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Improving the classification of plant functional types in dynamic vegetation modelling for the Neogene

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The simulation of paleovegetation with dynamic vegetation models requires an appropriate definition of plant functional types (PFTs). For several million year old time periods, such as the Miocene, analogue species must be defined and then classified into PFTs. Then, parameters for each plant type must be evaluated from the known present distribution of these analogue species. When the purpose is the validation of model results on available paleovegetation data, it is important that the same PFT classification is used both in the model and in the data. This allows to perform a detailed comparison at the PFT level, which is much more robust than the rough comparison at the biome level often used to validate vegetation model simulations.

In this contribution, we present the latest version of the PFT classification developed in the CARAIB vegetation model for the Neogene vegetation. Several new geographic distributions have been added to the ones used in the previous version of the classification. This adapted classification with the addition of shrubs and the refinement of tropical and subtropical types is based on plant types currently present in Europe, on the distributions of analogue species in southeastern Asia and on a set of other species distributions from other regions around the world. The resulting classification involves 26 groups and allows a more precise modelling of the subtropical and tropical types present in Europe during early periods of the Neogene, such as for instance the Middle Miocene.