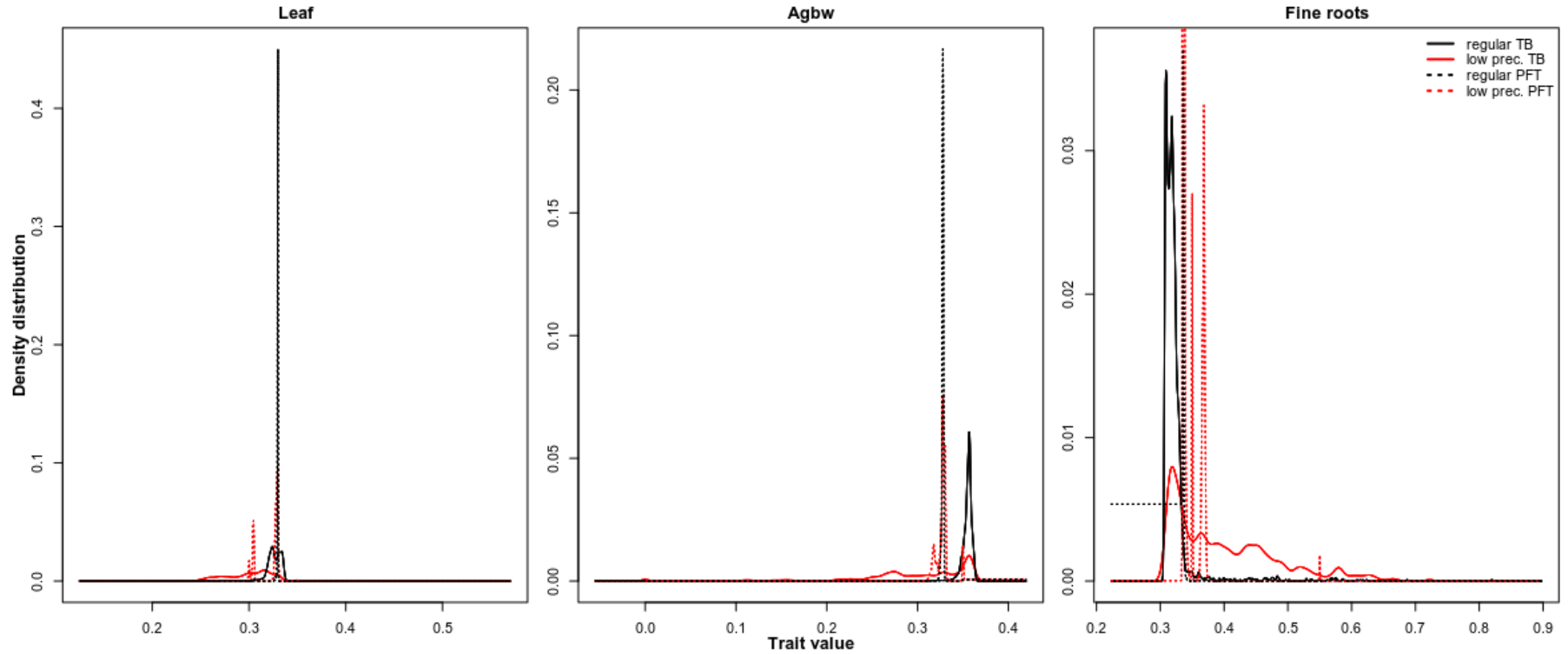
**Fig. 1:** Schematic diagram of CAETÊ in its trait-based model approach. From functional trait ranges the values are uniformly sampled and the combination of all creates a potential functional space. Each combination of trait values is a Plant Life Strategy (PLS) which will present a different performance, in terms of carbon balance, depending on the grid cell. From the potential functional space 3000 PLS are randomly sampled. The environmental filtering, the trade-offs between the chosen functional traits and the physiological processes determine if a PLS survives (positive carbon balance) or dies. From the performance (its relative biomass in the grid-cell) of the PLSs the grid-cell is occupied as a mosaic. This modelling framework allow us to access the model results not only regarding to biogeochemical variables but also in terms of trait distribution and functional diversity.

	Functional trait value					
	Allocation (%)			Residence time (years)		
	$\alpha_{\text{Leaf}}$	$\alpha_{\text{Abgw}}$	$\alpha_{\text{Fineroots}}$	$\tau_{\text{Leaf}}$	$\tau_{\text{Abgw}}$	$\tau_{\text{Fineroots}}$
Tropical evergreen tree	30	35	35	3	30	3
Tropical deciduous tree	35	35	30	2	30	2
Tropical grass	35	0	55	2	0	2

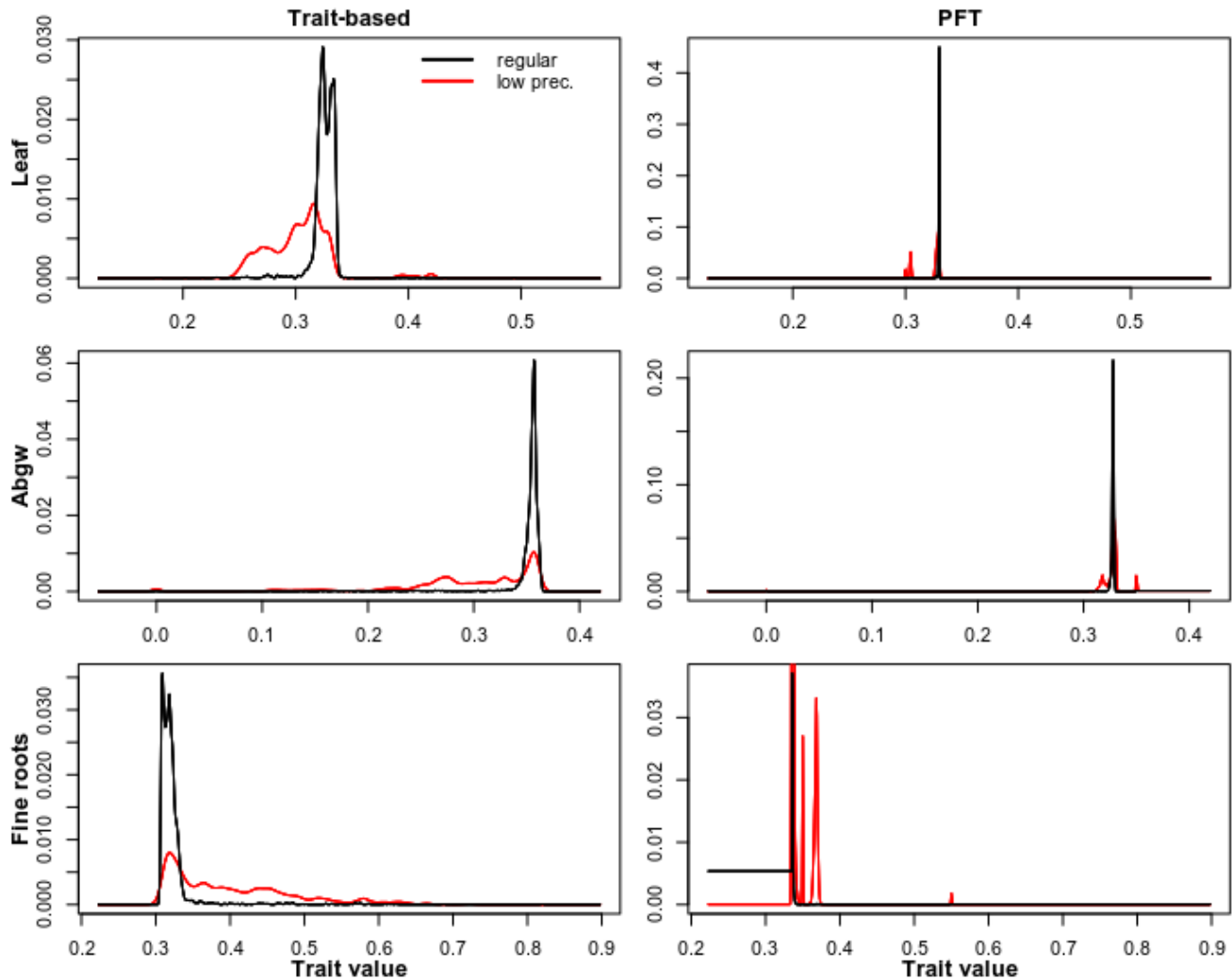
**Table 1:** Functional traits values for each Plant Functional Type (PFT) used in the PFT modelling approach. The values were chosen based on previous literature: Enquist & Niklas, 2002, Foley, 1996; Krinner et al., 2005; Kucharik et al., 2000; Malhi et al., 2009; Malhi, Doughty, Galbraith, 2011; Sitch et al., 2003.  $\alpha$ : allocation;  $\tau$ : residence time; Abgw: aboveground woody tissues

	Functional trait range value					
	Allocation (%)			Residence time		
	$\alpha_{\text{Leaf}}$	$\alpha_{\text{Abgw}}$	$\alpha_{\text{Fineroots}}$	$\tau_{\text{Leaf}}$	$\tau_{\text{Abgw}}$	$\tau_{\text{Fineroots}}$
	15 - 85	15 - 85	15 - 85	1 (m*) - 8 (y**)	1 (m) - 8 (y)	1(y) - 80 (y)

**Table 2:** Range of functional traits values from which values are sampled uniformly and its combinations create the different Plant Life Strategys (PLS). Used in the trait-based modelling approach.  $\alpha$ : allocation;  $\tau$ : residence time; Abgw: aboveground woody tissues; \*months; \*\*years



**Fig. 2** Density distributions of allocation traits using the Trait probability densities method (TPD; Carmona et al., 2016). The curves corresponds to the density of traits values across the Amazon basin. The red lines represent the results with the applied low precipitation scenario (low prec. in the graph) and the black ones represent the results concerning to the regular conditions of climate (regular in the graph). The solid lines show the results regarding to the employed trait-based (high functional diversity) modelling approach, while the dotted presents the results obtained with the PFT (low functional diversity) modelling approach. Since the figure corresponds to the allocation traits the unit of the Trait values is in percentages. Abgw: aboveground woody tissues; TB: trait-based; PFT: plant functional type



**Fig. 3** Density distributions of allocation traits using the Trait probability densities method (TPD; Carmona et al., 2016). The curves corresponds to the density of traits values across the Amazon basin. The red lines represent the results with the applied low precipitation scenario (low prec. in the graph) and the black ones represent the results concerning to the regular conditions of climate (regular in the graph). The left side of the figure show the results regarding to the employed traid-based (high functional diversity) modelling approach, while the right side presents the results obtained with the PFT (Plant Functional Type; low functional diversity) modelling approach. Since the figure corresponds to the allocation traits the unit of the Trait values is in percentages. Abgw: aboveground woody tissues.

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