

Interactive comment on “Height-diameter allometry of tropical forest trees” by T. R. Feldpausch et al.

Anonymous Referee #2

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Numerous studies involving H:D relations show that these relations are in the first place species-specific. Region, forest density and site productivity may be relevant, but species is most important. Lumping H:D relations across a multitude of tropical tree species is certainly not appropriate, it is like comparing apples and oranges, items which are popularly thought to be incomparable. The authors correctly state on p. 7731: “... available evidence suggesting that tree height, H, for a given diameter (D) may vary significantly among species (King, 1996)”, and on page 7760: “Asian trees are the tallest of all regions at higher D (Fig. 4) may be related to the tall stature of the dominant family there, viz. the Dipterocarpaceae, for which some species commonly attain heights of 60 m”, and on p. 7734: “Trees had usually been identified to species by a local botanist”. Well, - why not use that information? A major problem when trying to develop global models is the fact that African tree species do not occur in C4656

Asia or Latin America. Few species, if any, do occur across such a wide geographical range. Therefore, an ambitious study like this one should begin by developing species-specific H:D relations for certain regions. Species identification is very important, but unfortunately often neglected in tropical multi-species forest surveys. Species with similar characteristics may later be grouped according to specific dendrological characteristics, but they should first be identified. Continents may be treated as dummy variables, but that is not very elegant. The models are too simple, and the authors are advised to consult the literature, e.g. standard textbooks on dendrometry and published papers dealing with spatial aspects of H:D relations. A vast amount of literature on modeling tree height-diameter relations exists. I am attaching two sample papers involving studies on generalised H:D models. One deals with a multi-species problem, the other with geographical effects. Other relevant sources are cited in each of these papers. In principle, the study is interesting and relevant. However, differentiation among species, or species groups, is essential. The dataset of 40 000 trees appears to be rather small for meaningful modeling of height-diameter relations across the tropics. The results presented in this study may produce severe bias and misleading information about H:D relations and forest biomass. Publication of the paper in its present form can therefore not be recommended.

Please also note the supplement to this comment:

<http://www.biogeosciences-discuss.net/7/C4656/2011/bgd-7-C4656-2011-supplement.pdf>

Interactive comment on Biogeosciences Discuss., 7, 7727, 2010.