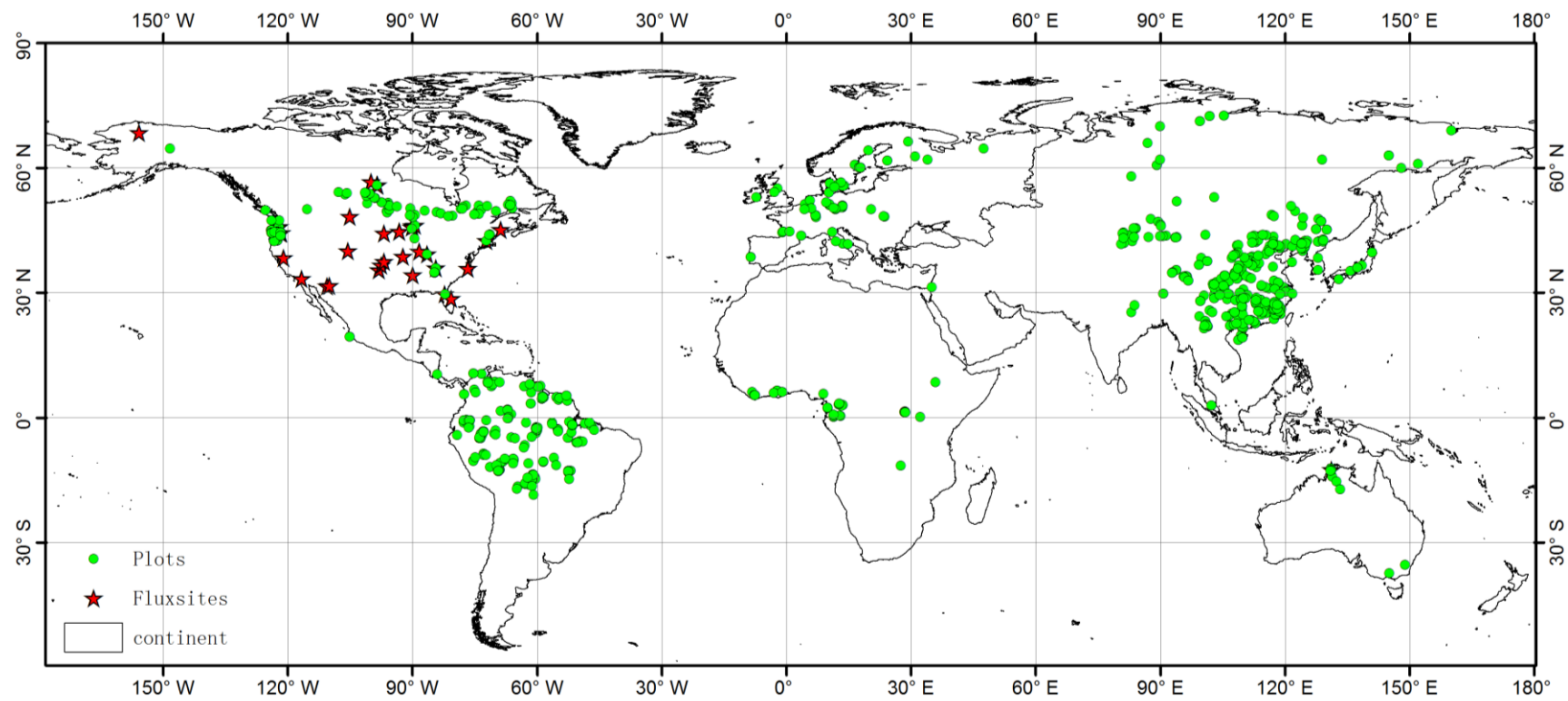


**Fig. S1** Location of plots and flux sits for model calibration and validation



**Table S1** Reference information for flux sites from Fluxnet

Longitude	Latitude	Site	PI	References
131.15	-12.49	Au-How	Jason Beringer	Beringer <i>et al.</i> (2003)
-68.75	45.21	US-Ho2	David Hollinger	Andrew <i>et al.</i> (2005)
-121.56	44.45	US-Me2	Bev Law	Van Tuyl <i>et al.</i> (2005)
-121.61	44.32	US-Me3	Bev Law	Campbell and Law (2005)
-121.57	44.44	US-Me5	Bev Law	Anthoni <i>et al.</i> (2002)
-76.67	35.80	US-NC2	Asko Noormets	Domec <i>et al.</i> (2012)
-105.55	40.03	US-NR1	Peter Blanken	Monson <i>et al.</i> (2002)
-89.87	34.25	US-Goo	Tilden Meyers	Wilson and Meyers (2007)
-72.17	42.54	US-Ha1	William Munger	Urbanski <i>et al.</i> (2007)
-72.19	42.54	US-LPH	Julian Hadley	Borken <i>et al.</i> (2006)
-86.41	39.32	US-MMS	Kim Novick	Oliphant <i>et al.</i> (2004)
-92.20	38.74	US-MOz	Lianhong Gu	Gu <i>et al.</i> (2006)
-82.24	29.76	US-SP2	Tim Martin	Gholz and Clark (2002)
-84.29	35.96	US-WBW	Tilden Meyers	Hui <i>et al.</i> (2004)
-98.48	55.88	CA-NS1	Mike Goulden	Goulden <i>et al.</i> (2006)
-98.52	55.91	CA-NS2	Mike Goulden	Wang <i>et al.</i> (2003)
-98.38	55.91	CA-NS3	Mike Goulden	Wang <i>et al.</i> (2002)
-98.38	55.91	CA-NS4	Mike Goulden	Bond-Lamberty <i>et al.</i> (2003)
-98.49	55.86	CA-NS5	Mike Goulden	Hirsch <i>et al.</i> (2004)
-99.95	56.64	CA-NS7	Mike Goulden	Bond-Lamberty <i>et al.</i> (2003)
-121.95	45.82	US-Wrc	Ken Bible	Harmon <i>et al.</i> (2004)
-89.98	46.08	US-Los	Ankur Desai	Sulman <i>et al.</i> (2009)
-89.35	46.24	US-Syv	Ankur Desai	Desai <i>et al.</i> (2005)
-90.08	45.81	US-WCr	Ankur Desai	Cook <i>et al.</i> (2004)
-110.51	31.59	US-Aud	Tilden Meyers	Krishnan <i>et al.</i> (2012)
-155.75	68.49	US-Ivo	Donatella Zona	McEwing <i>et al.</i> (2015)
-80.67	28.61	US-KS2	Bert Drake	Stiling <i>et al.</i> (2002)
-116.64	33.38	US-SO4	Walt Oechel	Luo <i>et al.</i> (2007)
-120.95	38.41	US-Var	Dennis Baldocchi	Ma <i>et al.</i> (2007)
-98.04	35.55	US-ARb	Margaret Torn	Migliavacca <i>et al.</i> (2010)
-98.04	35.55	US-ARc	Margaret Torn	Anderson <i>et al.</i> (2008)
-97.49	36.61	US-ARM	Margaret Torn	Fischer <i>et al.</i> (2007)
-96.84	44.35	US-Bkg	Tilden Meyers	Gilmanov <i>et al.</i> (2005)
-88.29	40.01	US-Bo1	Tilden Meyers	Turner <i>et al.</i> (2003)
-105.10	48.31	US-FPe	Tilden Meyers	Gilmanov <i>et al.</i> (2005)
-93.09	44.71	US-Ro1	John Baker	Griffis <i>et al.</i> (2010)
-93.09	44.72	US-Ro3	John Baker	Griffis <i>et al.</i> (2011)
-109.94	31.74	US-Wkg	Russell Scott	Scott <i>et al.</i> (2010)
-96.86	37.52	US-Wlr	David Cook	Song and Wesely (2003)

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Table S2 Collected forest plots for model calibration

ID	Year	AGB (Mg ha <sup>-1</sup> DM)
1	1994	284.8
2	2000	149.1
3	1998	255.8
4	2001	93.0
5	1998	177.9
6	2007	82.5
7	1986	195.4
8	2007	186.3
9	1994	61.8
10	1978	80.4
11	1996	121.0
12	1996	152.7
13	1991	187.6
14	1984	108.3
15	1992	230.5
16	1996	159.7
17	1997	111.5
18	1989	114.8
19	1992	57.5
20	1987	25.2
21	2006	52.3
22	1997	39.7
23	1997	45.0
24	1999	41.9
25	1991	153.9
26	1992	91.7
27	2002	66.7
28	2007	56.4
29	1983	134.8
30	1996	146.7
31	2001	178.5
32	1999	155.7
33	2005	96.6
34	1999	78.8
35	1999	53.8
36	1999	78.5
37	1992	265.1
38	1989	84.1
39	1999	83.9
40	1999	161.8
41	1999	42.8

42	1999	60.2
43	1999	66.4
44	1995	154.0
45	1980	117.8
46	1988	114.3
47	1989	122.5
48	1987	41.8
49	1994	69.6
50	1982	126.4
51	1988	97.8
52	1990	138.2
53	1979	54.0
54	1982	33.0
55	1984	44.1
56	1987	45.1
57	1997	65.1
58	2006	60.9
59	2005	89.9
60	1986	63.0
61	2007	50.3
62	2004	96.3
63	2005	75.3
64	2006	70.2
65	1997	70.9
66	1985	31.3
67	1984	173.2
68	1984	57.9
69	1984	142.1
70	1984	38.2
71	1984	92.7
72	1984	38.2
73	1992	30.3
74	1999	65.9
75	1999	25.6
76	1981	53.4
77	1984	65.0
78	1991	97.5
79	1980	63.0
80	2006	40.8
81	1980	17.2
82	1984	48.1
83	2000	47.0
84	1984	54.5
85	1984	60.0

86	1984	85.0
87	1996	48.1
88	1984	76.6
89	1984	12.6
90	1984	145.3
91	1984	71.0
92	1991	56.5
93	1984	58.6
94	2000	54.2
95	1984	182.5
96	1987	37.0
97	1997	49.8
98	1999	49.7
99	2006	25.3
100	1984	67.9
101	1987	123.1
102	1987	60.3
103	2007	74.1
104	1994	65.3
105	1995	89.0
106	1997	67.9
107	1997	66.9
108	2006	53.3
109	1994	209.9
110	1993	49.7
111	2003	69.9
112	2006	61.6
113	1984	68.8
114	1996	72.0
115	2006	98.7
116	1984	40.8
117	1987	47.0
118	1997	55.3
119	1995	65.1
120	1973	119.5
121	1990	48.8
122	2004	97.3
123	1984	116.4
124	1995	112.3
125	1996	214.5
126	2004	51.3
127	2005	322.1
128	2005	81.0
129	1996	197.4



130	1993	105.2
131	1996	188.2
132	1999	163.4
133	2003	152.5
134	2005	134.0
135	2002	84.1
136	1983	119.6
137	1997	74.7
138	2003	101.3
139	1983	70.2
140	1995	139.8
141	1983	73.9
142	1988	101.4
143	1989	111.6
144	1980	52.6
145	1983	82.6
146	2005	64.8
147	1976	70.3
148	1992	126.0
149	1997	95.0
150	1999	63.6
151	2001	110.3
152	1997	92.7
153	1999	143.9
154	1995	46.1
155	1973	121.3
156	1988	222.6
157	1990	81.3
158	1987	81.6
159	2005	67.0
160	1980	87.5
161	1992	60.4
162	1977	198.7
163	2003	83.6
164	2004	123.6
165	1974	53.4
166	1986	130.1
167	2002	95.1
168	1983	174.3
169	2003	72.1
170	2005	82.6
171	2006	125.0
172	1991	127.9
173	1989	93.3

174	1983	191.0
175	1995	128.9
176	1985	93.1
177	1990	115.0
178	2000	67.5
179	1986	61.0
180	2003	75.2
181	1991	64.5
182	2005	82.4
183	2006	77.7
184	1977	160.5
185	1983	54.7
186	2005	42.5
187	2006	51.8
188	1993	99.1
189	1983	41.7
190	1994	55.2
191	2005	48.8
192	1989	197.5
193	1991	49.2
194	2003	45.5
195	1991	54.4
196	2005	98.6
197	1992	207.5
198	2003	61.2
199	2002	72.0
200	1995	60.1
201	1996	167.3
202	2005	81.6
203	1996	91.9
204	2005	50.8
205	2005	84.0
206	2007	45.3
207	1991	118.6
208	1992	189.3
209	1997	218.2
210	1989	80.6
211	1991	116.4
212	1985	167.0
213	1994	198.5
214	1998	237.3
215	1985	89.9
216	1992	343.8
217	2003	49.8

218	2004	209.3
219	1994	194.5
220	2000	59.6
221	2005	101.5
222	1990	88.1
223	2003	135.7
224	2002	151.9
225	2003	55.9
226	2004	298.3
227	1996	265.7
228	1998	39.5
229	2004	83.6
230	1996	47.3
231	1998	79.1
232	2002	46.2
233	2006	58.5
234	2006	54.5
235	2007	71.8
236	1998	61.0
237	2000	124.3
238	2000	66.1
239	2004	110.5
240	1995	131.6
241	2002	125.7
242	1995	272.1
243	1988	155.6
244	2005	136.3
245	1993	151.0
246	1995	110.1
247	2002	139.8
248	1992	72.9
249	1993	45.5
250	2005	100.8
251	1984	62.0
252	1983	150.9
253	2002	37.3
254	1988	89.6
255	1989	137.1
256	1996	196.9
257	2004	194.2
258	1994	268.2
259	1994	242.3
260	2004	129.6
261	1992	89.9

262	2005	249.4
263	2002	69.3
264	1994	105.3
265	1985	47.2
266	2002	77.5
267	2003	59.9
268	1996	165.4
269	1990	80.4
270	1993	284.5
271	2002	69.4
272	1990	89.2
273	1993	168.0
274	1993	129.3
275	1988	185.4
276	1992	453.1
277	1989	516.3
278	1991	481.4
279	1990	54.4
280	1991	324.2
281	2000	535.8
282	2003	42.5
283	2004	325.0
284	2006	241.7
285	2002	249.9
286	2002	248.2
287	1997	259.1
288	1981	41.8
289	1982	42.7
290	1983	38.9
291	1981	57.0
292	1988	90.5
293	1985	99.3
294	1999	142.8
295	2001	59.7
296	1996	242.4
297	1991	69.9
298	1987	274.6
299	1990	58.1
300	2001	63.0
301	1991	104.9
302	1998	115.4
303	1978	52.5
304	1983	49.5
305	1996	56.9

306	1997	43.4
307	1997	95.0
308	1998	94.1
309	1994	50.4
310	1996	91.6
311	1990	84.3
312	2001	65.0
313	2004	87.0
314	1992	117.5
315	1993	109.6
316	2000	105.4
317	2000	177.2
318	2008	205.2
319	2000	179.4
320	1998	103.0
321	2008	200.9
322	1995	241.7
323	2000	197.0
324	1998	127.5
325	1997	56.3
326	2005	65.7
327	1990	118.3
328	1999	205.0
329	1991	65.9
330	1989	160.0
331	1991	90.2
332	1999	209.9
333	1986	118.3
334	1993	95.1
335	2007	126.4
336	2003	52.2
337	2003	116.6
338	1993	137.5
339	1994	102.0
340	1999	67.3
341	2001	98.9
342	1994	96.8
343	1991	52.7
344	2000	108.0
345	1999	249.0
346	2005	346.0
347	2001	266.2
348	2002	255.7
349	2002	279.0

350	2001	283.0
351	2001	308.1
352	2001	292.9
353	2002	260.8
354	2002	255.2
355	2001	299.7
356	1997	352.3
357	1998	349.2
358	1999	301.6
359	1999	371.7
360	2001	124.8
361	2001	213.7
362	2001	233.8
363	1998	266.0
364	1998	269.7
365	2001	249.2
366	2001	270.9
367	1996	387.1
368	2001	240.0
369	2001	285.0
370	2001	188.4
371	2000	260.0
372	1998	272.9
373	2000	269.3
374	1995	349.1
375	1995	324.8
376	2000	568.2
377	1990	281.2
378	1995	74.3
379	2001	367.8
380	2001	94.1
381	2001	65.8
382	2001	141.9
383	2001	167.7
384	2001	386.9
385	2001	319.5
386	1972	362.4
387	1966	137.4
388	1995	124.5
389	2005	107.3
390	2001	235.2
391	1997	92.7
392	2001	17.5
393	2001	64.9

394	2001	95.8
395	2001	172.8
396	2001	184.9
397	2001	55.2
398	2001	107.6
399	2001	86.5
400	2001	166.5
401	2001	460.4
402	1991	59.8
403	1993	116.5
404	2004	147.7
405	2001	29.0
406	2001	78.4
407	2001	161.6
408	2001	211.6
409	2004	53.5
410	1984	91.6
411	1990	199.3
412	2001	48.7
413	2001	451.2
414	2001	562.9
415	2001	538.3
416	2001	42.3
417	2001	114.3
418	2001	193.3
419	2001	279.7
420	1971	96.5
421	1991	40.8
422	2001	40.0
423	2004	45.0
424	1995	98.6
425	2000	127.7
426	1997	124.4
427	1998	175.0
428	1999	175.0
429	2001	178.0
430	2005	61.6
431	2001	63.6
432	2001	266.7
433	2002	41.2
434	2003	51.3
435	1997	139.7
436	1972	107.3
437	2001	22.4

438	2001	79.9
439	2001	93.8
440	2001	230.3
441	2001	161.7
442	1995	158.6
443	2004	218.0
444	2006	218.8
445	2005	204.8
446	2001	67.3
447	1999	99.0
448	2001	97.8
449	2001	111.2
450	2001	237.8
451	2001	332.6
452	1996	47.6
453	1997	50.8
454	1998	55.0
455	1999	58.1
456	2000	50.2
457	2001	54.1
458	2002	58.7
459	2003	64.0
460	1970	104.0
461	1965	62.4
462	2001	39.0
463	2002	42.8
464	2001	50.3
465	1974	70.6
466	1969	114.4
467	1977	31.5
468	2000	29.9
469	1995	97.6
470	1972	111.7
471	1969	47.4
472	1965	62.4
473	1981	79.6
474	1969	148.5
475	1971	48.9
476	2000	160.0
477	1969	106.2
478	2001	78.5
479	2003	70.1
480	2000	130.3
481	1969	94.5



482	2000	42.6
483	2001	84.0
484	2001	73.1
485	2001	116.8
486	2001	343.5
487	2001	444.5
488	1972	79.7
489	1972	60.4
490	1999	98.3
491	2001	114.2
492	2001	122.3
493	2001	157.0
494	2001	36.5
495	2001	52.6
496	2001	69.0
497	2001	108.0
498	2001	54.5
499	2001	142.3
500	2001	50.1
501	2001	100.5
502	2001	159.7
503	2001	241.1
504	1995	79.6
505	1999	87.2
506	2001	124.3
507	2001	309.5
508	2001	275.6
509	1972	146.8
510	1995	73.4
511	1972	125.0
512	2001	114.1
513	2004	111.4
514	1972	62.9
515	1969	148.1
516	1971	175.0
517	2001	215.5
518	1993	72.5
519	2002	111.6
520	1997	117.6
521	2005	54.2
522	1975	126.7
523	2001	132.0
524	1974	166.9
525	2001	174.0

526	1990	177.7
527	1995	130.8
528	1997	38.4
529	1990	196.0
530	1970	90.5
531	1995	58.4
532	2001	52.8
533	2004	31.4
534	2001	73.1
535	1998	82.7
536	1969	129.3
537	2000	83.2
538	1997	110.3
539	2003	127.0
540	1999	97.9
541	2001	61.1
542	2002	60.8
543	2003	62.0
544	2004	62.0
545	2006	63.0
546	2007	63.7
547	2005	143.7
548	1999	102.2
549	2000	150.4
550	2000	71.3
551	1997	43.2
552	1975	81.9
553	1974	80.8
554	2002	66.6
555	2002	115.9
556	1969	56.9
557	1995	115.1
558	1970	57.2
559	1983	72.2
560	1999	86.0
561	1970	57.6
562	1990	226.2
563	2000	78.8
564	1999	74.9
565	2000	61.2
566	2002	91.9
567	1970	266.5
568	1971	235.7
569	2001	1.8

570	2001	0.5
571	2001	1.4
572	2001	2.5
573	2001	1.2
574	2001	1.7
575	2001	1.1
576	2001	1.9
577	2001	1.2
578	2001	2.6
579	2001	0.6
580	2001	0.6
581	2001	0.4
582	2001	0.9
583	2001	1.0
584	2001	1.2
585	2001	0.9
586	2001	1.0
587	2001	0.4
588	2001	0.3
589	2001	0.6
590	2001	1.1
591	2001	0.5
592	2001	0.4
593	2001	0.6
594	2001	0.3
595	2001	0.6
596	2001	0.2
597	2001	0.3
598	2001	0.5
599	2001	0.4
600	2001	0.3
601	2001	0.4
602	2001	1.2
603	2001	1.0
604	2001	0.6
605	2001	0.6
606	2001	0.3
607	2001	0.4
608	2001	1.7
609	2001	1.8
610	2001	0.7
611	2001	1.3
612	2001	3.1
613	2001	1.2

614	2001	1.6
615	2001	3.0
616	2001	3.0
617	2001	1.0
618	2001	1.3
619	2001	1.0
620	2001	1.3
621	2001	0.8
622	2001	1.3
623	2001	1.2
624	2001	2.9
625	2001	1.8
626	2001	2.0
627	2001	1.0
628	2001	3.4
629	2001	4.5
630	2001	4.4
631	2001	3.4
632	2001	1.8
633	2001	0.5
634	2001	1.4
635	2001	2.5
636	2001	1.2
637	2001	1.7
638	2001	1.1
639	2001	1.9
640	2001	1.2
641	2001	2.6
642	1999	108.0
643	2000	65.0
644	1999	56.0
645	2001	66.0
646	1999	62.0
647	2000	14.0
648	2000	62.0
649	2000	62.0
650	2000	54.9
651	2000	54.9
652	2008	62.4
653	2008	63.5
654	2008	26.4
655	2008	3.9
656	2006	61.7
657	1997	7.6

658	1997	6.1
659	1997	20.3
660	1997	12.8
661	1997	12.8
662	1997	6.1
663	1997	20.3
664	1998	67.2
665	1998	67.2
666	1998	67.2
667	1998	67.2
668	1990	165.0
669	1990	214.0
670	1990	154.0
671	1990	133.8
672	1990	627.0
673	1995	16.3
674	1995	7.6
675	1988	34.2
676	1983	29.5
677	1993	123.0
678	1969	86.8
679	1980	97.9
680	1969	131.1
681	1969	127.2
682	2008	279.2
683	2008	181.3
684	1988	299.4
685	1974	131.7
686	1979	168.7
687	1999	86.3
688	1991	172.4
689	1991	143.4
690	1994	202.3
691	1993	100.7
692	1993	68.8
693	1993	126.9
694	1999	131.5
695	1999	136.6
696	1995	153.5
697	1995	65.1
698	1995	78.3
699	1994	111.7
700	1994	157.3
701	1994	61.7

702	1994	61.1
703	1998	114.0
704	2000	138.5
705	1997	97.1
706	2000	146.2
707	1999	129.7
708	1998	141.3
709	1997	71.1
710	1997	101.5
711	2001	134.2
712	1998	163.4
713	1980	187.3
714	1979	106.6
715	1979	123.2
716	1979	109.6
717	1979	86.2
718	1979	115.1
719	1979	141.5
720	1980	155.6
721	1980	112.9
722	1987	186.0
723	1989	99.6
724	1989	96.8
725	1989	119.4
726	1989	138.7
727	1989	178.3
728	1989	124.8
729	2001	266.2
730	1997	352.3
731	1998	349.2
732	1999	301.6
733	1993	348.7
734	1999	364.0
735	2002	255.7
736	2002	378.7
737	2003	364.6
738	2001	124.8
739	2001	213.7
740	2001	233.8
741	1998	266.0
742	1998	269.7
743	2001	249.2
744	2001	270.9
745	2002	313.7

746	2002	279.0
747	1996	387.1
748	2001	240.0
749	2001	285.0
750	2001	188.4
751	2001	283.0
752	2000	260.0
753	1998	272.9
754	2000	269.4
755	1995	349.1
756	2002	260.8
757	2002	255.2
758	2001	299.2
759	1984	343.6
760	1996	158.4
761	2007	153.7
762	2006	255.8
763	2008	209.5
764	2006	238.4
765	2008	273.4
766	2006	212.6
767	2010	193.7
768	2006	262.7
769	1997	319.4
770	1986	176.2
771	2010	221.3
772	1986	173.9
773	2007	245.7
774	1999	216.2
775	2003	558.6
776	2007	453.4
777	2003	406.8
778	2003	345.5
779	2003	300.0
780	2007	345.2
781	2003	308.2
782	2004	321.4
783	2007	352.3
784	2006	215.0
785	2006	146.1
786	1993	332.0
787	2008	320.8
788	2007	235.3
789	2010	188.8

790	2006	242.6
791	1988	210.2
792	1983	212.7
793	2003	363.8
794	2004	369.1
795	2006	411.6
796	2006	234.0
797	2003	408.9
798	2003	439.4
799	1983	308.0
800	2001	109.6
801	1996	70.2
802	1984	390.6
803	2000	322.4
804	2002	350.8
805	1985	151.7
806	2001	167.0
807	1972	152.2
808	2008	240.7
809	2006	188.7
810	2007	125.0
811	2008	224.7
812	2004	378.6
813	1996	268.4
814	1994	220.8
815	2000	260.3
816	2008	157.8
817	2010	132.4
818	1993	625.5
819	2005	419.0
820	2006	746.9
821	1994	253.6
822	2003	360.4
823	2002	319.6
824	1978	331.5
825	1981	251.5
826	1996	321.3
827	2006	225.3
828	1999	209.3
829	1980	448.1
830	1981	179.8
831	2008	348.6
832	2010	246.0
833	2010	238.4



834	2010	199.0
835	2010	239.4
836	2010	527.9
837	2010	433.8
838	2010	330.2
839	2006	485.8
840	2008	287.8
841	1990	277.4
842	2002	239.2
843	2007	245.8
844	2007	228.2
845	2009	206.0
846	2003	207.2
847	2003	220.8
848	2003	193.0
849	1996	422.9
850	2006	269.9
851	2008	140.9
852	2006	167.8
853	2007	133.3
854	1987	199.9
855	2006	250.2
856	1993	283.5
857	2004	404.5
858	2006	281.1
859	2001	144.5
860	1999	253.9
861	2007	205.5
862	2007	232.0
863	2007	256.2
864	2007	210.6
865	1956	375.8
866	1987	189.7
867	1996	210.8
868	1995	286.9
869	1990	267.9
870	2003	156.9
871	1996	170.7
872	1995	351.1
873	1995	232.0
874	1996	93.9
875	1993	99.3
876	2003	417.2
877	2003	455.2

878	2003	533.4
879	2008	395.0
880	1997	391.2
881	1996	542.5
882	1980	302.2
883	2007	208.8
884	1991	214.1
885	2008	421.5
886	1987	276.9
887	2006	420.4
888	2004	209.0
889	2007	214.8
890	2008	219.4
891	2006	255.6
892	1999	253.2
893	2003	421.4
894	2007	426.5
895	2007	231.6
896	2001	115.2
897	2008	138.9
898	1986	289.2
899	2010	257.8
900	2008	200.1
901	2008	193.6
902	2009	182.4
903	2006	266.4
904	2004	275.3
905	1991	284.7
906	2004	444.6
907	1995	265.4
908	1998	285.4
909	2003	217.0
910	1996	292.7
911	2006	363.9
912	2006	193.1
913	2008	400.2
914	2008	366.6
915	2008	383.0
916	2008	437.6
917	1994	183.2
918	2002	203.7
919	1987	290.1
920	1996	71.0
921	2006	275.7

922	2002	298.9
923	2008	249.6
924	2010	234.8
925	2009	148.2
926	2009	169.3
927	2008	151.2
928	1995	348.7
929	2008	450.2
930	2008	435.2
931	2008	331.9
932	2008	365.0
933	2008	331.5
934	2008	258.5
935	2008	257.9
936	1997	253.8
937	1998	239.0
938	2007	218.4
939	2007	157.0
940	2003	320.0
941	2008	172.0
942	2009	235.4
943	2005	271.2
944	2006	247.1
945	2006	194.0
946	2007	285.6
947	2007	239.5
948	2002	514.1
949	2002	483.3
950	2002	578.6
951	1986	336.4
952	2007	130.5
953	2007	333.2
954	2000	413.8
955	2000	275.1
956	1996	460.1
957	1996	396.9
958	2002	376.1
959	2002	344.5
960	2002	496.5
961	2002	749.1
962	2007	455.8
963	2007	419.8
964	2000	375.9
965	2002	389.1

966	2006	597.1
967	1988	415.6
968	1988	344.8
969	1988	365.8
970	1988	427.0
971	1988	406.5
972	1988	407.4
973	1988	292.4
974	1988	371.0
975	1988	364.6
976	1988	313.8
977	1993	651.6
978	1994	612.7
979	1994	576.5
980	1993	463.3
981	1993	412.0
982	1993	503.9
983	1998	302.9
984	2000	505.2
985	2000	539.5
986	1994	497.6
987	1994	439.0
988	2006	425.7
989	2007	461.3
990	1993	396.2
991	2006	510.3
992	2005	130.6

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**Table S3** Collected pan-tropical woody residence time ( $\tau_w$ , years)

ID	Country	Latitude	Longitude	Plot size (ha)	DBH (cm)	AGB (Mg DM)	Above-ground wood production (Mg DM year <sup>-1</sup> )	Method	Woody Residence Time ( $\tau_w$ , years)
	Ghana	6.56	-2.22	0.6	10	307	3.32	Biomass/productivity	92.4
1	Ghana	6.48	-2.17	0.88	10	254	2.74	Biomass/productivity	113.5
2	Ivory Coast	5.33	-4.17	0.3	9.5	510	5.08	Biomass/productivity	100.5
3	Cameroon	2.13	9.82	1	10	250	2.85	Biomass/productivity	87.7
4	Cameroon	2.13	9.82	1	10	131	2.29	Biomass/productivity	57.2
5	Cameroon	2.13	9.82	1	10	172	1.78	Biomass/productivity	96.7
6	Ghana	4.85	-2.10	1	10	406	7.84	Biomass/productivity	51.82
7	Ghana	4.8	-2.05	1	10	187	5.27	Biomass/productivity	35.48
8	Cameroon	3.33	12.72	1	10	561	8.11	Biomass/productivity	69.1
9	Cameroon	3.33	12.72	1	10	555	5.99	Biomass/productivity	92.6
10	Cameroon	3.36	12.72	1	10	543	4.26	Biomass/productivity	127.5
11	Cameroon	3.36	12.73	1	10	298	4.93	Biomass/productivity	60.5
12	Cameroon	3.32	12.76	1	10	334	4.02	Biomass/productivity	83
13	Cameroon	3.33	12.76	1	10	247	4.51	Biomass/productivity	54.8
14	DRC	1.6	28.5	10	10	375	6.58	Biomass/productivity	57.0
15	DRC	1.3	28.6	10	10	525	5.73	Biomass/productivity	91.6
16	Ivory Coast	5.38	-4.03	0.2	9.5	450	5.96	Biomass/productivity	75.5
17	Uganda	1.43	31.3	1.86	20			1/stem turnover	52.4
18	Ghana	6.19	-0.55	1	10			1/stem turnover	47.9
19	Ghana	6.19	-0.55	1	10			1/stem turnover	36.1
20	Tanzania	-8.59	35.87	0.25	10			1/stem turnover	45.0

21	Colombia	-3.72	-70.31	1	10	281	6.80	Biomass/productivity	41.3
22	Colombia	-3.72	-70.31	1	10	276	7.60	Biomass/productivity	36.3
23	Peru	-3.95	-73.43	0.44	10	270	5.18	Biomass/productivity	52.0
24	Peru	-3.95	-73.43	0.4	10	266	6.48	Biomass/productivity	41.1
25	Peru	-3.95	-73.43	0.44	10	241	6.22	Biomass/productivity	38.8
26	Peru	-3.95	-73.43	0.48	10	288	7.28	Biomass/productivity	39.5
27	Ecuador	-0.53	-76.43	1	10	322	7.38	Biomass/productivity	43.6
28	Panama	9.17	-79.85	50	10	292	4.72	Biomass/productivity	61.9
29	Brazil	-2.4	-59.9	1	10	339	4.40	Biomass/productivity	77.0
30	Brazil	-2.4	-59.9	1	10	251	3.80	Biomass/productivity	66.0
31	Brazil	-2.4	-59.9	1	10	304	4.48	Biomass/productivity	67.9
32	Brazil	-2.4	-59.9	1	10	319	3.36	Biomass/productivity	94.9
33	Brazil	-2.4	-59.9	3	10	295	4.56	Biomass/productivity	64.7
34	Brazil	-2.4	-59.9	3	10	355	3.72	Biomass/productivity	95.4
35	Brazil	-2.4	-59.9	2	10	349	3.74	Biomass/productivity	93.3
36	Brazil	-2.4	-60	2	10	379	4.8	Biomass/productivity	78.9
37	Brazil	-2.4	-60	2	10	356	4.52	Biomass/productivity	78.8
38	Brazil	-2.4	-60	9	10	342	4.18	Biomass/productivity	81.9
39	Brazil	-2.4	-59.9	1	10	327	4.66	Biomass/productivity	70.2
40	Brazil	-2.63	-60.17	1	10	352	5.12	Biomass/productivity	68.7
41	Brazil	-2.63	-60.17	1	10	369	5.28	Biomass/productivity	69.9
42	Brazil	-2.63	-60.17	1	10	328	5.1	Biomass/productivity	64.3
43	Brazil	-2.63	-60.17	1	10	372	4.92	Biomass/productivity	75.7
44	Brazil	-2.63	-60.17	1	10	316	5.26	Biomass/productivity	60.1
45	Brazil	-2.63	-60.17	1	10	355	5.36	Biomass/productivity	66.3
46	Ecuador	-0.7	-76.48	1	10	289	10.5	Biomass/productivity	27.6

47	Ecuador	−0.7	−76.47	1	10	222	7.86	Biomass/productivity	28.2
48	Venezuela	9.25	−72	1	10	187	5.8	Biomass/productivity	32.3
49	Venezuela	9.25	−72	1	10	305	8.28	Biomass/productivity	36.8
50	Brazil	−1.7	−51.53	1	10	365	4.36	Biomass/productivity	83.6
51	Brazil	−1.72	−51.45	1	10	383	4.3	Biomass/productivity	90
52	Brazil	−1.7	−51.53	1	10	330	4.36	Biomass/productivity	75.7
53	Brazil	−1.7	−51.53	1	10	379	4.9	Biomass/productivity	77.3
54	Bolivia	−14.54	−61.48	1	10	214	5.6	Biomass/productivity	38.2
55	Bolivia	−14.53	−61.48	1	10	234	7.66	Biomass/productivity	30.5
56	Bolivia	−14.35	−61.16	1	10	125	5.28	Biomass/productivity	23.6
57	Peru	−12.5	−68.95	1	10	283	6.6	Biomass/productivity	42.9
58	Peru	−12.5	−68.95	1	10	249	7.78	Biomass/productivity	32
59	Peru	−12.49	−69.11	1	10	250	7.68	Biomass/productivity	32.6
60	Peru	−12.49	−69.11	1	10	289	8.06	Biomass/productivity	36
61	Venezuela	6.5	−61.5	0.25	10	398	6.1	Biomass/productivity	50
62	Venezuela	6.5	−61.5	0.25	10	477	5	Biomass/productivity	73.3
63	Venezuela	6.5	−61.5	0.25	10	297	6.92	Biomass/productivity	34.3
64	Venezuela	6.5	−61.5	0.25	10	258	6.54	Biomass/productivity	40.8
65	Colombia	−4.09	−69.91	1	10	322	5.2	Biomass/productivity	61.9
66	Panama	8.75	−82.85	0.64	10	346	4.56	Biomass/productivity	75.8
67	Bolivia	−14.56	−60.75	1	10	249	8.32	Biomass/productivity	30
68	Bolivia	−14.56	−60.74	1	10	271	6.06	Biomass/productivity	44.7
69	Brazil	−2.63	−60.17	5	10	301	4.42	Biomass/productivity	68
70	Brazil	−2.63	−60.17	5	10	291	4.04	Biomass/productivity	72
71	Brazil	−1	−52.05	1	10	387	4.96	Biomass/productivity	78
72	Ecuador	−1.07	−77.6	1	10	248	7.18	Biomass/productivity	34.5

73	Ecuador	-1.07	-77.67	1	10	263	8.42	Biomass/productivity	31.2
74	Ecuador	-1.07	-77.67	1	10	319	8.7	Biomass/productivity	36.6
75	Ecuador	-1.07	-77.67	0.92	10	287	8.46	Biomass/productivity	33.9
76	Peru	-4.92	-73.73	1	10	237	10.18	Biomass/productivity	27.5
77	Peru	-4.92	-73.73	1	10	245	10.86	Biomass/productivity	35.5
78	Peru	-4.92	-73.73	1	10	288	10.18	Biomass/productivity	29.8
79	Bolivia	-16.0	-62.7	1	10	127	5.4	Biomass/productivity	23.4
80	Bolivia	-16.0	-62.7	1	10	130	4.2	Biomass/productivity	31.1
81	Colombia	1.16	-77.99	25	10	160	4.43	Biomass/productivity	36.2
82	Bolivia	-14.4	-61.13	1	10	173	4.9	Biomass/productivity	35.4
83	Bolivia	-14.4	-61.13	1	10	204	6.86	Biomass/productivity	29.7
84	Brazil	-19.2	-40.03	2.5	10	335	5.35	Biomass/productivity	62.5
85	Bolivia	-14.61	-60.87	1	10	240	4.96	Biomass/productivity	48.4
86	Bolivia	-14.6	-60.85	1	10	285	5.36	Biomass/productivity	53.2
87	Peru	-11.88	-71.35	0.97	10	299	6.02	Biomass/productivity	49.6
88	Peru	-11.88	-71.35	2	10	267	7.08	Biomass/productivity	37.7
89	Peru	-11.88	-71.35	2	10	288	8.24	Biomass/productivity	34.9
90	Brazil	-5.73	-49.05	2	10	214	6.02	Biomass/productivity	35.5
91	Brazil	-5.7	-49.03	2	10	299	5.68	Biomass/productivity	52.6
92	Brazil	-5.7	-49	2	10	327	5.26	Biomass/productivity	62.1
93	Peru	-3.78	-73.5	1	10	296	5.22	Biomass/productivity	56.6
94	Brazil	-1.45	-48.45	2	10	286	5.06	Biomass/productivity	56.5
95	French	4.08	-52.67	10	10	356	8.66	Biomass/productivity	41.1
96	French	4.08	-52.67	12	10	384	8.04	Biomass/productivity	47.8
97	Peru	-11.93	-71.25	1	10	263	7.58	Biomass/productivity	34.7
98	French	5.25	-52.83	6	10	392	4.51	Biomass/productivity	86.8



99	French	5.25	-52.83	6	10	417	4.27	Biomass/productivity	97.7
100	French	5.25	-52.83	6	10	415	4.31	Biomass/productivity	96.2
101	French	5.25	-52.83	6	10	427	4.14	Biomass/productivity	103
102	French	5.25	-52.83	6	10	415	4.15	Biomass/productivity	99.9
103	French	5.25	-52.83	6	10	435	4.51	Biomass/productivity	96.5
104	Colombia	-0.65	-72.07	1.8	10	417	10.1	Biomass/productivity	41.3
105	Colombia	-0.65	-72.07	1.8	10	618	7.29	Biomass/productivity	84.8
106	French	5.25	-53	0.78	5	324	7.04	Biomass/productivity	46
107	French	5.25	-53	1	5	342	6.15	Biomass/productivity	55.5
108	Colombia	6.75	-75.1	3.3	1	258	11.3	Biomass/productivity	22.8
109	Venezuela	8	-61.75	0.25	10		5.8	Biomass/productivity	56.7
110	Venezuela	8	-61.75	0.25	10		5.56	Biomass/productivity	70
111	Venezuela	1.93	-67.05	0.25	10	296	4.66	Biomass/productivity	63.6
112	Venezuela	1.75	-67	0.25	10	253	4.17	Biomass/productivity	60.6
113	Peru	-13.05	-71.55	1	10	206	3.27	Biomass/productivity	62.9
114	Peru	-3.23	-72.9	1	10	279	6.24	Biomass/productivity	44.6
115	Peru	-3.23	-72.9	1	10	287	6.78	Biomass/productivity	42.4
116	Peru	-12.83	-69.3	0.96	10	282	7.1	Biomass/productivity	39.7
117	Peru	-12.83	-69.28	1	10	260	5.2	Biomass/productivity	50
118	Peru	-12.83	-69.27	1	10	257	6.16	Biomass/productivity	41.8
119	Peru	-12.83	-69.28	1	10	266	5.4	Biomass/productivity	49.3
120	Peru	-12.83	-69.28	0.42	10	289	7.54	Biomass/productivity	38.3
121	Peru	-12.85	-69.28	1	10	260	6.98	Biomass/productivity	37.3
122	Brazil	-13.04	-52.23	1	10	150	5.26	Biomass/productivity	28.6
123	Brazil	-2.9	-54.95	1	10	290	6.24	Biomass/productivity	46.5
124	Brazil	-2.75	-55	1	10	296	5.16	Biomass/productivity	57.4

125	Brazil	-2.75	-55	1	10	374	5.46	Biomass/productivity	68.5
126	Brazil	-2.75	-55	1	10	377	5	Biomass/productivity	75.5
127	Ecuador	-0.63	-76.14	0.8	10	261	6.84	Biomass/productivity	38.1
128	Ecuador	-0.64	-76.15	1	10	255	5.26	Biomass/productivity	48.5
129	Peru	-12.95	-71.53	1	10	159	2.7	Biomass/productivity	58.9
130	Peru	-13.1	-71.58	1	10	94	2.01	Biomass/productivity	46.8
131	Peru	-13.1	-71.58	1	10	132	3.17	Biomass/productivity	41.6
132	Peru	-13.07	-71.55	1	10	77	1.58	Biomass/productivity	48.7
133	Peru	-13.07	-71.55	1	10	111	1.58	Biomass/productivity	70.2
134	Peru	-13.18	-71.58	1	10	130	2.42	Biomass/productivity	53.8
135	Peru	-3.43	-72.85	1	10	299	7.82	Biomass/productivity	38.3
136	Ecuador	-0.69	-76.4	24	10	263	6.59	Biomass/productivity	39.9
137	Bolivia	-16.53	-64.58	1	10			1/stem turnover	39.2
138	Brazil	-10.57	-68.31	1	10			1/stem turnover	30.7
139	Colombia	-3.06	-70	1	10			1/stem turnover	33.1
140	Brazil	3.25	-61.37	0.75	10	321	2.73	Biomass/productivity	117.6
141	Brazil	3.25	-61.37	0.75	10	374	3.23	Biomass/productivity	115.8
142	Brazil	3.25	-61.37	0.75	10	360	3.39	Biomass/productivity	106.1
143	Brazil	-10.82	-68.78	1	10			1/stem turnover	36.2
144	Bolivia	-17	-64.77	1	10			1/stem turnover	36.2
145	Thailand	16.82	101.29	50	10	203	3.51	Biomass/productivity	57.8
146	China	18.62	108.75	1.3	5	229	4.8	Biomass/productivity	47.7
147	Cambodia	12.7	104.9	23.04	10	256	5.35	Biomass/productivity	47.9
148	Malaysia	4.19	114.02	52	10	479	7.05	Biomass/productivity	68
149	China	21.92	101.25	1	2	295	8.48	Biomass/productivity	34.8
150	Indonesia	6.5	116.5	1	4.8	437	8.14	Biomass/productivity	53.7

151	Indonesia	6.5	116.5	1	4.8	554	16.51	Biomass/productivity	33.6
152	Indonesia	6.08	116.55	1	4.8	309	2.71	Biomass/productivity	113.9
153	Indonesia	6.08	116.55	0.2	4.8	246	1.9	Biomass/productivity	129
154	Indonesia	6.08	116.55	0.5	4.8	294	4.26	Biomass/productivity	69
155	Indonesia	6.08	116.55	0.25	4.8	308	2.49	Biomass/productivity	123.8
156	Indonesia	6.08	116.55	0.2	4.8	215	1.85	Biomass/productivity	116
157	Indonesia	6.08	116.55	0.2	4.8	238	1.85	Biomass/productivity	128.4
158	Indonesia	6.08	116.55	0.2	4.8	122	1.31	Biomass/productivity	93
159	Malaysia	2.35	102.19	50	10	320	6.86	Biomass/productivity	46.7
160	Sri Lanka	6.4	80.4	25	10	337	7.33	Biomass/productivity	46
161	India	12.42	75.42	0.32	30	379	6.87	Biomass/productivity	55.1
162	India	12.42	75.42	0.32	30	425	6.99	Biomass/productivity	60.8
163	India	12.42	75.42	0.32	30	348	4.61	Biomass/productivity	75.6
164	India	12.42	75.42	0.32	30	502	7.33	Biomass/productivity	68.5
165	Malaysia	-3.42	101.7	2	10			1/stem turnover	54.7
166	Malaysia	4.97	117.8	4	10			1/stem turnover	51.1
167	India	14.27	74.42	2.7	10			1/stem turnover	64.8
168	Malaysia	5	119	0.6 – 2.0	10			1/stem turnover	74.2
169	India	14.16	74.42	1.09	10			1/stem turnover	64.8
170	India	14.17	74.44	2.7	10			1/stem turnover	48.3
171	Malaysia	5.17	117.93	1-1.81	10			1/stem turnover	57.1
172	Indonesia	-0.83	100.33	0.91-1	10			1/stem turnover	34.1
173	Malaysia	2.47	101.92	2	10			1/stem turnover	54.9
174	Australia	-17.1	145.6	0.2 – 1.68	10			1/stem turnover	83.6
175	Australia	-16.52	145.1	0.5	10			1/stem turnover	121.1
176	Australia	-17.08	145.3	0.5	10			1/stem turnover	106.6