



**Table S1.** Canopy structure parameters derived from UAV-LiDAR point cloud in this study.

LiDAR parameters	Parameters	Description
<b>Elevation -related parameters</b>	Percentile elevation ( <i>Elev_1st,....., Elev_99th</i> )	The percentiles of the elevation distributions (1th, 5th, 10th, 20th, 25th, 30th, 40th, 50th, 60th, 70th, 75th, 80th, 90th, 95th, 99th) of all points above 10cm
	Percentile accumulate elevation( <i>Elev_AIH_1st,....., Elev_AIH_99th</i> )	The percentiles of the accumulate elevation distributions (1th, 5th, 10th, 20th, 25th, 30th, 40th, 50th, 60th, 70th, 75th, 80th, 90th, 95th, 99th) of all points above 10cm
	Interquartile distance of elevation ( <i>Elev_IQ</i> )	The Interquartile distance of elevation of all points above 10cm
	Interquartile distance of accumulate elevation ( <i>Elev_AIHIQ</i> )	The Interquartile distance of accumulate elevation of all points above 10cm
	Absolute average deviation ( <i>Elev_aad_z</i> )	The absolute average deviation of the elevation of all points above 10cm
	Canopy relief ratio ( <i>Elev_canopy_relief_ratio</i> )	The canopy relief ratio of elevation of all points above 10cm
	cube root mean cubic of elevation ( <i>Elev_curt_mean_cube</i> )	The cube root mean cubic of elevation of all points above 10cm
	The coefficient of variation of elevation ( <i>Elev_cv_z</i> )	The coefficient of variation of elevation of all points above 10cm
	MADmedian ( <i>Elev_madmedian</i> )	Median absolute deviation from the median
	Median of elevation ( <i>Elev_median_z</i> )	The median of the elevation above 10cm of all points
	Mean elevation ( <i>Elev_mean</i> )	The mean elevation above 10cm of all points
	Maximum elevation ( <i>Elev_max</i> )	The maximum elevation above 10cm of all points
	Minimum elevation ( <i>Elev_min</i> )	The minimum elevation above 10cm of all points
	Kurtosis of elevation ( <i>Elev_kurtosis</i> )	The kurtosis of the elevation of all points above 10cm
	Variance of elevation ( <i>Elev_variance</i> )	The variance of the elevation of all points above 10cm
	Standard deviation ( <i>Elev_stddev</i> )	The standard deviation of elevation of all points above 10cm
root mean square of elevation ( <i>Elev_sqrt_mean_sq</i> )	The root mean square of elevation of all points above 10cm	

	Skewness of elevation ( <i>Elev_skewness</i> )	The skewness of the elevation of all points above 10cm
<b>Density-related parameters</b>	Canopy return density ( <i>D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub>, D<sub>4</sub>, D<sub>5</sub>, D<sub>6</sub>, D<sub>7</sub>, D<sub>8</sub>, D<sub>9</sub></i> )	The proportion of points above the quantiles (10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, 90th) to total number of points
	Canopy cover above 10cm ( <i>Coverage</i> )	Percentages of first returns above 10cm
	Penetration above 10cm	Percentages of first not returned above 10cm
	Percentile intensity ( <i>Int_1st, ..., Int_99th</i> )	The percentiles of the intensity distributions (1th, 5th, 10th, 20th, 25th, 30th, 40th, 50th, 60th, 70th, 75th, 80th, 90th, 95th, 99th) of all points above 10cm
	Percentile accumulate intensity ( <i>Int_All1st, ..., Int_All99th</i> )	The percentiles of the accumulate intensity distributions (1th, 5th, 10th, 20th, 25th, 30th, 40th, 50th, 60th, 70th, 75th, 80th, 90th, 95th, 99th) of all points above 10cm
	Interquartile distance of accumulate intensity ( <i>Int_con_IQ</i> )	The Interquartile distance of intensity of all points above 10cm
	Absolute average deviation ( <i>Int_aad_z</i> )	The absolute average deviation of the intensity of all points above 10cm
<b>Intensity-related parameters</b>	The coefficient of variation of intensity ( <i>Int_cv_z</i> )	The coefficient of variation of intensity of all points above 10cm
	MADmedian ( <i>Int_madmedian</i> )	Median absolute deviation from the median
	Median of intensity ( <i>Int_median_z</i> )	The median of the intensity above 10cm of all points
	Mean intensity ( <i>Int_mean</i> )	The mean intensity above 10cm of all points
	Maximum intensity ( <i>Int_max</i> )	The maximum intensity above 10cm of all points
	Minimum intensity ( <i>Int_min</i> )	The minimum intensity above 10cm of all points
	Kurtosis of intensity ( <i>Int_kurtosis</i> )	The kurtosis of the intensity of all points above 10cm
	Variance of intensity ( <i>Int_variance</i> )	The variance of the intensity of all points above 10cm
	Standard deviation ( <i>Int_stddev</i> )	The standard deviation of intensity of all points above 10cm
	Skewness of intensity ( <i>Int_skewness</i> )	The skewness of the intensity of all points above 10cm