

Supplementary material

Table S1. Main characteristics of the selected beech forests and trees. Mean (minimum–maximum) age and diameter in 2008.

Ecoregion	Forest name or location (points in Figure 1)	Number of trees (of stands)	Mean age (year) (min.-max.)	Mean diameter (cm) (min.-max.)	Elevation (m)	Soil texture
Lowlands	Ravenhof	1 (x)	87	54	15	Sand
Lowlands	Buggenhoutbos	2 (x)	141 (141–141)	78 (65–90)	24	Sandy-loam
Lowlands	Bulskampveld	3 (x)	103 (100–108)	71 (62–86)	27	Sand
Lowlands	Wijnendaele	1 (x)	105	81	34	Loamy-sand
Lowlands	Ravels	5 (x)	88 (87–92)	43 (35–52)	38	Loamy-sand and sand
Lowlands	Bertembos	2 (x)	144 (118–171)	66 (54–79)	61	Loam
Lowlands	Polygoonbos	1 (x)	89 (89–89)	52 (52–52)	62	Sandy-loam
Lowlands	Chartreuzebos	5 (x)	96 (87–105)	65 (59–74)	74	Sandy-loam and sand
Lowlands	Heverleebos	2 (x)	148 (143–153)	61 (57–65)	78	Sandy-loam and loamy-sand
Lowlands	Muziekbos	1 (x)	109	60	92	Sandy-loam
Lowlands	Meerdaalwoud	12 (x)	146 (91–186)	70 (56–86)	102	Loam and sandy-loam
Lowlands	Soignes–Zoniën	41 (2+x)	133 (93–174)	68 (48–94)	110	Loam
Lowlands	Flobecq	8 (1)	93 (87–104)	67 (57–76)	113	Loam
Lowlands	Kluisbos	1 (x)	88	64	117	Sandy-loam
Uplands	Tihange	13 (1)	102 (87–124)	71 (60–84)	239	Loam
Uplands	Hestreux	10 (1)	128 (116–132)	62 (51–79)	397	Loam*
Uplands	Recogne	12 (1)	175 (162–186)	63 (56–75)	456	Loam*
Uplands	Fourneau Saint-Michel	10 (1)	120 (98–154)	49 (39–62)	484	Loam*
Uplands	Nassogne	8 (1)	94 (92–95)	43 (34–55)	539	Loam*
Uplands	Rocherath	12 (1)	133 (109–153)	62 (53–72)	607	Loam*

In each forest, trees were selected by stands (Latte et al. 2015a, b, c) or individually (indicated as 'x') (Kint et al. 2012; Aertsen et al. 2014). * indicates texture with stone content ($\geq 15\%$).

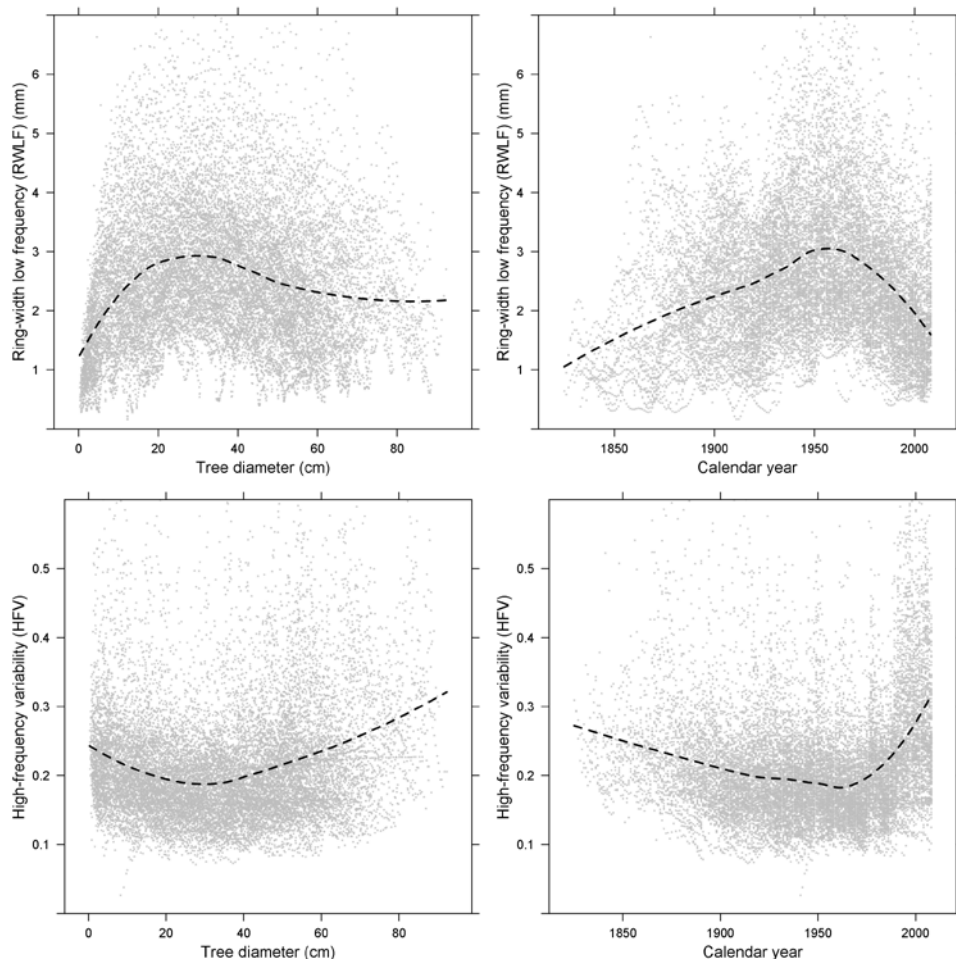


Figure S1. Ring-width low frequency (*RWLF*, top) and high-frequency variability (*HFV*, bottom) according to the tree diameter (left) and the calendar year (right). Grey dots indicate raw values. Dashed lines indicate mean trends (LOESS).

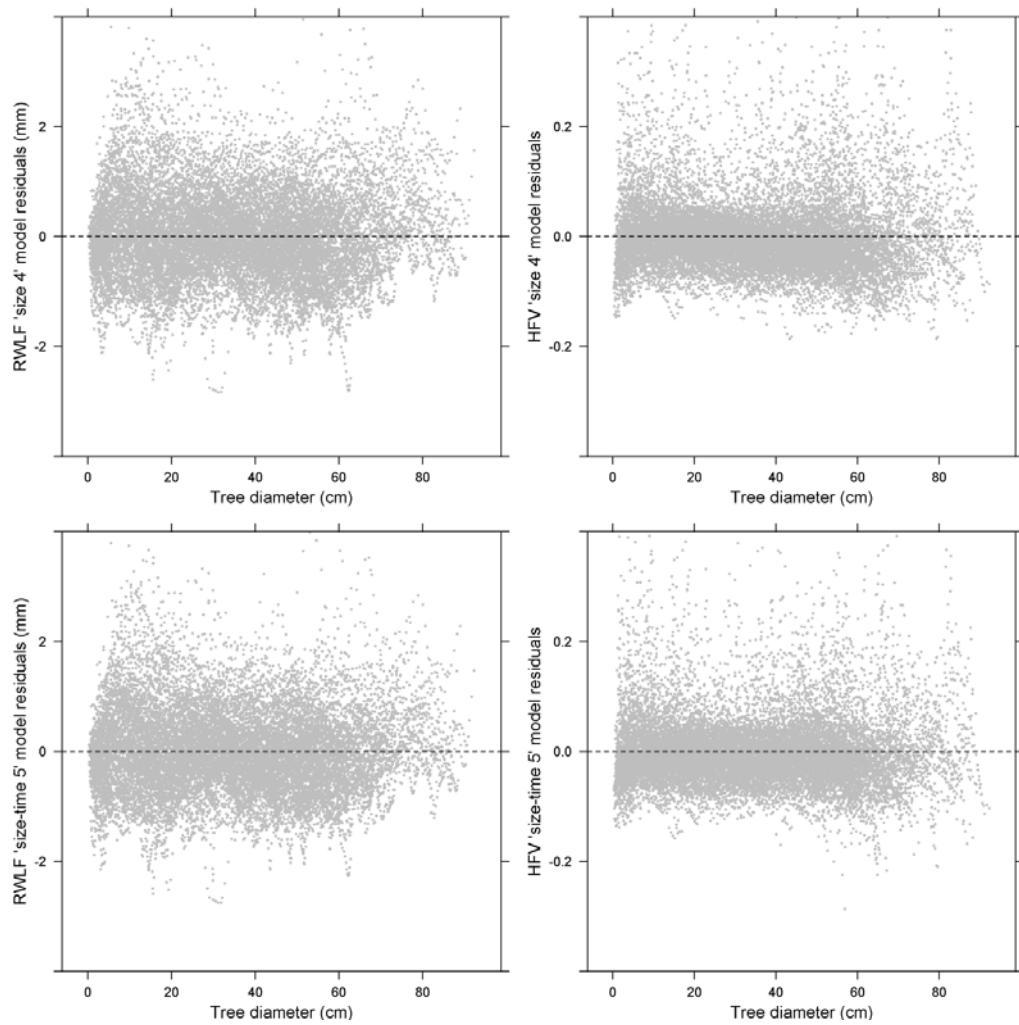


Figure S2. Residuals according to tree diameter of the 'size 4' models (top) and 'size-time 5' models (bottom) of ring-width low frequency (*RWLF*, left) and high-frequency variability (*HFV*, right).

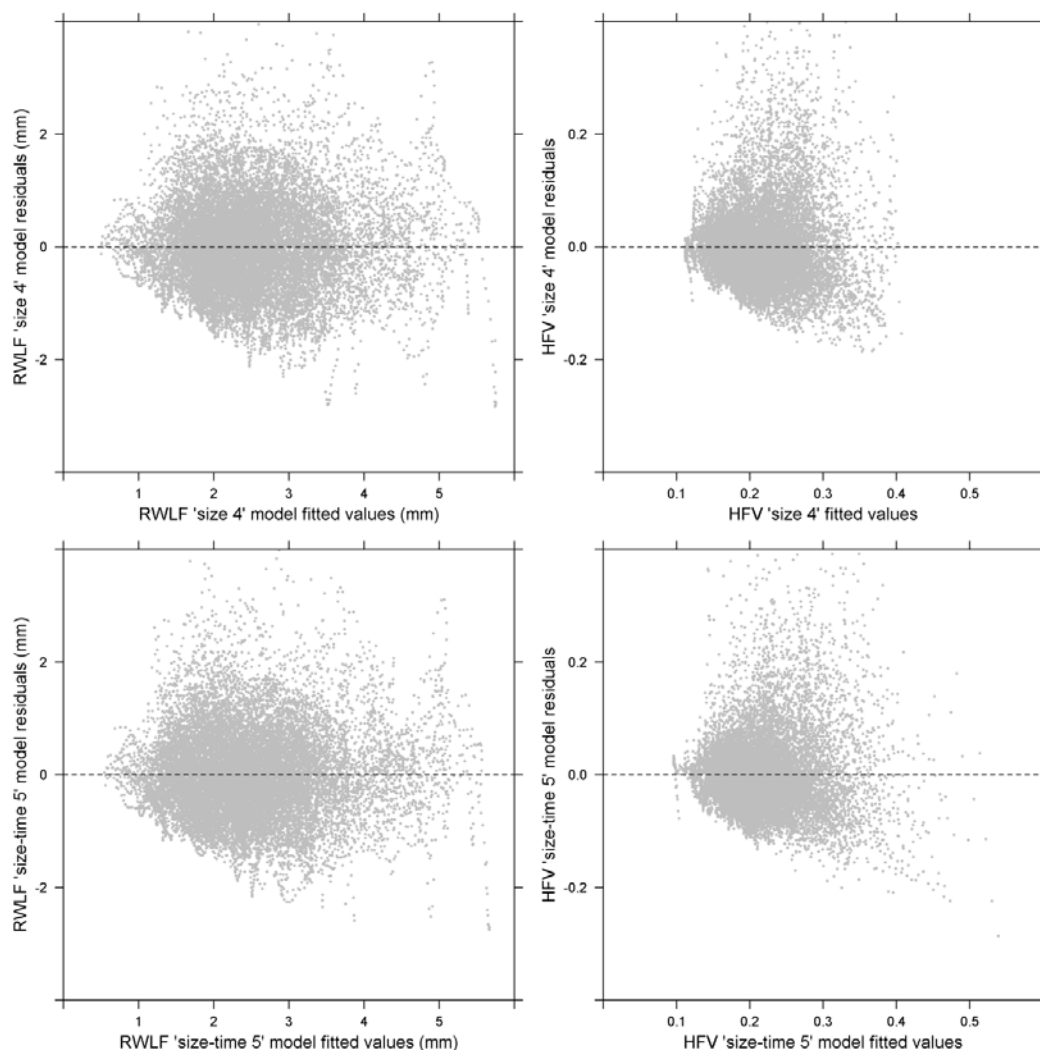


Figure S3. Residuals according to fitted values of the 'size 4' models (top) and 'size-time 5' models (bottom) of ring-width low frequency (*RWLF*, left) and high-frequency variability (*HFV*, right).

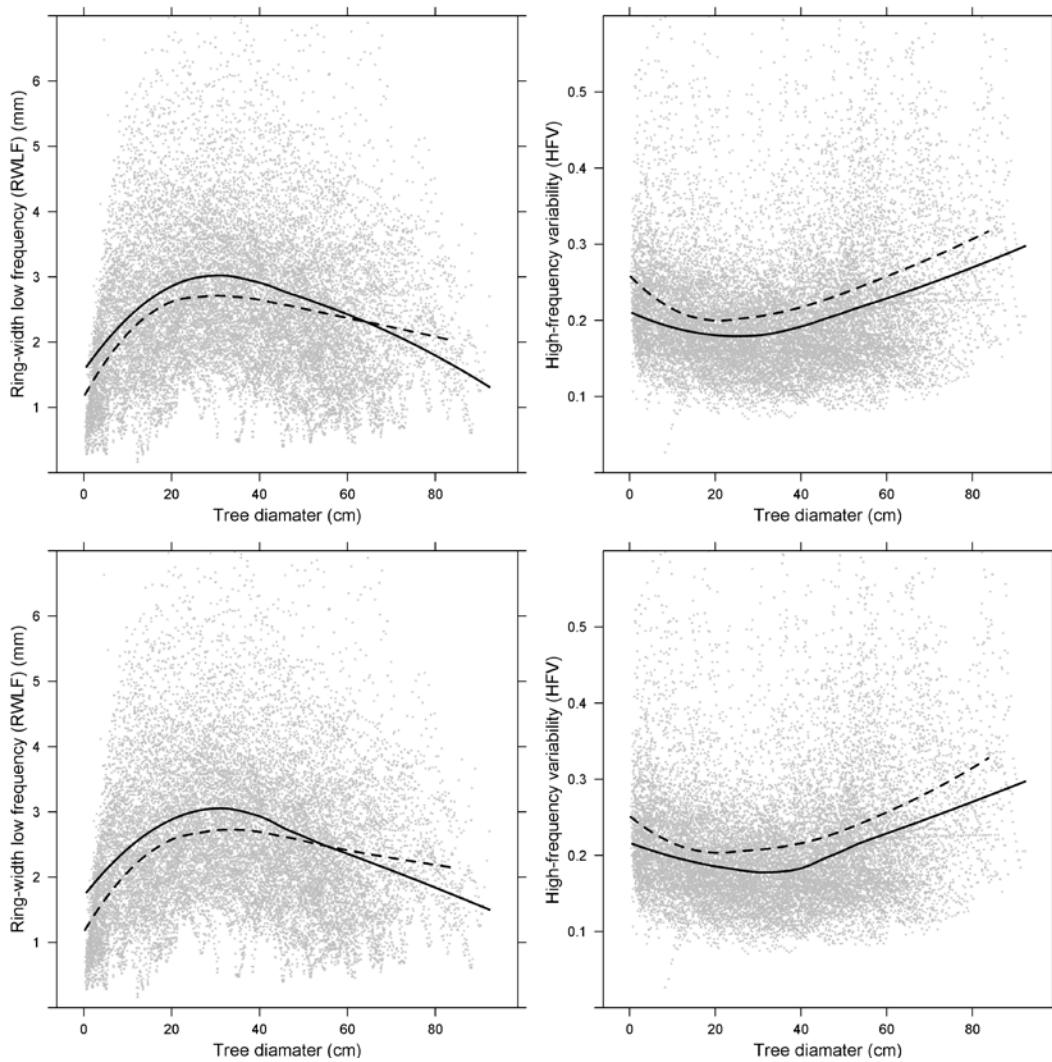


Figure S4. Fitted values according to the tree diameter for lowlands (full lines) and uplands (dashed lines) of the 'size 4' (top) and 'size-time 5' (bottom) models of ring-width low frequency (*RWLF*, left) and high-frequency variability (*HFV*, right). Grey dots indicate raw values. Lines are mean trends (LOESS)