



Supplement of

Contribution of soil microbial necromass carbon to soil organic carbon fractions and its influencing factors in different grassland types

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Table S1 Overview of sampling sites of different grassland types

Grassland types	Longitude (E)	Latitude (N)	Elevation (m)	MAP (mm)	MAT (°C)	Domain vegetation
TS1	106°30'45.03"	36°45'6.57"	1973	380	7.0	Tansy(Tanacetum vulgare)
TS2	106°16'3.48"	36°24'23.8"	1950	391	7.7	Altai Hawkweed(Aster altaicus)
TS3	106°24'46.39"	36°12'17.30"	1859	432	7.0	Needlegrass(Stipa capillata)
TS4	106°48'14.38"	36°1'8.24"	1679	470	7.7	Sedge (Carex)
TS5	106°34'54.64"	36°13'56.39"	1743	444	7.2	
MS1	105°37'36.66"	36°27'6.49"	2653	384	4.6	Large-eared Saussurea
MS2	105°37'6.92"	36°13'58.70"	2492	420	5.5	Baikal Needlegrass
MS3	106°7'11.55"	35°54'56.04"	2246	457	5.1	White Wormwood (Stipa
MS4	106°13'46.53"	35°29'47.80"	2486	563	4.4	baicalensis)
MS5	106°14'15.35"	35°40'49.79"	2247	496	5.1	Meadow-rue (Thalictrum)
DS1	107°2'59.10"	38°4'58.89"	1474	285	7.6	Short-flowered Needlegrass (Stipa
DS2	106°59'50.93"	37°53'27.65"	1430	277	8.0	breviflora)
DS3	106°28'44.93"	37°26'28.69"	1362	273	9.0	Seablite (Suaeda glauca)
DS4	105°31'49.79"	36°44'59.79"	1807	290	8.0	Russian Thistle (Salsola collina)
DS5	105°25'36.86"	37°8'51.70"	1720	252	7.9	Bush Clover (Lespedeza)
DS6	105°1'40.06"	37°14'24.23"	1843	229	7.2	Intermediate Peashrub (Caragana
DS7	105°44'38.66"	37°23'26.63"	1410	228	9.4	intermedia)
SD1	106°28'14.83"	38°20'38.9"	1169	197	8.5	Komarov's Swallowwort
SD2	106°29'34.37"	38°6'44.67"	1228	220	9.2	(Cynanchum komarovii)
SD3	106°5'16.86"	37°37'50.45"	1323	237	9.1	White Spiny Shrub
SD4	105°57'47.86"	38°38'53.99"	1359	233	5.8	(Cynanchumkomarovii)
SD5	104°41'47.20"	37°25'58.14"	1652	192	8.0	Pearl Russian Thistle (salsola passerina)

TS: typical steppe; MS: meadow steppe; DS: desert steppe; SD: steppe desert; MAT: mean annual temperature; MAP: mean annual precipitation.

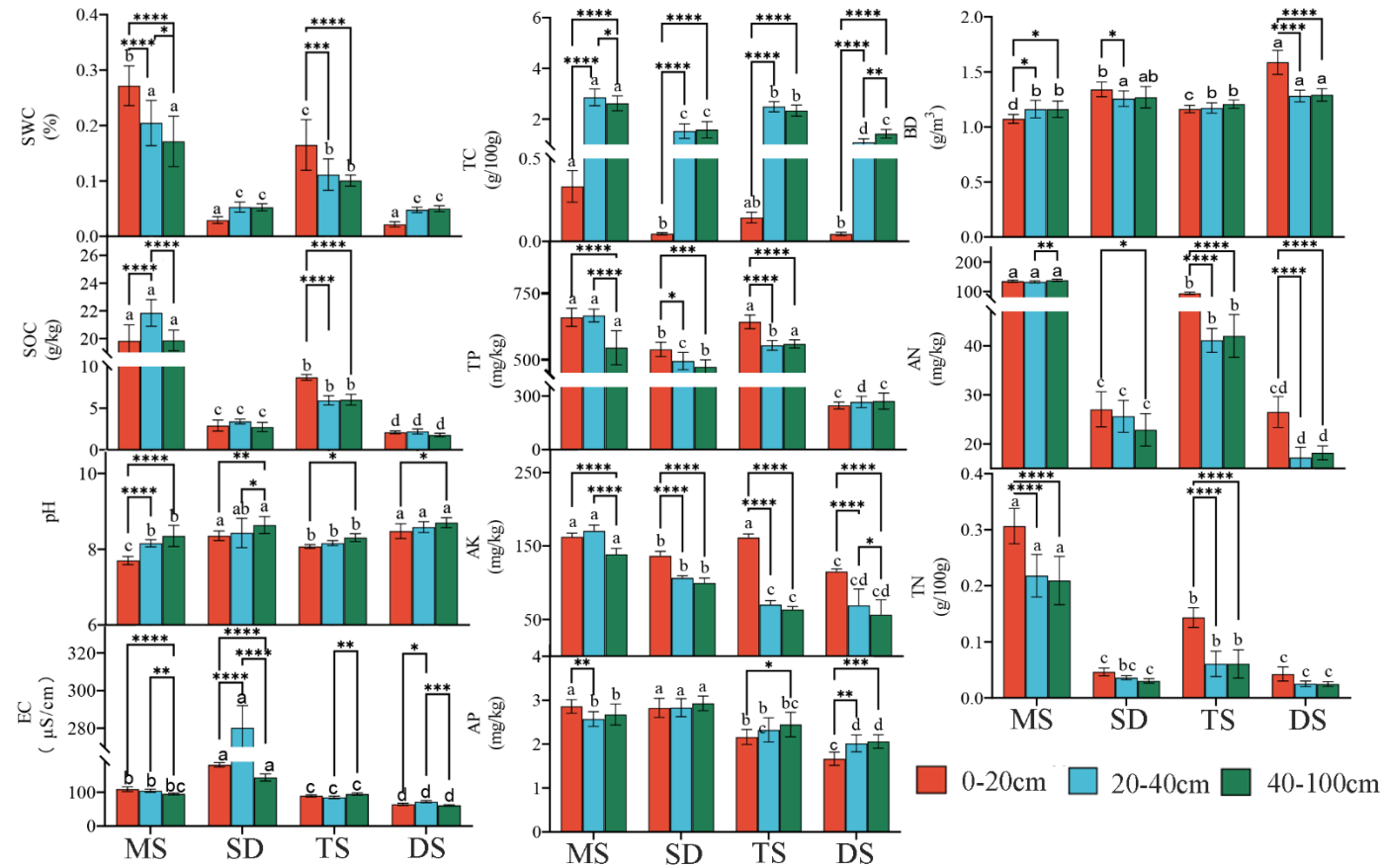


Fig S1. Characteristics of Soil Physicochemical Properties in 0-100 cm Under Different Grassland Types. SWC: Soil water content; BD: Bulk density; TN: Total nitrogen; TC: Total carbon; TP: Total phosphorus; AK: Available potassium; AP: Available phosphorus; AN: Available nitrogen; EC: Electrical conductance. Significant differences of the same grassland types in different soil layers *:p<0.05; **: p<0.01; ***: p<0.001; Different lowercase letters indicate significant differences between different grassland types in same soil layer (p < 0.05). The bars in red, blue and green represent the soil layers 0–20 cm, 20–40 cm and 40–100 cm respectively. MS: meadow steppe; SD: steppe desert; TS: typical steppe; DS: desert steppe.

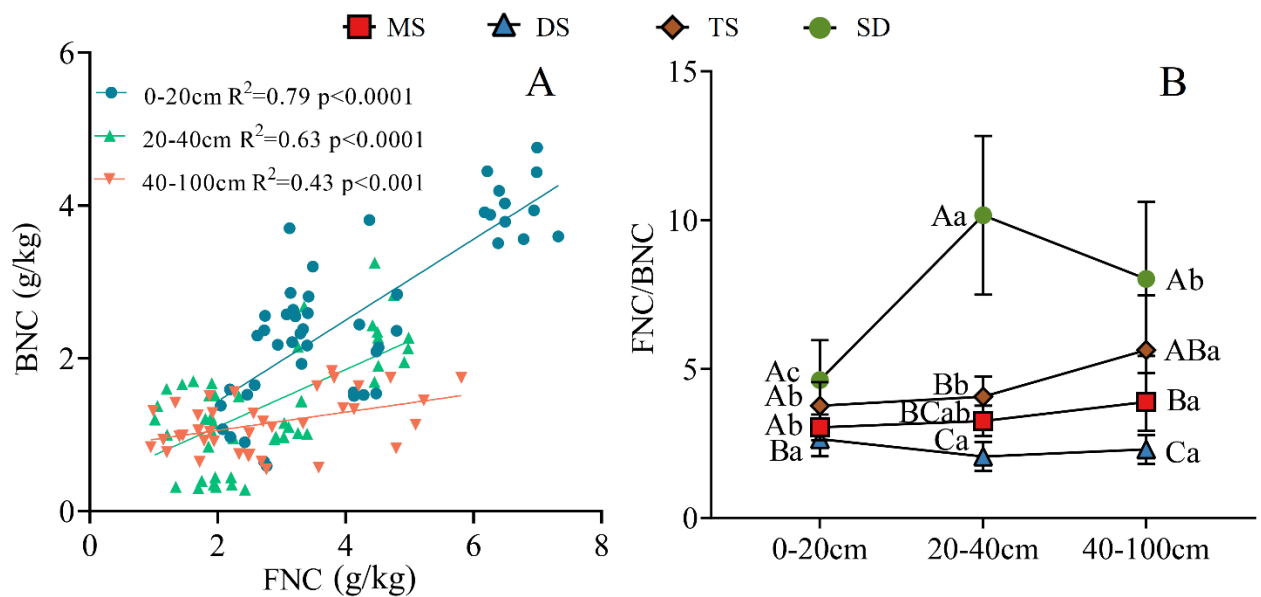


Fig S2. The correlation of BNC and FNC in different soil layers among four grassland types (A); The blue circle, green triangle and orange inverted triangle represent the soil layers 0–20 cm, 20–40 cm and 40–100 cm respectively. The ratio of FNC/BNC in different soil layers among different grassland types (B); Different uppercase letters indicate significant differences in different grassland types in the same soil layer ($p<0.05$), and different lowercase letters indicate significant differences in different soil layers under the same grassland types ($p<0.05$). The red square, blue triangle, brown rhombus and green circle represent: meadow steppe (MS); desert steppe (DS); typical steppe (TS); steppe desert (SD). FNC: fungal necromass carbon, BNC: bacterial necromass carbon, FNC/BNC: the ration of FNC to BNC.

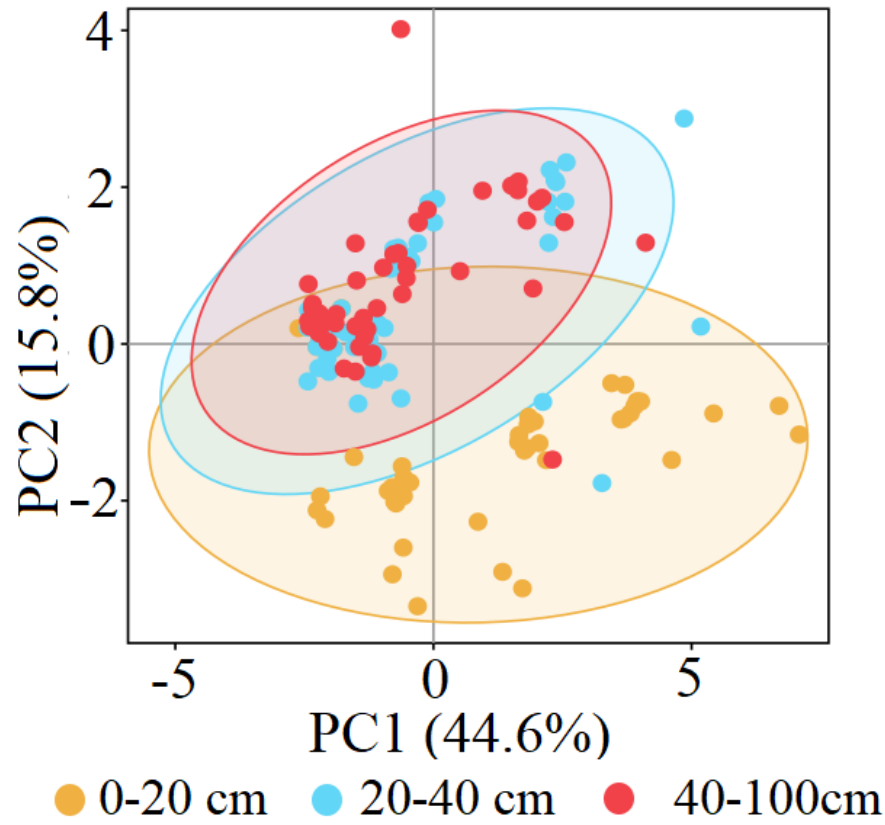


Fig S3, Principal component analysis of soil properties in different soil layers of four grassland types. Yellow, green and red circles represent 0-20cm, 20-40cm, 40-100cm soil layers(This analysis aggregated four grassland types in same soil layer).