



Figures and figure supplements

Present-day central African forest is a legacy of the 19th century human history

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Figure 1. Paleoenvironmental changes and human activities in the Sangha River Interval. The 34 sites with paleoenvironmental data (fires) and the 38 dated archaeological sites and discoveries (pots) are indicated on a vegetation map modified from **Gond et al. (2013)** (http://www.coforchange.eu/ products/maps). The seven sites used to monitor tree growth (trees) are also indicated (see **Supplementary files 4**, **5** and **6** for site names). Brown (three shades): savanna of the Sudano-Guinean domain; orange (three shades): savanna included in dense forest; yellow: savanna-forest edge; purple (two shades): very open forest; blue-green: open semi-deciduous forest; medium green (three shades): dense semi-deciduous forest; dark green (five shades): dense evergreen forest; light green (two shades): open evergreen forest; light blue (two shades): swamp forest and swamp. Map: QGIS 2.14 (http://www.qgis.org), CAD: Illustrator CS4 (https://www.adobe.com).



Figure 2. Variation in tree diameter distribution among the 176 genera across the SRI. Projection of the genera and the 10-cm-wide diameter classes in the ordination space defined by the first two axes of a correspondence analysis of the abundance matrix, as defined by 176 genera and 13 diameter classes. The size of the circles is proportional to the square root of the genus abundance. The color of the symbol corresponds to the two groups identified with a clustering analysis (based on Euclidean distances and an average agglomeration method) on the species score on the first factorial axis. Genera that showed a reverse-J diameter distribution (n = 134) are indicated in gray and those genera that showed a deviation from the reverse-J distribution (n = 42) in black (e.g., *Baillonella*). Black filled circles indicate the four genera that are monospecific in the SRI and used for the age estimations. Diameter distribution of the 10 most abundant genera is shown in addition to that of the four selected genera: *Celtis* (gray), *Polyalthia* (gray), *Strombosia* (gray), *Petersianthus* (gray), *Manilkara* (gray), *Entandrophragma* (black), *Terminalia* (black), *Anonidium* (gray), *Staudtia* (gray), and Macaranga (gray). Statistics: R (https://www.r-project.org/), CAD: Illustrator CS4 (https://www.adobe.com).



Figure 2—figure supplement 1. Distribution of diameters of the four study species in the 22 study sites (black). The solid lines on the average diameter distributions (gray) correspond to the fitted parametric diameter distribution (Weibull), which was used to estimate the mode and corresponding age. Ages and dates (AD) in the Sangha River Interval were estimated using the mean annual increment of diameter of (a) 367 *Erythrophleum suaveolens*, (b) 199 *Pericopsis elata*, (c) 152 *Terminalia superba* and (d) 265 *Triplochiton scleroxylon*. Age estimations were validated with published tree-ring data for these four species in natural forests in Cameroon (C), the Democratic Republic of Congo (DRC) and the Ivory Coast (IC) (*Supplementary file 3*). Maps: QGIS 2.14 (http://www.qgis.org), CAD: Illustrator CS4 (https://www.adobe.com). DOI: 10.7554/eLife.20343.005



Figure 2—figure supplement 2. Growth models (a, c, e and g) and growth trajectories (b, d, f and h) for the four study species based on tree-ring data. Eight growth models (i.e., Canham, Gompertz, Verhulst, Power, Power mult, Lognormal, Linear and Mean) were fitted to the data. Age estimations were obtained with numerical solutions to ordinary differential equations (ODE). Solid lines correspond to the model prediction on the observed range of diameters. Dashed lines correspond to the predictions for small trees (below the inventory threshold *Figure 2—figure supplement 2 continued on next page*

Figure 2—figure supplement 2 continued

of \leq 10 cm). For growth models, the color of symbols indicates access to light (light gray = emergent and dominant trees, Dawkins 5; gray = canopy and codominant trees, Dawkins 4; black = lower canopy and understory dominated trees, Dawkins \leq 3). For growth trajectories, age/diameter values based on published tree-ring data are indicated in light gray. Statistics: R (https://www.r-project.org/), CAD: Illustrator CS4 (https://www.adobe.com). DOI: 10.7554/eLife.20343.006



Figure 3. Chronology of paleoenvironmental changes and human activities in the Sangha River Interval. We compiled data on climate, erosion, vegetation types, light-demanding species and paleofires for the last 1000 years from 34 paleoenvironmental sites and data from 38 dated archaeological sites and discoveries with 63 related radiocarbon dates. The summed probability distribution of the radiocarbon ages showed fluctuations in the signal of human activities through time. Three primary time periods were identified: (a) before AD 1300; (b) from AD 1300 to 1850; and (c) after AD 1850. Color scales (four levels) were assigned depending on the proxy influx on the curve: light = present but rare; light-medium = present; medium = frequent; and dark = very frequent. Abbreviations: AD = Anno Domini (= calendar dates); C = Cameroon; RC = Republic of the Congo; CAR = Central African Republic; SSTs = Sea Surface Temperatures; C3/C4 plants = woody species (below –20‰)/herbs (above –20‰); *E. guineensis* = the oil palm *Elaeis guineensis* (*Supplementary files 5* and *6*). CAD: Illustrator CS4 (https://www.adobe.com). DOI: 10.7554/eLife.20343.007