Supplement of Earth Syst. Sci. Data, 17, 2873–2885, 2025
https://doi.org/10.5194/essd-17-2873-2025-supplement

Open Access Earth System Science Data

Supplement of

Global patterns and drivers of soil dissolved organic carbon concentrations

Tianjing Ren and Andong Cai

Correspondence to: Andong Cai (caiandong@caas.cn)

Fig. S1 PRISMA flow diagram showing the procedure used for selection of studies for synthesis.

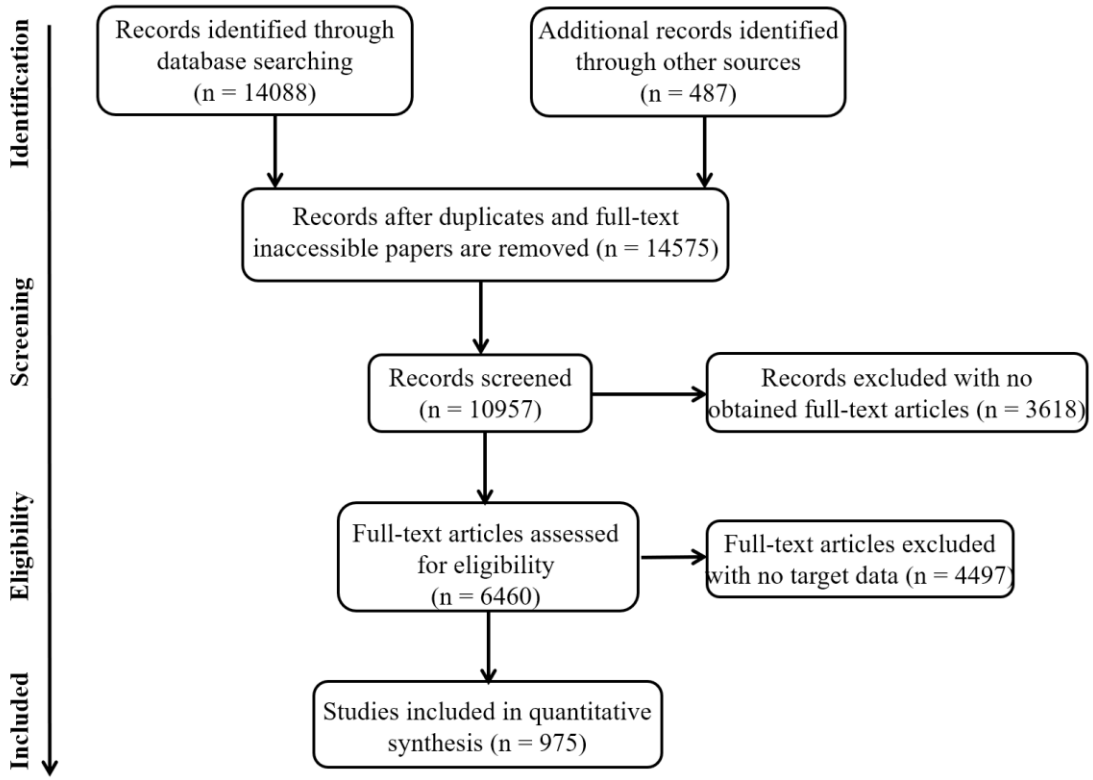

Fig. S2 Validation of predictor values extracted from global maps. (A) Mean annual temperature, (B) mean annual precipitation, (C) elevation, (D) soil sand, (E) soil clay, (F) soil organic carbon (SOC), (G) bulk density, (H) soil pH, and (I) microbial biomass carbon. Dashed line is the 1:1 line. Blue line and shaded area indicate the regression line and 95% confidence interval, respectively.

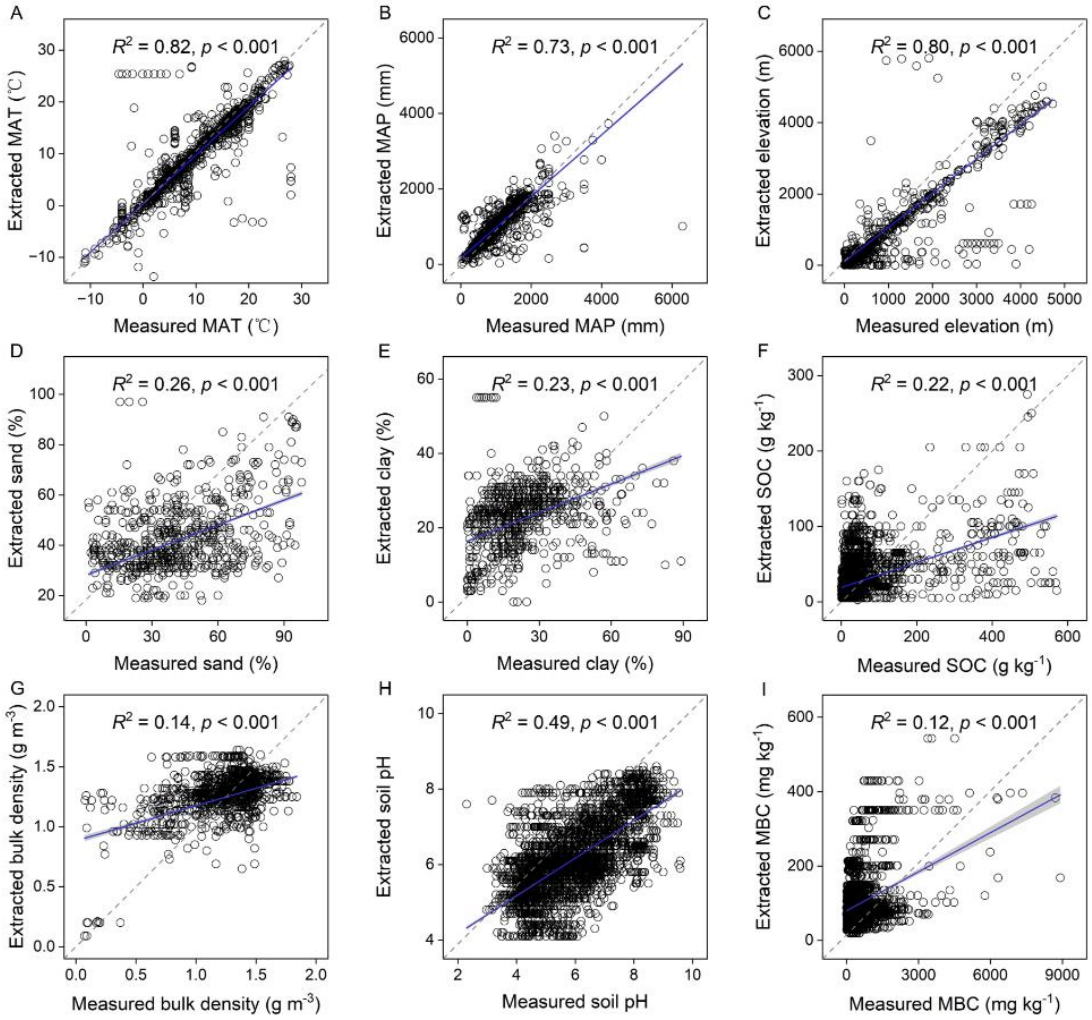

Fig. S3 The autocorrelation between soil clay and silt content.

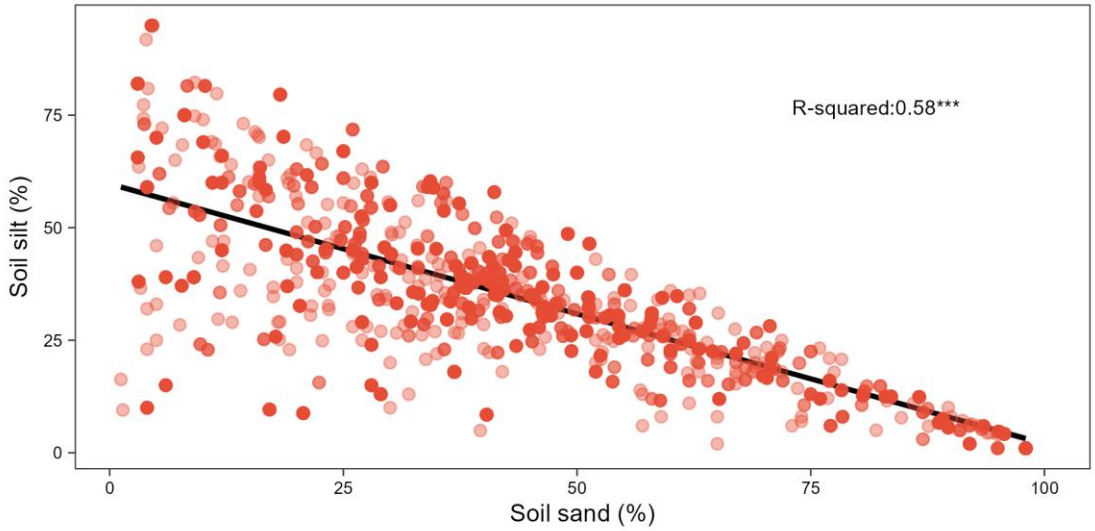

Fig. S4 The relationship between soil dissolved organic carbon (DOC) concentration and predictors. Soil DOC concentration in relation to mean annual temperature (MAT), mean annual precipitation (MAP), elevation, soil sand content, soil clay content, soil depth, soil organic carbon (SOC) content, soil pH, bulk density, and month (**a, b, c, d, e, f, g, h, i, j, k,** respectively). Binned soil DOC concentration measures by 15 groups for predictors, except for month (12 groups). Red dots represent the mean values. Solid red lines indicate results of local polynomial regressions based on the binned mean values. For visualization, we chose to limit the y-axis to 1600 mg kg^{-1}.

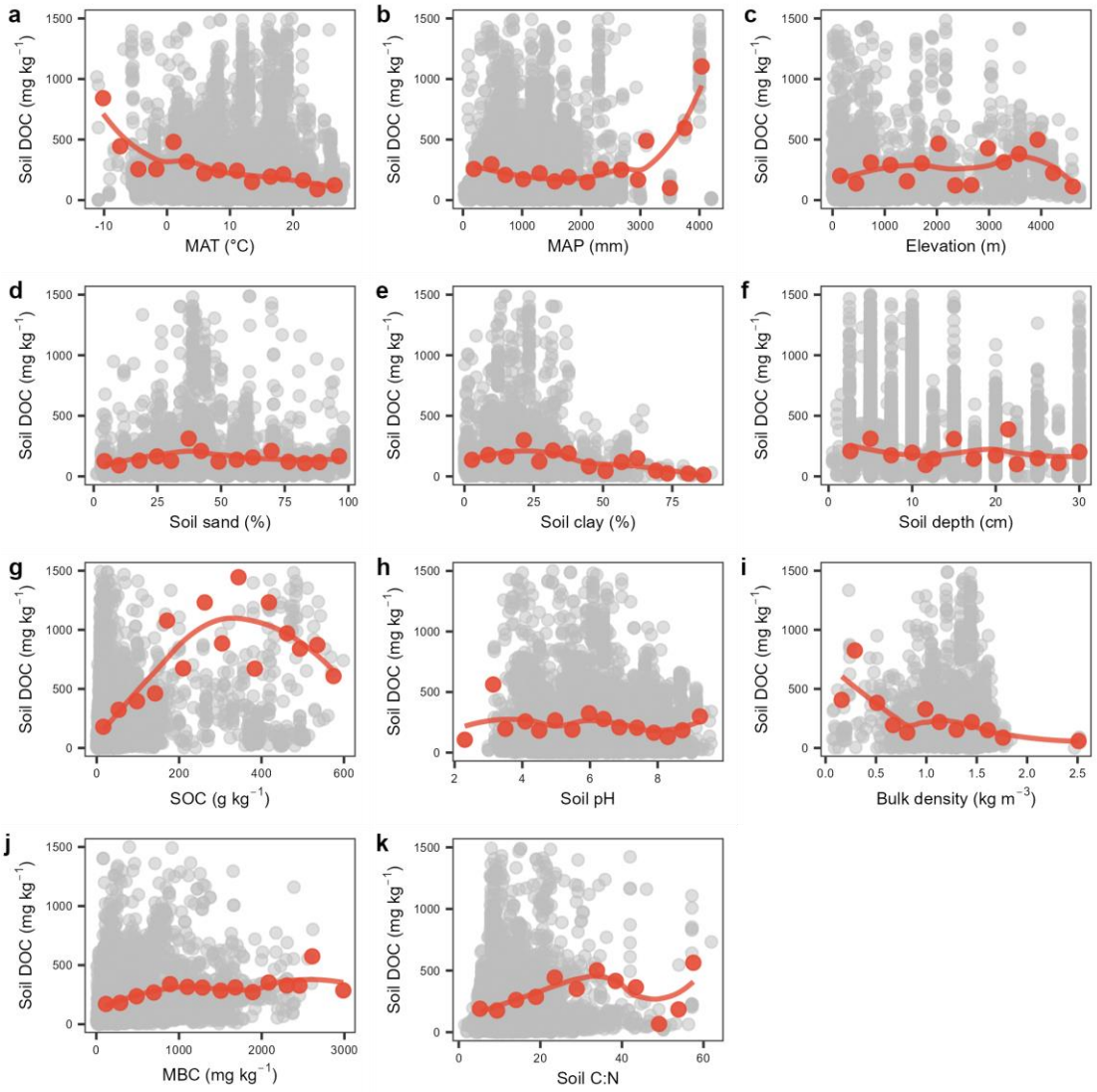

Fig. S5 Workflow and model selection flowchart.

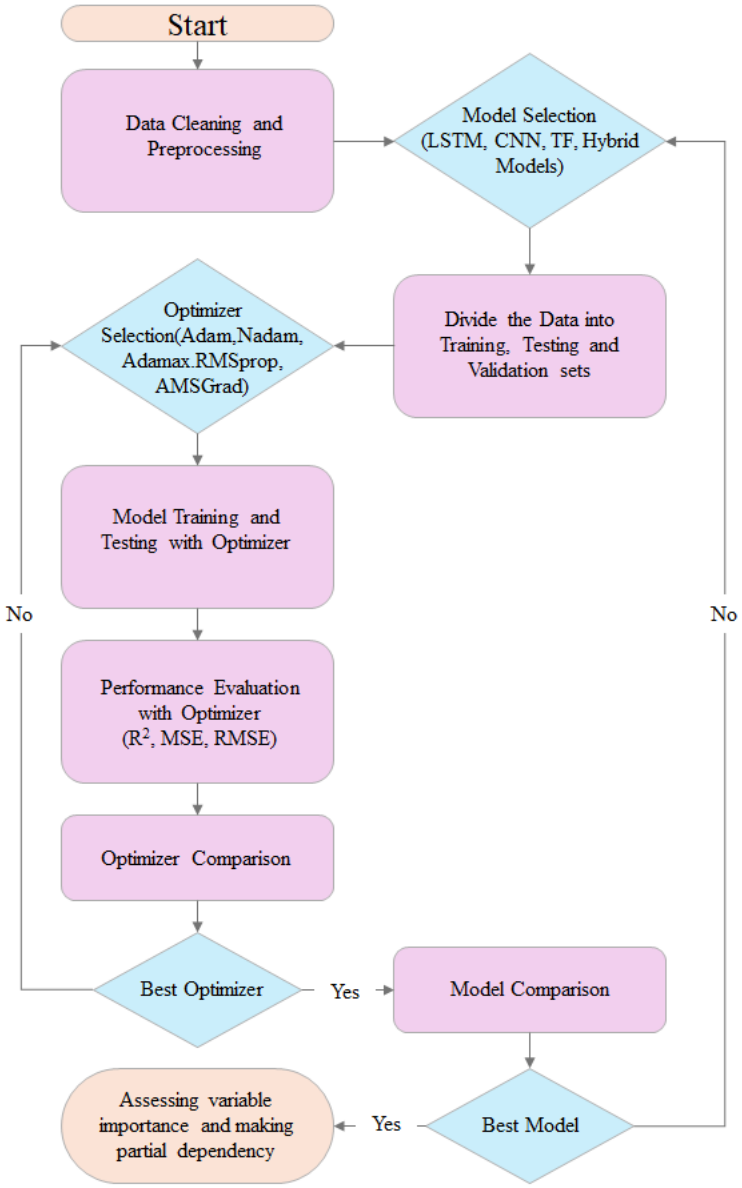

Fig. S6 %IncMSE and IncNodePurity of the random forest model predicting soil dissolved organic carbon (DOC) concentration, including the factor of ecosystems.

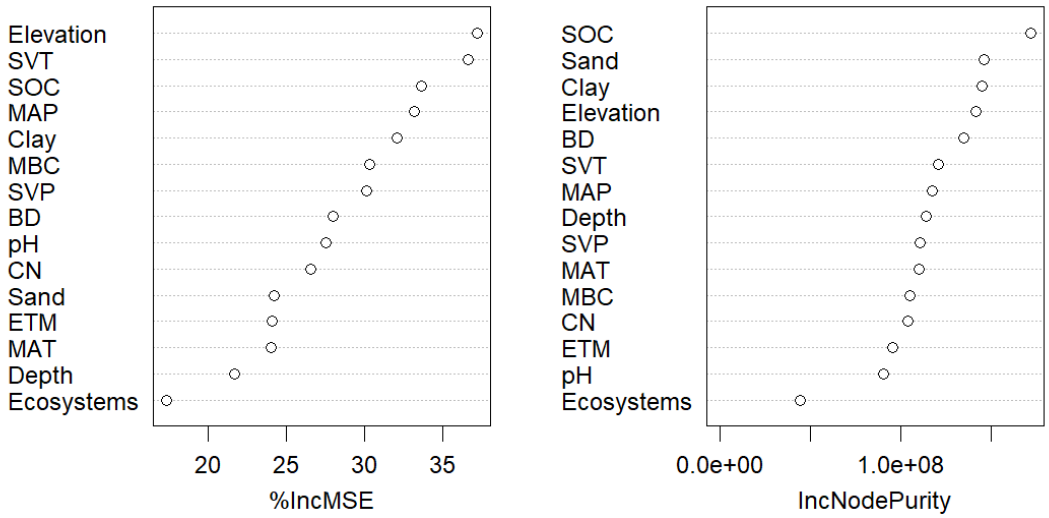

Fig. S7 The validation (a) and test (b) of random forest models for soil dissolved organic carbon (DOC) under 10-fold cross-validation.

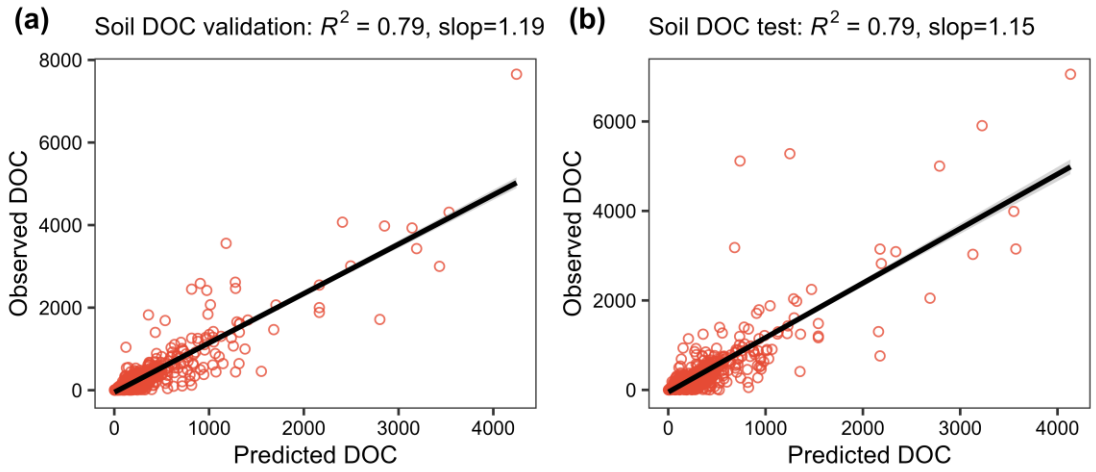

Fig. S8 Residual Plot for the model train (a), validation (b), and test (c).

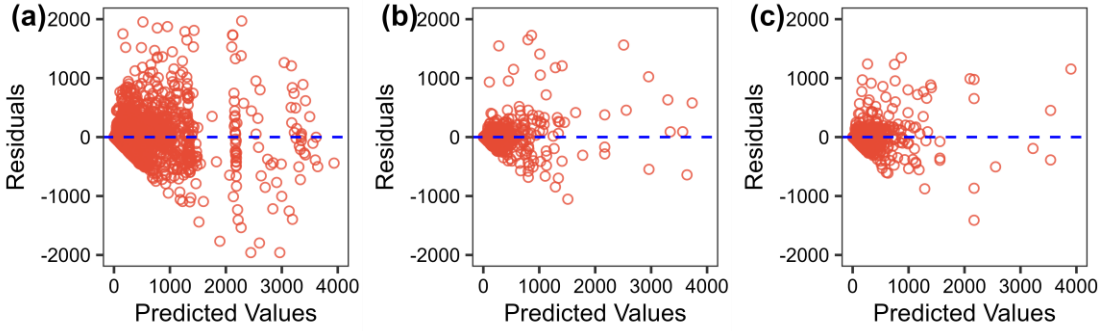

Fig. S9 Sensitivity analysis of model predictions.

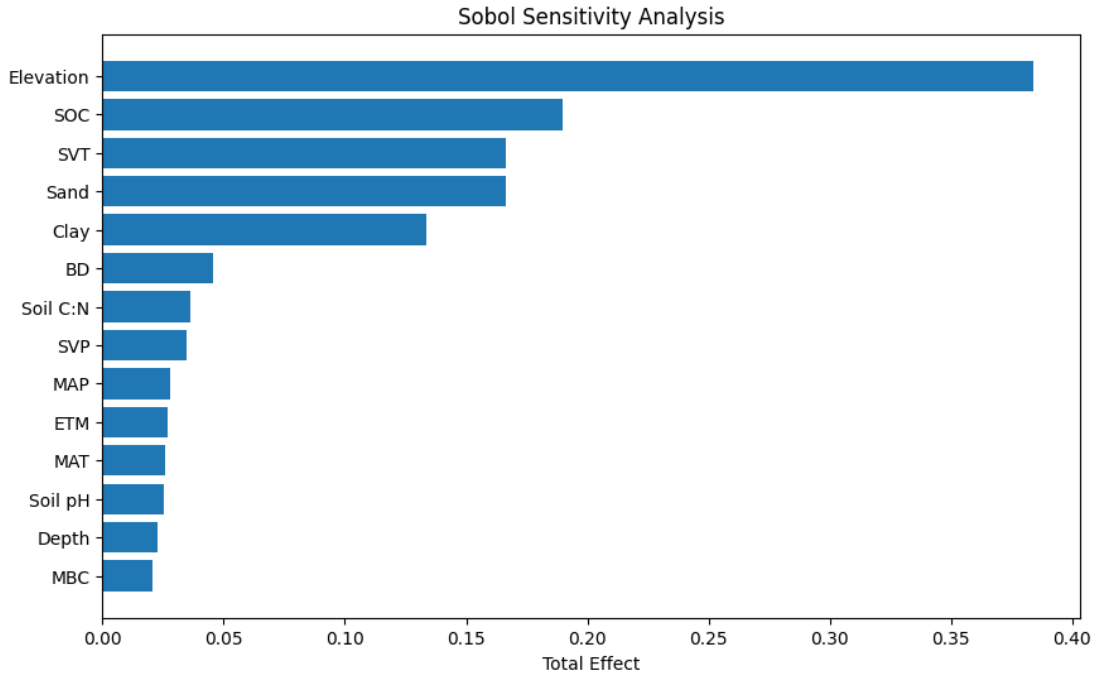

Fig. S10 The 10-fold cross-validation of random forest models for soil dissolved organic carbon (DOC) across wetland (a), forest (b), shruland (c), tundra (d), grassland (e), and cropland (f) ecosystems.

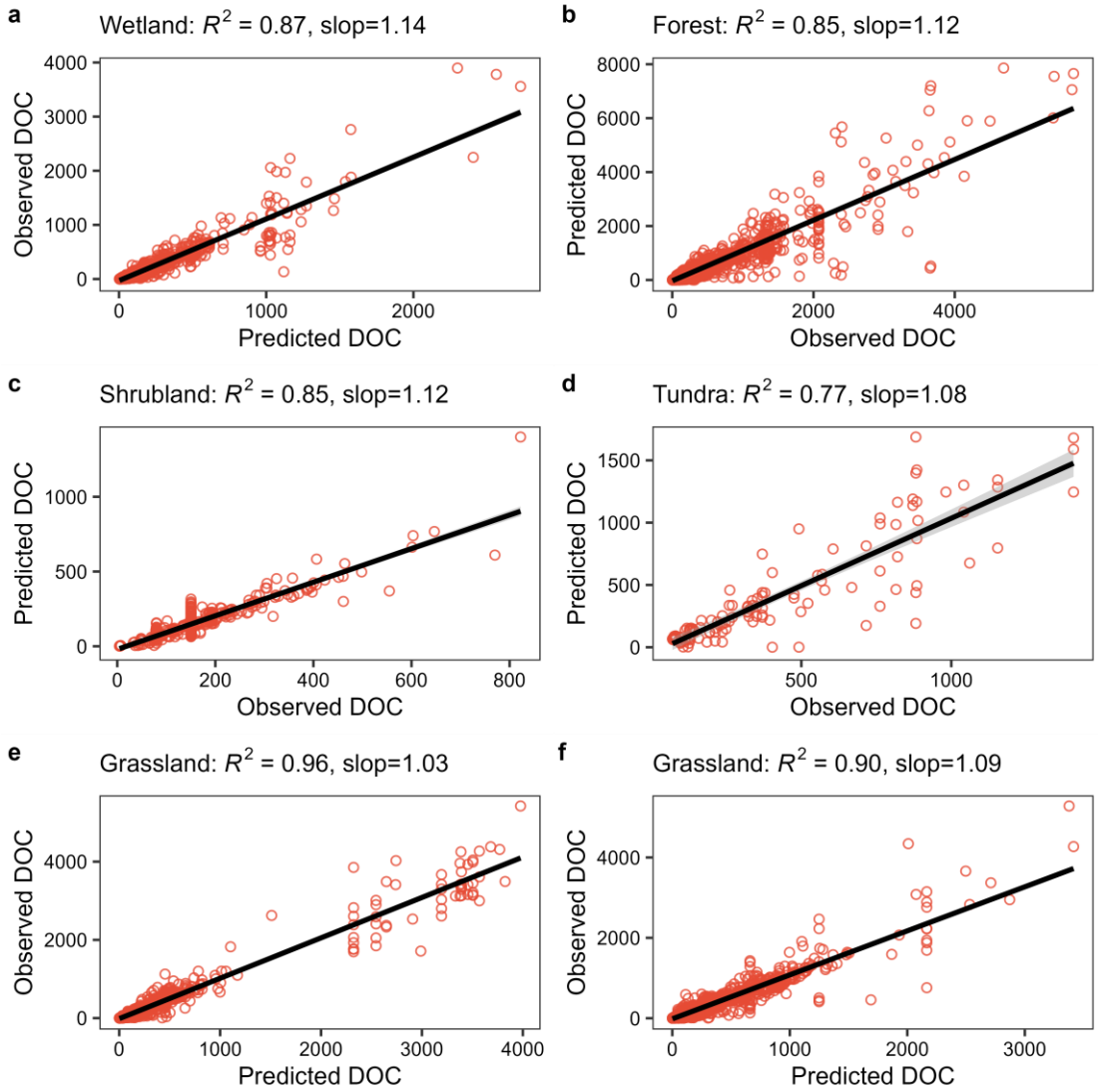

Fig. S11 Standard deviation (SD) of predicted soil dissolved organic carbon concentration (mg kg^{-1}).

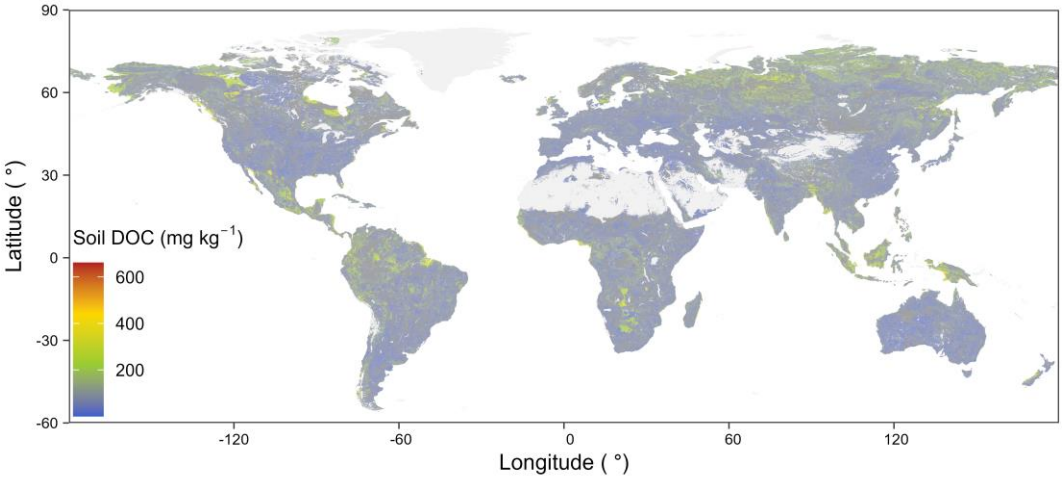

Table S1. Summary of independent variables used in this study to predict soil dissolved organic carbon concentration.

Groups	Variables	Original resolution	Data source
Climate	Mean annual temperature	1 km	http://worldclim.org/bioclim
	Mean annual precipitation	1 km	http://worldclim.org/bioclim
	Elevation	1 km	http://worldclim.org/bioclim
	Monthly evaporation	1 km	http://worldclim.org/bioclim
	Seasonal variability of precipitation	1 km	http://worldclim.org/bioclim
	Seasonal variability of temperature	1 km	http://worldclim.org/bioclim
Plants	Ecosystem	1 km	https://sedac.ciesin.columbia.edu
Soil	Soil organic carbon	250 m	https://openlandmap.org
	Soil total nitrogen	250 m	https://openlandmap.org
	Soil pH	250 m	https://openlandmap.org
	Sand	250 m	https://openlandmap.org
	Cay	250 m	https://openlandmap.org
	Bulk density	250 m	https://openlandmap.org
	Microbial biomass carbon	1 km	https://doi.org/10.6084/m9.figshare.19556419

Table S2. Comparison of model performance for all applied predictive models. Using the assembled soil dissolved organic carbon concentration, seven models were applied (linear regression model, lasso regression model, elastic net model, bagged cart model, boosted regression trees model, cubist regression model, and random forest model). The R^2 and root-mean-square error (RMSE) were calculated from 10-fold cross-validation to assess model performance.

Model	RMSE	R^2	Regression	Model type
LM	401	0.11	Linear	Non-selective
LEAPS	411	0.10	Linear	Variable selective
ENET	411	0.10	Linear	Variable selective
BAGGED	327	0.41	Non-linear	Machine learning
BOOSTED	304	0.49	Non-linear	Machine learning
CUBIST	258	0.60	Non-linear	Machine learning
RF	248	0.63	Non-linear	Machine learning

Supplementary Text Data source references

1 Wang, F. et al. Grazing greatly reduces the temporal stability of soil cellulolytic fungal community in a steppe on the Tibetan Plateau. Journal of Environmental Sciences 121, 48-57 (2022).

2 Wang, L. et al. Changes in litter input exert divergent effects on the soil microbial community and function in stands of different densities. Science of the Total Environment 845, 157297 (2022).

3 Wang, W. et al. Biocrust as a nature-based strategy (NbS) to restore the functionality of degraded soils in semiarid rainfed alfalfa (Medicago sativa L.) field. Journal of Cleaner Production 336, 130378 (2022).

4 Wang, Z. et al. Correlative distribution of DOM and heavy metals in the soils of the Zhangxi watershed in Ningbo city, East of China. Environmental Pollution 299, 118811 (2022).

5 Yang, J. et al. The effects of plastic film mulching and straw mulching on licorice root yield and soil organic carbon content in a dryland farming. Science of The Total Environment 826, 154113 (2022).

6 Yu, S. et al. Delayed wet season increases soil net N mineralization in a seasonally dry tropical forest. Science of The Total Environment 823, 153314 (2022).

7 Wu, D. et al. Molecular linkages between chemodiversity and MCPA complexation behavior of dissolved organic matter in paddy soil: Effects of land conversion. Environmental Pollution 311, 119949 (2022).

8 Zhang, D. et al. Dissimilar evolution of soil dissolved organic matter chemical properties during revegetation with arbor and shrub in desertified land of the Mu Us Desert. Science of The Total Environment 815, 152904 (2022).

9 Zhang, H. et al. Land-use-driven change in soil labile carbon affects microbial community composition and function. Geoderma 426, 116056 (2022).

10 Zhang, Y., Huang, X., Zhang, Z., Blewett, J. & Naafs, B. D. A. Spatiotemporal dynamics of dissolved organic carbon in a subtropical wetland and their implications for methane emissions. Geoderma 419, 115876 (2022).

11 Straathof, A. L., Chincarini, R., Comans, R. N. & Hoffland, E. Dynamics of soil dissolved organic carbon pools reveal both hydrophobic and hydrophilic compounds sustain microbial respiration. Soil Biology and Biochemistry 79, 109-116 (2014).

12 Ghani, A., Dexter, M., Carran, R. & Theobald, P. Dissolved organic nitrogen and carbon in pastoral soils: the New Zealand experience. European Journal of Soil Science 58, 832-843 (2007).

13 Curtin, D., Beare, M. H., Chantigny, M. H. & Greenfield, L. G. Controls on the extractability of soil organic matter in water over the 20 to 80 C temperature range. Soil Science Society of America Journal 75, 1423-1430 (2011).

14 Cook, B. D. & Allan, D. L. Dissolved organic carbon in old field soils: total amounts as a measure of available resources for soil mineralization. Soil Biology and Biochemistry 24, 585-594 (1992).

15 Neff, J. C. & Hooper, D. U. Vegetation and climate controls on potential CO2, DOC and DON production in northern latitude soils. Global Change Biology 8, 872-884 (2002).

16 Lundquist, E. J., Jackson, L. & Scow, K. Wet–dry cycles affect dissolved organic carbon in two California agricultural soils. Soil Biology and Biochemistry 31, 1031-1038 (1999).

17 Dou, F., Wright, A. L. & Hons, F. M. Sensitivity of labile soil organic carbon to tillage in wheat-based cropping systems. Soil Science Society of America Journal 72, 1445-1453 (2008).
18 Liu, Z., Clay, S. A., Clay, D. E. & Harper, S. S. Ammonia fertilizer influences atrazine adsorption-desorption characteristics. Journal of Agricultural and Food Chemistry 43, 815-819 (1995).
19 Michaelson, G., Ping, C., Kling, G. & Hobbie, J. The character and bioactivity of dissolved organic matter at thaw and in the spring runoff waters of the arctic tundra north slope, Alaska. Journal of Geophysical Research: Atmospheres 103, 28939-28946 (1998).
20 Amador, J. A., Görres, J. H. & Savin, M. C. Carbon and nitrogen dynamics in Lumbricus terrestris (L.) burrow soil: relationship to plant residues and macropores. Soil Science Society of America Journal 67, 1755-1762 (2003).
21 Chang, C. H. et al. Effects of simulated warming on soil DOC and DON concentrations in the alpine forest of western Sichuan based on altitudinal gradient experiment. Ying Yong Sheng tai xue bao= The Journal of Applied Ecology 27, 663-671 (2016).
22 Lan, J. et al. Dissolution rate under soil in karst areas and the influencing factors of different land use patterns. Acta Ecologica Sinica 33, 3205-3212 (2013).
23 Zhong, X.-l. et al. Physical protection by soil aggregates stabilizes soil organic carbon under simulated N deposition in a subtropical forest of China. Geoderma 285, 323-332 (2017).
24 Liu, D., Song, C., Wang, L., Wang, L. & Li, Y. Exogenous nitrogen enrichment impact on the carbon mineralization and DOC of the freshwater marsh soil. Huan Jing ke Xue= Huanjing Kexue 29, 3525-3530 (2008).
25 WANG, Q.-k., WANG, S.-l., YU, X.-j., ZHANG, J. & LIU, Y.-x. Soil carbon mineralization potential and its effect on soil active organic carbon in evergreen broadleaved forest and Chinese fir plantation. Chinese Journal of Ecology 26, 1918 (2007).
26 Qi, Y.-C. et al. Reponses of soil total organic carbon and dissolved organic carbon to simulated nitrogen deposition in temperate typical steppe in Inner Mongolia, China. Huan Jing ke Xue= Huanjing Kexue 35, 3073-3082 (2014).
27 Wu, H. et al. Accumulation of nitrate and dissolved organic nitrogen at depth in a red soil Critical Zone. Geoderma 337, 1175-1185 (2019).
28 Xi, M. et al. Assessment of the content, structure, and source of soil dissolved organic matter in the coastal wetlands of Jiaozhou Bay, China. Physics and Chemistry of the Earth, Parts A/b/c 103, 35-44 (2018).
29 Xiao-yan, Y. et al. Effects of extraction conditions on topsoil dissolved organic carbon concentration of black soil. Journal of Beijing Forestry University 35, 68-72 (2013).
30 Zhou, Z. et al. Changes in soil physicochemical properties and bacterial communities among different soil depths after long-term straw mulching under a no-till system. SOIL Discussions 2021, 1-33 (2021).
31 Zhang, J. et al. Different responses of soil respiration and its components to nitrogen and phosphorus addition in a subtropical secondary forest. Forest Ecosystems 8, 1-13 (2021).
32 Sun, X. et al. Organic mulching promotes soil organic carbon accumulation to deep soil layer in an urban plantation forest. Forest Ecosystems 8, 1-11 (2021).
33 Li, W.-y., Guo, Z., Li, J. & Han, J.-c. Effects of different proportions of soft rock additions on organic carbon pool and bacterial community structure of sandy soil. Scientific Reports 11, 4624 (2021).

34 Ghosh, M. et al. Short-term carbon sequestration and changes of soil organic carbon pools in rice under integrated nutrient management in India. Agriculture 11, 348 (2021).
35 Che, Q., Li, M. & Zhang, Z. Effects of biochar application on soil organic carbon in degraded saline-sodic wetlands of Songnen Plain, Northeast China. Chinese Geographical Science 31, 877-887 (2021).
36 Anning, D. K. et al. Divergent Accumulation of Microbial Residues and Amino Sugars in Loess Soil after Six Years of Different Inorganic Nitrogen Enrichment Scenarios. Applied Sciences 11, 5788 (2021).
37 Zhang, L. et al. Soil labile organic carbon fractions and soil enzyme activities after 10 years of continuous fertilization and wheat residue incorporation. Scientific Reports 10, 11318 (2020).
38 Walkiewicz, A., Brzezińska, M., Bieganowski, A., Sas-Paszt, L. & Frąc, M. Early response of soil microbial biomass and activity to biofertilizer application in degraded brunic arenosol and abruptic luvisol of contrasting textures. Agronomy 10, 1347 (2020).
39 Li, P. et al. Effects of straw and its biochar applications on the abundance and community structure of CO 2-fixing bacteria in a sandy agricultural soil. Journal of soils and sediments 20, 2225-2235 (2020).
40 Han, Y. et al. Effects of straw-return method for the maize–rice rotation system on soil properties and crop yields. Agronomy 10, 461 (2020).
41 Fan, W. & Wu, J. Short-term effects of returning granulated straw on soil microbial community and organic carbon fractions in dryland farming. Journal of Microbiology 58, 657-667 (2020).
42 Fan, D. et al. Nitrogen deep placement mitigates methane emissions by regulating methanogens and methanotrophs in no-tillage paddy fields. Biology and fertility of soils 56, 711-727 (2020).
43 Abd El-Azeim, M., Sherif, M., Hussien, M. & Haddad, S. Temporal impacts of different fertilization systems on soil health under arid conditions of potato monocropping. Journal of Soil Science and Plant Nutrition 20, 322-334 (2020).
44 Zhou, Z. et al. Long-term straw mulch effects on crop yields and soil organic carbon fractions at different depths under a no-till system on the Chengdu Plain, China. Journal of soils and sediments 19, 2143-2152 (2019).
45 Yang, S., Sun, X., Ding, J., Jiang, Z. & Xu, J. Effects of biochar addition on the NEE and soil organic carbon content of paddy fields under water-saving irrigation. Environmental Science and Pollution Research 26, 8303-8311 (2019).
46 Karimi, A., Moezzi, A., Chorom, M. & Enayatizamir, N. Chemical fractions and availability of Zn in a calcareous soil in response to biochar amendments. Journal of Soil Science and Plant Nutrition 19, 851-864 (2019).
47 Irfan, M. et al. Response of soil microbial biomass and enzymatic activity to biochar amendment in the organic carbon deficient arid soil: a 2-year field study. Arabian Journal of Geosciences 12, 1-9 (2019).
48 Azeem, M. et al. Effects of biochar and NPK on soil microbial biomass and enzyme activity during 2 years of application in the arid region. Arabian Journal of Geosciences 12, 1-13 (2019).
49 Yang, X. et al. Labile organic carbon fractions and carbon pool management index in a 3-year field study with biochar amendment. Journal of soils and sediments 18, 1569-1578 (2018).
50 Li, J. et al. Response of soil organic carbon fractions, microbial community composition and carbon mineralization to high-input fertilizer practices under an intensive agricultural system. PLoS One 13, e0195144 (2018).

51 Chen, Z., Wang, Q., Wang, H., Bao, L. & Zhou, J. Crop yields and soil organic carbon fractions as influenced by straw incorporation in a rice–wheat cropping system in southeastern China. Nutrient Cycling in Agroecosystems 112, 61-73 (2018).
52 Páraga-Aguado, I., Alcoba-Gómez, P. & Conesa, H. M. Suitability of a municipal solid waste as organic amendment for agricultural and metal (loid)-contaminated soils: effects on soil properties, plant growth and metal (loid) allocation in Zea mays L. Journal of Soils and Sediments 17, 2469-2480 (2017).
53 Liu, M. et al. Improved nutrient status affects soil microbial biomass, respiration, and functional diversity in a Lei bamboo plantation under intensive management. Journal of Soils and Sediments 17, 917-926 (2017).
54 Liu, H. et al. Responses of soil methanogens, methanotrophs, and methane fluxes to land-use conversion and fertilization in a hilly red soil region of southern China. Environmental Science and Pollution Research 24, 8731-8743 (2017).
55 Gebhardt, M., Fehmi, J. S., Rasmussen, C. & Gallery, R. E. Soil amendments alter plant biomass and soil microbial activity in a semi-desert grassland. Plant and soil 419, 53-70 (2017).
56 Zou, H. et al. Effects of straw return in deep soils with urea addition on the soil organic carbon fractions in a semi-arid temperate cornfield. PloS one 11, e0153214 (2016).
57 Zhang, L. et al. Changes in soil carbon and enzyme activity as a result of different long-term fertilization regimes in a greenhouse field. PloS one 10, e0118371 (2015).
58 Wang, Y. et al. 23-year manure and fertilizer application increases soil organic carbon sequestration of a rice–barley cropping system. Biology and Fertility of Soils 51, 583-591 (2015).
59 An, T. et al. Dynamics and distribution of 13 C-labeled straw carbon by microorganisms as affected by soil fertility levels in the Black Soil region of Northeast China. Biology and Fertility of Soils 51, 605-613 (2015).
60 Zhu, L., Hu, N., Yang, M., Zhan, X. & Zhang, Z. Effects of different tillage and straw return on soil organic carbon in a rice-wheat rotation system. PLOS one 9, e88900 (2014).
61 Tian, J., Lu, S., Fan, M., Li, X. & Kuzyakov, Y. Integrated management systems and N fertilization: effect on soil organic matter in rice-rapeseed rotation. Plant and soil 372, 53-63 (2013).
62 Liu, B. et al. 14 year applications of chemical fertilizers and crop straw effects on soil labile organic carbon fractions, enzyme activities and microbial community in rice-wheat rotation of middle China. Science of the Total Environment 841, 156608 (2022).
63 Liu, E., Yan, C., Mei, X., Zhang, Y. & Fan, T. Long-term effect of manure and fertilizer on soil organic carbon pools in dryland farming in northwest China. Plos one 8, e56536 (2013).
64 Lin, S. et al. Nitrous oxide emissions from yellow brown soil as affected by incorporation of crop residues with different carbon-to-nitrogen ratios: a case study in central China. Archives of environmental contamination and toxicology 65, 183-192 (2013).
65 Liang, Q. et al. Effects of 15 years of manure and inorganic fertilizers on soil organic carbon fractions in a wheat-maize system in the North China Plain. Nutrient Cycling in Agroecosystems 92, 21-33 (2012).
66 Zhu, H., Gong, L., Ding, Z. & Li, Y. Effects of litter and root manipulations on soil carbon and nitrogen in a Schrenk's spruce (Picea schrenkiana) forest. PLoS One 16, e0247725 (2021).
67 Xiao, Q. et al. Long-term manuring increases microbial carbon use efficiency and mitigates

priming effect via alleviated soil acidification and resource limitation. Biology and Fertility of Soils 57, 925-934 (2021).
68 Wang, D. et al. Nitrogen fertilization overweighs intercropping in promotion of dissolved organic carbon concentration and complexity in potato-cropped soil. Plant and Soil 462, 273-284 (2021).
69 Chen, Q. et al. Quantitative and Qualitative Responses of Soil Water-Extractable Organic Matter to Carbon and Nitrogen Management Practices in Loess Soil. Agronomy 11, 2025 (2021).
70 Bizimana, F. et al. Effects of long-term nitrogen fertilization on N 2 O, N 2 and their yield-scaled emissions in a temperate semi-arid agro-ecosystem. Journal of Soils and Sediments 21, 1659-1671 (2021).
71 Tang, H. et al. Short-term responses of soil organic carbon and its labile fractions to different manure Nitrogen input in a double-cropping rice field. The Journal of Agricultural Science 158, 119-127 (2020).
72 Song, D. et al. Effects of straw mulching practices on soil nematode communities under walnut plantation. Scientific Reports 10, 15351 (2020).
73 Liu, X., Feng, Z., Zhou, Y., Zhu, H. & Yao, Q. Plant Species-Dependent Effects of Liming and Plant Residue Incorporation on Soil Bacterial Community and Activity in an Acidic Orchard Soil. Applied Sciences 10, 5681 (2020).
74 Liu, J. et al. Variation of soil dissolved organic carbon under long-term different fertilizations and its correlation with maize yields. Journal of Soils and Sediments 20, 2761-2770 (2020).
75 Li, Z. et al. Green manure incorporation with reductions in chemical fertilizer inputs improves rice yield and soil organic matter accumulation. Journal of Soils and Sediments 20, 2784-2793 (2020).
76 Bah, H., Ren, X., Wang, Y., Tang, J. & Zhu, B. Characterizing greenhouse gas emissions and global warming potential of wheat-maize cropping systems in response to organic amendments in eutric regosols, China. Atmosphere 11, 614 (2020).
77 Mohamed, W. S. & Hammam, A. A. Poultry manure-derived biochar as a soil amendment and fertilizer for sandy soils under arid conditions. Egyptian Journal of Soil Science 59, 1-14 (2019).
78 Liu, Y. et al. Effects of water and organic manure coupling on the immobilization of cadmium by sepiolite. Journal of soils and sediments 19, 798-808 (2019).
79 Kim, S. U. et al. Nitrous oxide emission from upland soil amended with different animal manures. Applied biological chemistry 62, 1-8 (2019).
80 Chen, T. et al. Seasonal variations in N 2 and N 2 O emissions from a wheat–maize cropping system. Biology and fertility of soils 55, 539-551 (2019).
81 Peng, C., Hong-Yan, W., Zheng, R.-L., Zhang, B. & Guo-Xin, S. Long-term effects of biochar on rice production and stabilisation of cadmium and arsenic levels in contaminated paddy soils. Earth and Environmental Science Transactions of The Royal Society of Edinburgh 109, 415-420 (2018).
82 Xu, P. et al. Structure and biodegradability of dissolved organic matter from Ultisol treated with long-term fertilizations. Journal of soils and sediments 18, 1865-1872 (2018).
83 Xiao, Y. et al. Effect of biochar amendment on methane emissions from paddy field under water-saving irrigation. Sustainability 10, 1371 (2018).
84 Liu, Z., Nan, Z., Zhao, C. & Yang, Y. Potato absorption and phytoavailability of Cd, Ni, Cu, Zn and Pb in sierozem soils amended with municipal sludge compost. Journal of Arid Land 10,

638-652 (2018).
85 Conti, L. D. et al. Aluminum species and activity in sandy soil solution with pig slurry addition. Pesquisa Agropecuária Brasileira 52, 914-922 (2017).
86 Chen, A. et al. Rapid decrease of soil carbon after abandonment of subtropical paddy fields. Plant and Soil 415, 203-214 (2017).
87 Antonangelo, J. A., Ferrari, J., Crusciol, C. A. C. & Alleoni, L. R. F. Lime and calcium-magnesium silicate in the ionic speciation of an Oxisol. Scientia Agricola 74, 317-333 (2017).
88 Zhao, B., Zhang, J., Yu, Y., Karlen, D. L. & Hao, X. Crop residue management and fertilization effects on soil organic matter and associated biological properties. Environmental Science and Pollution Research 23, 17581-17591 (2016).
89 Wang, X.-g., Li, C.-s., Luo, Y., Hua, K.-k. & Zhou, M.-h. The impact of nitrogen amendment and crop growth on dissolved organic carbon in soil solution. Journal of Mountain Science 13, 95-103 (2016).
90 Wang, X., Tang, C., Baldock, J., Butterly, C. & Gazey, C. Long-term effect of lime application on the chemical composition of soil organic carbon in acid soils varying in texture and liming history. Biology and Fertility of Soils 52, 295-306 (2016).
91 Strid, A., Lee, B. S. & Lajtha, K. Homogenization of detrital leachate in an old-growth coniferous forest, OR: DOC fluorescence signatures in soils undergoing long-term litter manipulations. Plant and Soil 408, 133-148 (2016).
92 Sánchez-Garcá, M. et al. Compost vs biochar amendment: a two-year field study evaluating soil C build-up and N dynamics in an organically managed olive crop. Plant and Soil 408, 1-14 (2016).
93 Liu, H. et al. Effects of land use conversion and fertilization on CH 4 and N 2 O fluxes from typical hilly red soil. Environmental Science and Pollution Research 23, 20269-20280 (2016).
94 Liu, C. et al. Biochar increased water holding capacity but accelerated organic carbon leaching from a sloping farmland soil in China. Environmental Science and Pollution Research 23, 995-1006 (2016).
95 Gu, C. et al. Dynamic changes of soil surface organic carbon under different mulching practices in citrus orchards on sloping land. PloS one 11, e0168384 (2016).
96 Shang, F., Ren, S., Yang, P., Li, C. & Ma, N. Effects of different fertilizer and irrigation water types, and dissolved organic matter on soil C and N mineralization in crop rotation farmland. Water, Air, & Soil Pollution 226, 1-25 (2015).
97 Xie, B. et al. N2O emissions from an apple orchard in the coastal area of Bohai Bay, China. The Scientific World Journal 2014, 164732 (2014).
98 Kim, S. Y., Pramanik, P., Bodelier, P. L. & Kim, P. J. Cattle manure enhances methanogens diversity and methane emissions compared to swine manure under rice paddy. PLoS One 9, e113593 (2014).
99 Blair, R. M., Savin, M. C. & Chen, P. Composted and formulated poultry litters promote soil nutrient availability but not plant uptake or edamame quality. Agronomy for sustainable development 34, 849-856 (2014).
100 Bajgai, Y., Kristiansen, P., Hulugalle, N. & McHenry, M. Changes in soil carbon fractions due to incorporating corn residues in organic and conventional vegetable farming systems. Soil research 52, 244-252 (2014).

101 Lee, C. H. et al. Different response of silicate fertilizer having electron acceptors on methane emission in rice paddy soil under green manuring. Biology and Fertility of Soils 48, 435-442 (2012).
102 Zambrosi, F. C. B., Alleoni, L. R. F. & Caires, E. F. Liming and ionic speciation of an Oxisol under no-till system. Scientia Agricola 65, 190-203 (2008).
103 Kalbitz, K., Meyer, A., Yang, R. & Gerstberger, P. Response of dissolved organic matter in the forest floor to long-term manipulation of litter and throughfall inputs. Biogeochemistry 86, 301-318 (2007).
104 Shand, C. & Coutts, G. The effects of sheep faeces on soil solution composition. Plant and Soil 285, 135-148 (2006).
105 Yano, Y., Lajtha, K., Sollins, P. & Caldwell, B. A. Chemistry and dynamics of dissolved organic matter in a temperate coniferous forest on andic soils: effects of litter quality. Ecosystems 8, 286-300 (2005).
106 Lajtha, K. et al. Detrital controls on soil solution N and dissolved organic matter in soils: a field experiment. Biogeochemistry 76, 261-281 (2005).
107 Park, J.-H. & Matzner, E. Controls on the release of dissolved organic carbon and nitrogen from a deciduous forest floor investigated by manipulations of aboveground litter inputs and water flux. Biogeochemistry 66, 265-286 (2003).
108 Yavitt, J. B. & Fahey, T. J. Peat and solution chemistry responses to CaCO 3 application in wetlands next to Woods Lake, New York. Experimental Watershed Liming Study, 103-121 (1996).
109 Geary, R. J. & Driscoll, C. T. Forest soil solutions: acid/base chemistry and response to calcite treatment. Experimental Watershed Liming Study, 53-78 (1996).
110 Smolander, A., Kitunen, V., Priha, O. & Mälkönen, E. Nitrogen transformations in limed and nitrogen fertilized soil in Norway spruce stands. Plant and Soil 172, 107-115 (1995).
111 Kreutzer, K. in Nutrient Uptake and Cycling in Forest Ecosystems: Proceedings of the CEC/IUFRO Symposium Nutrient Uptake and Cycling in Forest Ecosystems Halmstad, Sweden, June, 7–10, 1993. 447-470 (Springer).
112 ULLAH, B. Soil Nitrous Oxide Emission as Affected by Application of Phosphorus, 华中农业大学, (2016).
113 Hung, C.-Y., Ejack, L. & Whalen, J. K. Fall-applied manure with cover crop did not increase nitrous oxide emissions during spring freeze-thaw periods. Applied Soil Ecology 158, 103786 (2021).
114 Munera-Echeverri, J. L., Martinsen, V., Strand, L. T., Cornelissen, G. & Mulder, J. Effect of conservation farming and biochar addition on soil organic carbon quality, nitrogen mineralization, and crop productivity in a light textured Acrisol in the sub-humid tropics. PloS one 15, e0228717 (2020).
115 Akley, K. E. Impacts of cropping systems on soil health and microbial ecology, Kansas State University, (2015).
116 Omari, R. A. et al. Influence of organic inputs with mineral fertilizer on maize yield and soil microbial biomass dynamics in different seasons in a tropical acrisol. Environmental Sustainability 3, 45-57 (2020).
117 Ansong Omari, R. et al. Nitrogen mineralization and microbial biomass dynamics in different tropical soils amended with contrasting organic resources. Soil Systems 2, 63 (2018).

118 Zhang, Y. et al. Long-Term Fertilization Alters the Chemical Composition of Dissolved Organic Carbon via Regulating Soil Physicochemical Factors. (2021).
119 Ohno, T., Griffin, T. S., Liebman, M. & Porter, G. A. Chemical characterization of soil phosphorus and organic matter in different cropping systems in Maine, USA. Agriculture, ecosystems & environment 105, 625-634 (2005).
120 Gao, J., Liu, L., Shi, Z. & Lv, J. Characteristics of Fluorescent Dissolved Organic Matter in Paddy Soil Amended With Crop Residues After Column (0–40 cm) Leaching. Frontiers in Environmental Science 10, 766795 (2022).
121 Zheng, H. et al. Field-aged biochar enhances soil organic carbon by increasing recalcitrant organic carbon fractions and making microbial communities more conducive to carbon sequestration. Agriculture, Ecosystems & Environment 340, 108177 (2022).
122 Sun, X., Liu, J., Liu, S. & Gao, W. Soil organic carbon fractions comparison after 40-year long-term fertilisation in a wheat-corn rotation field. Soil & Water Research 17 (2022).
123 Xu, Y. et al. Dissolved N and C leaching losses mitigated by optimized fertilization management in intensive greenhouse system: insights from DOM characteristics via EEM-PARAFAC. Journal of Soils and Sediments 23, 657-671 (2023).
124 Ma, F. et al. Impacts of elevated atmospheric CO2 and N fertilization on N2O emissions and dynamics of associated soil labile C components and mineral N in a maize field in the North China plain. Agronomy 12, 432 (2022).
125 Zhang, Z. et al. Cover crops and N fertilization affect soil ammonia volatilization and N2O emission by regulating the soil labile carbon and nitrogen fractions. Agriculture, Ecosystems & Environment 340, 108188 (2022).
126 Wang, X., Jian, S., Gamage, L. & Li, J. Effect of nitrogen fertilization on central tendency and spatial heterogeneity of soil moisture, pH and dissolved organic carbon and nitrogen in two bioenergy croplands#. Journal of Plant Nutrition and Soil Science 185, 355-369 (2022).
127 Wang, D. et al. Compost amendment maintains soil structure and carbon storage by increasing available carbon and microbial biomass in agricultural soil–A six-year field study. Geoderma 427, 116117 (2022).
128 Chen, K. et al. Biochar-induced changes in the soil diazotroph community abundance and structure in a peanut field trial. Biochar 4, 26 (2022).
129 Wang, C., Du, S. & Nishimura, O. Rice rusk-derived biochar suppressed N2O emission from acidic arable soil by inhibiting nitrate reduction. Journal of Soil Science and Plant Nutrition 22, 3189-3199 (2022).
130 Xu, P. et al. Prior nitrogen fertilization stimulated N 2 O emission from rice cultivation season under a rapeseed-rice production system. Plant and Soil, 1-12 (2022).
131 Yang, Y., Liu, H. & Lv, J. Response of N2O emission and denitrification genes to different inorganic and organic amendments. Scientific Reports 12, 3940 (2022).
132 Fan, D., Cao, C. & Li, C. Integrated organic-inorganic nitrogen fertilization mitigates nitrous oxide emissions by regulating ammonia-oxidizing bacteria in purple caitai fields. Agriculture 12, 723 (2022).
133 Maslov, M., Astaykina, A. & Pozdnyakov, L. Earthworm Lumbricus terrestris contributes nitrous oxide emission from temperate agricultural soil regardless of applied mineral nitrogen fertilizer doses. Agronomy 12, 2745 (2022).
134 Xu, Y. et al. Long-term successive biochar amendments Alter the composition and α-diversity of

bacterial Community of Paddy Soil in Rice-wheat rotation. Frontiers in Environmental Science 10, 921766 (2022).
135 Huang, R. et al. Biochar Application Increases Labile Carbon and Inorganic Nitrogen Supply in a Continuous Monocropping Soil. Land 11, 473 (2022).
136 Lin, H. et al. How do soil organic carbon pool, stock and their stability respond to crop residue incorporation in subtropical calcareous agricultural soils? Agriculture, Ecosystems & Environment 332, 107927 (2022).
137 Gu, Y.-J., Han, C.-L., Kong, M., Siddique, K. H. & Li, F.-M. Film Mulching with Low Phosphorus Application Improves Soil Organic Carbon and Its Decomposability in a Semiarid Agroecosystem. Agriculture 12, 816 (2022).
138 Al-Graiti, T. et al. The composition of dissolved organic matter in arable lands: does soil management practice matter? Agronomy 12, 2797 (2022).
139 Xu, P. et al. Methane emission from rice cultivation regulated by soil hydrothermal condition and available carbon and nitrogen under a rice–wheat rotation system. Plant and Soil 480, 283-294 (2022).
140 Bal ł k, J. et al. The impact of the long-term application of mineral nitrogen and sewage sludge fertilizers on the quality of soil organic matter. Chemical and Biological Technologies in Agriculture 9, 86 (2022).
141 Cao, B. et al. Long-term nitrogen and straw application improves wheat production and soil organic carbon sequestration. Journal of Soil Science and Plant Nutrition 22, 3364-3376 (2022).
142 Bai, J. et al. Effects of sewage sludge application on plant growth and soil characteristics at a Pinus sylvestris var. mongolica plantation in Horqin sandy land. Forests 13, 984 (2022).
143 Ji, C. et al. Reductive soil disinfestation with biochar amendment modified microbial community composition in soils under plastic greenhouse vegetable production. Soil and Tillage Research 218, 105323 (2022).
144 Abagandura, G. O. et al. Soil labile carbon and nitrogen fractions after eleven years of manure and mineral fertilizer applications. Archives of Agronomy and Soil Science 69, 875-890 (2023).
145 Chen, K. et al. Effects of applying maize stover on soil diazotroph community diminish with depth. Applied Soil Ecology 179, 104573 (2022).
146 Chen, M. et al. Effects of organic fertilization on phosphorus availability and crop growth: Evidence from a 7-year fertilization experiment. Archives of Agronomy and Soil Science 69, 2092-2103 (2023).
147 Du, L. et al. Fertilization regime shifts the molecular diversity and chlorine reactivity of soil dissolved organic matter from tropical croplands. Water Research 225, 119106 (2022).
148 Jiang, N. et al. Effects of straw and biochar amendment on hydrological fluxes of dissolved organic carbon in a subtropical montane agricultural landscape. Environmental Pollution 296, 118751 (2022).
149 Jiang, S. et al. Field-scale fluorescence fingerprints of biochar-derived dissolved organic matter (DOM) provide an effective way to trace biochar migration and the downward co-migration of Pb, Cu and As in soil. Chemosphere 301, 134738 (2022).
150 Li, K. et al. Unveiling the role of dissolved organic matter on phosphorus sorption and availability in a 5-year manure amended paddy soil. Science of the Total Environment 838, 155892 (2022).
151 Li, Y. et al. Biochar incorporation increases winter wheat (Triticum aestivum L.) production

461 with significantly improving soil enzyme activities at jointing stage. Catena 211, 105979 (2022).
462 152 Lin, S. et al. Combined slag and biochar amendments to subtropical paddy soils lead to a
463 short-term change of bacteria community structure and rise of soil organic carbon. Applied Soil
464 Ecology 179, 104593 (2022).
465 153 Liu, X. et al. Effects of nitrogen-enriched biochar on subtropical paddy soil organic carbon pool
466 dynamics. Science of The Total Environment 851, 158322 (2022).
467 154 Rombolà, A. G. et al. Effect of biochar amendment on organic matter and dissolved organic
468 matter composition of agricultural soils from a two-year field experiment. Science of The Total
469 Environment 812, 151422 (2022).
470 155 Wang, H. et al. Variation in Soil Denitrification among Fertilization Regimes and Its Microbial
471 Mechanism. Geomicrobiology Journal 39, 722-730 (2022).
472 156 Issah, G., Schoenau, J. & Knight, J. Landscape position, sampling time, and tillage, but not
473 legume species, affect labile carbon and nitrogen fractions in a 4-yr-old rejuvenated grazed
474 pasture. Canadian Journal of Soil Science 101, 641-653 (2021).
475 157 Kobierski, M., Lemanowicz, J., Wojewódzki, P. & Kondratowicz-Maciejewska, K. The effect of
476 organic and conventional farming systems with different tillage on soil properties and enzymatic
477 activity. Agronomy 10, 1809 (2020).
478 158 Chen, J., Zhu, R., Zhang, Q., Kong, X. & Sun, D. Reduced-tillage management enhances soil
479 properties and crop yields in a alfalfa-corn rotation: Case study of the Songnen Plain, China.
480 Scientific Reports 9, 17064 (2019).
481 159 Ghimire, R., Norton, J. B., Stahl, P. D. & Norton, U. Soil microbial substrate properties and
482 microbial community responses under irrigated organic and reduced-tillage crop and forage
483 production systems. PloS one 9, e103901 (2014).
484 160 Dong, W., Hu, C., Chen, S. & Zhang, Y. Tillage and residue management effects on soil carbon
485 and CO 2 emission in a wheat–corn double-cropping system. Nutrient Cycling in
486 Agroecosystems 83, 27-37 (2009).
487 161 Virk, A. L. et al. Effects of diversified cropping sequences and tillage practices on soil organic
488 carbon, nitrogen, and associated fractions in the North China Plain. Journal of Soil Science and
489 Plant Nutrition 21, 1201-1212 (2021).
490 162 Qiu, Q. et al. Variability and controls of soil CO 2 fluxes under different tillage and crop residue
491 managements in a wheat-maize double-cropping system. Environmental Science and Pollution
492 Research 27, 45722-45736 (2020).
493 163 Debska, B., Jaskulska, I. & Jaskulski, D. Method of tillage with the factor determining the
494 quality of organic matter. Agronomy 10, 1250 (2020).
495 164 Rieder, Á. et al. Soil organic matter alteration velocity due to land-use change: A case study
496 under conservation agriculture. Sustainability 10, 943 (2018).
497 165 Sun, B., Hallett, P. D., Caul, S., Daniell, T. J. & Hopkins, D. W. Distribution of soil carbon and
498 microbial biomass in arable soils under different tillage regimes. Plant and Soil 338, 17-25
499 (2011).
500 166 Elmi, A. A., Madramootoo, C., Hamel, C. & Liu, A. Denitrification and nitrous oxide to nitrous
501 oxide plus dinitrogen ratios in the soil profile under three tillage systems. Biology and Fertility
502 of Soils 38, 340-348 (2003).
503 167 Tang, H. et al. Impacts of short-term tillage and crop residue incorporation managements on soil
504 microbial community in a double-cropping rice field. Scientific Reports 12, 2093 (2022).

168 Mchunu, C. N., Lorentz, S., Jewitt, G., Manson, A. & Chaplot, V. No-till impact on soil and soil organic carbon erosion under crop residue scarcity in Africa. Soil Science Society of America Journal 75, 1503-1512 (2011).
169 Mubekaphi, C. Soil organic carbon, glomalin related soil protein and related physical properties after 15 years of different management practices in a subtropical region of South Africa, (2019).
170 Rahmati, M. et al. Changes in soil organic carbon fractions and residence time five years after implementing conventional and conservation tillage practices. Soil and Tillage Research 200, 104632 (2020).
171 Hao, Q., Cheng, B. & Jiang, C. Long-term tillage effects on soil organic carbon and dissolved organic carbon in a purple paddy soil of Southwest China. Acta Ecologica Sinica 33, 260-265 (2013).
172 Si, P. et al. Effect of no-tillage with straw mulch and conventional tillage on soil organic carbon pools in Northern China. Archives of Agronomy and Soil Science 64, 398-408 (2018).
173 Hurisso, T. T., Norton, J. B. & Norton, U. Soil profile carbon and nitrogen in prairie, perennial grass–legume mixture and wheat-fallow production in the central High Plains, USA. Agriculture, ecosystems & environment 181, 179-187 (2013).
174 Carrillo-Gonzalez, R., Gonzalez-Chavez, M., Aitkenhead-Peterson, J., Hons, F. & Loeppert, R. Extractable DOC and DON from a dry-land long-term rotation and cropping system in Texas, USA. Geoderma 197, 79-86 (2013).
175 Gao, Y. et al. Effect of tillage practices on soil CO2 emissions, microbial C-fixation, and C-degradation functional gene abundance in Northeast China. Journal of Soils and Sediments 23, 446-458 (2023).
176 Jia, L. et al. Keystone microbiome in the rhizosphere soil reveals the effect of long-term conservation tillage on crop growth in the Chinese Loess Plateau. Plant and Soil 473, 457-472 (2022).
177 Fisk, L., Barton, L., Maccarone, L., Jenkins, S. & Murphy, D. Seasonal dynamics of ammonia-oxidizing bacteria but not archaea influence soil nitrogen cycling in a semi-arid agricultural soil. Scientific Reports 12, 7299 (2022).
178 Sarker, M. R. et al. Conservation tillage and residue management improve soil health and crop productivity—Evidence from a rice-maize cropping system in Bangladesh. Frontiers in Environmental Science 10, 969819 (2022).
179 Li, N., Lei, W., Sheng, M., Long, J. & Han, Z. Straw amendment and soil tillage alter soil organic carbon chemical composition and are associated with microbial community structure. European Journal of Soil Biology 110, 103406 (2022).
180 Cui, J. et al. Nutrient availability is a dominant predictor of soil bacterial and fungal community composition after nitrogen addition in subtropical acidic forests. PLoS One 16, e0246263 (2021).
181 Zhou, J. et al. Nitrogen addition affects soil respiration primarily through changes in microbial community structure and biomass in a subtropical natural forest. Forests 10, 435 (2019).
182 Zhang, H., Liu, Y., Zhou, Z. & Zhang, Y. Inorganic nitrogen addition affects soil respiration and belowground organic carbon fraction for a Pinus tabuliformis forest. Forests 10, 369 (2019).
183 Song, Y. et al. Short-term response of the soil microbial abundances and enzyme activities to experimental warming in a boreal peatland in Northeast China. Sustainability 11, 590 (2019).
184 Li, Y. et al. Divergent responses of soil carbon and nitrogen pools to short-term nitrogen

addition between two plantations in Northeast China. International Journal of Agricultural and Biological Engineering 12, 82-90 (2019).

185 Dong, D., Shi, C., Yan, S. & Ashraf, M. Effects of elevated atmospheric CO2, O3 and soil phenanthrene on soil enzyme activities and microbial biomass. Applied Ecology and Environmental Research 17, 8501-8512 (2019).

186 Chen, L. et al. Differential responses of net N mineralization and nitrification to throughfall reduction in a Castanopsis hystrix plantation in southern China. Forest Ecosystems 6, 1-11 (2019).

187 Zhou, S., Xiang, Y., Tie, L., Han, B. & Huang, C. Simulated nitrogen deposition significantly reduces soil respiration in an evergreen broadleaf forest in western China. PLoS One 13, e0204661 (2018).

188 Yue, P. et al. Impact of elevated precipitation, nitrogen deposition and warming on soil respiration in a temperate desert. Biogeosciences 15, 2007-2019 (2018).

189 Olatunji, O. A. et al. The responses of soil microbial community and enzyme activities of Phoebe zhennan cultivated under different soil moisture conditions to phosphorus addition. iForest-Biogeosciences and Forestry 11, 751 (2018).

190 Ma, J., Kang, F., Cheng, X. & Han, H. Response of soil organic carbon and nitrogen to nitrogen deposition in a Larix principis-rupprechtii plantation. Scientific Reports 8, 8638 (2018).

191 Lv, F., Xue, S., Wang, G. & Zhang, C. Nitrogen addition shifts the microbial community in the rhizosphere of Pinus tabuliformis in Northwestern China. PLoS One 12, e0172382 (2017).

192 Hu, Y. et al. Climate change affects soil labile organic carbon fractions in a Tibetan alpine meadow. Journal of Soils and Sediments 17, 326-339 (2017).

193 van Gestel, N. C., Dhungana, N., Tissue, D. T. & Zak, J. C. Seasonal microbial and nutrient responses during a 5-year reduction in the daily temperature range of soil in a Chihuahuan Desert ecosystem. Oecologia 180, 265-277 (2016).

194 Chen, D. et al. Response of soil carbon and nitrogen to 15-year experimental warming in two alpine habitats (kobresia meadow and potentilla shrubland) on the Qinghai-Tibetan Plateau. Polish Journal of Environmental Studies 25, 2305-2313 (2016).

195 Song, Y. et al. Short-term effect of nitrogen addition on litter and soil properties in Calamagrostis angustifolia freshwater marshes of Northeast China. Wetlands 33, 505-513 (2013).

196 Song, B. et al. Light and heavy fractions of soil organic matter in response to climate warming and increased precipitation in a temperate steppe. PloS one 7, e33217 (2012).

197 Li, L.-J., Zeng, D.-H., Yu, Z.-Y., Fan, Z.-P. & Mao, R. Soil microbial properties under N and P additions in a semi-arid, sandy grassland. Biology and Fertility of Soils 46, 653-658 (2010).

198 Carol Adair, E. & Burke, I. C. Plant phenology and life span influence soil pool dynamics: Bromus tectorum invasion of perennial C 3–C 4 grass communities. Plant and soil 335, 255-269 (2010).

199 Liu, Y. et al. Nitrogen addition promotes soil phosphorus availability in the subalpine forest of eastern Tibetan Plateau. Journal of Soils and Sediments, 1-11 (2022).

200 Wu, Y. et al. Nitrous oxide emissions from an alpine grassland as affected by nitrogen addition. Atmosphere 12, 976 (2021).

201 Dai, Y. et al. Response of soil bacterial communities to nitrogen and phosphorus additions in an age-sequence of subtropical forests. iForest-Biogeosciences and Forestry 14, 71 (2021).

202 Wang, J.-J. et al. Long-term nitrogen addition alters the composition of soil-derived dissolved organic matter. ACS Earth and Space Chemistry 4, 189-201 (2019).
203 Liu, X., Lamb, E. G. & Zhang, S. Nitrogen addition impacts on soil microbial stoichiometry are driven by changes in plant resource stoichiometry not by the composition of main microbial groups in an alpine meadow. Biology and fertility of soils 56, 261-271 (2020).
204 Choma, M. et al. Bacteria but not fungi respond to soil acidification rapidly and consistently in both a spruce and beech forest. FEMS Microbiology Ecology 96, fiaa174 (2020).
205 Ataka, M., Sun, L., Nakaji, T., Katayama, A. & Hiura, T. Five-year nitrogen addition affects fine root exudation and its correlation with root respiration in a dominant species, Quercus crispula, of a cool temperate forest, Japan. Tree physiology 40, 367-376 (2020).
206 Phillips, C. A., Elberling, B. & Michelsen, A. Soil carbon and nitrogen stocks and turnover following 16 years of warming and litter addition. Ecosystems 22, 110-124 (2019).
207 Yuan, X. et al. Effects of short-term warming and nitrogen addition on the quantity and quality of dissolved organic matter in a subtropical Cunninghamia lanceolata plantation. Plos one 13, e0191403 (2018).
208 Jung, K., Kwak, J.-H., Gilliam, F. S. & Chang, S. X. Simulated N and S deposition affected soil chemistry and understory plant communities in a boreal forest in western Canada. Journal of plant ecology 11, 511-523 (2018).
209 Gong, Y., Wu, J., Vogt, J., Le, T. B. & Yuan, T. Combination of warming and vegetation composition change strengthens the environmental controls on N2O fluxes in a boreal peatland. Atmosphere 9, 480 (2018).
210 Chen, G.-t., Tu, L.-h., Chen, G.-s., Hu, J.-y. & Han, Z.-l. Effect of six years of nitrogen additions on soil chemistry in a subtropical Pleioblastus amarus forest, Southwest China. Journal of forestry research 29, 1657-1664 (2018).
211 Zhang, K. et al. Impact of nitrogen fertilization on soil–Atmosphere greenhouse gas exchanges in eucalypt plantations with different soil characteristics in southern China. Plos one 12, e0172142 (2017).
212 Wang, Y., Wang, H., He, J.-S. & Feng, X. Iron-mediated soil carbon response to water-table decline in an alpine wetland. Nature communications 8, 15972 (2017).
213 Ritson, J. P. et al. The effect of drought on dissolved organic carbon (DOC) release from peatland soil and vegetation sources. Biogeosciences 14, 2891-2902 (2017).
214 Niboyet, A., Bardoux, G., Barot, S. & Bloor, J. M. Elevated CO 2 mediates the short-term drought recovery of ecosystem function in low-diversity grassland systems. Plant and soil 420, 289-302 (2017).
215 Lei, Z., Sun, H., Li, Q., Zhang, J. & Song, X. Effects of nitrogen deposition on soil dissolved organic carbon and nitrogen in Moso bamboo plantations strongly depend on management practices. Forests 8, 452 (2017).
216 Jia, X., Liu, T., Zhao, Y., He, Y. & Yang, M. Elevated atmospheric CO 2 affected photosynthetic products in wheat seedlings and biological activity in rhizosphere soil under cadmium stress. Environmental Science and Pollution Research 23, 514-526 (2016).
217 He, D. et al. Composition of the soil fungal community is more sensitive to phosphorus than nitrogen addition in the alpine meadow on the Qinghai-Tibetan Plateau. Biology and Fertility of Soils 52, 1059-1072 (2016).
218 Hasegawa, S., Macdonald, C. A. & Power, S. A. Elevated carbon dioxide increases soil nitrogen

and phosphorus availability in a phosphorus-limited Eucalyptus woodland. Global Change Biology 22, 1628-1643 (2016).

219 Carrillo, Y., Dijkstra, F. A., LeCain, D. & Pendall, E. Mediation of soil C decomposition by arbuscular mycorrizhal fungi in grass rhizospheres under elevated CO 2. Biogeochemistry 127, 45-55 (2016).

220 Cai, Y., Chang, S. X., Ma, B. & Bork, E. W. Watering increased DOC concentration but decreased N 2 O emission from a mixed grassland soil under different defoliation regimes. Biology and Fertility of Soils 52, 987-996 (2016).

221 Gao, Y., Zeng, X., Xie, Q. & Ma, X. Release of carbon and nitrogen from alpine soils during thawing periods in the eastern Qinghai-Tibet Plateau. Water, Air, & Soil Pollution 226, 1-9 (2015).

222 Fang, H. et al. Elevated atmospheric carbon dioxide concentration stimulates soil microbial activity and impacts water-extractable organic carbon in an agricultural soil. Biogeochemistry 122, 253-267 (2015).

223 Xu, M. et al. Low-level nitrogen addition promotes net methane uptake in a boreal forest across the Great Xing'an Mountain Region, China. Forest Science 60, 973-981 (2014).

224 Li, T., Tao, Q., Liang, C. & Yang, X. Elevated CO 2 concentration increase the mobility of Cd and Zn in the rhizosphere of hyperaccumulator Sedum alfredii. Environmental science and pollution research 21, 5899-5908 (2014).

225 Kane, E. S. et al. Peat porewater dissolved organic carbon concentration and lability increase with warming: a field temperature manipulation experiment in a poor-fen. Biogeochemistry 119, 161-178 (2014).

226 Huang, J., Richard, H. & Zheng, S. Effects of nitrogen fertilization on soil labile carbon fractions of freshwater marsh soil in Northeast China. International Journal of Environmental Science and Technology 11, 2009-2014 (2014).

227 Delarue, F. et al. Indirect effects of experimental warming on dissolved organic carbon content in subsurface peat. Journal of soils and sediments 14, 1800-1805 (2014).

228 Lu, X. et al. Long-term nitrogen addition decreases carbon leaching in a nitrogen-rich forest ecosystem. Biogeosciences 10, 3931-3941 (2013).

229 Lovett, G. M., Arthur, M. A., Weathers, K. C., Fitzhugh, R. D. & Templer, P. H. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern US deciduous forest. Ecosystems 16, 980-1001 (2013).

230 Haei, M., Öquist, M. G., Ilstedt, U. & Laudon, H. The influence of soil frost on the quality of dissolved organic carbon in a boreal forest soil: combining field and laboratory experiments. Biogeochemistry 107, 95-106 (2012).

231 Carrillo, Y., Dijkstra, F. A., Pendall, E., Morgan, J. A. & Blumenthal, D. M. Controls over soil nitrogen pools in a semiarid grassland under elevated CO 2 and warming. Ecosystems 15, 761-774 (2012).

232 Cusack, D. F., Silver, W. L., Torn, M. S. & McDowell, W. H. Effects of nitrogen additions on above-and belowground carbon dynamics in two tropical forests. Biogeochemistry 104, 203-225 (2011).

233 Helliwell, R., Britton, A., Gibbs, S., Fisher, J. & Potts, J. Interactive effects of N deposition, land management and weather patterns on soil solution chemistry in a Scottish alpine heath. Ecosystems 13, 696-711 (2010).

234 Hagedorn, F. et al. Short-term responses of ecosystem carbon fluxes to experimental soil warming at the Swiss alpine treeline. Biogeochemistry 97, 7-19 (2010).
235 Junod, J. et al. Effect of irrigation levels on dissolved organic carbon soil distribution and the depth mobility of chlorpyrifos. Chilean journal of agricultural research 69, 435-444 (2009).
236 Fang, Y. et al. Large loss of dissolved organic nitrogen from nitrogen-saturated forests in subtropical China. Ecosystems 12, 33-45 (2009).
237 Kim, S.-Y. & Kang, H. Effects of elevated CO 2 on below-ground processes in temperate marsh microcosms. Hydrobiologia 605, 123-130 (2008).
238 Waldrop, M. P. & Zak, D. R. Response of oxidative enzyme activities to nitrogen deposition affects soil concentrations of dissolved organic carbon. Ecosystems 9, 921-933 (2006).
239 Scheuner, E. T. & Makeschin, F. Impact of atmospheric nitrogen deposition on carbon dynamics in two Scots pine forest soils of Northern Germany. Plant and soil 275, 43-54 (2005).
240 Marsh, A. S., Rasse, D. P., Drake, B. G. & Patrick Megonigal, J. Effect of elevated CO 2 on carbon pools and fluxes in a brackish marsh. Estuaries 28, 694-704 (2005).
241 Pregitzer, K. S., Zak, D. R., Burton, A. J., Ashby, J. A. & MacDonald, N. W. Chronic nitrate additions dramatically increase the export of carbon and nitrogen from northern hardwood ecosystems. Biogeochemistry 68, 179-197 (2004).
242 King, J. et al. Fine-root biomass and fluxes of soil carbon in young stands of paper birch and trembling aspen as affected by elevated atmospheric CO 2 and tropospheric O 3. Oecologia 128, 237-250 (2001).
243 Magill, A. H. et al. Long-term nitrogen additions and nitrogen saturation in two temperate forests. Ecosystems 3, 238-253 (2000).
244 Lamontagne, S. & Schiff, S. L. The Response of a Heterogeneous Upland Boreal Shield Catchment to a Short Term NO 3-Addition. Ecosystems 2, 460-473 (1999).
245 McDowell, W. H., Currie, W. S., Aber, J. D. & Yang, Y. in Biogeochemical Investigations at Watershed, Landscape, and Regional Scales: Refereed papers from BIOGEOMON, The Third International Symposium on Ecosystem Behavior; Co-Sponsored by Villanova University and the Czech Geological Survey; held at Villanova University, Villanova Pennsylvania, USA, June 21–25, 1997. 175-182 (Springer).
246 Currie, W. S., Aber, J. D., McDowell, W. H., Boone, R. D. & Magill, A. H. Vertical transport of dissolved organic C and N under long-term N amendments in pine and hardwood forests. Biogeochemistry 35, 471-505 (1996).
247 Voigt, C. et al. Warming of subarctic tundra increases emissions of all three important greenhouse gases–carbon dioxide, methane, and nitrous oxide. Global Change Biology 23, 3121-3138 (2017).
248 Basiliko, N., Moore, T. R., Jeannotte, R. & Bubier, J. L. Nutrient input and carbon and microbial dynamics in an ombrotrophic bog. Geomicrobiology Journal 23, 531-543 (2006).
249 Hu, Y.-L., Jung, K., Zeng, D.-H. & Chang, S. X. Nitrogen-and sulfur-deposition-altered soil microbial community functions and enzyme activities in a boreal mixedwood forest in western Canada. Canadian Journal of Forest Research 43, 777-784 (2013).
250 Strack, M., Munir, T. M. & Khadka, B. Shrub abundance contributes to shifts in dissolved organic carbon concentration and chemistry in a continental bog exposed to drainage and warming. Ecohydrology 12, e2100 (2019).
251 Fouché, J., Keller, C., Allard, M. & Ambrosi, J. P. Increased CO2 fluxes under warming tests

and soil solution chemistry in Histic and Turbic Cryosols, Salluit, Nunavik, Canada. Soil Biology and Biochemistry 68, 185-199 (2014).
252 Peplau, T., Schroeder, J., Gregorich, E. & Poeplau, C. Long-term geothermal warming reduced stocks of carbon but not nitrogen in a subarctic forest soil. Global Change Biology 27, 5341-5355 (2021).
253 Gong, Y., Wu, J., Sey, A. A. & Le, T. B. Nitrogen addition (NH4NO3) mitigates the positive effect of warming on methane fluxes in a coastal bog. Catena 203, 105356 (2021).
254 Schleuss, P.-M. et al. Stoichiometric controls of soil carbon and nitrogen cycling after long-term nitrogen and phosphorus addition in a mesic grassland in South Africa. Soil Biology and Biochemistry 135, 294-303 (2019).
255 Widdig, M. et al. Microbial carbon use efficiency in grassland soils subjected to nitrogen and phosphorus additions. Soil Biology and Biochemistry 146, 107815 (2020).
256 Spohn, M. & Schleuss, P.-M. Addition of inorganic phosphorus to soil leads to desorption of organic compounds and thus to increased soil respiration. Soil Biology and Biochemistry 130, 220-226 (2019).
257 Oulehle, F. et al. Soil–solution partitioning of DOC in acid organic soils: results from a UK field acidification and alkalization experiment. European Journal of Soil Science 64, 787-796 (2013).
258 Hagedorn, F., Kammer, A., Schmidt, M. W. & Goodale, C. L. Nitrogen addition alters mineralization dynamics of 13 C-depleted leaf and twig litter and reduces leaching of older DOC from mineral soil. Global Change Biology 18, 1412-1427 (2012).
259 Seifert-Monson, L. et al. Effects of sulfate deposition on pore water dissolved organic carbon, nutrients, and microbial enzyme activities in a northern peatland. Soil Biology and Biochemistry 79, 91-99 (2014).
260 Wang, M. et al. Long-term warming increased microbial carbon use efficiency and turnover rate under conservation tillage system. Soil Biology and Biochemistry 172, 108770 (2022).
261 Niu, G. et al. Do long-term high nitrogen inputs change the composition of soil dissolved organic matter in a primary tropical forest? Environmental Research Letters 17, 095015 (2022).
262 Querejeta, J. I. et al. Lower relative abundance of ectomycorrhizal fungi under a warmer and drier climate is linked to enhanced soil organic matter decomposition. New Phytologist 232, 1399-1413 (2021).
263 Wang, H. et al. Effects of simulated nitrogen deposition on soil active carbon fractions in a wet meadow in the Qinghai-Tibet Plateau. Journal of Soil Science and Plant Nutrition 22, 2943-2954 (2022).
264 Yuan, X. et al. Effects of nitrogen addition on the concentration and composition of soil-based dissolved organic matter in subtropical Pinus taiwanensis forests. Journal of Soils and Sediments 22, 1924-1937 (2022).
265 Zhang, J. et al. Ten years of warming increased plant-derived carbon accumulation in an East Asian monsoon forest. Plant and Soil 481, 349-365 (2022).
266 Lu, F. et al. Long-term phosphorus addition strongly weakens the carbon sink function of a temperate peatland. Ecosystems 26, 201-216 (2023).
267 Yang, Y. et al. Soil enzyme activity regulates the response of soil C fluxes to N fertilization in a temperate cultivated grassland. Atmosphere 13, 777 (2022).
268 Weng, X., Sui, X., Liu, Y., Yang, L. & Zhang, R. Effect of nitrogen addition on the carbon metabolism of soil microorganisms in a Calamagrostis angustifolia wetland of the Sanjiang

Plain, northeastern China. Annals of Microbiology 72, 18 (2022).
269 Dong, L., Berg, B., Gu, W., Wang, Z. & Sun, T. Effects of different forms of nitrogen addition on microbial extracellular enzyme activity in temperate grassland soil. Ecological Processes 11, 36 (2022).
270 Li, L. et al. Joint control by soil moisture, functional genes and substrates on response of N2O flux to climate extremes in a semiarid grassland. Agricultural and Forest Meteorology 316, 108854 (2022).
271 Liao, L. et al. Differential effects of nitrogen addition on the organic carbon fractions of rhizosphere and bulk soil based on a pot experiment. Journal of Soils and Sediments 23, 103-117 (2023).
272 Wang, Y., Hu, Z., Liu, C., Wu, Z. & Chen, S. Methane emissions in japonica rice paddy fields under different elevated CO2 concentrations. Nutrient Cycling in Agroecosystems 122, 173-189 (2022).
273 Oestmann, J., Dettmann, U., Düvel, D. & Tiemeyer, B. Experimental warming increased greenhouse gas emissions of a near-natural peatland and Sphagnum farming sites. Plant and Soil 480, 85-104 (2022).
274 Chen, W. et al. Divergent responses of soil microbial functional groups to long-term high nitrogen presence in the tropical forests. Science of The Total Environment 821, 153251 (2022).
275 Chen, Y. et al. The stimulatory effect of elevated CO2 on soil respiration is unaffected by N addition. Science of The Total Environment 813, 151907 (2022).
276 Guo, Y. et al. Effects of nitrogen and water addition on N2O emissions in temperate grasslands, northern China. Applied Soil Ecology 177, 104548 (2022).
277 Li, N. et al. Combined livestock grazing-exclusion and global warming decreases nitrogen mineralization by changing soil microbial community in a Tibetan alpine meadow. Catena 219, 106589 (2022).
278 Li, N. et al. Response of cbbL-harboring microorganisms to precipitation changes in a naturally-restored grassland. Science of The Total Environment 838, 156191 (2022).
279 Luo, L. et al. Effects of mycorrhiza and hyphae on the response of soil microbial community to warming in eastern Tibetan Plateau. Science of The Total Environment 837, 155498 (2022).
280 Wang, T. et al. Simultaneous Measurements of Dissolved Organic Carbon and Soil Respiration Reveal Reduced Soil Carbon Loss Under Nitrogen Addition in a Montane Forest. Journal of Geophysical Research: Biogeosciences 127, e2022JG006829 (2022).
281 Wu, G. et al. Effects of soil warming and straw return on soil organic matter and greenhouse gas fluxes in winter wheat seasons in the North China Plain. Journal of Cleaner Production 356, 131810 (2022).
282 Yuan, X. et al. Relationship between soil bacterial communities and dissolved organic matter in a subtropical Pinus taiwanensis forest after short-term nitrogen addition. Forest Ecology and Management 512, 120165 (2022).
283 Wang, M. et al. Dissolved organic matter characteristics and important site factors in a subtropical mountain forest in central China. Forest Science 66, 49-57 (2020).
284 Teng, Z., Fan, W., Wang, H., Cao, X. & Xu, X. Monitoring soil microorganisms with community-level physiological profiles using Biolog EcoPlates™ in Chaohu lakeside wetland, East China. Eurasian Soil Science 53, 1142-1153 (2020).
285 Rousset, C., Clough, T. J., Grace, P. R., Rowlings, D. W. & Scheer, C. Soil type, bulk density

and drainage effects on relative gas diffusivity and N2O emissions. Soil Research 58, 726-736 (2020).
286 Qin, X.-q. et al. Characterizing soil dissolved organic matter in typical soils from China using fluorescence EEM–PARAFAC and UV–visible absorption. Aquatic Geochemistry 26, 71-88 (2020).
287 Lu, T., Wang, X. & Zhang, W. Total and dissolved soil organic and inorganic carbon and their relationships in typical loess cropland of Fengu Basin. Geoscience Letters 7, 1-13 (2020).
288 Kouchou, A. et al. Evaluation of the environmental and human health risk related to metallic contamination in agricultural soils in the Mediterranean semi-arid area (Saiss plain, Morocco). Environmental earth sciences 79, 1-22 (2020).
289 Kholodov, V. et al. Optical properties of the extractable organic matter fractions in typical chernozems of long-term field experiments. Eurasian Soil Science 53, 739-748 (2020).
290 Kharitonova, G. V., Kot, F. S. & Krutikova, V. O. Carbonate and concomitant microaggregation in irrigated Mediterranean soils of Israel. Irrigation Science 38, 431-447 (2020).
291 Jeanneau, L. et al. Water table dynamics control carbon losses from the destabilization of soil organic matter in a small, lowland agricultural catchment. Soil Systems 4, 2 (2019).
292 Imran, M. et al. Soil selenium transformation across different parent materials in Pothwar uplands of Pakistan. Arabian Journal of Geosciences 13, 1-16 (2020).
293 Ide, J. i. et al. Molecular composition of soil dissolved organic matter in recently-burned and long-unburned boreal forests. International Journal of Wildland Fire 29, 541-547 (2020).
294 Hailegnaw, N. S. et al. The role of biochar and soil properties in determining the available content of Al, Cu, Zn, Mn, and Cd in soil. Agronomy 10, 885 (2020).
295 Gök, G. & Gürbüz, O. A. Application of geostatistics for grid and random sampling schemes for a grassland in Nigde, Turkey. Environmental monitoring and assessment 192, 1-12 (2020).
296 Fovet, O., Cooper, D. M., Jones, D. L., Jones, T. G. & Evans, C. D. Dynamics of dissolved organic matter in headwaters: comparison of headwater streams with contrasting DOM and nutrient composition. Aquatic sciences 82, 1-12 (2020).
297 Curtin, D. et al. Exchangeable cation effects on hot water extractable carbon and nitrogen in agricultural soils. Soil research 58, 356-363 (2020).
298 Croat, S., DeSutter, T., Casey, F. & O'Brien, P. Phosphorus sorption and desorption in soils treated by thermal desorption. Water, Air, & Soil Pollution 231, 1-9 (2020).
299 Connolly, C. T., Cardenas, M. B., Burkart, G. A., Spencer, R. G. & McClelland, J. W. Groundwater as a major source of dissolved organic matter to Arctic coastal waters. Nature Communications 11, 1479 (2020).
300 Chibuike, G. et al. Denitrification capacity of hill country wet and dry area soils as influenced by dissolved organic carbon concentration and chemistry. Wetlands 40, 681-691 (2020).
301 Azam, A. et al. Changes in soil organic carbon fractions across a loess toposequence. Journal of Soil Science and Plant Nutrition 20, 1193-1202 (2020).
302 Zhang, H., Li, Y., Pang, M., Xi, M. & Kong, F. Responses of contents and structure of DOM to Spartina alterniflora invasion in Yanghe estuary wetland of Jiaozhou Bay, China. Wetlands 39, 729-741 (2019).
303 Zeh, L., Limpens, J., Erhagen, B., Bragazza, L. & Kalbitz, K. Plant functional types and temperature control carbon input via roots in peatland soils. Plant and Soil 438, 19-38 (2019).
304 Wang, T., Zhao, X., Wang, C., Huang, Z. & Liu, S. Analysis of three-dimensional fluorescence

spectrum characteristics of water extractable organic matter in Mollisols after different years of cultivation. Applied Ecology & Environmental Research 17 (2019).
305 Thieme, L. et al. Dissolved organic matter characteristics of deciduous and coniferous forests with variable management: different at the source, aligned in the soil. Biogeosciences 16, 1411-1432 (2019).
306 Stutz, K. P. et al. Lignin from white-rotted European beech deadwood and soil functions. Biogeochemistry 145, 81-105 (2019).
307 Ritson, J. et al. Sources of dissolved organic carbon (DOC) in a mixed land use catchment (Exe, UK). Science of the total environment 666, 165-175 (2019).
308 Pintaldi, E., Viglietti, D., D'Amico, M. E., Magnani, A. & Freppaz, M. Abiotic Parameters and pedogenesis as controlling factors for soil C and N cycling along an elevational gradient in a Subalpine Larch Forest (NW Italy). Forests 10, 614 (2019).
309 Petrash, D. A. et al. Spatially resolved soil solution chemistry in a central European atmospherically polluted high-elevation catchment. Soil 5, 205-221 (2019).
310 Peach, M. E., Ogden, L. A., Mora, E. A. & Friedland, A. J. Building houses and managing lawns could limit yard soil carbon for centuries. Carbon balance and management 14, 1-14 (2019).
311 Nie, X. et al. Effects of water erosion on soil organic carbon stability in the subtropical China. Journal of soils and sediments 19, 3564-3575 (2019).
312 Liu, J. et al. Rice-paddy field acts as a buffer system to decrease the terrestrial characteristics of dissolved organic matter exported from a typical small agricultural watershed in the Three Gorges Reservoir Area, China. Environmental Science and Pollution Research 26, 23873-23885 (2019).
313 Li, S. et al. Compositional and chemical characteristics of dissolved organic matter in various types of cropped and natural Chinese soils. Chemical and biological technologies in agriculture 6, 1-11 (2019).
314 Hunziker, M., Arnalds, O. & Kuhn, N. J. Evaluating the carbon sequestration potential of volcanic soils in southern Iceland after birch afforestation. Soil 5, 223-238 (2019).
315 Fu, J. et al. Dissolved organic carbon leaching from montane grasslands under contrasting climate, soil and management conditions. Biogeochemistry 145, 47-61 (2019).
316 Freppaz, M., Viglietti, D., Balestrini, R., Lonati, M. & Colombo, N. Climatic and pedoclimatic factors driving C and N dynamics in soil and surface water in the alpine tundra (NW-Italian Alps). Nature Conservation 34, 67-90 (2019).
317 Faghih, F., Emadi, M., Sadegh-Zadeh, F. & Bahmanyar, M. A. Long-term charcoal-induced changes to soil properties in temperate regions of northern Iran. Journal of forestry research 30, 1063-1071 (2019).
318 Dublet, G. et al. Colloidal size and redox state of uranium species in the porewater of a pristine mountain wetland. Environmental science & technology 53, 9361-9369 (2019).
319 Drozdova, O. Y. et al. Organic Matter Transformation in the Conjugate Series of Surface Water in Northern Karelia. Water resources 46, 52-58 (2019).
320 Dalmagro, H. J. et al. Streams with riparian forest buffers versus impoundments differ in discharge and DOM characteristics for pasture catchments in Southern Amazonia. Water 11, 390 (2019).
321 Chiu, T.-P., Huang, W.-S., Chen, T.-C. & Yeh, Y.-L. Fluorescence characteristics of dissolved organic matter (DOM) in percolation water and lateral seepage affected by soil solution (SS) in

a lysimeter test. Sensors 19, 4016 (2019).
322 Cao, Z. et al. Past aridity's effect on carbon mineralization potentials in grassland soils. Biogeosciences 16, 3605-3619 (2019).
323 Balestrini, R. et al. Dynamic of nitrogen and dissolved organic carbon in an alpine forested catchment: atmospheric deposition and soil solution trends. Nature Conservation 34, 41-66 (2019).
324 Xiaodong Zheng, X. C., Chengming Liang, Y. H. & Jinshui Wu, Y. S. Influence of extractants and filter materials in the extraction of dissolved organic matter (DOM) from subtropical agricultural soil. Emirates Journal of Food and Agriculture, 165-172 (2018).
325 Zhang, Y., Duan, P., Zhang, P. & Li, M. Variations in cyanobacterial and algal communities and soil characteristics under biocrust development under similar environmental conditions. Plant and soil 429, 241-251 (2018).
326 Yang, Y. et al. Effects of different land types on soil enzyme activity in the Qinghai Lake region. Wetlands 38, 711-721 (2018).
327 Xu, B., Wang, J., Wu, N., Wu, Y. & Shi, F. Seasonal and interannual dynamics of soil microbial biomass and available nitrogen in an alpine meadow in the eastern part of Qinghai–Tibet Plateau, China. Biogeosciences 15, 567-579 (2018).
328 Wu, Y., Shaaban, M., Peng, Q. a., Zhou, A. q. & Hu, R. Impacts of earthworm activity on the fate of straw carbon in soil: a microcosm experiment. Environmental Science and Pollution Research 25, 11054-11062 (2018).
329 Song, G., Novotny, E. H., Richards, K. G. & Hayes, M. H. Characteristics of hydrophobic and hydrophilic acid fractions in drainage waters of undisturbed soil lysimeters. Journal of soils and sediments 18, 3197-3214 (2018).
330 Shen, Y. et al. Labile organic carbon pools and enzyme activities of Pinus massoniana plantation soil as affected by understory vegetation removal and thinning. Scientific reports 8, 573 (2018).
331 Rosa, E. & Debska, B. Seasonal changes in the content of dissolved organic matter in arable soils. Journal of Soils and Sediments 18, 2703-2714 (2018).
332 Nygaard, P. H., Strand, L. T. & Stuanes, A. O. Gap formation and dynamics after long-term steady state in an old-growth Picea abies stand in Norway: Above-and belowground interactions. Ecology and evolution 8, 462-476 (2018).
333 Nakhavali, M. et al. Representation of dissolved organic carbon in the JULES land surface model (vn4. 4_JULES-DOCM). Geoscientific Model Development 11, 593-609 (2018).
334 Li, D. et al. Cadmium bioavailability well assessed by DGT and factors influencing cadmium accumulation in rice grains from paddy soils of three parent materials. Journal of soils and sediments 18, 2552-2561 (2018).
335 Kov, R. et al. A farm-scale investigation of the organic matter composition and soil chemistry of Andisols as influenced by land use and management. Biogeochemistry 140, 65-79 (2018).
336 Kobierski, M., Kondratowicz-Maciejewska, K., Banach-Szott, M., Wojewódzki, P. & Peñas Castejón, J. M. Humic substances and aggregate stability in rhizospheric and non-rhizospheric soil. Journal of Soils and Sediments 18, 2777-2789 (2018).
337 Homyak, P. M. et al. Effects of altered dry season length and plant inputs on soluble soil carbon. Ecology 99, 2348-2362 (2018).
338 Guo, Y., Song, C., Tan, W., Wang, X. & Lu, Y. Hydrological processes and permafrost regulate magnitude, source and chemical characteristics of dissolved organic carbon export in a peatland

945 catchment of northeastern China. Hydrology and Earth System Sciences 22, 1081-1093 (2018).
946 339 Glina, B., Bogacz, A., Mendyk, Ł., Bojko, O. & Nowak, M. Effectiveness of restoration of a
947 degraded shallow mountain fen after five years. (2018).
948 340 Costa, E. N. D. d., Landim de Souza, M. F., Lima Marrocos, P. C., Lobao, D. & Lopes da Silva,
949 D. M. Soil organic matter and CO2 fluxes in small tropical watersheds under forest and cacao
950 agroforestry. PloS one 13, e0200550 (2018).
951 341 Barcellos, D., O'Connell, C. S., Silver, W., Meile, C. & Thompson, A. Hot spots and hot
952 moments of soil moisture explain fluctuations in iron and carbon cycling in a humid tropical
953 forest soil. Soil Systems 2, 59 (2018).
954 342 Banach-Szott, M., Kondratowicz-Maciejewska, K. & Kobierski, M. Humic substances in
955 Fluvisols of the Lower Vistula floodplain, North Poland. Environmental Science and Pollution
956 Research 25, 23992-24002 (2018).
957 343 AlMulla, A. A., Jones, D. & Roberts, P. Substrate influences temperature sensitivity of dissolved
958 organic carbon (DOC) and nitrogen (DON) mineralization in arid agricultural soils. Soil
959 Systems 2, 28 (2018).
960 344 Wang, J., Song, C., Hou, A. & Xi, F. Methane emission potential from freshwater marsh soils of
961 Northeast China: response to simulated freezing-thawing cycles. Wetlands 37, 437-445 (2017).
962 345 Wang, C., Tong, C., Chambers, L. G. & Liu, X. Identifying the salinity thresholds that impact
963 greenhouse gas production in subtropical tidal freshwater marsh soils. Wetlands 37, 559-571
964 (2017).
965 346 Tang, J., Zhang, Y., Zha, Y., Li, X. & Fan, S. Oxalate enhances desorption of perfluorooctane
966 sulfonate from soils and sediments. Water, Air, & Soil Pollution 228, 1-11 (2017).
967 347 Sanderman, J. & Kramer, M. G. Dissolved organic matter retention in volcanic soils with
968 contrasting mineralogy: a column sorption experiment. Biogeochemistry 135, 293-306 (2017).
969 348 Raudina, T. V. et al. Dissolved organic carbon and major and trace elements in peat porewater of
970 sporadic, discontinuous, and continuous permafrost zones of western Siberia. Biogeosciences 14,
971 3561-3584 (2017).
972 349 Qiu, J. & Turner, M. G. Effects of non-native Asian earthworm invasion on temperate forest and
973 prairie soils in the Midwestern US. Biological Invasions 19, 73-88 (2017).
974 350 Puissant, J. et al. Climate change effects on the stability and chemistry of soil organic carbon
975 pools in a subalpine grassland. Biogeochemistry 132, 123-139 (2017).
976 351 Morling, K., Raeke, J., Kamjunke, N., Reemtsma, T. & Tittel, J. Tracing aquatic priming effect
977 during microbial decomposition of terrestrial dissolved organic carbon in chemostat experiments.
978 Microbial ecology 74, 534-549 (2017).
979 352 McDonald, G. et al. A survey of total and dissolved organic carbon in alkaline soils of southern
980 Australia. Soil Research 55, 617-629 (2017).
981 353 Li, Z. et al. Effects of moso bamboo (Phyllostachys edulis) invasions on soil nitrogen cycles
982 depend on invasion stage and warming. Environmental Science and Pollution Research 24,
983 24989-24999 (2017).
984 354 Li, Y., Wang, Y., Xu, S., Hu, B. & Wang, Z.-L. Effects of mariculture and solar-salt production
985 on sediment microbial community structure in a coastal wetland. Journal of Coastal Research 33,
986 573-582 (2017).
987 355 Jiskra, M., Wiederhold, J. G., Skyllberg, U., Kronberg, R.-M. & Kretzschmar, R. Source tracing
988 of natural organic matter bound mercury in boreal forest runoff with mercury stable isotopes.

Environmental Science: Processes & Impacts 19, 1235-1248 (2017).
356 Jiang, X. et al. Colloid-bound and dissolved phosphorus species in topsoil water extracts along a grassland transect from Cambisol to Stagnosol. Biogeosciences 14, 1153-1164 (2017).
357 Ide, J. i. et al. Spatial variations in the molecular diversity of dissolved organic matter in water moving through a boreal forest in eastern Finland. Scientific reports 7, 42102 (2017).
358 Cuske, M., Karczewska, A. & Gałka, B. Speciation of Cu, Zn, and Pb in Soil Solutions Extracted from Strongly Polluted Soils Treated with Organic Materials. Polish Journal of Environmental Studies 26 (2017).
359 Conner, L. G., Gill, R. A. & Harvey, J. T. Earlier snowmelt accompanied by warmer soil temperatures in mid-latitude aspen forest and subalpine meadow: Implications for soil carbon. Plant and Soil 417, 275-285 (2017).
360 Cheng, X., Yu, M. & Wang, G. G. Effects of thinning on soil organic carbon fractions and soil properties in Cunninghamia lanceolata stands in eastern China. Forests 8, 198 (2017).
361 Cao, Q. et al. Factors affecting distribution patterns of organic carbon in sediments at regional and national scales in China. Scientific reports 7, 5497 (2017).
362 Broder, T., Knorr, K.-H. & Biester, H. Changes in dissolved organic matter quality in a peatland and forest headwater stream as a function of seasonality and hydrologic conditions. Hydrology and Earth System Sciences 21, 2035-2051 (2017).
363 Bojko, O. et al. Labile and stabile soil organic carbon fractions in surface horizons of mountain soils–relationships with vegetation and altitude. Journal of Mountain Science 14, 2391-2405 (2017).
364 Yuan, H.-Y. et al. Geographic distance and amorphous iron affect the abundance and distribution of Geobacteraceae in paddy soils in China. Journal of Soils and Sediments 16, 2657-2665 (2016).
365 Yang, C., Wang, Y., Jing, Y. & Li, J. The impact of land use on riparian soil dissolved organic matter and on streamwater quality on Chongming Island, China. Regional Environmental Change 16, 2399-2408 (2016).
366 Wu, H., Xu, X., Duan, C., Li, T. & Cheng, W. Synergistic effects of dissolved organic carbon and inorganic nitrogen on methane uptake in forest soils without and with freezing treatment. Scientific Reports 6, 32555 (2016).
367 Wang, J.-J., Jiao, Y., Rhew, R. C. & Chow, A. T. Haloform formation in coastal wetlands along a salinity gradient at South Carolina, United States. Environmental Chemistry 13, 745-756 (2016).
368 Vázquez, C. et al. Land use impact on chemical and spectroscopical characteristics of soil organic matter in an arid ecosystem. Environmental Earth Sciences 75, 1-13 (2016).
369 Thieme, L., Graeber, D., Kaupenjohann, M. & Siemens, J. Fast-freezing with liquid nitrogen preserves bulk dissolved organic matter concentrations, but not its composition. Biogeosciences 13, 4697-4705 (2016).
370 Supriatin, S., Weng, L. & Comans, R. N. Selenium-rich dissolved organic matter determines selenium uptake in wheat grown on Low-selenium arable land soils. Plant and Soil 408, 73-94 (2016).
371 Rouwane, A., Rabiet, M., Grybos, M., Bernard, G. & Guibaud, G. Effects of NO 3− and PO 4 3− on the release of geogenic arsenic and antimony in agricultural wetland soil: a field and laboratory approach. Environmental Science and Pollution Research 23, 4714-4728 (2016).
372 Ogrinc, N. et al. Inorganic and organic carbon dynamics in forested soils developed on

contrasting geology in Slovenia—A stable isotope approach. Journal of soils and sediments 16, 382-395 (2016).
373 Mo, Q. et al. Reforestation in southern China: revisiting soil N mineralization and nitrification after 8 years restoration. Scientific Reports 6, 19770 (2016).
374 Ma, W. et al. Stability of soil organic carbon and potential carbon sequestration at eroding and deposition sites. Journal of Soils and Sediments 16, 1705-1717 (2016).
375 Liao, S. et al. Water, rather than temperature, dominantly impacts how soil fauna affect dissolved carbon and nitrogen release from fresh litter during early litter decomposition. Forests 7, 249 (2016).
376 Klimek, B., Chodak, M., Jaźwa, M. & Niklińska, M. Functional diversity of soil microbial communities in boreal and temperate Scots pine forests. European Journal of Forest Research 135, 731-742 (2016).
377 Karl, A. D., Merwin, I. A., Brown, M. G., Hervieux, R. A. & Heuvel, J. E. V. Under-vine management impacts soil properties and leachate composition in a New York State Vineyard. HortScience 51, 941-949 (2016).
378 Julian, P., Gu, B. & Wright, A. L. Mercury stoichiometric relationships in a subtropical peatland. Water, Air, & Soil Pollution 227, 1-16 (2016).
379 Jones, T. G., Evans, C. D., Jones, D. L., Hill, P. W. & Freeman, C. Transformations in DOC along a source to sea continuum; impacts of photo-degradation, biological processes and mixing. Aquatic Sciences 78, 433-446 (2016).
380 Joly, F.-X., Fromin, N., Kiikkilä, O. & Hättenschwiler, S. Diversity of leaf litter leachates from temperate forest trees and its consequences for soil microbial activity. Biogeochemistry 129, 373-388 (2016).
381 Hu, Z. et al. A comparison of methane emissions following rice paddies conversion to crab-fish farming wetlands in southeast China. Environmental Science and Pollution Research 23, 1505-1515 (2016).
382 Hofmann, K., Lamprecht, A., Pauli, H. & Illmer, P. Distribution of prokaryotic abundance and microbial nutrient cycling across a high-alpine altitudinal gradient in the Austrian Central Alps is affected by vegetation, temperature, and soil nutrients. Microbial ecology 72, 704-716 (2016).
383 Hanan, E. J., D'Antonio, C. M., Roberts, D. A. & Schimel, J. P. Factors regulating nitrogen retention during the early stages of recovery from fire in coastal chaparral ecosystems. Ecosystems 19, 910-926 (2016).
384 Gómez-Gener, L. et al. When water vanishes: magnitude and regulation of carbon dioxide emissions from dry temporary streams. Ecosystems 19, 710-723 (2016).
385 Gerschlauer, F. et al. Gross nitrogen turnover of natural and managed tropical ecosystems at Mt. Kilimanjaro, Tanzania. Ecosystems 19, 1271-1288 (2016).
386 Fuss, C. B. et al. Nitrate and dissolved organic carbon mobilization in response to soil freezing variability. Biogeochemistry 131, 35-47 (2016).
387 Dunn, C., Jones, T. G., Roberts, S. & Freeman, C. Plant species effects on the carbon storage capabilities of a blanket bog complex. Wetlands 36, 47-58 (2016).
388 Burger, M., Haden, V. R., Chen, H., Six, J. & Horwath, W. R. Stand age affects emissions of N 2 O in flood-irrigated alfalfa: a comparison of field measurements, DNDC model simulations and IPCC Tier 1 estimates. Nutrient Cycling in Agroecosystems 106, 335-345 (2016).
389 Wei, H. et al. Are variations in heterotrophic soil respiration related to changes in substrate

availability and microbial biomass carbon in the subtropical forests? Scientific Reports 5, 18370 (2015).
390 Wang, G. et al. Distribution of dissolved organic carbon and KMnO 4-oxidizable carbon along the low-to-high intertidal gradient in a mangrove forest. Journal of Soils and Sediments 15, 2199-2209 (2015).
391 Tsai, C.-W., Tian, G. & Chiu, C.-Y. Great fraction of dissolved organic C and N in the primary per-humid Chamaecyparis forest soil. Botanical Studies 56, 1-9 (2015).
392 Tong, C., Huang, J. & Jia, Y. Small-scale spatial variability of soil methane production potential and porewater characteristics in an estuarine Phragmites australis marsh. Journal of Coastal Research 31, 994-1004 (2015).
393 Tirado-Corbalá, R., Anderson, R. G., Wang, D. & Ayars, J. E. Soil carbon and nitrogen stocks of different Hawaiian sugarcane cultivars. Agronomy 5, 239-261 (2015).
394 Rékási, M. & Filep, T. Factors determining Cd, Co, Cr, Cu, Ni, Mn, Pb and Zn mobility in uncontaminated arable and forest surface soils in Hungary. Environmental Earth Sciences 74, 6805-6817 (2015).
395 Pu, X. et al. Responses of soil carbon and nitrogen to successive land use conversion in seasonally frozen zones. Plant and soil 387, 117-130 (2015).
396 Liao, S. et al. Soil fauna affects dissolved carbon and nitrogen in foliar litter in alpine forest and alpine meadow. Plos one 10, e0139099 (2015).
397 Levia, D. F. et al. Calcium and aluminum cycling in a temperate broadleaved deciduous forest of the eastern USA: relative impacts of tree species, canopy state, and flux type. Environmental monitoring and assessment 187, 1-13 (2015).
398 KOCINIEWSKA, K. Soil quality assessment of Phaeozems and Luvisols from the Kujawy region (central Poland). Soil Science Annual 66, 111-118 (2015).
399 Kaňa, J., Tahovska, K., Kopáček, J. & Šantrůčková, H. Excess of organic carbon in mountain spruce forest soils after bark beetle outbreak altered microbial N transformations and mitigated N-saturation. PLoS One 10, e0134165 (2015).
400 Chávez-Vergara, B. M., González-Rodríguez, A., Etchevers, J. D., Oyama, K. & García-Oliva, F. Foliar nutrient resorption constrains soil nutrient transformations under two native oak species in a temperate deciduous forest in Mexico. European Journal of Forest Research 134, 803-817 (2015).
401 Bradová, M. et al. The variations of aluminium species in mountainous forest soils and its implications to soil acidification. Environmental Science and Pollution Research 22, 16676-16687 (2015).
402 Armstrong, A., Waldron, S., Ostle, N. J., Richardson, H. & Whitaker, J. Biotic and abiotic factors interact to regulate northern peatland carbon cycling. Ecosystems 18, 1395-1409 (2015).
403 Zhang, S. et al. Changes in pH, dissolved organic matter and Cd species in the rhizosphere soils of Cd phytostabilizer Athyrium wardii (Hook.) Makino involved in Cd tolerance and accumulation. Environmental Science and Pollution Research 21, 4605-4613 (2014).
404 Yuan, J., Ding, W., Liu, D., Xiang, J. & Lin, Y. Methane production potential and methanogenic archaea community dynamics along the Spartina alterniflora invasion chronosequence in a coastal salt marsh. Applied microbiology and biotechnology 98, 1817-1829 (2014).
405 Ukonmaanaho, L., Starr, M., Lindroos, A.-J. & Nieminen, T. M. Long-term changes in acidity and DOC in throughfall and soil water in Finnish forests. Environmental monitoring and

assessment 186, 7733-7752 (2014).
406 Tiemeyer, B. & Kahle, P. Nitrogen and dissolved organic carbon (DOC) losses from an artificially drained grassland on organic soils. Biogeosciences 11, 4123-4137 (2014).
407 Scheibe, A. & Gleixner, G. Influence of litter diversity on dissolved organic matter release and soil carbon formation in a mixed beech forest. PloS one 9, e114040 (2014).
408 Ohno, T. et al. Molecular composition and biodegradability of soil organic matter: a case study comparing two new England forest types. Environmental science & technology 48, 7229-7236 (2014).
409 Liu, T.-Z., Liu, C.-Q., Lang, Y.-C. & Ding, H. Dissolved organic carbon and its carbon isotope compositions in hill slope soils of the karst area of southwest China: Implications for carbon dynamics in limestone soil. Geochemical Journal 48, 277-285 (2014).
410 Liu, D., Ding, W., Yuan, J., Xiang, J. & Lin, Y. Substrate and/or substrate-driven changes in the abundance of methanogenic archaea cause seasonal variation of methane production potential in species-specific freshwater wetlands. Applied microbiology and biotechnology 98, 4711-4721 (2014).
411 He, D. & Ruan, H. Long term effect of land reclamation from lake on chemical composition of soil organic matter and its mineralization. Plos one 9, e99251 (2014).
412 Gao, J., Zhang, X., Lei, G. & Wang, G. Soil organic carbon and its fractions in relation to degradation and restoration of wetlands on the Zoigê Plateau, China. Wetlands 34, 235-241 (2014).
413 Franchini, A. G., Erny, I. & Zeyer, J. Spatial variability of methane emissions from Swiss alpine fens. Wetlands ecology and management 22, 383-397 (2014).
414 Fink, J. R. et al. Chemical and mineralogical changes in a Brazilian Rhodic Paleudult under different land use and managements. Revista Brasileira de Ciência do Solo 38, 1304-1314 (2014).
415 Ding, Y., Cawley, K. M., Da Cunha, C. N. & Jaffé, R. Environmental dynamics of dissolved black carbon in wetlands. Biogeochemistry 119, 259-273 (2014).
416 Lim Kim Choo, L. N. & Ahmed, O. H. Partitioning carbon dioxide emission and assessing dissolved organic carbon leaching of a drained peatland cultivated with pineapple at Saratok, Malaysia. The Scientific World Journal 2014, 906021 (2014).
417 Bhadha, J. H., Lang, T. A. & Daroub, S. H. Seasonal delivery of organic matter and metals to farm canals: effect on sediment phosphorus storage capacity. Journal of soils and sediments 14, 991-1003 (2014).
418 Xu, J., Yang, S., Peng, S., Wei, Q. & Gao, X. Solubility and leaching risks of organic carbon in paddy soils as affected by irrigation managements. The Scientific World Journal 2013, 546750 (2013).
419 Wei, S. & Twardowska, I. Main rhizosphere characteristics of the Cd hyperaccumulator Rorippa globosa (Turcz.) Thell. Plant and soil 372, 669-681 (2013).
420 Wang, F. et al. Seedling growth and soil nutrient availability in exotic and native tree species: implications for afforestation in southern China. Plant and Soil 364, 207-218 (2013).
421 Salek-Gilani, S., Raiesi, F., Tahmasebi, P. & Ghorbani, N. Soil organic matter in restored rangelands following cessation of rainfed cropping in a mountainous semi-arid landscape. Nutrient cycling in agroecosystems 96, 215-232 (2013).
422 Marañón-Jiménez, S. & Castro, J. Effect of decomposing post-fire coarse woody debris on soil

fertility and nutrient availability in a Mediterranean ecosystem. Biogeochemistry 112, 519-535 (2013).
423 Knorr, K.-H. DOC-dynamics in a small headwater catchment as driven by redox fluctuations and hydrological flow paths–are DOC exports mediated by iron reduction/oxidation cycles? Biogeosciences 10, 891-904 (2013).
424 Huang, W. et al. Dissolved organic carbon in headwater streams and riparian soil organic carbon along an altitudinal gradient in the Wuyi Mountains, China. PLoS One 8, e78973 (2013).
425 Farrell, M. et al. Oligopeptides represent a preferred source of organic N uptake: a global phenomenon? Ecosystems 16, 133-145 (2013).
426 De Marco, A., Arena, C., Giordano, M. & Virzo De Santo, A. Impact of the invasive tree black locust on soil properties of Mediterranean stone pine-holm oak forests. Plant and soil 372, 473-486 (2013).
427 Bolan, N., Kunhikrishnan, A. & Gibbs, J. Rhizoreduction of arsenate and chromate in Australian native grass, shrub and tree vegetation. Plant and soil 367, 615-625 (2013).
428 Bi, R., Lu, Q., Yu, W., Yuan, Y. & Zhou, S. Electron transfer capacity of soil dissolved organic matter and its potential impact on soil respiration. Journal of Soils and Sediments 13, 1553-1560 (2013).
429 Bhattacharyya, P. et al. Net ecosystem CO 2 exchange and carbon cycling in tropical lowland flooded rice ecosystem. Nutrient cycling in agroecosystems 95, 133-144 (2013).
430 Yang, Y. et al. Dissolved organic carbon in association with water soluble nutrients and metals in soils from Lake Okeechobee Watershed, South Florida. Water, Air, & Soil Pollution 223, 4075-4088 (2012).
431 Wang, A. et al. Abundance and composition dynamics of soil ammonia-oxidizing archaea in an alpine fir forest on the eastern Tibetan Plateau of China. Canadian Journal of Microbiology 58, 572-580 (2012).
432 Qi, Y. et al. Effects of a conversion from grassland to cropland on the different soil organic carbon fractions in Inner Mongolia, China. Journal of Geographical Sciences 22, 315-328 (2012).
433 Liebner, S., Schwarzenbach, S. P. & Zeyer, J. Methane emissions from an alpine fen in central Switzerland. Biogeochemistry 109, 287-299 (2012).
434 Hossain, M. et al. Spatial heterogeneity and kinetic regulation of arsenic dynamics in mangrove sediments: the Sundarbans, Bangladesh. Environmental science & technology 46, 8645-8652 (2012).
435 Ginzburg, O. & Steinberger, Y. Effects of forest wildfire on soil microbial-community activity and chemical components on a temporal-seasonal scale. Plant and soil 360, 243-257 (2012).
436 Fasching, C. & Battin, T. J. Exposure of dissolved organic matter to UV-radiation increases bacterial growth efficiency in a clear-water Alpine stream and its adjacent groundwater. Aquatic Sciences 74, 143-153 (2012).
437 Tu, C.-L., Liu, C.-Q., Lu, X.-H., Yuan, J. & Lang, Y.-C. Sources of dissolved organic carbon in forest soils: evidences from the differences of organic carbon concentration and isotope composition studies. Environmental Earth Sciences 63, 723-730 (2011).
438 Senga, Y. et al. Vertical profiles of DIN, DOC, and microbial activities in the wetland soil of Kushiro Mire, northeastern Japan. Limnology 12, 17-23 (2011).
439 Löfgren, S. et al. Recovery of soil water, groundwater, and streamwater from acidification at the

Swedish Integrated Monitoring catchments. Ambio 40, 836-856 (2011).
440 Liu, D., Ding, W., Jia, Z. & Cai, Z. Relation between methanogenic archaea and methane production potential in selected natural wetland ecosystems across China. Biogeosciences 8, 329-338 (2011).
441 Kunhikrishnan, A., Bolan, N. S. & Naidu, R. Phytoavailability of copper in the presence of recycled water sources. Plant and soil 348, 425-438 (2011).
442 Hur, J. Microbial changes in selected operational descriptors of dissolved organic matters from various sources in a watershed. Water, Air, & Soil Pollution 215, 465-476 (2011).
443 Groffman, P. M. et al. Snow depth, soil freezing and nitrogen cycling in a northern hardwood forest landscape. Biogeochemistry 102, 223-238 (2011).
444 Bárcenas-Moreno, G., García-Orenes, F., Mataix-Solera, J., Mataix-Beneyto, J. & Bååth, E. Soil microbial recolonisation after a fire in a Mediterranean forest. Biology and Fertility of soils 47, 261-272 (2011).
445 Yu, X., Zhang, Y., Zhao, H., Lu, X. & Wang, G. Freeze-thaw effects on sorption/desorption of dissolved organic carbon in wetland soils. Chinese Geographical Science 20, 209-217 (2010).
446 Wu, Y., Clarke, N. & Mulder, J. Dissolved organic nitrogen concentrations and ratios of dissolved organic carbon to dissolved organic nitrogen in throughfall and soil waters in Norway spruce and Scots pine forest stands throughout Norway. Water, Air, & Soil Pollution 210, 171-186 (2010).
447 Tejnecký, V. et al. Seasonal variation of water extractable aluminium forms in acidified forest organic soils under different vegetation cover. Biogeochemistry 101, 151-163 (2010).
448 Schmidt, B. H., Wang, C.-P., Chang, S.-C. & Matzner, E. High precipitation causes large fluxes of dissolved organic carbon and nitrogen in a subtropical montane Chamaecyparis forest in Taiwan. Biogeochemistry 101, 243-256 (2010).
449 Roux-Michollet, D., Dudal, Y., Jocteur-Monrozier, L. & Czarnes, S. Steam treatment of surface soil: how does it affect water-soluble organic matter, C mineralization, and bacterial community composition? Biology and fertility of soils 46, 607-616 (2010).
450 Oyanagi, N. & Nakata, M. Dynamics of dissolved ions in the soil of abandoned terraced paddy fields in Sado Island, Japan. Paddy and Water Environment 8, 121-129 (2010).
451 Cloutier-Hurteau, B., Turmel, M.-C., Sauvé, S. & Courchesne, F. The speciation of water-soluble Al and Zn in the rhizosphere of forest soils. Journal of Environmental Monitoring 12, 1274-1286 (2010).
452 Chu, H. & Grogan, P. Soil microbial biomass, nutrient availability and nitrogen mineralization potential among vegetation-types in a low arctic tundra landscape. Plant and soil 329, 411-420 (2010).
453 Chen, D., Zhang, Y., Lin, Y., Zhu, W. & Fu, S. Changes in belowground carbon in Acacia crassicarpa and Eucalyptus urophylla plantations after tree girdling. Plant and Soil 326, 123-135 (2010).
454 Zaccone, C., D'Orazio, V., Shotyk, W. & Miano, T. M. Chemical and spectroscopic investigation of porewater and aqueous extracts of corresponding peat samples throughout a bog core (Jura Mountains, Switzerland). Journal of Soils and Sediments 9, 443-456 (2009).
455 Xu, X. & Kazuyuki, I. Soil acidification stimulates the emission of ethylene from temperate forest soils. Advances in Atmospheric Sciences 26, 1253-1261 (2009).
456 Stutter, M. I., Langan, S. J. & Lumsdon, D. G. Vegetated buffer strips can lead to increased

release of phosphorus to waters: a biogeochemical assessment of the mechanisms. Environmental science & technology 43, 1858-1863 (2009).

457 Sleutel, S. et al. Patterns of dissolved organic carbon and nitrogen fluxes in deciduous and coniferous forests under historic high nitrogen deposition. Biogeosciences 6, 2743-2758 (2009).

458 Roberts, P., Newsham, K. K., Bardgett, R. D., Farrar, J. F. & Jones, D. L. Vegetation cover regulates the quantity, quality and temporal dynamics of dissolved organic carbon and nitrogen in Antarctic soils. Polar Biology 32, 999-1008 (2009).

459 Fujii, K., Funakawa, S., Hayakawa, C., Sukartiningsih & Kosaki, T. Quantification of proton budgets in soils of cropland and adjacent forest in Thailand and Indonesia. Plant and Soil 316, 241-255 (2009).

460 Aanderud, Z. T. & Richards, J. H. Hydraulic redistribution may stimulate decomposition. Biogeochemistry 95, 323-333 (2009).

461 Prokushkin, A., Tokareva, I., Prokushkin, S., Abaimov, A. & Guggenberger, H. Fluxes of dissolved organic matter in larch forests in the cryolithozone of central Siberia. Russian Journal of Ecology 39, 151-159 (2008).

462 Menyailo, O. The effect of afforestation on mineralization of soil organic matter. Russian Journal of Ecology 39, 21-25 (2008).

463 Fiedler, S. et al. Particulate organic carbon (POC) in relation to other pore water carbon fractions in drained and rewetted fens in Southern Germany. Biogeosciences 5, 1615-1623 (2008).

464 Fellman, J. B., D'Amore, D. V., Hood, E. & Boone, R. D. Fluorescence characteristics and biodegradability of dissolved organic matter in forest and wetland soils from coastal temperate watersheds in southeast Alaska. Biogeochemistry 88, 169-184 (2008).

465 Åkerblom, S. et al. Partitioning of Hg between solid and dissolved organic matter in the humus layer of boreal forests. Water, air, and soil pollution 189, 239-252 (2008).

466 Zambrosi, F. C. B., Alleoni, L. R. F. & Caires, E. F. Nutrient concentration in soil water extracts and soybean nutrition in response to lime and gypsum applications to an acid Oxisol under no-till system. Nutrient Cycling in Agroecosystems 79, 169-179 (2007).

467 Zalamea, M., González, G., Ping, C.-L. & Michaelson, G. Soil organic matter dynamics under decaying wood in a subtropical wet forest: effect of tree species and decay stage. Plant and Soil 296, 173-185 (2007).

468 Wickland, K. P., Neff, J. C. & Aiken, G. R. Dissolved organic carbon in Alaskan boreal forest: Sources, chemical characteristics, and biodegradability. Ecosystems 10, 1323-1340 (2007).

469 Ward, S. E., Bardgett, R. D., McNamara, N. P., Adamson, J. K. & Ostle, N. J. Long-term consequences of grazing and burning on northern peatland carbon dynamics. Ecosystems 10, 1069-1083 (2007).

470 Vink, S., Ford, P., Bormans, M., Kelly, C. & Turley, C. Contrasting nutrient exports from a forested and an agricultural catchment in south-eastern Australia. Biogeochemistry 84, 247-264 (2007).

471 Peichl, M. et al. Concentrations and fluxes of dissolved organic carbon in an age-sequence of white pine forests in Southern Ontario, Canada. Biogeochemistry 86, 1-17 (2007).

472 Park, J.-H., Day, T. A., Strauss, S. & Ruhland, C. T. Biogeochemical pools and fluxes of carbon and nitrogen in a maritime tundra near penguin colonies along the Antarctic Peninsula. Polar Biology 30, 199-207 (2007).

473 Pampura, T., Groenenberg, J., Lofts, S. & Priputina, I. Validation of transfer functions predicting Cd and Pb free metal ion activity in soil solution as a function of soil characteristics and reactive metal content. Water, air, and soil pollution 184, 217-234 (2007).
474 Ngao, J., Longdoz, B., Granier, A. & Epron, D. Estimation of autotrophic and heterotrophic components of soil respiration by trenching is sensitive to corrections for root decomposition and changes in soil water content. Plant and soil 301, 99-110 (2007).
475 Montaño, N. M., García-Oliva, F. & Jaramillo, V. J. Dissolved organic carbon affects soil microbial activity and nitrogen dynamics in a Mexican tropical deciduous forest. Plant and Soil 295, 265-277 (2007).
476 McGee, G. G., Mitchell, M. J., Leopold, D. J. & Raynal, D. J. Comparison of soil nutrient fluxes from tree-fall gap zones of an old-growth northern hardwood forest1. The Journal of the Torrey Botanical Society 134, 269-280 (2007).
477 Giesler, R. et al. Production of dissolved organic carbon and low-molecular weight organic acids in soil solution driven by recent tree photosynthate. Biogeochemistry 84, 1-12 (2007).
478 Vinther, F. P., Hansen, E. M. & Eriksen, J. Leaching of soil organic carbon and nitrogen in sandy soils after cultivating grass-clover swards. Biology and Fertility of Soils 43, 12-19 (2006).
479 Tao, S., Xu, F., Liu, W., Cui, Y. & Coveney, R. M. A chemical extraction method for mimicking bioavailability of polycyclic aromatic hydrocarbons to wheat grown in soils containing various amounts of organic matter. Environmental science & technology 40, 2219-2224 (2006).
480 Marchand, C., Albéric, P., Lallier-Vergès, E. & Baltzer, F. Distribution and characteristics of dissolved organic matter in mangrove sediment pore waters along the coastline of French Guiana. Biogeochemistry 81, 59-75 (2006).
481 Lee, R. Y. & Joye, S. B. Seasonal patterns of nitrogen fixation and denitrification in oceanic mangrove habitats. Marine Ecology Progress Series 307, 127-141 (2006).
482 Jones, D. L. & Willett, V. B. Experimental evaluation of methods to quantify dissolved organic nitrogen (DON) and dissolved organic carbon (DOC) in soil. Soil Biology and biochemistry 38, 991-999 (2006).
483 Fröberg, M., Berggren, D., Bergkvist, B., Bryant, C. & Mulder, J. Concentration and fluxes of dissolved organic carbon (DOC) in three Norway spruce stands along a climatic gradient in Sweden. Biogeochemistry 77, 1-23 (2006).
484 Brenner, R. E., Boone, R. D., Jones, J. B., Lajtha, K. & Ruess, R. W. Successional and physical controls on the retention of nitrogen in an undisturbed boreal forest ecosystem. Oecologia 148, 602-611 (2006).
485 Asano, Y., Compton, J. E. & Church, M. R. Hydrologic flowpaths influence inorganic and organic nutrient leaching in a forest soil. Biogeochemistry 81, 191-204 (2006).
486 Aitkenhead-Peterson, J. A. et al. Linking foliar chemistry to forest floor solid and solution phase organic C and N in Picea abies [L.] Karst stands in northern Bohemia. Plant and soil 283, 187-201 (2006).
487 Weintraub, M. N. & Schimel, J. P. The seasonal dynamics of amino acids and other nutrients in Alaskan Arctic tundra soils. Biogeochemistry 73, 359-380 (2005).
488 Schwendenmann, L. & Veldkamp, E. The role of dissolved organic carbon, dissolved organic nitrogen, and dissolved inorganic nitrogen in a tropical wet forest ecosystem. Ecosystems 8, 339-351 (2005).
489 Schulze, W. X. et al. A proteomic fingerprint of dissolved organic carbon and of soil particles.

Oecologia 142, 335-343 (2005).
490 Opsahl, S. P. Organic carbon composition and oxygen metabolism across a gradient of seasonally inundated limesink and riparian wetlands in the southeast Coastal Plain, USA. Biogeochemistry 76, 47-68 (2005).
491 Kaiser, K. & Guggenberger, G. Dissolved organic sulphur in soil water under Pinus sylvestris L. and Fagus sylvatica L. stands in northeastern Bavaria, Germany variations with seasons and soil depth. Biogeochemistry 72, 337-364 (2005).
492 Fröberg, M., Kleja, D. B., Bergkvist, B., Tipping, E. & Mulder, J. Dissolved organic carbon leaching from a coniferous forest floor--a field manipulation experiment. Biogeochemistry 75, 271-287 (2005).
493 Fang, C. & Moncrieff, J. B. The variation of soil microbial respiration with depth in relation to soil carbon composition. Plant and Soil 268, 243-253 (2005).
494 Lu, Y., Watanabe, A. & Kimura, M. Contribution of plant photosynthates to dissolved organic carbon in a flooded rice soil. Biogeochemistry 71, 1-15 (2004).
495 Cory, R., Green, S. & Pregitzer, K. Dissolved organic matter concentration and composition in the forests and streams of Olympic National Park, WA. Biogeochemistry 67, 269-288 (2004).
496 Ciglasch, H., Lilienfein, J., Kaiser, K. & Wilcke, W. Dissolved organic matter under native Cerrado and Pinus caribaea plantations in the Brazilian savanna. Biogeochemistry 67, 157-182 (2004).
497 Bohlen, P. J., Pelletier, D. M., Groffman, P. M., Fahey, T. J. & Fisk, M. C. Influence of earthworm invasion on redistribution and retention of soil carbon and nitrogen in northern temperate forests. Ecosystems 7, 13-27 (2004).
498 Lindroos, A.-J., Brügger, T., Derome, J. & Derome, K. The weathering of mineral soil by natural soil solutions. Water, Air, and Soil Pollution 149, 269-279 (2003).
499 Yu, Z. et al. Contribution of amino compounds to dissolved organic nitrogen in forest soils. Biogeochemistry 61, 173-198 (2002).
500 Ross, D. et al. Afforestation of pastures with Pinus radiata influences soil carbon and nitrogen pools and mineralisation and microbial properties. Soil Research 40, 1303-1318 (2002).
501 Qualls, R., Haines, B., Swank, W. & Tyler, S. Retention of soluble organic nutrients by a forested ecosystem. Biogeochemistry 61, 135-171 (2002).
502 Menyailo, O. V., Hungate, B. A. & Zech, W. Tree species mediated soil chemical changes in a Siberian artificial afforestation experiment. Plant and Soil 242, 171-182 (2002).
503 Jacinthe, P.-A., Dick, W. & Owens, L. Overwinter soil denitrification activity and mineral nitrogen pools as affected by management practices. Biology and fertility of soils 36, 1-9 (2002).
504 Solinger, S., Kalbitz, K. & Matzner, E. Controls on the dynamics of dissolved organic carbon and nitrogen in a Central European deciduous forest. Biogeochemistry 55, 327-349 (2001).
505 Ross, D. J., Scott, N. A., Tate, K. R., Rodda, N. J. & Townsend, J. A. Root effects on soil carbon and nitrogen cycling in a Pinus radiata D. Don plantation on a coastal sand. Soil Research 39, 1027-1039 (2001).
506 Fitzhugh, R. D. et al. Effects of soil freezing disturbance on soil solution nitrogen, phosphorus, and carbon chemistry in a northern hardwood ecosystem. Biogeochemistry 56, 215-238 (2001).
507 Zeller, V., Bahn, M., Aichner, M. & Tappeiner, U. Impact of land-use change on nitrogen mineralization in subalpine grasslands in the Southern Alps. Biology and Fertility of Soils 31,

441-448 (2000).
508 McDowell, W. H. Internal nutrient fluxes in a Puerto Rican rain forest. Journal of Tropical Ecology 14, 521-536 (1998).
509 Johnson, C. E., Driscoll, C. T., Siccama, T. G. & Likens, G. E. Element fluxes and landscape position in a northern hardwood forest watershed ecosystem. Ecosystems 3, 159-184 (2000).
510 Markewitz, D. & Richter, D. D. The bio in aluminum and silicon geochemistry. Biogeochemistry 42, 235-252 (1998).
511 Zabowski, D., Rygiewicz, P. & Skinner, M. Site disturbance effects on a clay soil under radiata pine: I. Soil solutions and clay mineral stability. Plant and soil 186, 343-351 (1996).
512 Dai, K. O. H., David, M. B. & Vance, G. F. Characterization of solid and dissolved carbon in a spruce-fir Spodosol. Biogeochemistry 35, 339-365 (1996).
513 Schaaf, W. Effects of Mg (OH) 2-fertilization on nutrient cycling in a heavily damaged Norway spruce ecosystem (NE Bavaria/FRG). Plant and Soil 168, 505-511 (1995).
514 贾韦德. Impacts of Different Land Uses on Carbon Fluxes from Subtropical Soils in Central China: Implications for Carbon Sequestration, 华中农业大学, (2009).
515 Zhao, R., He, M., Jiang, C. & Liu, F. Soil microbial stoichiometry and community structure responses to long-term natural forest conversion to plantations in a subtropical region. Environmental Science and Pollution Research 29, 27560-27570 (2022).
516 Zhang, L. et al. Alpine meadow degradation depresses soil nitrogen fixation by regulating plant functional groups and diazotrophic community composition. Plant and Soil, 1-17 (2022).
517 Yang, R. et al. The content, composition, and influencing factors of organic carbon in the sediments of two types of constructed wetlands. Environmental Science and Pollution Research 28, 49206-49219 (2021).
518 Yang, H., Xie, Y., Zhu, T. & Zhou, M. Reduced organic carbon content during the evolvement of calcareous soils in karst region. Forests 12, 221 (2021).
519 Xiao, Y., Huang, Z., Li, Y., Ling, Y. & Xiao, H. Dynamics variation of soil labile organic carbon fractions in different wetland types of dongting lake under seasonal water level fluctuation. Sustainability 13, 13836 (2021).
520 Shannon, V., Vanguelova, E., Morison, J., Shaw, L. & Clark, J. The contribution of deadwood to soil carbon dynamics in contrasting temperate forest ecosystems. European Journal of Forest Research 141, 241-252 (2022).
521 Na, M., Sun, X., Zhang, Y., Sun, Z. & Rousk, J. Higher stand densities can promote soil carbon storage after conversion of temperate mixed natural forests to larch plantations. European Journal of Forest Research 140, 373-386 (2021).
522 Lynn, T. M. et al. Effect of land use on soil properties, microbial abundance and diversity of four different crop lands in central Myanmar. 3 Biotech 11, 154 (2021).
523 Liu, T., Peng, D., Tan, Z., Guo, J. & Zhang, Y. Effects of stand density on soil respiration and labile organic carbon in different aged Larix principis-rupprechtii plantations. Ecological Processes 10, 1-15 (2021).
524 Liu, M., Li, P., Liu, M., Wang, J. & Chang, Q. The trend of soil organic carbon fractions related to the successions of different vegetation types on the tableland of the Loess Plateau of China. Journal of Soils and Sediments 21, 203-214 (2021).
525 Kurganova, I., Telesnina, V., Lopes de Gerenyu, V., Lichko, V. & Karavanova, E. The dynamics of carbon pools and biological activity of retic albic podzols in southern taiga during the

postagrogenic evolution. Eurasian Soil Science 54, 337-351 (2021).
526 Fan, S. et al. Variations in soil enzyme activities and microbial communities along an altitudinal gradient on the eastern Qinghai–Tibetan plateau. Forests 12, 681 (2021).
527 Čapek, P., Kasanke, C. P., Starke, R., Zhao, Q. & Tahovská, K. Biochemical inhibition of acid phosphatase activity in two mountain spruce forest soils. Biology and Fertility of Soils 57, 991-1005 (2021).
528 Xiao, S. et al. Soil organic carbon sequestration and active carbon component changes following different vegetation restoration ages on severely eroded red soils in subtropical China. Forests 11, 1304 (2020).
529 Xu, Z. et al. Plant functional traits determine latitudinal variations in soil microbial function: evidence from forests in China. Biogeosciences 16, 3333-3349 (2019).
530 Hui-Juan, X. et al. Relative importance of urban and non-urban land-use types for potential denitrification derived N2O: insights from a regional study. Earth and Environmental Science Transactions of the Royal Society of Edinburgh 109, 453-460 (2018).
531 Sokołowska, J., Józefowska, A., Woźnica, K. & Zaleski, T. Interrelationship between soil depth and soil properties of Pieniny National Park forest (Poland). Journal of Mountain Science 16, 1534-1545 (2019).
532 Gerzabek, M. H. et al. Agriculture changes soil properties on the Galápagos Islands–two case studies. Soil Research 57, 201-214 (2019).
533 Wei, H. et al. Variation in soil methane fluxes and comparison between two forests in China. Forests 9, 204 (2018).
534 Huo, L. et al. Effect of wetland reclamation on soil organic carbon stability in peat mire soil around Xingkai Lake in Northeast China. Chinese Geographical Science 28, 325-336 (2018).
535 Jiang, Q., Xu, Z., Hao, Y. & Dong, H. Dynamics of soil labile carbon and nitrogen pools in riparian zone of Wyaralong Dam in Southeast Queensland, Australia. Journal of Soils and Sediments 17, 1030-1044 (2017).
536 Che, R. et al. Increase in ammonia-oxidizing microbe abundance during degradation of alpine meadows may lead to greater soil nitrogen loss. Biogeochemistry 136, 341-352 (2017).
537 Bonnett, S. A. F., Maltby, E. & Freeman, C. Hydrological legacy determines the type of enzyme inhibition in a peatlands chronosequence. Scientific Reports 7, 9948 (2017).
538 Song, H. et al. Changing roles of ammonia-oxidizing bacteria and archaea in a continuously acidifying soil caused by over-fertilization with nitrogen. Environmental Science and Pollution Research 23, 11964-11974 (2016).
539 Gao, S.-J. et al. Spectroscopic characteristics of dissolved organic matter in afforestation forest soil of Miyun District, Beijing. Journal of analytical methods in chemistry 2016, 1480857 (2016).
540 Jia, G.-M., Zhang, B.-L., Niu, J.-T., Wang, L.-M. & Chen, F.-Q. Soil labile organic carbon fractions in rhizosphere soil in citrus plantations in the Three Gorges Reservoir Area. Agroforestry systems 89, 1097-1105 (2015).
541 Cusack, D. F., Lee, J. K., McCleery, T. L. & LeCroy, C. S. Exotic grasses and nitrate enrichment alter soil carbon cycling along an urban–rural tropical forest gradient. Global change biology 21, 4481-4496 (2015).
542 Wang, Q., Xiao, F., Zhang, F. & Wang, S. Labile soil organic carbon and microbial activity in three subtropical plantations. Forestry 86, 569-574 (2013).

543 Almagro, M., Querejeta, J. I., Boix-Fayos, C. & Martínez-Mena, M. Links between vegetation patterns, soil C and N pools and respiration rate under three different land uses in a dry Mediterranean ecosystem. Journal of Soils and Sediments 13, 641-653 (2013).
544 Song, Y. et al. Changes in labile organic carbon fractions and soil enzyme activities after marshland reclamation and restoration in the Sanjiang Plain in Northeast China. Environmental management 50, 418-426 (2012).
545 Potthast, K., Hamer, U. & Makeschin, F. Land-use change in a tropical mountain rainforest region of southern Ecuador affects soil microorganisms and nutrient cycling. Biogeochemistry 111, 151-167 (2012).
546 Zhang, G. Changes of soil labile organic carbon in different land uses in Sanjiang Plain, Heilongjiang Province. Chinese Geographical Science 20, 139-143 (2010).
547 Schütz, K., Kandeler, E., Nagel, P., Scheu, S. & Ruess, L. Functional microbial community response to nutrient pulses by artificial groundwater recharge practice in surface soils and subsoils. FEMS microbiology ecology 72, 445-455 (2010).
548 Bárta, J., Melichová, T., Vaněk, D., Picek, T. & Šantrůčková, H. Effect of pH and dissolved organic matter on the abundance of nirK and nirS denitrifiers in spruce forest soil. Biogeochemistry 101, 123-132 (2010).
549 Montaño, N. M., Sandoval-Pérez, A. L., García-Oliva, F., Larsen, J. & Gavito, M. E. Microbial activity in contrasting conditions of soil C and N availability in a tropical dry forest. Journal of tropical ecology 25, 401-413 (2009).
550 Zou, J. & Osborne, B. Spatially related sampling uncertainty in the assessment of labile soil carbon and nitrogen in an Irish forest plantation. Applied Sciences 11, 2139 (2021).
551 Zhang, X. et al. Soil profile rather than reclamation time drives the mudflat soil microbial community in the wheat-maize rotation system of Nantong, China. Journal of Soils and Sediments 21, 1672-1687 (2021).
552 Zhang, W. et al. Soil water content, carbon, and nitrogen determine the abundances of methanogens, methanotrophs, and methane emission in the Zoige alpine wetland. Journal of Soils and Sediments, 1-12 (2022).
553 Wan Mohd Zamri, W. M. I. et al. Assessment of Aqueous Extraction Methods on Extractable Organic Matter and Hydrophobic/Hydrophilic Fractions of Virgin Forest Soils. Molecules 26, 2480 (2021).
554 Yao, L. et al. Variations of soil organic matters and plant cuticular waxes along an altitude gradient in Qinghai-Tibet Plateau. Plant and Soil 458, 41-58 (2021).
555 Xu, J., Han, C., Jiang, Y. & Zhong, W. Spatial distribution and co-occurrence of aerobic ammonia oxidation and anaerobic ammonium oxidation activities in the water-soil interface, bulk, and rhizosphere regions of paddy soil. Plant and Soil 466, 557-568 (2021).
556 Škerlep, M. et al. Spruce forest afforestation leading to increased Fe mobilization from soils. Biogeochemistry, 1-18 (2022).
557 Rupp, H., Tauchnitz, N. & Meissner, R. The effects of soil drying out and rewetting on nitrogen and carbon leaching—results of a long-term lysimeter experiment. Water 13, 2601 (2021).
558 Kupka, D., Kania, M. & Gruba, P. The proximity of a highway increases CO2 respiration in forest soil and decreases the stability of soil organic matter. Scientific Reports 11, 21605 (2021).
559 Jeong, Y.-J. et al. Land use types with different fertilization management affected isotope ratios of bulk and water-extractable C and N of soils in an intensive agricultural area. Journal of Soils

and Sediments, 1-14 (2022).
560 Freppaz, M. et al. Characterization of organic-rich mineral debris revealed by rapid glacier retreat, Indren Glacier, European Alps. Journal of Mountain Science 18, 1521-1536 (2021).
561 Farrell, M. & Prober, S. M. Keystone perennial grassland species control soil nitrogen flows. Ecosystems 24, 1500-1515 (2021).
562 Chibuike, G., Burkitt, L., Bretherton, M., Singh, R. & Bishop, P. Dissolved organic carbon concentration and denitrification capacity of a New Zealand hill country soil after forage crop establishment. Earth Systems and Environment 5, 419-432 (2021).
563 Álvarez-López, V. et al. Evidence for nickel mobilisation in rhizosphere soils of Ni hyperaccumulator Odontarrhena serpyllifolia. Plant and Soil 464, 89-107 (2021).
564 Zhao, D. et al. Effects of contemporary land use types and conversions from wetland to paddy field or dry land on soil organic carbon fractions. Sustainability 12, 2094 (2020).
565 Wu, X. et al. Soil organic matter dynamics as affected by land use change from rice paddy to wetland. Wetlands 40, 2199-2207 (2020).
566 Wasak, K., Klimek, B. & Drewnik, M. Rapid effects of windfall on soil microbial activity and substrate utilization patterns in the forest belt in the Tatra Mountains. Journal of Soils and Sediments 20, 801-815 (2020).
567 Maslov, M. N. & Maslova, O. A. Temperate peatlands use-management effects on seasonal patterns of soil microbial activity and nitrogen availability. Catena 190, 104548 (2020).
568 McMillan, R., Quideau, S., MacKenzie, M. & Biryukova, O. Nitrogen mineralization and microbial activity in oil sands reclaimed boreal forest soils. Journal of environmental quality 36, 1470-1478 (2007).
569 Sackett, T. E., Smith, S. M. & Basiliko, N. Indirect and direct effects of exotic earthworms on soil nutrient and carbon pools in North American temperate forests. Soil Biology and Biochemistry 57, 459-467 (2013).
570 Zhang, L. et al. Infrared spectroscopy estimation methods for water-dissolved carbon and amino sugars in diverse Canadian agricultural soils. Canadian Journal of Soil Science 98, 484-499 (2018).
571 Moore, T. Dissolved organic carbon in a northern boreal landscape. Global Biogeochemical Cycles 17 (2003).
572 Lim, S.-S. et al. Soil organic carbon stocks in three Canadian agroforestry systems: From surface organic to deeper mineral soils. Forest ecology and management 417, 103-109 (2018).
573 Diochon, A., Gregorich, E. & Tarnocai, C. Evaluating the quantity and biodegradability of soil organic matter in some Canadian Turbic Cryosols. Geoderma 202, 82-87 (2013).
574 Oiffer, L. & Siciliano, S. D. Methyl mercury production and loss in Arctic soil. Science of the total environment 407, 1691-1700 (2009).
575 Löfgren, S. & Zetterberg, T. Decreased DOC concentrations in soil water in forested areas in southern Sweden during 1987–2008. Science of the Total Environment 409, 1916-1926 (2011).
576 Kerr, J. G. & Eimers, M. C. Decreasing soil water Ca2+ reduces DOC adsorption in mineral soils: Implications for long-term DOC trends in an upland forested catchment in southern Ontario, Canada. Science of the Total Environment 427, 298-307 (2012).
577 Ulanowski, T. & Branfireun, B. Small-scale variability in peatland pore-water biogeochemistry, Hudson Bay Lowland, Canada. Science of the Total Environment 454, 211-218 (2013).
578 Edwards, K. A. & Jefferies, R. L. Inter-annual and seasonal dynamics of soil microbial biomass

and nutrients in wet and dry low-Arctic sedge meadows. Soil Biology and Biochemistry 57, 83-90 (2013).
579 Xu, W. et al. Deepened snow enhances gross nitrogen cycling among Pan-Arctic tundra soils during both winter and summer. Soil Biology and Biochemistry 160, 108356 (2021).
580 Enanga, E., Creed, I., Casson, N. & Beall, F. Summer storms trigger soil N2O efflux episodes in forested catchments. Journal of Geophysical Research: Biogeosciences 121, 95-108 (2016).
581 Ota, M. et al. Could cryoturbic diapirs be key for understanding ecological feedbacks to climate change in high arctic polar deserts? Journal of Geophysical Research: Biogeosciences 125, e2019JG005263 (2020).
582 Vogt, J., Wu, J., Altdorff, D., Le, T. B. & Gong, Y. Nitrous oxide fluxes of a boreal abandoned pasture do not significantly differ from an adjacent natural bog despite distinct environmental conditions. Science of The Total Environment 714, 136648 (2020).
583 Dinsmore, K. J., Skiba, U. M., Billett, M. F., Rees, R. M. & Drewer, J. Spatial and temporal variability in CH4 and N2O fluxes from a Scottish ombrotrophic peatland: Implications for modelling and up-scaling. Soil Biology and Biochemistry 41, 1315-1323 (2009).
584 Van Eynde, E. et al. Soil zinc fertilisation does not increase maize yields but improves nutritional quality. (2022).
585 Chaplot, V. & Cooper, M. Soil aggregate stability to predict organic carbon outputs from soils. Geoderma 243, 205-213 (2015).
586 Yang, N., Zou, D., Yang, M. & Lin, Z. Variations in soil microbial biomass carbon and soil dissolved organic carbon in the re-vegetation of hilly slopes with purple soil. PLoS One 11, e0166536 (2016).
587 Shao, X., Yang, W. & Wu, M. Seasonal dynamics of soil labile organic carbon and enzyme activities in relation to vegetation types in Hangzhou Bay tidal flat wetland. PLoS One 10, e0142677 (2015).
588 Fujii, K., Hartono, A., Funakawa, S., Uemura, M. & Kosaki, T. Fluxes of dissolved organic carbon in three tropical secondary forests developed on serpentine and mudstone. Geoderma 163, 119-126 (2011).
589 Saunders, T. J., McClain, M. E. & Llerena, C. A. The biogeochemistry of dissolved nitrogen, phosphorus, and organic carbon along terrestrial-aquatic flowpaths of a montane headwater catchment in the Peruvian Amazon. Hydrological Processes: An International Journal 20, 2549-2562 (2006).
590 Wu, H. et al. Modeling dissolved organic carbon in temperate forest soils: TRIPLEX-DOC model development and validation. Geoscientific Model Development 7, 867-881 (2014).
591 Mchunu, C. & Chaplot, V. Land degradation impact on soil carbon losses through water erosion and CO2 emissions. Geoderma 177, 72-79 (2012).
592 Wolka, K., Biazin, B., Martinsen, V. & Mulder, J. Soil organic carbon and associated soil properties in Enset (Ensete ventricosum Welw. Cheesman)-based homegardens in Ethiopia. Soil and Tillage Research 205, 104791 (2021).
593 Martinez-Mena, M., Lopez, J., Almagro, M., Boix-Fayos, C. & Albaladejo, J. Effect of water erosion and cultivation on the soil carbon stock in a semiarid area of South-East Spain. Soil and Tillage Research 99, 119-129 (2008).
594 Qiu, S. et al. Changes in soil carbon and nitrogen pools after shifting from conventional cereal to greenhouse vegetable production. Soil and Tillage Research 107, 80-87 (2010).

595 Rizinjirabake, F., Tenenbaum, D. E. & Pilesjö, P. Sources of soil dissolved organic carbon in a mixed agricultural and forested watershed in Rwanda. Catena 181, 104085 (2019).
596 Cacace, C. et al. Effects of different pioneer and exotic species on the changes of degraded soils. Scientific Reports 12, 18548 (2022).
597 Xu, X., Miao, H. & Chen, Z. The vertical distribution and their relationship of dissolved organic carbon and exchangeable metals in Chinese old-growth forest soils. African Journal of Agricultural Research 6, 998-1008 (2011).
598 Brucker, E., Kernchen, S. & Spohn, M. Release of phosphorus and silicon from minerals by soil microorganisms depends on the availability of organic carbon. Soil Biology and Biochemistry 143, 107737 (2020).
599 Ciganda, V. S. et al. Soil nitrous oxide emissions from grassland: Potential inhibitor effect of hippuric acid. Journal of Plant Nutrition and Soil Science 182, 40-47 (2019).
600 Ge, P., Da, L., Wang, W. & Xu, X. Seasonal dynamics of dissolved organic carbon, nitrogen and other nutrients in soil of Pinus massoniana stands after pine wilt disease disturbance. Journal of soil science and plant nutrition 14, 75-87 (2014).
601 Undurraga, P., Zagal, E., Sepúlveda, G. & Valderrama, N. Dissolved organic carbon and nitrogen in Andisol for six crop rotations with different soil management intensity. Chilean Journal of Agricultural Research 69, 445-454 (2009).
602 Gangloff, S., Stille, P., Pierret, M.-C., Weber, T. & Chabaux, F. Characterization and evolution of dissolved organic matter in acidic forest soil and its impact on the mobility of major and trace elements (case of the Strengbach watershed). Geochimica et Cosmochimica Acta 130, 21-41 (2014).
603 Oporto, C., Vandecasteele, C. & Smolders, E. Elevated cadmium concentrations in potato tubers due to irrigation with river water contaminated by mining in Potosí, Bolivia. Journal of environmental quality 36, 1181-1186 (2007).
604 Couic, E. et al. The impact of ecological restoration on biogeochemical cycling and mercury mobilization in anoxic conditions on former mining sites in French Guiana. Microorganisms 9, 1702 (2021).
605 Parsapour, M. K., Kooch, Y., Hosseini, S. M. & Alavi, S. J. Litter and topsoil in Alnus subcordata plantation on former degraded natural forest land: a synthesis of age-sequence. Soil and Tillage Research 179, 1-10 (2018).
606 Dittman, J. A., Driscoll, C. T., Groffman, P. M. & Fahey, T. J. Dynamics of nitrogen and dissolved organic carbon at the Hubbard Brook Experimental Forest. Ecology 88, 1153-1166 (2007).
607 Rhoades, C. C. Soil Nitrogen Leaching in Logged Beetle-Killed Forests and Implications for Riparian Fuel Reduction. Journal of Environmental Quality 48, 305-313 (2019).
608 Rinklebe, J., Shaheen, S. M. & Yu, K. Release of As, Ba, Cd, Cu, Pb, and Sr under pre-definite redox conditions in different rice paddy soils originating from the USA and Asia. Geoderma 270, 21-32 (2016).
609 Schwaner, G. W. & Kelly, C. N. American chestnut soil carbon and nitrogen dynamics: Implications for ecosystem response following restoration. Pedobiologia 75, 24-33 (2019).
610 Patel, K. F. et al. Soil carbon and nitrogen responses to snow removal and concrete frost in a northern coniferous forest. Canadian Journal of Soil Science 98, 436-447 (2018).
611 Norton, U. et al. Moisture pulses, trace gas emissions and soil C and N in cheatgrass and native

grass-dominated sagebrush-steppe in Wyoming, USA. Soil Biology and Biochemistry 40, 1421-1431 (2008).
612 Löfgren, S., Gustafsson, J. P. & Bringmark, L. Decreasing DOC trends in soil solution along the hillslopes at two IM sites in southern Sweden—Geochemical modeling of organic matter solubility during acidification recovery. Science of the Total Environment 409, 201-210 (2010).
613 Burns, K. N. et al. Vineyard soil bacterial diversity and composition revealed by 16S rRNA genes: differentiation by geographic features. Soil Biology and Biochemistry 91, 232-247 (2015).
614 Weintraub, M. N., Scott-Denton, L. E., Schmidt, S. K. & Monson, R. K. The effects of tree rhizodeposition on soil exoenzyme activity, dissolved organic carbon, and nutrient availability in a subalpine forest ecosystem. Oecologia 154, 327-338 (2007).
615 Chambers, L. G. et al. Biogeochemical effects of simulated sea level rise on carbon loss in an Everglades mangrove peat soil. Hydrobiologia 726, 195-211 (2014).
616 Pschenyckyj, C. M., Clark, J. M., Shaw, L. J., Griffiths, R. I. & Evans, C. D. Effects of acidity on dissolved organic carbon in organic soil extracts, pore water and surface litters. Science of the Total Environment 703, 135585 (2020).
617 Spears, J. D., Holub, S., Harmon, M. & Lajtha, K. The influence of decomposing logs on soil biology and nutrient cycling in an old-growth mixed coniferous forest in Oregon, USA. Canadian Journal of Forest Research 33, 2193-2201 (2003).
618 Zheng, J. et al. A long-term hybrid poplar plantation on cropland reduces soil organic carbon mineralization and shifts microbial community abundance and composition. Applied Soil Ecology 111, 94-104 (2017).
619 Zhao, M., Wang, M., Zhao, Y., Jiang, M. & Wang, G. Variations in concentration and carbon isotope composition of methanotroph biomarkers in sedge peatlands along the altitude gradient in the Changbai Mountain, China. Frontiers in Microbiology 13, 892430 (2022).
620 Wardinski, K. M. et al. Water-soluble organic matter from soils at the terrestrial-Aquatic interface in Wetland-dominated landscapes. Journal of Geophysical Research: Biogeosciences 127, e2022JG006994 (2022).
621 Wang, H., Wu, J., Li, G., Yan, L. & Wei, X. Effects of rainfall frequency on soil labile carbon fractions in a wet meadow on the Qinghai-Tibet Plateau. Journal of Soils and Sediments 22, 1489-1499 (2022).
622 Morgalev, S. Y. et al. Fractionation of organic C, nutrients, metals and bacteria in peat porewater and ice after freezing and thawing. Environmental Science and Pollution Research 30, 823-836 (2023).
623 Pintaldi, E. et al. Snowbed communities and soil C and N dynamics during a four-year investigation in the NW-Italian Alps. Arctic, Antarctic, and Alpine Research 54, 368-385 (2022).
624 Du, W., Wang, D., Wu, X., Zhao, L. & Zang, S. Effects of Forest Types on SOC and DOC in the Permafrost Region of the Daxing'anling Mountains. Processes 10, 1293 (2022).
625 Zhang, F. et al. Analysis of UV–VIS spectral characteristics and content estimation of soil DOM under mulching practices. Ecological Indicators 138, 108869 (2022).
626 Yang, Y. et al. Variations in the composition of tea leaves and soil microbial community. Biology and Fertility of Soils 58, 167-179 (2022).
627 Zhang, R. et al. Changes in the characteristics of soil dissolved organic matter over time since inter-planting with white clover (Trifolium repens L.) in apple orchards on the Loess Plateau in

China. Plant and Soil, 1-18 (2022).
628 Darusman, T., Murdiyarso, D., Impron, I., Chaniago, I. A. & Lestari, D. P. Carbon dynamics in rewetted tropical peat swamp forests. Climate 10, 35 (2022).
629 Aaltonen, H. et al. The effects of glucose addition and water table manipulation on peat quality of drained peatland forests with different management practices. Soil Science Society of America Journal 86, 1625-1638 (2022).
630 Xiang, F. et al. Black soldier fly larvae vermicompost alters soil biochemistry and bacterial community composition. Applied Microbiology and Biotechnology 106, 4315-4328 (2022).
631 Garc á, P. E., Mansilla Ferro, C. F. & Di éguez, M. C. Characterisation of dissolved organic matter from temperate wetlands: field dynamics and photoreactivity changes driven by natural inputs and diagenesis along the hydroperiod. New Zealand Journal of Marine and Freshwater Research 57, 480-494 (2023).
632 Xiong, X. et al. Carbon and nitrogen availability drives seasonal variation in soil microbial communities along an elevation gradient. Forests 13, 1657 (2022).
633 Xu, W., Elberling, B. & Ambus, P. L. Pyrogenic organic matter as a nitrogen source to microbes and plants following fire in an Arctic heath tundra. Soil Biology and Biochemistry 170, 108699 (2022).
634 Li, X. et al. Switchgrass cropping systems affect soil carbon and nitrogen and microbial diversity and activity on marginal lands. GCB Bioenergy 14(8), 918–940 (2022).
635 Gong, S. et al. Effect of stand age on the temporal dynamics of soil active carbon and nitrogen in Chinese cypress artificial forests. Soil Science and Plant Nutrition 68, 64-71 (2022).
636 Prijac, A., Gandois, L., Jeanneau, L., Taillardat, P. & Garneau, M. Dissolved organic matter concentration and composition discontinuity at the peat–pool interface in a boreal peatland. Biogeosciences 19, 4571-4588 (2022).
637 Moens, C., Dondeyne, S., Panagea, I. & Smolders, E. Depth profile of colloidal iron in the pore water of an Albic Podzol. European Journal of Soil Science 73, e13305 (2022).
638 Friedl, J. et al. Amplitude and frequency of wetting and drying cycles drive N2 and N2O emissions from a subtropical pasture. Biology and Fertility of Soils 58, 593-605 (2022).
639 Huang, W.-H., Lin, T.-C., Huang, C.-M., Chen, T.-C. & Yeh, Y.-L. Copper distribution and binding affinity of size-fractioned humic substances taken from paddy soil and correlation with optical characteristics. Agronomy 12, 1689 (2022).
640 Rindt, O. et al. Biogeochemical dynamics during snowmelt and in summer in the Alps. Biogeochemistry 162, 257-266 (2023).
641 Zhao, R., He, M. & Liu, F. Differential linkages between soil respiration components and microbial community structures under long-term forest conversion. Journal of Soils and Sediments 22, 1252-1262 (2022).
642 Li, H., Yang, Y., Crabbe, M. J. C. & Chen, H. The Characteristics of Dissolved Organic Matter and Soil Microbial Communities in the Soils of Larix principis-rupprechtii Mayr. Plantations in the Qinling Mountains, China. Sustainability 14, 11968 (2022).
643 Leogrande, R. et al. Reclaimed water use in agriculture: effects on soil chemical and biological properties in a long-term irrigated citrus farm. Agronomy 12, 1317 (2022).
644 Behnke, M., Fellman, J. B., D'Amore, D. V., Gomez, S. & Spencer, R. From canopy to consumer: what makes and modifies terrestrial DOM in a temperate forest. Biogeochemistry 164, 185-205 (2023).

645 Ricardo, S.-M. et al. Exploring dissolved organic carbon variations in a high elevation tropical peatland ecosystem: Cerro de la Muerte, Costa Rica. Frontiers in Water 3, 742780 (2022).
646 Eder, A. et al. Pathways and composition of dissolved organic carbon in a small agricultural catchment during base flow conditions. Ecohydrology & Hydrobiology 22, 96-112 (2022).
647 McFarland, J. W. et al. Mechanisms for retention of low molecular weight organic carbon varies with soil depth at a coastal prairie ecosystem. Soil Biology and Biochemistry 168, 108601 (2022).
648 Sokołowska, J., Józefowska, A. & Zaleski, T. Impact of natural forest succession on changes in soil organic carbon in the polish Carpathian mountains. Forests 13, 744 (2022).
649 Zhang, L. et al. Composition characteristics of dissolved organic matter at the vegetation-soil interface under the influence of mining disturbances. Polish Journal of Environmental Studies 31, 439-449 (2021).
650 de Aguiar Santiago, F. L. et al. Rehabilitation promotes rapid recovery of arbuscular mycorrhizal fungi in iron mining areas. Pedobiologia 95, 150838 (2022).
651 Guan, J. et al. Responses of soil active organic carbon fractions and enzyme activities to freeze-thaw cycles in Wetlands. Wetlands 42, 36 (2022).
652 Yates, C. A. et al. Determining patterns in the composition of dissolved organic matter in fresh waters according to land use and management. Biogeochemistry 164, 143-162 (2023).
653 Kaneko, S., Furusawa, H., Okamoto, T. & Hirano, Y. Dissolved Organic Matter (DOM) in a Warm-Temperate Forested Watershed—A Possibility of Ultraviolet Absorbance as an Indicator of DOM. Forests 13, 510 (2022).
654 Fan, Q., Yang, Y., Geng, Y., Wu, Y. & Niu, Z. Biochemical composition and function of subalpine shrubland and meadow soil microbiomes in the Qilian Mountains, Qinghai–Tibetan plateau, China. PeerJ 10, e13188 (2022).
655 Cui, J. et al. Correlations between dominant vegetation type and composition and diversity of soil bacterial communities in a subtropical forest. Soil Science Society of America Journal 86, 1123-1137 (2022).
656 Zhang, H., Zheng, X., Cai, Y. & Chang, S. X. Land-use change enhanced soc mineralization but did not significantly affect its storage in the surface layer. International Journal of Environmental Research and Public Health 19, 3020 (2022).
657 Startsev, V. V., Yakovleva, E. V., Kutyavin, I. N. & Dymov, A. A. Fire impact on carbon pools and basic properties of retisols in native spruce forests of the European North and Central Siberia of Russia. Forests 13, 1135 (2022).
658 Kobierski, M. & Banach-Szott, M. Organic matter in riverbank sediments and fluvisols from the flood zones of lower vistula river. Agronomy 12, 536 (2022).
659 Cui, Q. et al. Response of soil carbon fractions and enzyme activities to mowing management on in a coastal wetland of the yellow river delta. Frontiers in Marine Science 9, 993181 (2022).
660 Davis, C. J., Presley, D. R., Rivard, C. L., Griffin, J. J. & Tomlinson, P. J. Conservation systems influence on soil properties in pumpkin production. Soil Science Society of America Journal 86, 435-449 (2022).
661 Długosz, J. & Piotrowska-Długosz, A. Changes in carbon-degrading enzyme activities and microbial biomass content–The effect of soil depth and soil-forming processes. Applied Soil Ecology 180, 104629 (2022).
662 Fujii, K., Funakawa, S. & Kosaki, T. Effects of forest management on soil acidification in cedar

plantation. Geoderma 424, 115967 (2022).
663 Glina, B. et al. Local weather conditions determine DOC production and losses from agricultural fen soils affected by open-pit lignite mining. Catena 211, 106012 (2022).
664 He, G. et al. Forest succession improves the complexity of soil microbial interaction and ecological stochasticity of community assembly: Evidence from Phoebe bournei-dominated forests in subtropical regions. Frontiers in Microbiology 13, 1021258 (2022).
665 He, Y. et al. Drivers of soil respiration and nitrogen mineralization change after litter management at a subtropical Chinese sweetgum tree plantation. Soil Use and Management 39, 92-103 (2023).
666 Hu, L., Li, Q., Yan, J., Liu, C. & Zhong, J. Vegetation restoration facilitates belowground microbial network complexity and recalcitrant soil organic carbon storage in southwest China karst region. Science of the Total Environment 820, 153137 (2022).
667 Kaba, M., Mesnage, V., Sakho, I., Faye, S. & Boussafir, M. Processes controlling the organic matter degradation in a tropical coastal wetland: Mboro, Senegal. Catena 217, 106419 (2022).
668 Kooch, Y., Ghorbanzadeh, N., Kuzyakov, Y., Praeg, N. & Ghaderi, E. Investigation of the effects of the conversion of forests and rangeland to cropland on fertility and soil functions in mountainous semi-arid landscape. Catena 210, 105951 (2022).
669 Li, C. et al. Soil dissolved carbon and nitrogen dynamics along a revegetation chronosequence of Caragana korshinskii plantations in the Loess hilly region of China. Catena 216, 106405 (2022).
670 Li, J. et al. Characteristics of soil carbon emissions and bacterial community composition in peatlands at different stages of vegetation succession. Science of the Total Environment 839, 156242 (2022).
671 Li, J., Sun, X., Li, M., Zou, J. & Bian, H. Effects of stand age and soil organic matter quality on soil bacterial and fungal community composition in Larix gmelinii plantations, Northeast China. Land Degradation & Development 33, 1249-1259 (2022).
672 Li, Y., Chen, J., Feng, H. & Siddique, K. H. Plastic mulching significantly improves soil enzyme and microbial activities without mitigating gaseous N emissions in winter wheat-summer maize rotations. Field Crops Research 286, 108630 (2022).
673 Liang, K. et al. Changes in quantity and quality of dissolved organic carbon in purple soil: Roles of land use and soil depth. Land Degradation & Development 34, 327-337 (2023).
674 Liu, S. et al. Seasonal freeze-thaw characteristics of soil carbon pools under different vegetation restoration types on the Longzhong Loess Plateau. Frontiers in Ecology and Evolution 10, 1019627 (2022).
675 Liu, X. et al. Spatial distribution of soil iron across different plant communities along a hydrological gradient in the Yellow River Estuary wetland. Frontiers in Ecology and Evolution 10, 979194 (2022).
676 Liu, Y. et al. Changes in soil microbial metabolic activity following long-term forest succession on the central Loess Plateau, China. Land Degradation & Development 34, 723-735 (2023).
677 Mohseni, N. & Hosseinzadeh, S. R. Soil erosion progression under rill and gully erosion processes and its effect on variations of mechanisms controlling C mineralization ratio. Ecohydrology & Hydrobiology 22, 370-378 (2022).
678 Nasonova, A., Levy, G. J., Rinot, O., Eshel, G. & Borisover, M. Organic matter in aqueous soil extracts: Prediction of compositional attributes from bulk soil mid-IR spectra using partial least

square regressions. Geoderma 411, 115678 (2022).
679 Ren, B. et al. Appraisal of different land use systems for heterotrophic respiration in a Karst landscape. Environmental Research 212, 113480 (2022).
680 Wang, C., Xue, L. & Jiao, R. Stoichiometric imbalances and the dynamics of phosphatase activity and the abundance of phoC and phoD genes with the development of Cunninghamia lanceolata (Lamb.) Hook plantations. Applied Soil Ecology 173, 104373 (2022).
681 Lei, B., Xu, Y., Tang, Y. & Hauptfleisch, K. Shifts in carbon stocks through soil profiles following management change in intensive agricultural systems. Agricultural Sciences 6, 304-314 (2015).
682 Liu, H. et al. Effects of the interaction between temperature and revegetation on the microbial degradation of soil dissolved organic matter (DOM)–A DOM incubation experiment. Geoderma 337, 812-824 (2019).
683 Wen-jun, Z. et al. Characteristics and influencing factors of soil dissolved organic carbon and nitrogen in a tropical seasonal rainforest in Xishuangbanna, Southwest China. Journal of Beijing Forestry University 38, 34-41 (2016).
684 Yu-Lai, W., Chang-Ming, Y., Li-Min, Z. & Heng-Zhao, C. Spatial distribution and fluorescence properties of soil dissolved organic carbon across a riparian buffer wetland in Chongming Island, China. Pedosphere 25, 220-229 (2015).
685 Liu, S. et al. The role of UV-B radiation and precipitation on straw decomposition and topsoil C turnover. Soil Biology and Biochemistry 77, 197-202 (2014).
686 Yao, S., Qin, J., Peng, X. & Zhang, B. The effects of vegetation on restoration of physical stability of a severely degraded soil in China. Ecological Engineering 35, 723-734 (2009).
687 Qiu, Q. et al. Effects of plant-derived dissolved organic matter (DOM) on soil CO2 and N2O emissions and soil carbon and nitrogen sequestrations. Applied Soil Ecology 96, 122-130 (2015).
688 Long, G.-Q., Jiang, Y.-J. & Sun, B. Seasonal and inter-annual variation of leaching of dissolved organic carbon and nitrogen under long-term manure application in an acidic clay soil in subtropical China. Soil and Tillage Research 146, 270-278 (2015).
689 Liu, T., Liu, C., Zhang, W. & Tu, C. Concentrations and migration features of dissolved organic carbon in the soils of slope lands in Karst area. China Environmental Science 29, 248-253 (2009).
690 Zhang, J., Song, C. & Yang, W. Seasonal dynamics of dissolved organic carbon and its impact factors in the Doyeuxia augustifolia marsh soil. Acta Scientiae Circumstantiae 25, 1397-1402 (2005).
691 Xiao, Y., Huang, Z., Wu, H. & Lv, X. Compositions and contents of active organic carbon in different wetland soils in Sanjiang Plain, Northeast China. Acta Ecol Sin 23, 7625-7633 (2015).
692 WANG, W., YANG, Y.-s., CHEN, G.-s., GUO, J.-f. & QIAN, W. Profile distribution and seasonal variation of soil dissolved organic carbon in natural Castanopsis fabric forest in subtropical China. Chinese Journal of Ecology 27, 924 (2008).
693 Shu-fen, L., Yuan-chun, Y. & Sheng, H. Correlation between dissolved organic carbon and soil factors of the forest soil in southern of China. 浙江农林大学学报 20, 119-123 (2003).
694 Lei, B., Fan, M., Chen, Q., Six, J. & Zhang, F. Conversion of wheat–maize to vegetable cropping systems changes soil organic matter characteristics. Soil Science Society of America Journal 74, 1320-1326 (2010).

695 Lu, S. et al. Patterns and drivers of soil respiration and vegetation at different altitudes in Southern China. Applied Ecology & Environmental Research 17 (2019).
696 Lin, C., Larsen, E., Grace, P. & Smith, J. in Soil solutions for a changing world: Proceedings of the 19th World Congress of Soil Science. 27-30 (International Union of Soil Sciences).
697 Cookson, W. et al. Controls on soil nitrogen cycling and microbial community composition across land use and incubation temperature. Soil Biology and Biochemistry 39, 744-756 (2007).
698 Mavi, M. S. Evaluation of extractants to quantify dissolved organic carbon and nitrogen in dissimilar soils. Journal of the Indian Society of Soil Science 66, 111-115 (2018).
699 Kaiser, C. et al. Belowground carbon allocation by trees drives seasonal patterns of extracellular enzyme activities by altering microbial community composition in a beech forest soil. New Phytologist 187, 843-858 (2010).
700 Vandenbruwane, J., De Neve, S., Qualls, R. G., Sleutel, S. & Hofman, G. Comparison of different isotherm models for dissolved organic carbon (DOC) and nitrogen (DON) sorption to mineral soil. Geoderma 139, 144-153 (2007).
701 Filep, T., Kincses, I. & Nagy, P. Dissolved organic carbon (DOC) and dissolved organic nitrogen (DON) content of an arenosol as affected by liming in a pot experiment. Archives of Agronomy and Soil Science 49, 111-117 (2003).
702 Novara, A. et al. Dynamics of soil organic carbon pools after agricultural abandonment. Geoderma 235, 191-198 (2014).
703 Jaszczyński, J. The relationship between dissolved organic carbon and hydro-climatic factors in peat-muck soil. Journal of Water and Land Development (2015).
704 Cox, L. et al. Effect of exogenous carbon on movement of simazine and 2, 4-D in soils. Soil science society of America journal 65, 1688-1695 (2001).
705 Maxin, C. R. & Kögel-Knabner, I. Partitioning of polycyclic aromatic hydrocarbons (PAH) to water-soluble soil organic matter. European Journal of Soil Science 46, 193-204 (1995).
706 Matschonat, G. & Vogt, R. Assessment of a laboratory method to obtain the equilibrium solution composition of forest soils. European journal of soil science 48, 545-552 (1997).
707 Ludwig, B., Khanna, P. & Prenzel, J. Use of a coupled equilibrium model to describe the buffering of protons and hydroxyl ions in some acid soils. Zeitschrift für Pflanzenernährung und Bodenkunde 161, 547-554 (1998).
708 Austnes, K. & Vestgarden, L. S. Prolonged frost increases release of C and N from a montane heathland soil in southern Norway. Soil Biology and Biochemistry 40, 2540-2546 (2008).
709 Sowerby, A., Emmett, B., Williams, D., Beier, C. & Evans, C. The response of dissolved organic carbon (DOC) and the ecosystem carbon balance to experimental drought in a temperate shrubland. European Journal of Soil Science 61, 697-709 (2010).
710 Hughes, S., Reynolds, B. & Roberts, J. The influence of land management on concentrations of dissolved organic carbon and its effects on the mobilization of aluminium and iron in podzol soils in Mid-Wales. Soil use and management 6, 137-145 (1990).
711 McDowell, W. H. & Wood, T. Podzolization: soil processes control dissolved organic carbon concentrations in stream water. Soil Science 137, 23-32 (1984).
712 Qualls, R. G. & Richardson, C. J. Factors controlling concentration, export, and decomposition of dissolved organic nutrients in the Everglades of Florida. Biogeochemistry 62, 197-229 (2003).
713 Yavitt, J. Carbon dynamics in Appalachian peatlands of west Virginia and western Maryland.

Water, Air, and Soil Pollution 77, 271-290 (1994).
714 Fröberg, M. et al. Low dissolved organic carbon input from fresh litter to deep mineral soils. Soil Science Society of America Journal 71, 347-354 (2007).
715 Yang, G. et al. Responses of CO2 emission and pore water DOC concentration to soil warming and water table drawdown in Zoige Peatlands. Atmospheric Environment 152, 323-329 (2017).
716 Ying, C., Shaoqiang, W., Jingyuan, W., Peichl, M. & Falahatar, S. Dissolved organic carbon dynamics and controls of planted slash pine forest soil in subtropical region in southern China. Journal of Resources and Ecology 4, 105-114 (2013).
717 Pesántez, J., Mosquera, G. M., Crespo, P., Breuer, L. & Windhorst, D. Effect of land cover and hydro-meteorological controls on soil water DOC concentrations in a high-elevation tropical environment. Hydrological Processes 32, 2624-2635 (2018).
718 Panneer Selvam, B., Laudon, H., Guillemette, F. & Berggren, M. Influence of soil frost on the character and degradability of dissolved organic carbon in boreal forest soils. Journal of Geophysical Research: Biogeosciences 121, 829-840 (2016).
719 Andreasson, F., Bergkvist, B. & Bååth, E. Bioavailability of DOC in leachates, soil matrix solutions and soil water extracts from beech forest floors. Soil Biology and Biochemistry 41, 1652-1658 (2009).
720 Ågren, A. M., Haei, M., Blomkvist, P., Nilsson, M. B. & Laudon, H. Soil frost enhances stream dissolved organic carbon concentrations during episodic spring snow melt from boreal mires. Global Change Biology 18, 1895-1903 (2012).
721 Raastad, I. A. & Mulder, J. Dissolved organic matter (DOM) in acid forest soils at Gårdsjön (Sweden): natural variabilities and effects of increased input of nitrogen and of reversal of acidification. Water, air and soil pollution 114, 199 (1999).
722 Shafiquzzaman, M. et al. Identification and characterization of dissolved organic matter sources in Kushiro river impacted by a wetland. Ecological engineering 70, 459-464 (2014).
723 Kawahigashi, M., Sumida, H. & Yamamoto, K. Seasonal changes in organic compounds in soil solutions obtained from volcanic ash soils under different land uses. Geoderma 113, 381-396 (2003).
724 Funakawa, S., Hirai, H. & Kyuma, K. Soil-forming processes under natural forest north of Kyoto in relation to soil solution composition. Soil Science and Plant Nutrition 38, 101-112 (1992).
725 Stumpe, B. & Marschner, B. Dissolved organic carbon from sewage sludge and manure can affect estrogen sorption and mineralization in soils. Environmental Pollution 158, 148-154 (2010).
726 Macdonald, A., Murphy, D., Mahieu, N. & Fillery, I. Labile soil organic matter pools under a mixed grass/lucerne pasture and adjacent native bush in Western Australia. Soil Research 45, 333-343 (2007).
727 Camino-Serrano, M. et al. ORCHIDEE-SOM: modeling soil organic carbon (SOC) and dissolved organic carbon (DOC) dynamics along vertical soil profiles in Europe. Geoscientific Model Development 11, 937-957 (2018).
728 Marques, J. D. d. O., Luizão, F. J., Teixeira, W. G. & Ferreira, S. J. F. Variations of dissolved organic carbon and soil physical properties under different land uses in Central Amazônia. Volume 36, Número 2, Pags. 611-622 (2012).
729 Lu, Y., Wassmann, R., Neue, H.-U. & Huang, C. Dynamics of dissolved organic carbon and

methane emissions in a flooded rice soil. Soil Science Society of America Journal 64, 2011-2017 (2000).
730 Oosterwoud, M., Temminghoff, E. & van der Zee, S. Quantification of DOC concentrations in relation with soil properties of soils in tundra and taiga of Northern European Russia. Biogeosciences Discussions 7, 3189-3226 (2010).
731 Buckeridge, K. M., Cen, Y.-P., Layzell, D. B. & Grogan, P. Soil biogeochemistry during the early spring in low arctic mesic tundra and the impacts of deepened snow and enhanced nitrogen availability. Biogeochemistry 99, 127-141 (2010).
732 Fang, H. et al. Experimental nitrogen deposition alters the quantity and quality of soil dissolved organic carbon in an alpine meadow on the Qinghai-Tibetan Plateau. Applied Soil Ecology 81, 1-11 (2014).
733 Fang, H. et al. Changes in soil heterotrophic respiration, carbon availability, and microbial function in seven forests along a climate gradient. Ecological Research 29, 1077-1086 (2014).
734 Iqbal, J. et al. Microbial biomass, and dissolved organic carbon and nitrogen strongly affect soil respiration in different land uses: A case study at Three Gorges Reservoir Area, South China. Agriculture, Ecosystems & Environment 137, 294-307 (2010).
735 Jones, D., Hughes, L., Murphy, D. & Healey, J. Dissolved organic carbon and nitrogen dynamics in temperate coniferous forest plantations. European journal of soil science 59, 1038-1048 (2008).
736 Li, W. et al. Soil available nitrogen, dissolved organic carbon and microbial biomass content along altitudinal gradient of the eastern slope of Gongga Mountain. Acta Ecologica Sinica 33, 266-271 (2013).
737 Liu, C. P. & Sheu, B. H. Dissolved organic carbon in precipitation, throughfall, stemflow, soil solution, and stream water at the Guandaushi subtropical forest in Taiwan. Forest Ecology and Management 172, 315-325 (2003).
738 Linghong Z. Effects of Winter Green Manure Crops with and Without Chicken Grazing on CH4 and CO2 Emissions, Soil Nutrients and Yield in a Double-Crop Rice Paddy Field in South China. 2017. (In Chinese)
739 Shan L. The study on N2O flux from different land uses in three gorges reservoir area. 2011. (In Chinese)
740 Guo, K. Effect of Biochars Prepared from Different Feedstocks and Pyrolysis Temperatures on the Structure and Function of Microbial Communities in a Bamboo (Phyllostachys Praecox) Plantation Soil. 2021. (In Chinese)
741 Yuan, Q. Study on soil organic carbon fractions in different land use types. 2013. (In Chinese)
742 Yin, Y. Effects of biochars addition on the mineralization of soil organic carbon under different incubation conditions. 2018. (In Chinese)
743 Ai, N. Nitrogen immobilization by soil microbial biomass and its control in different soils. 2008. (In Chinese)
744 Li, L. Effects of different N level on soil organic carbon stability in meadow chernozemic soil. 2014. (In Chinese)
745 Liang, H. Effect of different fertilization on CO2 emission for a paddy-upland rotation purple soil under wheat. 2011. (In Chinese)
746 Chen, J. Effects of different fertilizer sources and tillage practices on GHG emissions and soil carbon pool in paddy fields. 2016. (In Chinese)

747 Wang, Q. Effects of different ways of straw returning on soil greenhouse gas emissions in sloping cropland. 2016. (In Chinese)
748 Zhou, W. Temperature Sensitivity and Driving Factors Analysis of Soil Organic Carbon Decomposition across Chinese Typical Cropland. 2020. (In Chinese)
749 Pei, X. Effect of long-term fertilization on diversity of soil microbial community structure under different cropping systems. 2010. (In Chinese)
750 Yin, C. Responses of N2O Emission and Reduction as well as Associated Microbes to Temperature and Different Fertilization Regimes in Arable Soils. 2017. (In Chinese)
751 Gao, Z. Contents and characteristics of soluble organic carbon, nitrogen in the arable soil. 2009. (In Chinese)
752 Liu, Y. Effects of Organic Fertilizer Substituting Mineral Nitrogen Fertilizer on Soil Carbon and
753 Absorbed Nutrient in Spring Wheat. 2021. (In Chinese)
753 Zhang, L. Intergrative effects of green manure and straw incorporation on greenhouse gas emissions and environmental performance under the typical rice cropping systems in southern china. 2018. (In Chinese)
754 Zhou, G. The Characteristics of Carbon and Nitrogen Transformation under the Co-incorporation of Rice Straw and Leguminous Green Manures in Double Rice Field in Southern China. 2017. (In Chinese)
755 Wu, L. Effects of land-use conversion from double-rice to vegetable cultivation on net ecosystem carbon budget and greenhouse gas emissions. 2018. (In Chinese)
756 Cheng, H. Responses of soil active organic carbon, nitrogen and rice yield to Chinese milk vetch application rates. 2020. (In Chinese)
757 Yu, J. Study on the effect of fertilizing management on carbon and nitrogen of black soil. 2010. (In Chinese)
758 Wang, Y. Effects of water and fertilizer treatments based on vetch and orychophragmus violaceus on soil fertility and composition of active organic carbon. 2020. (In Chinese)
759 Guo, Y. Effects of exogenous carbon addition on organic carbon mineralization, humification and enzyme activities in agricultural soils. 2020. (In Chinese)
760 Li, Y. Effects of multi-year application of biochar on carbon cycle of tobacco-growing soils in Henan Province. 2019. (In Chinese)
761 Zhu, W. Effect of combined amendment of wheat and huai bean straws on soil organic carbon sequestration. 2018. (In Chinese)
762 Chang, D. Cliaractci istics of Soil Dissolved Organic Matter in Main Creen Manure Plantation Systems in China. 2015. (In Chinese)
763 Zhang, W. Effects of amendments on soil organic carbon fractions and microbial in upland red soil. 2017. (In Chinese)
764 Deng, B. Effects of ameliorant application on greenhouse gas emissions from camellia oleifera plantation soil under nitrogen fertilization. 2020. (In Chinese)
765 Zhu, J. Study on the change of soil organic carbon and the prediction model of total organic carbon based on hyperspectral after biochar addition. 2017. (In Chinese)
766 Yang, X. Study of application nitrogen fertilizer rate on soil labile pools and their effects in different managements condition. 2016. (In Chinese)
767 Pu, D. Effects of application of biogas slurry and biochar on soil active organic carbon and nitrogen in poplar forest. 2015. (In Chinese)

768 Xu, Y. Application of rice straw and engineered bacteria on the biochemical properties of cu and cd-polluted soil. 2011. (In Chinese)
769 Yu, P. Characteristics and mechanisms of organic matter mineralization influenced by fertilization and land use in red soil and paddy soil. 2021. (In Chinese)
770 Chen, W. Fertilization effects on active organic carbons and soil structure in black soil farmland with different soil organic matter contents. 2013. (In Chinese)
771 Liu, S. Preliminary mechanism study on the effect of fertilization on reactive minerals and their carbon sequestration in upland red soil. 2016. (In Chinese)
772 Sun, D. Effect of fertilization practice on the constitution and bioavailability of dissolved organic carbon in red paddy soil. 2014. (In Chinese)
773 Ji, X. Effects of Combined Application of Organic and Inorganic Fertilizers on Carbon and Nitrogen Characteristics and Bacterial Community Structure of Purple Soil. 2020. (In Chinese)
774 Xu, L. Effects of Liquid Organic Fertilizer Application on Soil Biological Properties and Active Organic Carbon Components in Navel Orange Orchard. 2021. (In Chinese)
775 Sun, H. Effect of Organic Fertilizer and Inorganic Fertilizer Application on N2O and NO Emissions from Fluvo-aquic Soil in the North China Plain. 2020. (In Chinese)
776 Liu, R. Study on the mechanism of the improvement of soil organic matter under simulated maize straw and biochar returning in a black soil. 2021. (In Chinese)
777 Yang, J. Dynamic and leaching characteristics of soluble organic nitrogen compositions in paddy soil under different fertilization treatments during rice growth period. 2018. (In Chinese)
778 Shen, Z. C02 and N20 Emission Characteristics and Impact Factors in Farmland under Biogas Slurry Irrigation. 2015. (In Chinese)
779 Zhao, L. Effects of fertilization on cucumber growth and soil fertility in greenhouse continuous cropping under soil deterioration. 2015. (In Chinese)
780 Zheng, L. Effects of combined applications of pig manure and chemical fertilizers on CH4 and N2O emissions and their global warming potentials in paddy fields with double-rice cropping. 2015. (In Chinese)
781 Lu, Y. Influnces of combining biochar and nitrogn fertilization on red soil nematode assemblages and soil enzyme activities. 2015. (In Chinese)
782 Yu, L. The effects of biochar on acidic soil amelioration and soil nitrification. 2019. (In Chinese)
783 Wu, Y. Effects of biochar application on bacterial diversity and physical-chemical properties in fluvor-aquic soil of north China. 2014. (In Chinese)
784 Wang, J. Effect of biochar application on the composition and stability of organic carbon in deep paddy soil. 2020. (In Chinese)
785 Xue, S. Effects of biochar addition on soil labile C and N contents in a subtropical evergreen forest. 2018. (In Chinese)
786 Yu, M. Charosphere Effects of Biochar and Its Associated Key Processes of Soil Nitrogen Transformation. 2021. (In Chinese)
787 An, Y. Effect of biochar application on soil aggregates distribution and organic carbon fractions. 2016. (In Chinese)
788 Xu, L. Effect of biochar on soil prosperities and soil organic carbon pool. 2013. (In Chinese)
789 Ran, J. Effects of phosphorus fertilizer application and different optimized measures on rhizosphere process, yield and phosphorus use efficiency of winter wheat in dryland. 2021. (In Chinese)

790 Wang, W. Impact of Annual Straw Management and Fertilizer on Agriculture Ecosystem Greenhouse Gas Emissions and Productivity in Wheat-Maize Rotation System. 2019. (In Chinese)
791 Wang, P. Remediation of cu and cd-contaminated soil by joint application of straw and engineered bacteria. 2011. (In Chinese)
792 Wen, D. Effects of straw biochar application on tobacco soil carbon and nitrogen forms and related enzyme activities. 2017. (In Chinese)
793 Ma, Y. Effect of application of straw-derived biochar on denitrification and anammox in paddy soil. 2020. (In Chinese)
794 Guo, C. Effects of cotton straw incorporation on soil microbial biomass carbon, nitrogen, phosphorus and Soil Dissolved Organic Carbon of continuous cropping cotton field. 2015. (In Chinese)
795 Li, C. Study on the effect of corn straw on mian physical and chemical characteristics of black soil. 2012. (In Chinese)
796 Ye, C. Effects of Straw Returning Methods and Quantities on Organic Carbon and Nitrogen components in Brown Earth and the Growth of Maize. 2019. (In Chinese)
797 Xu, Y. Changes of Contents and Chemical Composition of Soil Labile Organic Carbon Fractions and its Correlation with Soil Enzyme Activities under Straw Incorporation Condition. 2018. (In Chinese)
798 Pei, P. Effects of Straw Incorporation Coupled Nitrogen levels on Biochemical Properties of Paddy Soil and Growth Characteristics of Rice. 2014. (In Chinese)
799 Su, Y. Effects of long-term straw return on n2o and no emissions from wheat-maize rotation system in purplish soil. 2021. (In Chinese)
800 Li, X. Effect of combination of rice husk biochar and organic fertilizers on soil organic carbon fractions and soil microbial community of apple orchard. 2016. (In Chinese)
801 Hu, X. Effects on soil fertility in the application of organic materials in paddy field. 2019. (In Chinese)
802 Huang, X. Mechanisms of the interaction between poorly crystalling iron oxides and soil organic carbon in a rice-wheat cropping system. 2017. (In Chinese)
803 Xia, Z. Nitrogen and carbon transformation in soil of maize/fabe-bean intercropping system. 2011. (In Chinese)
804 Li, Y. Effects of plastic film mulching and fertilization on soil respiration and carbon stocks on the Loess Plateau cropland. 2021. (In Chinese)
805 Luo, P. Effect of long-term fertilization on microbial community in a brown soil under crop-rotation system. 2014. (In Chinese)
806 Dao, L. Emission characteristics of co2 and ch4 on dryland under different long-term fertilizations. 2018. (In Chinese)
807 Huang, C. Regulation of long-term fertilization on iron oxides and organic carbon preservation in soils. 2015. (In Chinese)
808 Guo, Y. Emission characteristics of co2 and ch4 on dryland lou soil under different long-term fertilizations. 2017. (In Chinese)
809 Hao, X. Effect of long-term fertilization on soil organic carbon, organic nitrogen and microbial properties in subtropical paddy soils. 2008. (In Chinese)
810 Li, D. Influence of long-term fertilization on AM fungi community in a brown soil. 2018. (In

Chinese)
811 Rong, J. Effects of long-term fertilization on soil carbon pool and distribution characteristics of aggregates in oasis farmland. 2012. (In Chinese)
812 Kong, F. Relationship between humus carbon and microbial community structure and function in long-term fertilized red soil aggregates. 2020. (In Chinese)
813 Zhang, J. Changes of winter wheat yield and soil fertility under long-term straw management and nitrogen application. 2018. (In Chinese)
814 Huang, W. Research on the difference of soil organic carbon, nitrogen fractions and yield in double-cropped paddy in south cina under long-term straw return. 2020. (In Chinese)
815 Yao, F. Effect of long-term rotation fertilization on ammonia oxidation microorganisms abundance in brown soil. 2016. (In Chinese)
816 Li, X. Response mechanism of soil organic carbon to different agricultural tillage methods in the north of yinshan. 2017. (In Chinese)
817 Peng, Y. Response of Soil Respiration to Addition of Nitrogen and Phosphorus and Influencing Factors of Dry Farmland in Longzhong. 2021. (In Chinese)
818 Huang, T. Intercropping and fertilization of forage rape with sorghum in feed rapeseed effect of yield quality and soil oragnic carbon composition. 2020. (In Chinese)
819 Song, J. Response of soil organic carbon and crop yield to long-term fertilization and climate change in winter-wheat and summer-maize rotation. 2021. (In Chinese)
820 Luo, K. Black soil carbon nitrogen and its fraction in response to long-term fertilization. 2012. (In Chinese)
821 Luo, C. Effects of structural variation on wheat productivity and soil quality and its mechanism under ridge-furrow mulching farming system in semiarid East African Plateau. 2020. (In Chinese)
822 Qi, R. Responses of Soil Organic Carbon Mineralization under Long-term Fertilization Regimes to Temperature Changes and Cattle Manure Addition. 2016. (In Chinese)
823 Chen, L. Study on effects of the typical rice-wheat herbicides influencing on CH4 and N2O emissions from croplands ecosystem. 2014. (In Chinese)
824 Yu, Z. Seasonal variations of microbial community structures and functions in cultivated and natural restored Mollisols. 2012. (In Chinese)
825 Jiang, Y. Effects of Inhibitors and Controlled Release Fertilizers on N2O and NO Emissions from Fluvo-aquic Soil in the Old Course of Yellow. 2020. (In Chinese)
826 Kuang, E. Analysis of DOC component structure in straw deep-combed black soil profile based on fluorescence spectrum. 2022. (In Chinese)
827 Zhao, X. Response of dissolved organic matter chemical properties to long-term different fertilization in latosol: insight from uitraviolet-visible spectroscopy. 2022. (In Chinese)
828 Zhang, J. Effects of Organic Fertilizer Substituting Mineral Nitrogen Fertilizer on Soil Carbon and Absorbed Nutrient in Spring Wheat. 2022. (In Chinese)
829 Liu, Z. The effects of different straw-derived biochars and tillage measures on soil carbon. 2021. (In Chinese)
830 Lu, S. Effects of different tillage and fertilization measures on soil nutrients, organic carbon and microbial community functional diversity in Weibei Highland. 2020. (In Chinese)
831 Pan, X. Effects of different tillage managements on soil carbon and nitrogen cycling microbial diversity under double-cropping rice field. 2020. (In Chinese)

832 Li, S. Effects of different tillage patterns on greenhouse gas emission and nitrogen uptake of rice. 2016. (In Chinese)
833 Wang, X. Effects of conservation tillage on the indicators and correlations of soil organic carbon. 2009. (In Chinese)
834 Wang, C. Effects of conservation tillage measures on the contents and properties of organic carbon and nitrogen in lou soil. 2010. (In Chinese)
835 Guo, L. Effects of no-tillage and straw return on soil organic carbon pool and microbial diversity in rice–wheat systems. 2018. (In Chinese)
836 Li, D. The dynamic of methane emission and the community structure and population of methanogens under no-tillage non-flooded with straw mulching paddy field of southeast china. 2010. (In Chinese)
837 Zhang, R. Paddy soil respiration and organic carbon fractions under wide ridge cultivated with no-tillage in central China. 2015. (In Chinese)
838 Liu, X. Effects of Deep Loosening and Deep Straw Returning on Soil Organic Carbon and Microbial Community Characteristics in Black Soil. 2019. (In Chinese)
839 Yan, X. Effects of cotton stubble returning and plowing on soil physicochemical properties and microbial community struction in cosstal saline soil. 2021. (In Chinese)
840 Meng, Y. Effects of straw incorporation on soil carbon-nitrogen conversion and crop growth in a rice-wheat rotation system. 2020. (In Chinese)
841 Kou, Z. Effects of tillage and application of fertilizer on paddy soil carbon emission and carbon balance. 2011. (In Chinese)
842 Wang, J. Effect of Different Tillage Practices on Soil Organic Carbon Transformation and Water Use in Dryland Winter Wheat. 2014. (In Chinese)
843 Wu, Y. The effect of tillage systems on organic carbon fractions in a purple paddy soil. 2012. (In Chinese)
844 Wang, X. Effects of returning mode and straw-decomposing inoculant on decomposition characteristics and soil nutrient content of maize straw. 2020. (In Chinese)
845 Teclemariam, S. G. Effect of on-tillage on soil organic carbon and nitrogen and their pools in rainfed agriculture of northern china. 2012. (In Chinese)
846 Li, J. Long-term tillage effects on soil aggregate organic carbon and microbial community diversity. 2014. (In Chinese)
847 Hao, M. Changes of soil organic carbon components and relationships with soil microbial diversity in wheat-maize crop system. 2018. (In Chinese)
848 Wang, Y. Effects of Different Elevated CO2 Concentrations on CH4 Emission and its Mechanism in Paddy Fields. 2021. (In Chinese)
849 Yu, C. Soil microbial responses to global change in a semi-arid steppe in northern china. 2016. (In Chinese)
850 Zhou, G. Responses of soil respiration to simulated drought and nitrogen addition in a subtropical evergreen broad-leaved forest. 2020. (In Chinese)
851 Wu, Y. Effects of litter and nitrogen addition on carbon and nitrogen of soil fractions in Castanopsis faberi Hance forest. 2019. (In Chinese)
852 Chen, L. Response of soil nitrogen cycling to simulated rainfall reduction in Red Vertebra plantation, South Subtropical region. 2019. (In Chinese)
853 Zhang, J. Characteristics and influence factors of soil respiration in alpine marsh meadow under

warming and nitrogen application. 2021. (In Chinese)
854 Zhao, S. Influence of Arbuscular Mycorrhizal Fungi on Soil Aggregates and Carbon Storage under Warming and Nitrogen Addition in Songnen Grassland. 2021. (In Chinese)
855 Zhong, Z. Effects of experimental warming and precipitation manipulation on the key processes of soil carbon cycle in abandoned farmland of the loess hilly region. 2021. (In Chinese)
856 Zheng, Y. Effects of soil warming and preeipitation exclusion on soil respiration of chinese fir plantation and its mechanism in mid-subtropical china. 2017. (In Chinese)
857 Bai, H. The effect of warming on the change of soil organic carbon and its components in subtropical forests. 2020. (In Chinese)
858 Li, Y. Effect of Warming on N2O Emission on Alpine Meadow and Cultivated Grassland in the Qinghai Tibet Plateau. 2020. (In Chinese)
859 Zhou, W. Effects of increasing atmospheric temperature and carbon dioxide concentration on CH4 and N20 emissions and microorganisms in paddy fields. 2017. (In Chinese)
860 Li, D. Nitrogen application has effect on soil of Schima superba forest in Tiantong Influence of carbon pool formation and decomposition. 2015. (In Chinese)
861 Wang, Y. Effect of simulated warming and throughfall reduction on soil respiration and microbial response in Warm-temperate oak (Quercus aliena var. acuteserrata) forest. 2015. (In Chinese)
862 Yang, C. Effects of simulated warming on soil inorganic nitrogen in a young and a mature Cunninghamia lanceolata stand in humid. 2020. (In Chinese)
863 Pan, X. Effects of simulated warming and nitrogen deposition on soil respiration and DOM in soil solution. 2016. (In Chinese)
864 Wang, X. Effects of simulated warming and precipitation increasing on soil carbon composition and respiration of abandoned grassland in the loess hilly region. 2021. (In Chinese)
865 Gou, X. Effect of simulated climate warming on soil carbon and nitrogen transformation in the alpine forest of western sichuan. 2014. (In Chinese)
866 Chao, A. Effects of simulated climate change on greenhouse gas fluxes in typical steppe ecosystem. 2019. (In Chinese)
867 Xiong, L. Changes molecular composition of rice root exudates and soil organic matter in a rice paddy under simulated climate change. 2020. (In Chinese)
868 Lei, Z. Effects of simulated nitrogen deposition and biochar addition on dissolved organic carbon and nitrogen in Moso bamboo platation. 2019. (In Chinese)
869 Wang, C. Effects of simulated nitrogen deposition and acidification on soil properties in Yunwu Mountain grassland. 2020. (In Chinese)
870 Chu, X. Effects of Simulated Nitrogen Deposition on Soil Nitrogen Mineralization in Quercus Acutissima Forest of Urban and Rural Areas. 2021. (In Chinese)
871 Peng, Y. Effects of simulated nitrogen deposition on belowground carbon cycling processes and soil biochemical characteristics in a secondary evergreen broad-leaved forest on Wawu Mountain. 2016. (In Chinese)
872 Zhang, J. Effect of simulated nitrogen deposition on soil carbon budget progress in a larix olgensis plantation forest. 2016. (In Chinese)
873 Qu, W. Effects of stimulated nitrogen deposition on soil carbon budget in the Yellow River Delta Wetland. 2021. (In Chinese)
874 Li, J. Effects of simulated nitrogen input on the key processes of carbon cycle in a salt marsh in

the Yellow River Delta. 2021. (In Chinese)
875 Wang, N. Effects of simulated acid rain on the roots and soil ecological processes of a subtropical broadleaf pgyllostachys edulis mixed stand. 2020. (In Chinese)
876 An, W. Effects of simulated acid rain on nutrient dynamics of paddy field and greenhouse gases emission in fuzhou plain. 2017. (In Chinese)
877 Zhang, M. Effects of nitrogen and litter addition on soil organic carbon pool components in Minjiang River estuary wetland. 2019. (In Chinese)
878 Xu, W. Study on effects of nitrogen deposition, grazing and exireme precipitation on N2O emissions in a leymus chinensls meadow. 2021. (In Chinese)
879 Zhang, C. Effects of nitrogen deposition and acidity mitigation on plant fine root functional traits and ecological process in red soil region. 2020. (In Chinese)
880 Hao, Y. Effects of nitrogen deposition on soil organic carbon and microbial properties in evergreen broad-leaved forests of subtropics. 2018. (In Chinese)
881 Cui, J. Mechanism of nitrogen deposition on undergrowth and soil bacterial community diversity in subtropical evergreen broad-leaved forest. 2017. (In Chinese)
882 Li, J. Effects of nitrogen deposition on soil aggregate and organic carbon stability in subtropical forest. 2016. (In Chinese)
883 Zhao, S. Effects of nitrogen deposition on soil organic carbon in shrub grass tundra of Changbai Mountain. 2021. (In Chinese)
884 Wang, M. Effects of millipedes on microbial community structure and oxidase activity under the nitrogen deposition. 2019. (In Chinese)
885 Zhang, H. Effect of nitrogen addition on growth and soil nutrients of cunninghanmia lanceolate plantation. 2017. (In Chinese)
886 Xu, K. Effects of simulated nitrogen deposition on soil active organic carbon in poplar plantations in a coastal area, China. 2014. (In Chinese)
887 Song, J. Effects of nitrogen and phosphorus additions on soil organic carbon fractions and aggregate stability in a subtropical evergreen broad-leaved forest. 2020. (In Chinese)
888 Li, L. Effect of N and P additions on c and n pools of rhizosphere and non-rhizosphere soils on a subtropical evergreen broad-leaved forest. 2017. (In Chinese)
889 Ling, X. Effects of nitrogen and phosphorus addition on the structure, carbon content and stability of soil aggregates in Songnen grassland. 2020. (In Chinese)
890 Li, C. Effects of wet deposition of nitrogen and phosphorus and litter addition on soil active organic carbon pool and nitrogen and phosphorus in broad leaved pinus koraiensis forest. 2020. (In Chinese)
891 Wang, Y. Effect of adding a combination of nitrogen and phosphorus on fine root and soil microbes of machilus pauhoi. 2018. (In Chinese)
892 Zhang, Q. Short-term effects of soil warming and nitrogen addition on the CNP stoichiometry and physiological ecology of cunninghamia lanceolate in subtropical regions. 2017. (In Chinese)
893 Guo, J. Response of main mineral bioavailability to atmospheric CO2 emission in paddy ecosystem. 2011. (In Chinese)
894 Liu, Y. Legacy effects of historical nitrogen and water addition on soil microbiological characteristics in a typical steppe. 2021. (In Chinese)
895 Li, Y. Effects of precipitation reduction and nitrogen addition on soil organic carbon content and soil microbial community in subtropical mountain forests. 2020. (In Chinese)

896 Tao, D. Effects of Precipitation Changes and Nutrient Addition on Ecosystem Carbon Exchange of a Meadow Grassland in Hulunber. 2021. (In Chinese)
897 Huang, Y. Effect of precipitation exclusion on castanopsis carlesil natural forest soil methane uptake and methanotrophs community structure. 2014. (In Chinese)
898 Li, H. Effects of simulated warming on active soil organic carbon and nitrogen of the alpine timberline. 2018. (In Chinese)
899 Wang, A. Effect of seasonal freeze-thaw on soil microbial and biochemical property in alpine forest soil. 2012. (In Chinese)
900 Guo, Q. Effect of nitrogen addition on growth and soil nutrient of cunninghanmia lanceolate plantation. 2016. (In Chinese)
901 Huo, L. Impact of Buring Straw Layer Along With Plastic Mulching on Saline Soil Organic Carbon and CO2 Emission in Hetao Irrigation District. 2015. (In Chinese)
902 Gao, G. Effects of Freezing on the Sediment Environment and Microorganism around Roots of Typical Wetland Plants in Agricultural Drainage Ditch. 2021. (In Chinese)
903 Huang, R. Effects of biological regulated measures on soil physicochemical properties and runoff-sediment yield in three gorges reservoir region. 2013. (In Chinese)
904 Yong, Y. Changes of Nutrients in Grassland of Typical Ecological Animal Husbandry Cooperatives and Their Relationship with Sustainable Production in the Three Rivers Source Region. 2016. (In Chinese)
905 Zhou, F. Soil microbial community structure and function under plantations of different tree species. 2017. (In Chinese)
906 Zhang, P. Effects of different winter planting patterns on soil physical and chemical properties and microbial diversity in double cropping rice fields. 2020. (In Chinese)
907 Gu, H. Differences and Influencing Factors of PLFA Fingerprints under Different Land Use Patterns in Red Soil. 2021. (In Chinese)
908 Yang, Y. The structure of soil organic carbon and enzyme activity under different land types. 2017. (In Chinese)
909 Jiang, J. Study on the response of autotrophic bacterial community and microbial carbon sequestration to soil erosion under different soil types. 2019. (In Chinese)
910 Di, J. Effects of different intercropping models of torreya grandis on soil physicochemical properties and bacterial diversity. 2020. (In Chinese)
911 Zhang, B. Study on Soil Nitrification, Denitrification and Functional Microorganisms of Cunninghamia lanceolata Forest at Different Ages. 2020. (In Chinese)
912 Zhu, X. Short-term effects of different regenerations after clearfelling on soil greenhouse gases in Chinese fir plantation. 2016. (In Chinese)
913 Li, Y. Dynamic study of soil organic carbon and soil respiration in different regeneration patterns of Chinese fir plantation. 2010. (In Chinese)
914 Yang, J. Studies on soil nitrogen transformations and the functional microorganisms in natural secondary forests with different ages. 2020. (In Chinese)
915 Huang, L. The influence of different vegetation restoration patterns on physical property and soil labile carbon in degraded purple soil. 2015. (In Chinese)
916 Wang, N. The research of change rule and characteristics of soil microbial metabolism and the important indicators of organic carbon at different altitude. 2015. (In Chinese)
917 Ding, X. Effect of different mixed modes on soil organic carbon and soil respiration in

phyllostachys heterocycla. 2009. (In Chinese)
918 Pu, Q. Study on soil organic carbon, nitrogen and enzyme activity characteristics with different ecological restoration patterns in desert land of northwestern Sichuan, China. 2017. (In Chinese)
919 Zhou, H. Variation Characteristics of Organic Carbon and Its Fractions in Soil of Alfalfa Grassland with Different Growing Years. 2016. (In Chinese)
920 Zhu, H. Effects of different carbon input manipulations on soil carbon, nitrogen and biological characteristics of Schrenk's spruce (Picea schrenkiana) forest. 2021. (In Chinese)
921 Li, X. Variation characteristics of soil carbon and nitrogen components in Tianshui Huaniu apple orchard with different planting years. 2021. (In Chinese)
922 Xu, Q. Study on variation characteristics and influencing factors of soil aggregates in plastic shed system during different planting years. 2020. (In Chinese)
923 Zhan, M. Study on mechanisms of carbon sequestration, carbon emissions and soil organic carbon dynamics in different farming paddy fields. 2009. (In Chinese)
924 Wang, W. A preliminary study on soil carbon pool characteristics of poplar plantation under different management modes. 2010. (In Chinese)
925 Li, Z. Status Analysis of Soil Iron Oxide and Organic Carbon Forms in China's Different Fertility Paddy Soils. 2018. (In Chinese)
926 Yuan, Z. Response of soil organic matter fractions with different thinning intensities in subalpine spruce forest western Sichuan. 2011. (In Chinese)
927 Wang, N. Characteristics of carbon pools, nitrogen pools, phosphorus, potassium and nitrogen balance, phosphorus balance as well as potassium balance in soil profile in typical spring maize planted regions in northeast China. 2016. (In Chinese)
928 Liu, T. Effect of forest conversion on quantities and spectroscopic characteristics of soil dissolved organic matter in subtropical China. 2015. (In Chinese)
929 Zheng, X. Effects of afforestation on soil organic carbon and nutrient content in different trees of mid-subtropical China. 2018. (In Chinese)
930 Bao, Y. Effects of vegetation types on soil DOM characteristics and microbes in the mid-subtropical forests. 2018. (In Chinese)
931 Li, J. Response of soil labile organic carbon fractions and carbon mineralization to land-use changes in min-subtropical hilly region of China. 2014. (In Chinese)
932 Zhao, P. Changes of soil organic carbon and microbial properties in Pinus taiwanensis forest at different altitudes in Daiyun Mountain of subtropical. 2019. (In Chinese)
933 Chen, X. Effect of land use and landscape position on soil labile organic carbon in the hilly red-soil area of the mid-subtropical climatic zone. 2012. (In Chinese)
934 Lian, X. Study on emission fluxes of CO2 and CH4 and their vertical distribution characterizations of soil from wetlands in southeast China. 2014. (In Chinese)
935 Wang, Q. Soil microbial respiration rate and its influencing factors along a north-south forest transect in eastern China. 2016. (In Chinese)
936 Sun, S. Responses of soil carbon and nitrogen cycles to Changes in Global Environmental factors —Effects of land use types, N deposition and climate warming on soil C and N cycles. 2014. (In Chinese)
937 Deng, W. Nitrous Oxide Emissions from a Hilly Tea Field in Subtropical China. 2018. (In Chinese)
938 Zeng, X. Characteristics of soil phosphorus under typical vegetation types in subtropical forests

and the affecting factors. 2019. (In Chinese)
939 Wang, M. Characteristics of dissolved organic carbon in a subtropical forest landscape and its sequestration mechanisms. 2019. (In Chinese)
940 Yuan, Z. Characteristics of Carbon Pool and Nutrients under two typical forests in Nanjing Zijin Mountain. 2017. (In Chinese)
941 Fei, F. Responses of soil microbial biomass and enzyme activities to forest gap scale. 2015. (In Chinese)
942 Mei, J. The characteristic of soil active organic carbon in different forest types in Saihanba. 2020. (In Chinese)
943 Ding, L. Study on carbon and nitrogen forms and soil enzyme activities of rhizosphere soil of main tree species in northern Da Hinggan Ling mountains. 2019. (In Chinese)
944 Tian, S. Study on characteristics of soil labile organic carbon in main forest types in the north of Da Hinggan Ling mountains. 2016. (In Chinese)
945 Li, S. Characteristics of soil carbon change during forest succession in Da Hinggan mountains. 2019. (In Chinese)
946 Sun, L. The Dynamics of Soil Organic Carbon Fractions in Different Vegetation Types of Tianshan Forest. 2018. (In Chinese)
947 Zhou, H. Study on Runoff and Sediment Yield Process of the Cross Ridge and Longitudinal Ridge Slope under Natural Rainfall. 2018. (In Chinese)
948 Zhang, Y. Abundance and diversity of soil nematode community in natural at different altitudes in cold-temperate climate zone. 2021. (In Chinese)
949 Wu, R. Research on soil microbial properties in Larix principis-rupprechtii plantation at Taiyue, Shanxi. 2020. (In Chinese)
950 Ke, Y. The characteristics of soil CO2, N2O emissions in the hilly area of central Sichuan basin typical farmland and forest and validation of DNDC model for the measurements. 2015. (In Chinese)
951 Xu, Y. Effects of different transformation measures on soil organic carbon in the Pinus massoniana low-benefit forest in southern Sichuan. 2016. (In Chinese)
952 Hao, K. Seasonal dynamic of soil labile organic carbon in spruce plantation different structural adjustment in subalpine of western Sichuan. 2011. (In Chinese)
953 Kang, C. Seasonal dynamics of soil labile Organic Carbon in spruce plantation different structural adjustment in subalpine of western Sichuan. 2019. (In Chinese)
954 Huang, H. Study on soil dissolved organic matter content under different land use types of Longgu district in Chengdu. 2013. (In Chinese)
955 Gong, C. Effects of altered carbon input on carbon emissions of the marshy wetlands and the microbiological mechanisms. 2018. (In Chinese)
956 Xin, F. The seasonal dynamics of soil respiration and microbial community with different plantations regeneration way of Cunninghamia lanceolata. 2012. (In Chinese)
957 Lin, X. Effects of tree species composition on soil carbon composition in poplar plantation. 2021. (In Chinese)
958 Zhang, H. Annual variations of the active and recalcitrant organic carbons and the microbial influences in saline-alkali farmland soil. 2017. (In Chinese)
959 Liu, X. Farmland carbon pool composition and emissions characteristics of various land use types in Fuzhou. 2020. (In Chinese)

960 Du, C. Seasonal dynamics of soil microbial communities under different forest types in the Xinjiangshan Forest Region of Qinling Mountains. 2018. (In Chinese)
961 Xu, Y. Mechanisms of Greenhouse Gas Emissions and Soil Organic Carbon Dynamics from Rice-rapeseed Rotation in Different Water-saving Irrigation Paddy Fields. 2016. (In Chinese)
962 Huang, T. Effects of different soil and water loss control measures on surface runoff and soil nutrients in camellia forest in purple soil region. 2018. (In Chinese)
963 Du, L. CO2 emission from red soil and its influence factors in mid-subtopical China. 2006. (In Chinese)
964 Li, S. Study on Resource Utilization Efficiency and Soil Environmental Effects of Multi-cropping Planting System in Red Upland Soil. 2021. (In Chinese)
965 Yang, F. Non-target effects of naphthalene on soil respiration and biochemical characteristics in the subalpine forest of western Sichuan, China. 2018. (In Chinese)
966 Li, X. Effects of Close-to-nature Forest Reconstruction on Distribution Patterns of Carbon Storage in Young and Middle Age Forests in Ningbo Area. 2019. (In Chinese)
967 Feng, X. Effects of under-forest economic model of Pinus massoniana on soil active carbon and soil respiration in Changting. 2017. (In Chinese)
968 Ma, T. Effect of thinning on soil nitrous oxide fluxes in Pinus massoniana Plantation. 2016. (In Chinese)
969 Zhou, Q. Seasonal dynamics characteristics of soil and litter nutrients in Phoebe bournei, Cunninghamia lanceolata and its mixed plantation. 2020. (In Chinese)
970 Huang, Q. Contribution and influencing factors of soil organic matter derived from microorganism during the restoration process of Pinus massoniana forest. 2020. (In Chinese)
971 Liu, J. Effects of simulated climate warming on soil carbon and nitrogen transformation in the alpine forest of western Sichuan. 2012. (In Chinese)
972 Wei, Y. Effects of Rice Cultivation on Peatland Soil Enzyme Activities. 2019. (In Chinese)
973 Huo, L. The vertical distribution and stability of SOC in marsh before and after reclamation. 2013. (In Chinese)
974 Zhang, W. Dynamic and factors of microbial biomass carbon and dissolved organic carbon in Peatland. 2015. (In Chinese)
975 Xiang W. The effect of biochars application on short-range ordere minerals in paddy soils. 2017. (In Chinese)