

Supplementary Materials

Table S1. Detail information of each forest plot.

ID	Stand type	Longitude	Latitude	Elevation (m)	Slope (°)	Aspect	Mean Tree Height	Mean DBH	Mean CBH	Tree Number
1	MP	114.754289	25.639831	155	10	sunny	12.5	14	3	24
2	MP	114.751832	25.632683	175	15	shady	11	13	2.5	25
3	MP	114.743362	25.634808	199	15	shady	12	12	2	19
4	MP	114.742018	25.635040	185	30	sunny	9	12	1.5	18
5	MP	114.761347	25.635474	178	18	shady	10	13	2	23
6	MP	115.638924	26.247082	234	35	shady	15	11	4	25
7	MP	115.600024	26.188400	217	40	sunny	6	17	5	20
8	MP	115.671709	26.257810	266	28	sunny	10	17	4	20
9	MP	115.637054	26.246835	241	30	sunny	20	18	6	29
10	EP	115.683916	26.253215	232	35	shady	15	16	5	21
11	EP	115.618437	26.227696	309	45	sunny	18	17	6	31
12	EP	115.585221	26.277520	294	30	sunny	16	20	7	31
13	EP	115.599839	26.187363	208	10	sunny	18	21	8	28
14	EP	115.597110	26.184408	226	25	sunny	15	17	9	18
15	EP	115.670396	26.261018	273	38	shady	8	13	5	17
16	CL	115.211186	25.239394	327	42	shady	17	18	5	32
17	CL	115.164185	25.284438	298	30	shady	15	13	3	45
18	CL	115.180526	25.243812	289	28	shady	14	15	5	38
19	CL	115.201262	25.271954	274	10	shady	16	18	5	20
20	CL	115.200041	25.272679	278	20	shady	12	13	5	40
21	BL	114.744322	25.634500	203	40	shady	15	15	3	36
22	BL	114.757964	25.634180	126	45	shady	16	16	5	20
23	BL	114.750327	25.633820	159	25	sunny	14	14	6	32
24	BL	114.743638	25.635037	184	25	shady	13	15	3	31
25	BL	114.760963	25.622616	198	35	shady	22	19	5	27
26	CBM	114.692381	25.583559	177	35	shady	14	12	4	40
27	CBM	114.754267	25.638031	154	33	shady	16	15	5	20
28	CBM	114.754363	25.635437	152	36	sunny	13	13	5	33
29	CBM	114.767974	25.633865	139	39	shady	12	12	3	25
30	CBM	114.769192	25.634552	134	45	shady	13	15	4	21

Notes: MP stood for *P. massoniana* forest, EP stood for *Pinus elliottii* forest, CL stood for *C. lanceolata* forest, BL stood for of mixed broad-leaved forest, and CBM stood for conifer-broadleaf mixed forest.

Table S2. Multiple comparisons of structural metrics of the five stand types.

Linear Hypotheses	Canopy Height		Crown Base Height		Canopy Volume		Stand Density	
	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>
CBM – BL = 0	-1.80	0.89	-0.13	1.00	0.58	0.91	-53.40	0.98
CL – BL = 0	1.25	0.97	1.00	0.56	0.29	0.99	4.60	1.00
EP – BL = 0	-3.73	0.28	2.65	<0.001	-1.10	0.54	-235.60	0.10
MP – BL = 0	-4.28	0.10	-1.84	<0.05	-0.56	0.88	-265.93	<0.05
CL – CBM = 0	3.05	0.54	1.12	0.43	-0.30	0.99	58.00	0.98
EP – CBM = 0	-1.93	0.85	2.78	<0.001	-1.68	0.13	-182.20	0.31
MP – CBM = 0	-2.48	0.61	-1.72	<0.05	-1.15	0.30	-212.53	0.11
EP – CL = 0	-4.98	0.07	1.66	0.12	-1.38	0.30	-240.20	0.09
MP – CL = 0	-5.53	<0.01	-2.84	<0.001	-0.85	0.61	-270.53	<0.05
MP – EP = 0	-0.55	1.00	-4.49	<0.001	0.53	0.92	-30.33	1.00
Linear Hypotheses	0–1.5 m VAI		1.5–5 m VAI		5–10 m VAI		>10 m VAI	
	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>
CBM – BL = 0	515.61	0.89	1016.1	0.21	660.49	0.68	-769.18	0.37
CL – BL = 0	805.99	0.60	-1160.33	0.11	251.09	0.99	-8.09	1.00
EP – BL = 0	810.64	0.61	-1348.74	<0.05	-887.60	0.35	-388.82	0.87
MP – BL = 0	718.14	0.63	174.83	0.99	591.28	0.67	-839.23	0.17
CL – CBM = 0	290.37	0.98	-2176.43	<0.001	-409.40	0.93	761.09	0.38
EP – CBM = 0	295.03	0.98	-2364.84	<0.001	-1548.09	<0.01	380.36	0.88
MP – CBM = 0	202.53	0.99	-841.27	<0.27	-69.21	1.00	-70.05	1.00
EP – CL = 0	4.65	1.00	-188.41	0.99	-1138.69	0.12	-380.73	0.88
MP – CL = 0	-87.84	1.00	1335.16	<0.01	340.19	0.94	-831.14	0.17
MP – EP = 0	-92.49	1.00	1523.57	<0.001	1478.88	<0.001	-450.41	0.71
Linear Hypotheses	0–1.5 m Canopy Cover		1.5–5 m Canopy Cover		5–10 m Canopy Cover		>10 m Canopy Cover	
	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>
CBM – BL = 0	0.09	0.82	0.11	0.85	0.11	0.66	0.08	0.93
CL – BL = 0	0.17	0.24	0.17	0.48	0.21	0.09	0.17	0.47
EP – BL = 0	0.10	0.69	0.06	0.98	0.09	0.77	-0.02	1.00
MP – BL = 0	0.14	0.32	0.12	0.73	0.10	0.62	-0.06	0.97
CL – CBM = 0	0.08	0.86	0.07	0.97	0.10	0.77	0.09	0.91
EP – CBM = 0	0.01	1.00	-0.05	0.99	-0.02	1.00	-0.10	0.88
MP – CBM = 0	0.05	0.96	0.01	1.00	-0.01	1.00	-0.14	0.56

EP – CL = 0	-0.07	0.92	-0.12	0.79	-0.12	0.59	-0.18	0.36
MP – CL = 0	-0.03	0.99	-0.06	0.97	-0.11	0.59	-0.23	0.10
MP – EP = 0	0.03	0.99	0.06	0.96	0.01	1.00	-0.04	0.99

Notes: MP stood for *P. massoniana* forest, EP stood for *Pinus elliottii* forest, CL stood for *C. lanceolata* forest, BL stood for of mixed broad-leaved forest, and CBM stood for conifer-broadleaf mixed forest.

Table S3. Forest structural parameters of five stand types.

Stand Type	Parameters	Canopy Height (m)	Crown Base Height (m)	Canopy Volume (m ³ /m ²)	Stand Density (trees/ha)
<i>P. massoniana</i>	Mean	6.97	3.55	2.53	289
	Max	9.36	6.95	4.65	515
	Min	4.46	1.50	0.62	136
	SD	1.39	2.00	1.24	131.44
<i>P. elliottii</i>	Mean	7.52	6.83	2.00	319
	Max	9.28	9.48	2.42	348
	Min	4.86	5.03	1.53	291
	SD	1.54	1.88	0.39	24.61
<i>C. lanceolata</i>	Mean	12.50	5.17	3.38	559
	Max	15.08	6.85	5.13	830
	Min	9.29	3.78	1.80	178
	SD	2.13	1.11	1.50	269.55
Mixed broad-leaved forest	Mean	11.25	4.18	3.10	555
	Max	21.15	5.62	4.30	914
	Min	6.58	3.35	1.68	214
	SD	6.36	0.96	1.06	259.15
Conifer-broadleaf mixed forest	Mean	9.45	4.05	3.68	501
	Max	17.45	5.45	5.21	632
	Min	6.37	3.00	2.17	392
	SD	4.68	1.03	1.20	109.12

Notes: Max is the maximum value, Min is the minimum value, and SD is the standard deviation.

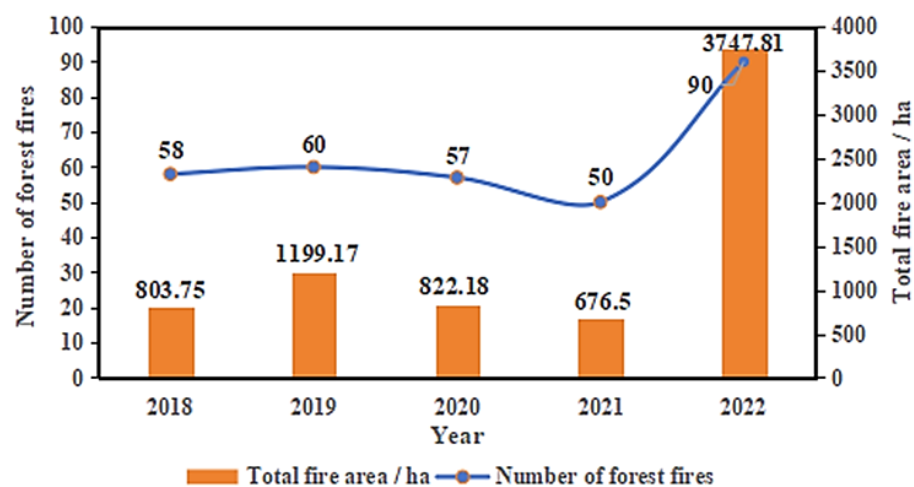


Figure S1. Number of wildfires in southern Jiangxi in recent five years (Data from National Bureau of Statistics: <https://www.stats.gov.cn/>).



Pinus massoniana forest



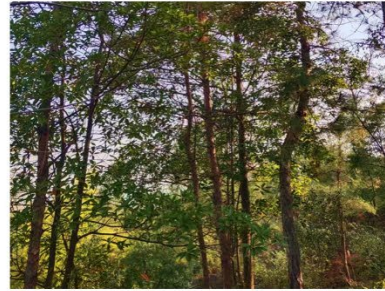
Pinus elliottii forest



Cunninghamia lanceolata forest



Broadleaf mixed forest



Conifer-broadleaf mixed forest

Figure S2. Field photos of each stand type.

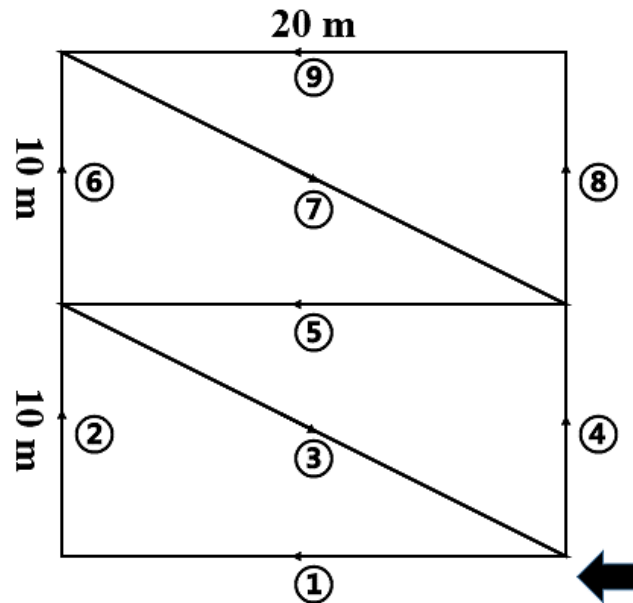


Figure S3. LiDAR scanning route.

Crown Base Height (CBH) Calculation Program:

The CBH is defined as the distance along the stem from ground to the attachment point of the first living branch. Accurate CBH information is essential for forest and fire managers. The voxel-based method applied in this study is based exclusively on the vertical point height distribution, and each voxel contained a single value of the number of included LiDAR returns. The CBH was determined by analyzing the distribution curve of the frequency of the vertical profile points and finding the height where the mutation inflection point (Figure S3) was located.

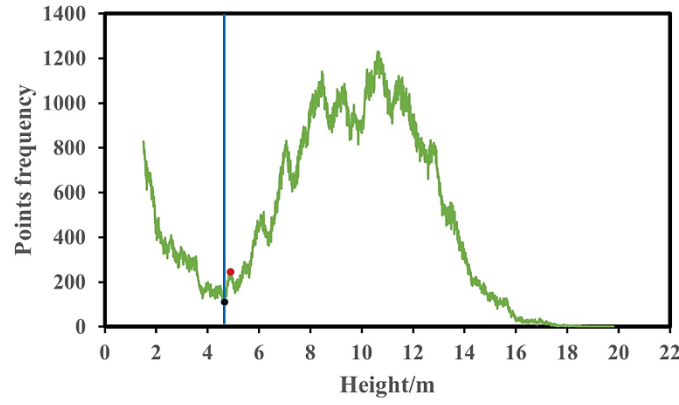


Figure S4. A vertical point frequency curve distribution (green line) graph of one plot. X axis is the tree height and Y axis is the point frequency of the voxels. The green line represents the smoothed point frequency values. Black and red colored points refer to the visual detected local minima and maxima respectively. The vertical blue line shows the estimated CBH (i.e., the height of the voxel, the point frequency of which is the local minima before the first significant local maxima).

QQ plot:

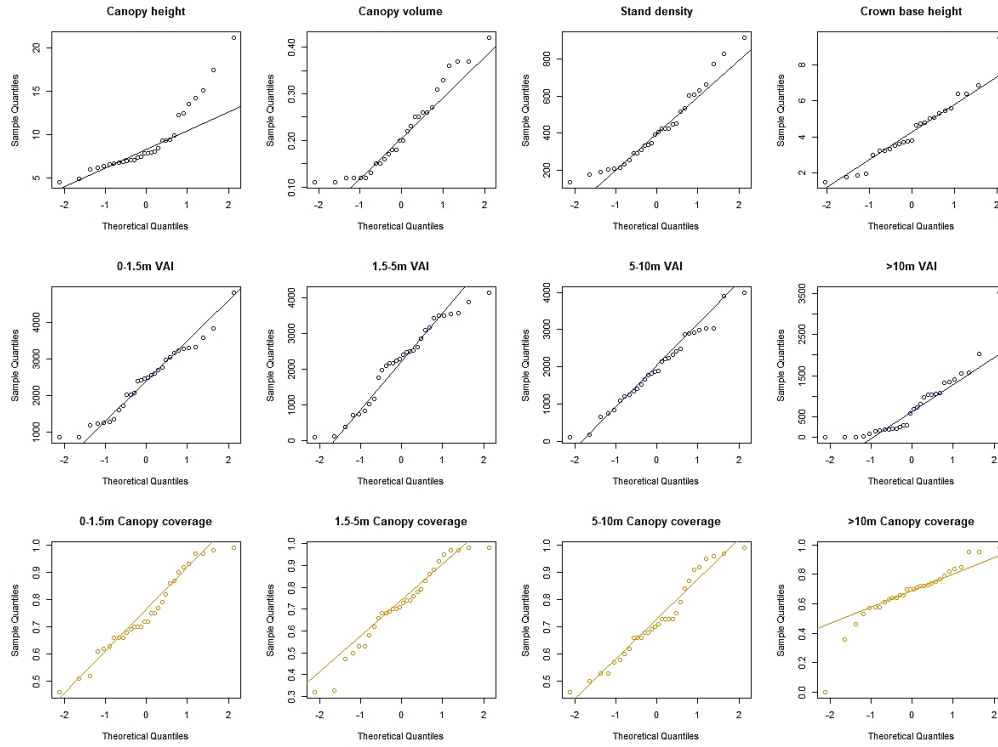


Figure S5. Quantile-Quantile plot: examine whether the extracted parameters of each forest stand follow a normal distribution.