*SM3. Details about the database construction*

Table S2. Description of the variables included in the dataset (n = 4004)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Variable | Signification | Unit | Range | Mean |
|  |  |  |  |  |
| D | trunk diameter at breast height | cm | (5 - 212) | 23.98 |
| H | Total tree height | m | (1.20 - 70.7) | 16.04 |
|  | wood specific gravity | g/cm3 | (0.09 - 1.20) | 0.633 |
|  |  | g/cm3 × cm2 × m | (18.2 - 1.22 106) | 22290 |
| AGB | Above-ground biomass | kg | (1.23 - 76060) | 1134 |
|  |  |  |  |  |

*Issues with some datasets from Chave et al. (2005)*

In Araujo *et al.* (1999), fresh AGB had been reported rather than dry AGB. In Chave *et al.* (2005), a value of 42% moisture content (*m*) had been assumed for conversion from fresh into dry biomass. However, a better conversion from fresh to oven-dry biomass takes the following form: , such that moisture content decreases when wood specific gravity increases. From a detailed study in French Guiana including measurements for both m and  (Lescure *et al.*, 1983), we found that (dbh range: 5-118 cm, n=363, r2=0.41, CV=7.7%). We therefore used this equation to compute the dry AGB in the Araujo *et al.* (1999) dataset (site BraPara1 in main text).

In the present analysis, we included only the Chave *et al.* (2005) sites where wood specific gravity, DBH and total tree height had been measured. At one site, BraMan1, the value for wood specific gravity had been assumed constant in Chave *et al.* (2005) and was unavailable from either the publication (Higuchi *et al.* 1998) or the authors. This site was then excluded from the reanalysis (315 trees). At another site, Yucatan, wood specific gravity could be retrieved for only a fraction of the trees (175 out of 247), and the present analysis includes only trees where wood specific gravity could be reliably inferred. A number of sites from Chave *et al.* (2005) did not include total tree height data (BraMatoG, Carvalho *et al.* 2001; BraPara2, Russell 1983; Colombia, Overman *et al.* 1994; Jamaica, Tanner 1980; IndiaKarna, Rai & Proctor 1986; Venezuela, Jordan & Uhl 1978) and they were not included in the present analysis.

Dataset Venezuela in Chave *et al.* (2005) may be the same as Venezuela2 in the present study (unpublished, contributed by JGS), but the former was reported by Brown (1997) from unpublished data associated with Jordan & Uhl (1978), which we here decided to exclude anyway. Dataset Karnataka of Chave *et al.* (2005) was digitized directly from a figure in Rai & Proctor (1986). Since then, the original full dataset could be retrieved, including tree height data (contributed by PP and RP), and it is then considered as a new dataset.

Finally, a large number of studies were consulted and compiled after 2005 but excluded from the present compilation as they were lacking one or more of the required fields.

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