Supplemental Materials

Table S1. Results of soil microbial functional diversity (Shannon index) for descriptive statistics and Kolmogorov-Smirnov test.

Shannon	No. of samples	Min.	Max.	Mean	Standard variance	CV/%	Skew	Kurtosis	K-S test	Distribution type
Raw data	185	0.99	3.38	3.03	0.33	11.01	-3.21	7.59	0.000	#
Outliers removed	179	2.03	3.38	3.04	0.27	9.04	-2.26	5.44	0.000	#
Box-Cox	185	6.63	88.15	55.10	17.30	31.40	-1.03	1.06	0.164	N

Box-Cox, the raw data after Box-Cox transformation; #, non-normal distribution; N, Normal distribution; Shannon, Shannon index. CV, coefficient of variation; Skew, degree of skewed distribution; K-S test, Kolmogorov-Smirnov test. Outliers indicated the value of the variable was out of the range [3*mean - standard error, 3*mean + standard error].

Table S2. Semivariance analysis of spatial structure of soil microbial functional diversity.

	Model	C_0	Sill ($C+C_0$)	$C_0/(C+C_0)$	R^2	Rang (°)
Shannon index	Exponential	49.2	312.1	0.16	0.69	0.32

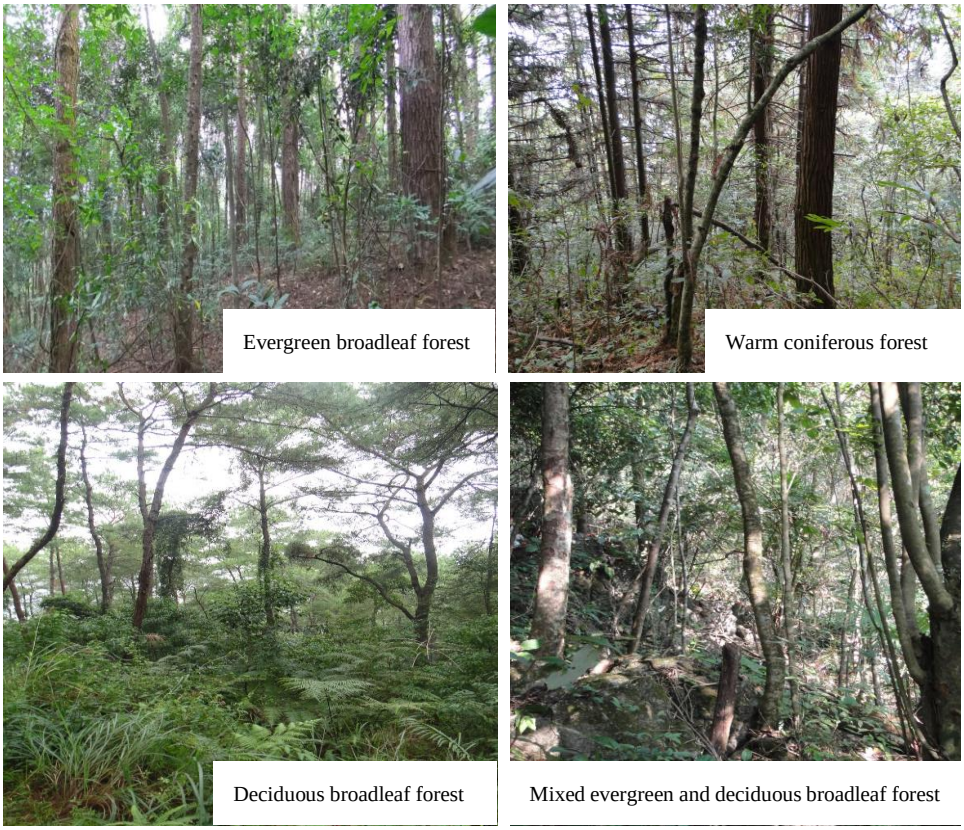

Figure S1 Photos of sampling plots.

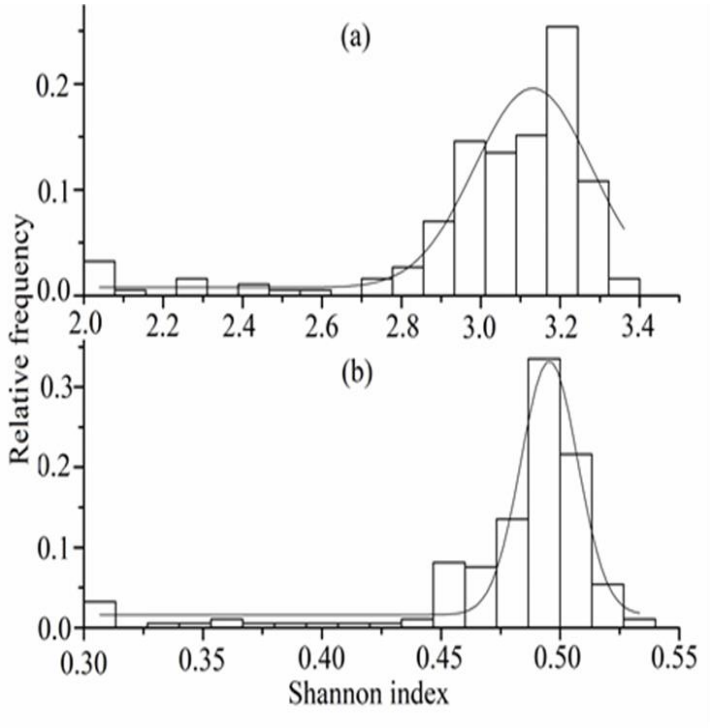

Figure S2 Frequency distribution of Shannon-Wiener diversity index for the investigated forest soils. The curves correspond to simulation of normal distribution (a) with raw data or lognormal distribution (b) with the data after Box-Cox transformation.

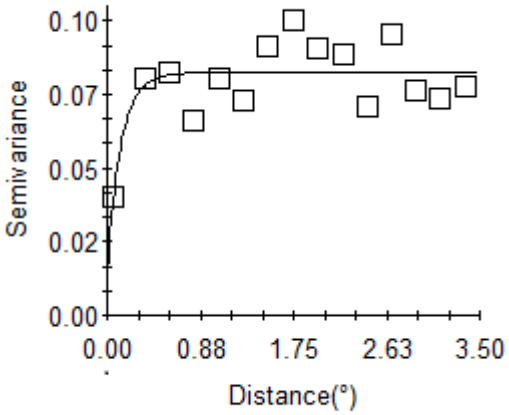

Figure S3 Robust variograms (□) of microbial functional diversity for the investigated forest soils.

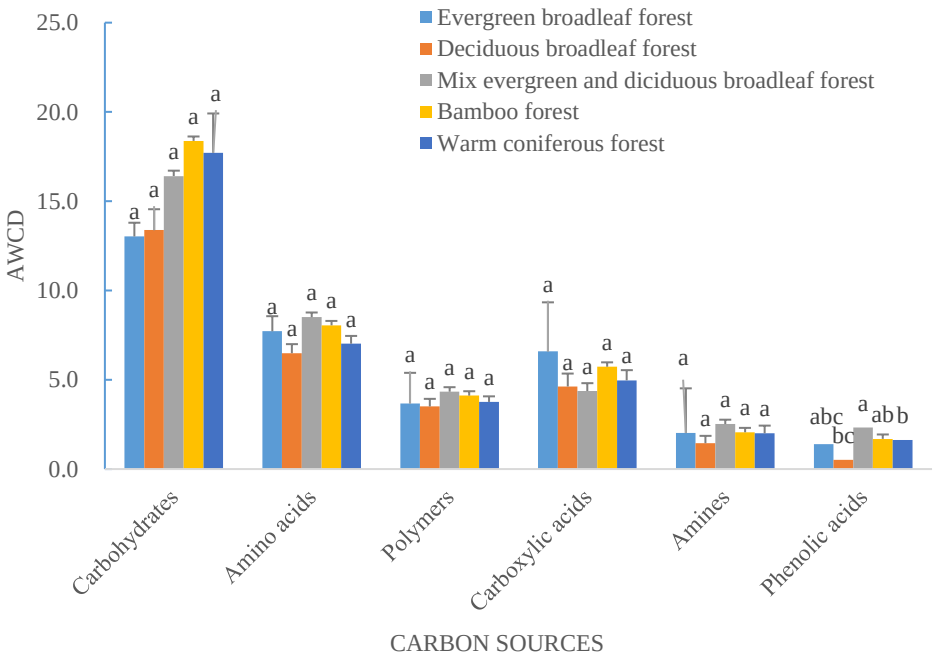

Figure S4 Use efficiency of carbon sources by the soil microbial communities from the different forest types.

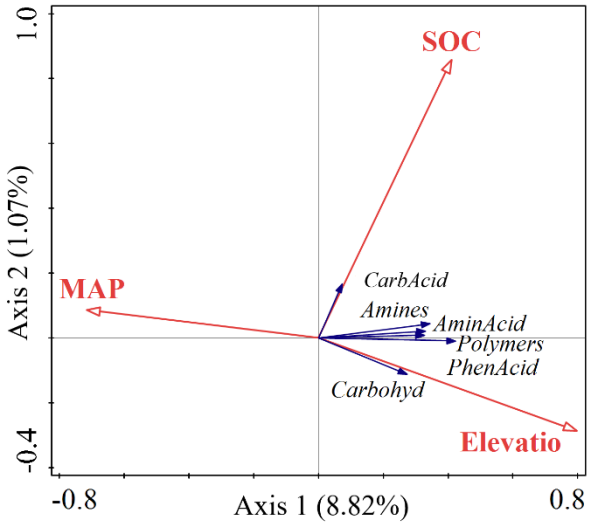

Figure S5 Redundancy analysis (RDA) of carbon resources utilization and environmental factors in forest plots. Carbohyd, Carbohydrates; AminAcid, Amino acids; Polymers, Polymers; CarbAcid, Carboxylic acids; Amines, Amines; PhenAcid, Phenolic acids; MAP, Mean annual precipitation; Elevatio, Elevation; SOC, Soil organic carbon.