Supplement of Biogeosciences, 15, 1217–1228, 2018
https://doi.org/10.5194/bg-15-1217-2018-supplement

Supplement of

Divergence of dominant factors in soil microbial communities and functions in forest ecosystems along a climatic gradient

Zhiwei Xu et al.

Correspondence to: Guirui Yu (yugr@igsnrr.ac.cn) and Xinyu Zhang (zhangxy@igsnrr.ac.cn)

Table S1. The PLFA biomarkers used to represent the different groups of soil micro-organisms （Frostegård *et al*.1996).

Microbial group	Phospholipids fatty acid signatures
Bacteria in general	i15：0,a15：0,i16：0,i17：0a17:0,16：1ω7c, cy17：0,cy19：0
Gram-positive bacteria (G$^+$)	i15：0,a15：0,i16：0,i17：0
Gram-negative bacteria (G$^-$)	16：1ω7c, cy17：0,cy19：0
Actinomycetes	10Me16：0,10Me18：0
Fungi	18：1ω9c,18：2ω6c

Table S2. Average values of soil enzyme activities and microbial PLFAs in the three different climatic zones and three different forest types, respectively.

Treatment		Climate			Forest type		
		Temperate (LS)	Warm temperate (TY)	Subtropical (DH)	Conifer broad-leaved mixed forest	Coniferous forest	Broad-leaved forest
Enzyme activities (nmol g^{-1} h^{-1})*	BG	134b	299a	86b	155b	214a	133b
	NAG	40b	176a	28b	49b	114a	64b
	LAP	67c	359a	242b	143c	223b	256a
	AP	366b	285b	994a	842a	365c	557b
PLFAs (nmolg^{-1})**	tPLFAs	11.75a	9.59b	7.67c	6.32a	5.23a	4.51b
	Bacteria	5.67a	4.37b	4.25b	5.53a	4.71b	3.47c
	Fungi	0.25c	0.41b	0.84a	0.46b	0.25c	0.82a
	F/B	0.04b	0.11a	0.21a	0.08b	0.05c	0.26a
	G^{+}	3.17a	2.26c	2.80b	3.35a	2.73b	2.23b
	G^{-}	2.16a	1.81b	1.19b	2.17a	1.98a	1.24b
	G^{+}/G^{-}	1.69b	2.25b	2.37a	1.65a	1.84a	1.85a
	Actinomycete	0.31a	0.23a	0.26a	0.33a	0.27b	0.22b

*: β-glucosidase (BG), N-acetylglucosaminidase (NAG), leucine aminopeptidase (LAP) and acid phosphatase (AP)

**: tPLFAs, total PLFAs; F/B, fungi/bacteria; G^{+}, Gram-positive bacteria; G^{-}, Gram-negative bacteria; G^{+}/G^{-},Gram-positive bacteria/Gram-negative bacteria.

The Data labeled with different letters indicated soil microbial PLFAs and enzyme activities among different climatic zones or forest types were significantly different at $P < 0.05$.

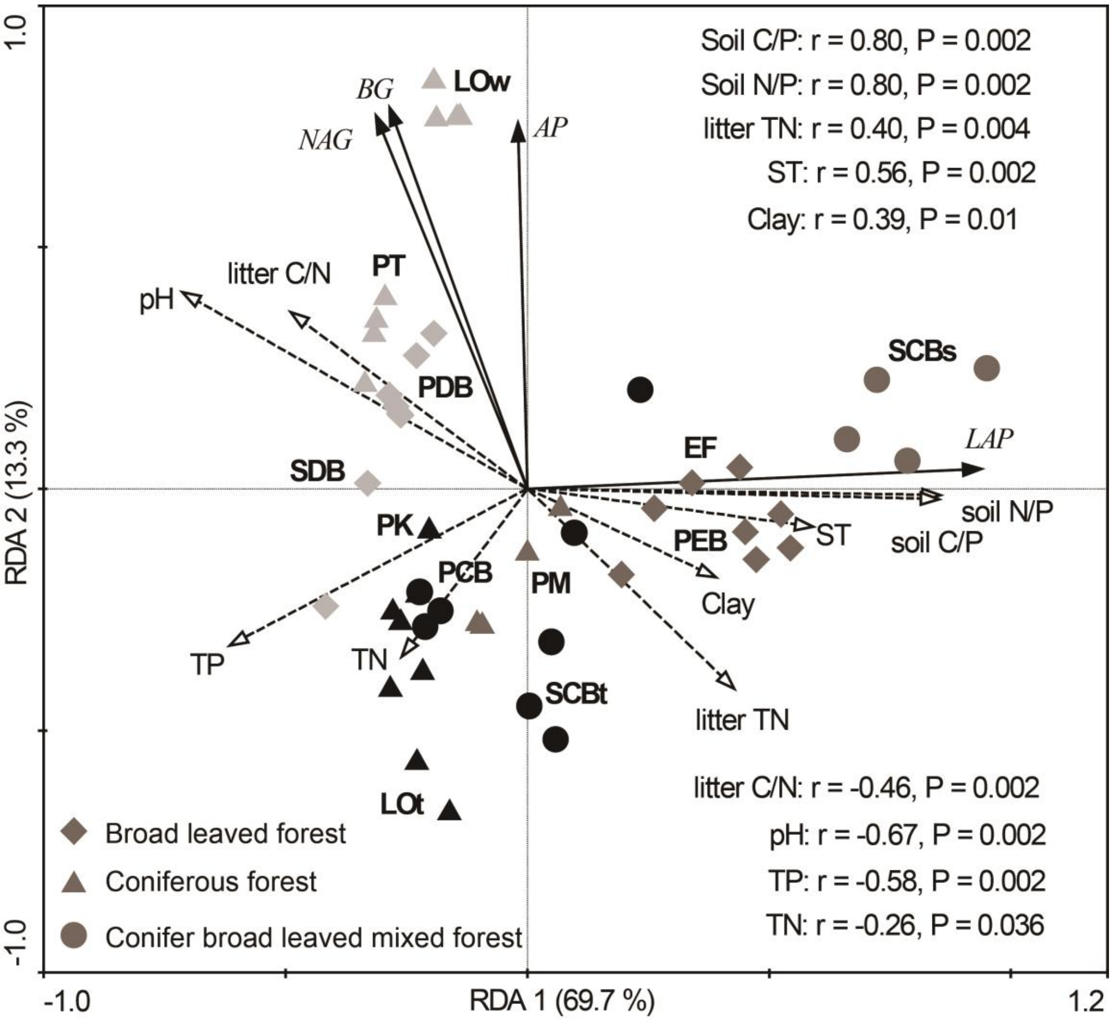

Figure S1. Redundancy analysis (RDA) ordination biplot of soil enzyme activities and environmental properties for the 12 forests. (Black color legend, Liangshui; Light grey color legend, Taiyue; Dark grey color legend, Dinghu). Only the environmental variables that were significantly correlated with RDA1 are shown. The dotted lines and solid lines represent the environmental variables and enzyme activities. The abbreviations of the sampling site and enzyme activities included in this figure are shown in Table 1 and Figure 2, respectively. The variables in this table were abbreviated as follows: litter TN = litter total nitrogen; litter C/N = litter total carbon/nitrogen; ST = soil temperature; Clay = soil clay content; TN = soil total nitrogen; TP = soil total phosphorus; C/P = soil carbon/phosphorus, and N/P = soil nitrogen/phosphorus.

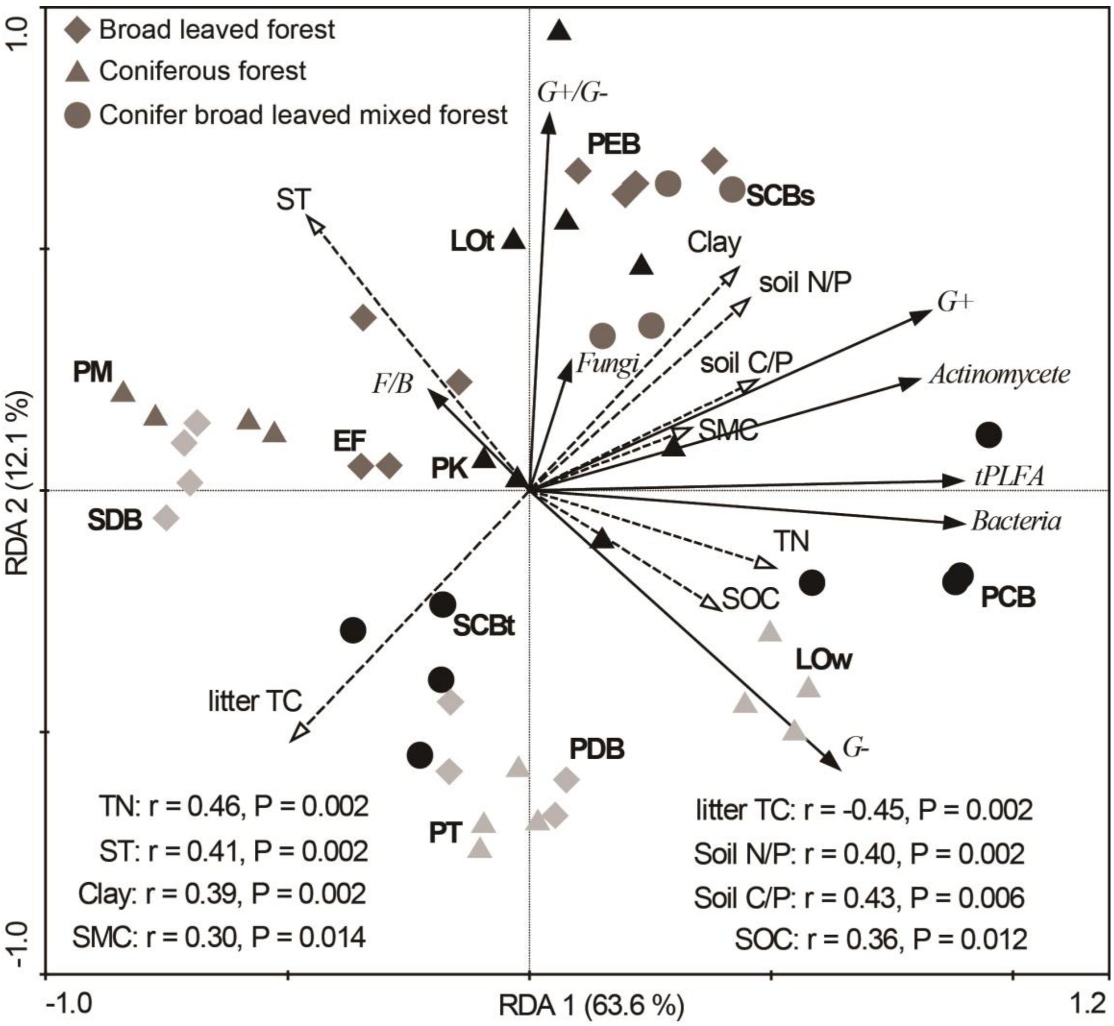

Figure S2. Redundancy analysis (RDA) ordination biplot of soil microbial community structure and environmental properties for the 12 forests. (Black color legend, Liangshui; Light grey color legend, Taiyue; Dark grey color legend, Dinghu). Only the environmental variables that were significantly correlated with RDA1 are shown. The abbreviations of the sampling site and microbial groups included in this figure are shown in Table 1 and Figure 3, respectively. The variables in this table were abbreviated as follows: litter TC = litter total carbon; SMC = soil moisture content; ST = soil temperature; Clay = soil clay content; TN = soil total nitrogen; SOC = soil organic carbon; soil C/P = soil carbon/phosphorus, and soil N/P = soil nitrogen/phosphorus.