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## ***Interactive comment on “Do species traits determine patterns of wood production in Amazonian forests?” by T. R. Baker et al.***

### **Anonymous Referee #3**

Received and published: 30 October 2008

#### General Comments

This paper tests whether two functional traits: wood density and maximum height, are related to wood productivity, across Amazonian forests. The paper contains a sound data set, with more than 60 forest plots considered. The paper is also timely, in that it addresses a conceptual issue of great interest: What are the effects of species on ecosystem processes? This information is highly useful for determining how to model diverse tropical forest.

One point to consider is the lack of some key references of recent work that is highly related to the data presented here. For example, this paper suggests that specific leaf area, which was not measured, could be more useful than wood density. Therefore,

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Poorter et al. (2008), a paper in which wood density, height, and specific leaf area were all measured, should be cited in the introduction and discussed in the discussion.

I also found the introduction weak in terms of explaining the mechanistic connections that are expected between wood density and productivity, and between height and growth. There have been several papers that describe these relationships that could be included in the introduction to explain why relationships among these variables might be expected. For height, Thomas and Bazzaz (1999) is cited in the discussion, but should also be mentioned in the introduction to help the reader understand why we expect a relationship between height and wood production. Falster and Westoby (2005) should also be mentioned in the introduction for mechanisms relating height to growth in tropical trees. For wood density, Santiago et al. (2004) should be cited for explaining relationships among wood density, growth, and leaf physiology in tropical trees.

The discussion begins with a paragraph describing understorey specialists. This does not seem relevant because the article is focusing on the relationship between traits and wood production, and most wood is produced by canopy trees that have access to high light availability and therefore have a much greater carbon economy than understorey trees. The discussion should begin by describing processes in the trees that produce most of the productivity as the title, introduction, and rest of the paper suggests. I do not understand what the fact that flowering and fruiting in the understorey is less frequent near Manaus has to do with the focus of this paper. At any rate, this topic should definitely not be the first focus of the discussion.

The discussion also uses a number of temperate examples to interpret the data even when tropical examples are available. The results of Poorter et al. (2008) are especially relevant to this discussion.

## References

Falster DS, Westoby M (2005) Alternative height strategies among 45 dicot rain forest species from tropical Queensland, Australia. *Journal of Ecology* 93:521-535

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Santiago LS, Goldstein G, Meinzer FC, Fisher JB, Machado K, Woodruff D, Jones T (2004) Leaf photosynthetic traits scale with hydraulic conductivity and wood density in Panamanian forest canopy trees. *Oecologia* 140:543-550

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Interactive comment on *Biogeosciences Discuss.*, 5, 3593, 2008.

## BGD

5, S2134–S2136, 2008

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