

**Effects of plant and soil characteristics on the partitioning different rainfalls
to soil in a subtropical Chinese fir forest ecosystem**

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Supplementary Information

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Figure S1

Table S1. Soil texture for the study site.

Layers (cm)	Sand (%)	Silt (%)	Clay (%)
0-20	8.00 ± 2.69	51.34 ± 2.88	40.65 ± 2.90
20-40	1.48 ± 0.50	52.33 ± 3.49	46.17 ± 3.44
40-60	3.08 ± 2.13	46.86 ± 4.97	50.04 ± 3.11
60-80	2.19 ± 0.97	45.49 ± 4.16	52.30 ± 3.18
80-100	1.46 ± 0.91	44.40 ± 4.65	54.13 ± 3.86

Table S2. Results of comparing pre-rainfall and first day after rainfall of soil water δD .

Rainfall events	Layers (cm)	PC		MCC		MCA	
		df	P-value	df	P-value	df	P-value
Light rainfall	0-20	4	<0.001	4	0.002	4	0.001
	20-40	4	0.003	4	0.004	4	0.002
	40-60	4	0.015	4	0.602	4	0.018
	60-80	4	0.201	4	0.394	4	0.785
	80-100	4	0.773	4	0.392	4	0.484
Moderate rainfall	0-20	4	0.001	4	<0.001	4	0.004
	20-40	4	0.05	4	<0.001	4	0.002
	40-60	4	0.014	4	0.002	4	<0.001
	60-80	4	0.002	4	0.001	4	0.002
	80-100	4	0.004	4	0.001	4	0.001
Heavy rainfall	0-20	4	<0.001	4	<0.001	4	<0.001
	20-40	4	<0.001	4	<0.001	4	<0.001
	40-60	4	<0.001	4	0.005	4	<0.001
	60-80	4	0.001	4	<0.001	4	<0.001
	80-100	4	0.001	4	<0.001	4	<0.001

Note: PC: pure *C. lanceolata* plantation; MCC: mixed plantation with *C. lanceolata* and *C. camphora*;

MCA: mixed plantation with *C. lanceolata* and *A. cremastogyne*.

Table S3. Results of comparing the contribution of rainfall to soil water among the three plantations.

Rainfall events	Layers (cm)	df	F-value	P-value
Light rainfall	0-20	2	0.444	0.644
	20-40	2	0.367	0.694
	40-60	2	2.047	0.138
	60-80	2	2.047	0.138
	80-100	2	0.391	0.678
Moderate rainfall	0-20	2	4.203	0.022
	20-40	2	2.518	0.093
	40-60	2	3.038	0.059
	60-80	2	8.931	0.001
	80-100	2	11.288	0.001
Heavy rainfall	0-20	2	17.645	<0.001
	20-40	2	15.760	0.001
	40-60	2	22.596	<0.001
	60-80	2	7.938	0.001
	80-100	2	14.876	0.001

Table S4. Correlation coefficient between CRSW, vegetation properties and soil properties.

Variable	TB (kg·m ⁻²)	SB (g·m ⁻²)	HB (g·m ⁻²)	LM (t·hm ⁻²)	EHC (t·hm ⁻²)	MWAR (g·kg ⁻¹ ·h ⁻¹)	RB (g·m ⁻²)	BD (g·cm ⁻³)	TP (%)	FC (%)	CLRS W (%)	CMRS W (%)	CHRS W (%)
TB (kg·m ⁻²)	1	0.874**	0.634**	0.777**	0.828**	0.733**	0.317*	-0.388**	0.511**	0.549**	0.054	0.424**	0.397**
SB (g·m ⁻²)	0.874**	1	0.841**	0.744**	0.897**	0.839**	0.165	-0.338*	0.610**	0.571**	0.005	0.359*	0.402**
HB (g·m ⁻²)	0.634**	0.841**	1	0.497**	0.644**	0.613**	0.015	-0.246	0.488**	0.588**	0.012	0.230*	0.322**
LM (t·hm ⁻²)	0.777**	0.744**	0.497**	1	0.821**	0.767**	0.272	-0.278	0.439**	0.476**	0.065	0.414*	0.393*
EHC (t·hm ⁻²)	0.828**	0.897**	0.644**	0.821**	1	0.984**	0.243	-0.297*	0.530**	0.479**	0.035	0.367*	0.370*
MWAR(g·kg ⁻¹ ·h ⁻¹)	0.733**	0.839**	0.613**	0.767**	0.984**	1	0.217	-0.241	0.488**	0.410**	0.027	0.278	0.301*
RB (g·m ⁻²)	0.317*	0.165	0.015	0.272	0.243	0.217	1	0.541**	0.477**	0.311*	0.609**	0.665**	0.612**
BD (g·cm ⁻³)	-0.388**	-0.338*	-0.246	-0.278	-0.297*	-0.241	0.541**	1	-0.600**	-0.489**	-0.829**	-0.894**	-0.898**
TP (%)	0.511**	0.610**	0.488**	0.439**	0.530**	0.488**	0.477**	-0.600**	1	0.679**	0.394**	0.556**	0.636**
FC (%)	0.549**	0.571**	0.588**	0.476**	0.479**	0.410**	0.311*	-0.489**	0.679**	1	0.304*	0.508**	0.594**
CLRSW (%)	0.054	0.005	-0.012	0.065	0.035	0.027	0.609**	-0.829**	0.394**	0.304*	1	0.898**	0.869**
CMRSW (%)	0.424**	0.359*	0.230*	0.414**	0.367*	0.278	0.665**	-0.894**	0.556**	0.508**	0.898**	1	0.911**
CHRSW (%)	0.397**	0.402**	0.322*	0.393*	0.370**	0.301*	0.612**	-0.898**	0.636**	0.594**	0.869**	0.911**	1

Note: TB: tree biomass; SB: shrub biomass; HB: herb biomass; LM: litter mass; EHC: Effective holding

capacity; MWAR: Maximum water absorption rate; BD: bulk density; TP: total porosity; FC: field

capacity; CLRSW: the contribution of light rainfall to soil water; CMRSW: the contribution of

moderate rainfall to soil water; CHRSW: the contribution of heavy rainfall to soil water; *: p<0.05; **:

p<0.01.

Table S5. Soil organic carbon concentration (g/kg) among the three plantations.

Layers (cm)	PC	MCC	MCA
0-20	11.21±0.70b	13.80±1.11a	14.68±0.30a
20-40	9.42±0.23a	10.34±0.94ab	10.84±0.50a
40-60	5.21±0.63a	5.62±0.36a	5.87±0.35a
60-80	4.40±1.11a	5.28±1.51a	5.30±0.57a
80-100	2.49±0.30b	3.10±0.28a	2.92±0.25ab

Note: PC: pure *C. lanceolata* plantation; MCC: mixed plantation with *C. lanceolata* and *C. camphora*;

MCA: mixed plantation with *C. lanceolata* and *A. cremastogyne*.

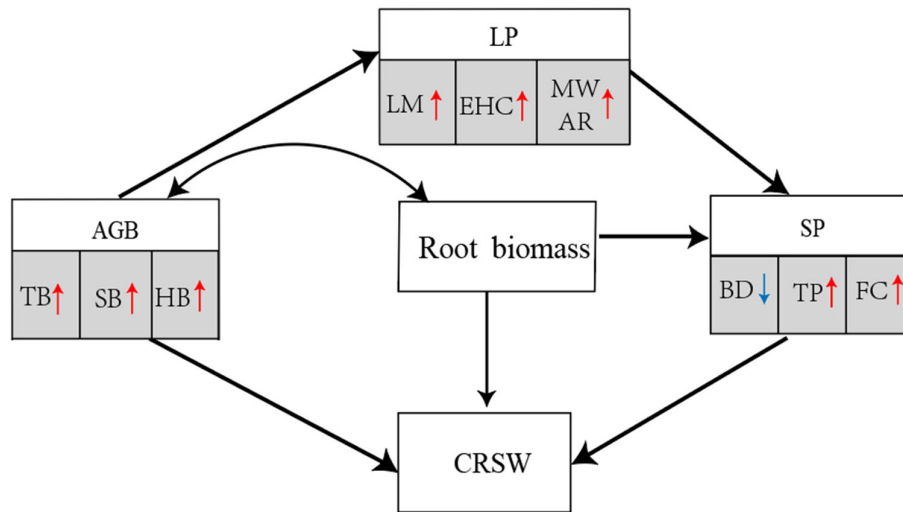


Figure S1 A priori model of variables on the contribution of rainfall to soil water (CRSW). The double-layered rectangle represents the first principal component of the principal component analysis (PCA) for above-ground biomass, litter and soil properties. Above-ground biomass includes TB (tree biomass), SB (shrub biomass), and HB (herb biomass). Litter properties include LM (litter mass), EHC (Effective holding capacity) and MWAR (Maximum water absorption rate). Soil properties include BD (bulk density), TP (total porosity) and FC (field capacity); CRSW: the contribution of rainfall to soil water.