Dear Dr. Rutishauser,

Thank you for your interest in our manuscript and for your relevant comments.

You found what turns out to be a mistake in equation 2. In this equation, the geometric approximation is restricted to the trunk (as stated l. 4 to 6 p. 19719), equation 2 should therefore be:

$$\ln(\mathrm{TAGB}) = \alpha + \beta * \ln\left(D^2 * \mathbf{Ht} * \rho\right) + \gamma * \ln(\mathrm{Cm}) + \varepsilon$$

We apologize for the mistake that will be corrected in the next version of the manuscript.

Your concerns on our definition of trunk height are also sound. In the current version of the manuscript, we decompose total tree height into trunk height (Ht) and crown depth (Hc), while at the same time defining trunk height as the height of the first living branch. In the destructive datasets compiled for the purpose of this study, trunk height (or crown base) always corresponded to the height of the first fork (pers. com. with the authors), even in data from Peru where it was not formerly defined as such (see Goodman et al., 2014). Defining trunk height (or crown base) as the height of the first fork would thus be consistent with our data, but may not be appropriate in all cases. We propose to modify our definition of trunk height to "the height of the first main branch", and hereafter briefly discuss this proposition.

As you rightfully stressed, identifying (but not measuring) the top of "the trunk" (defined here as the height of the first fork) is not always a trivial task. In the semantic of tree architecture (Barthélémy and Caraglio, 2007), a fork would be an upright branch with a similar structure to the one of the principal axe (Heuret et al., 2003) or "total reiteration" *sensu* Oldeman (1974). Such branches typically appear in the last stages of species architectural development sequence. Therefore, the smaller the tree, the less likely it is to present an obvious fork (or any fork at all). Using the first fork as a marker of crown base is thus convenient when one only considers "large" trees with advanced crown metamorphosis, which is often the case for trees harvested for commercial purpose and may explain its wide usage by early forest scientists. In some commercial tree species however, trees of harvestable size only present partial reiterations (horizontal branches that straighten-up in their most distal part; eg. *Pycnanthus angolensis* in Africa, a species belonging to the Massart architectural model; Halle et al., 1978). From a morphological point of view, these large, long-lasting branches do not form forks *per se* nor do they conform to the definition of forks in the architectural semantic, yet they affect timber quality and the lowest partial reiteration is used as marker of bole distal limit by foresters. A more generic identifier of the trunk/bole distal limit could therefore be "the lowest main branch" (as in Rutishauser et al., in press), although there is some extent of subjectivity in this definition. In our study, wood merchantable properties are irrelevant, but leaning on foresters long experience in identifying the distal limit of the bole seems reasonable. Our results suggested an increase in "crown" mass proportion on very large canopy trees (≥ 10 Mg), and our final recommendation is to measure trunk height for trees ≥ 100 cm of diameter at breast height. We believe that in the vast majority of cases, identifying the lowest main branch (i.e. excluding epicormic branches) on such very large trees leaves little room for subjectivity. Again, we agree that the subjectivity increases as tree size decreases. This partly explains why trees ≤ 10 cm of diameter at breast height were excluded from the analysis and may also contribute to the considerable range of variation found for crown mass proportion among "small trees".

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