Supplementary information:

Modeling boreal forest's mineral soil and peat C stock dynamics with Yasso07 model coupled with updated moisture modifier

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Table S1. The prior distribution of parameters of Yasso07.ξ_D version of Yasso07 soil carbon model (parameters k_A … $\delta2$) coupled with environmental function ξ_D (Eq. (4), parameters d, q, SWC_{opt}), and parameters of likelihood function (Eq. (6), a_{SOC}, b_{SOC}, a_{CO2}, b_{CO2}) used with observations SOC stocks and CO_2 emissions from forest/mire ecotone sites for Bayesian optimization.

| parameters	Prior p(θ)		
	2.50%	50%	97.50%
kA	0.62	0.73	0.84
kW	5	5.8	6.6
kE	0.24	0.29	0.35
kN	0.027	0.031	0.042
kH	0.0014	0.0017	0.0019
αAW	0.41	0.48	0.54
αAE	0	0.01	0.16
αAN	0.6	0.83	0.98
αWA	0.94	0.99	1
αWE	0	0	0.08
αWN	0	0.01	0.21
αEA	0	0	0.004
αEW	0	0	0.003
αEN	0	0.03	0.25
αNA	0	0	0.007
αNW	0	0.01	0.031
αNE	0.79	0.92	0.99
αH	0.0037	0.0045	0.0056
$\delta1$	-1.9	-1.7	-1.5
$\delta2$	0.76	0.86	0.96
r	-0.321	-0.306	-0.29
d	0.9989	0.999	0.9999
Q_{10}	0.7	1.743	5
SWC_{opt}	5	31.69	50
a_{SOC}	0.0001	80	150
b_{SOC}	0.0001	1	3
a_{CO2}	0.0001	0.15	0.7
b_{CO2}	0.0001	0.5	3
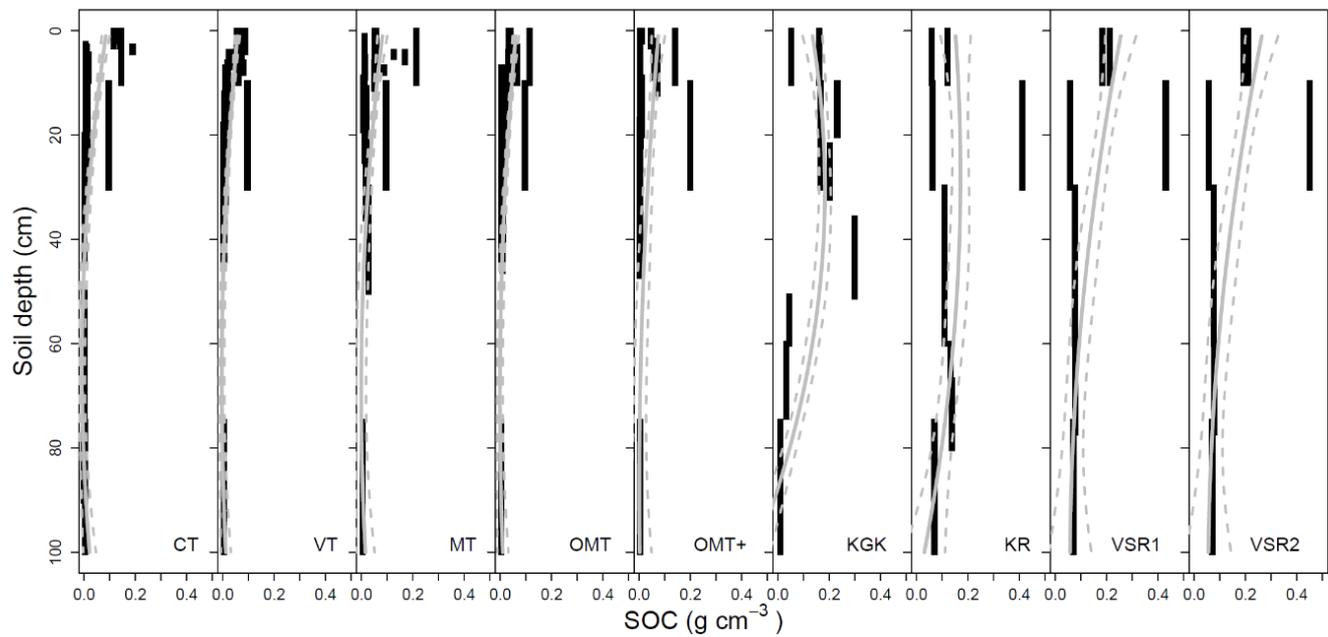
Figure S1. Soil organic carbon content (SOC, g cm^{-3}) for samples soil layers of different depth and the fitted functions used for interpolation of total SOC up to 1m.
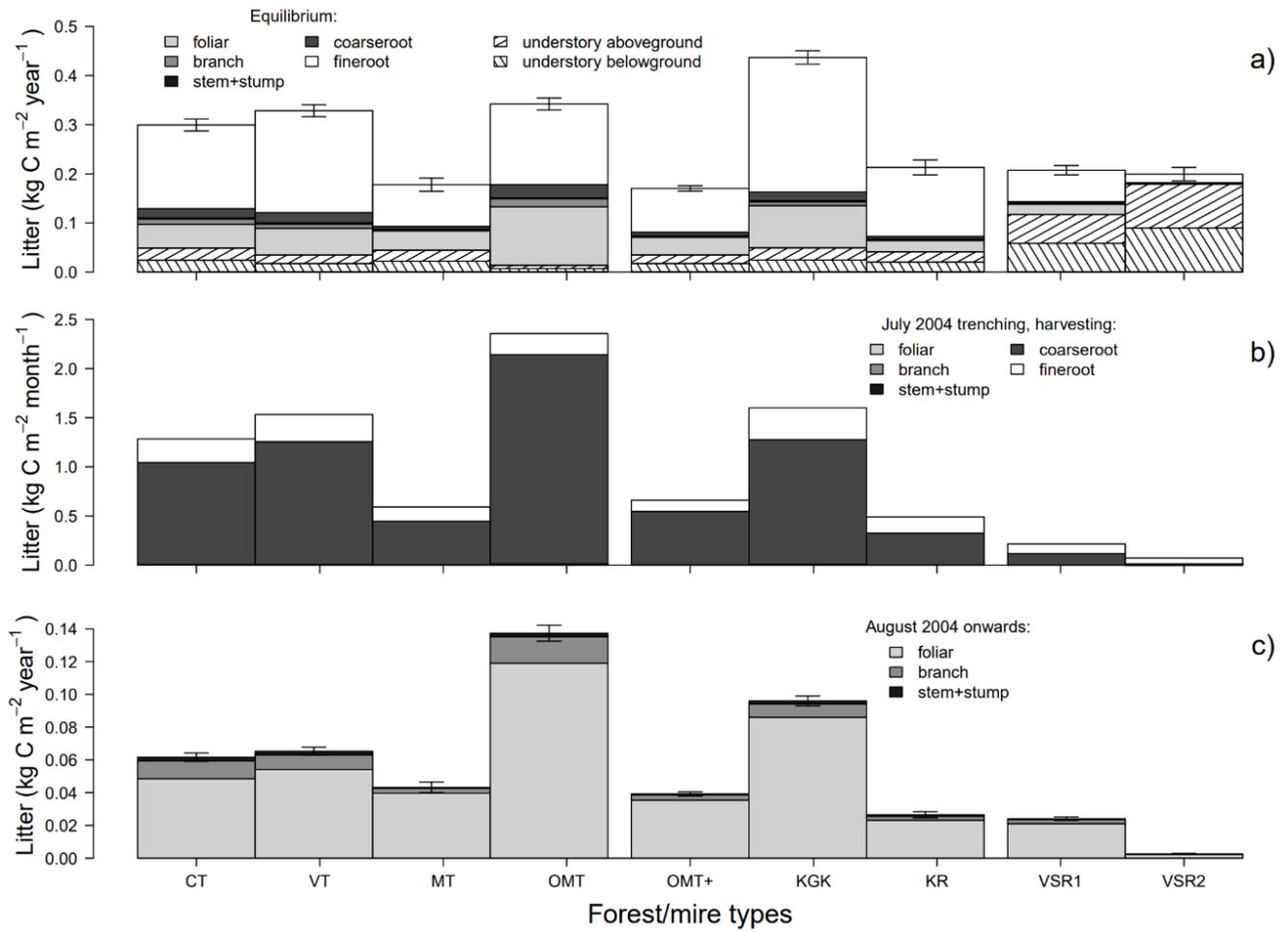
Figure S2. Litter input for nine forest/mire types derived separately from each biomass component (foliage, branches, stem and stump, roots, and understory) for assumed equilibrium state forest before trenching (a), during root trenching (b), and after trenching (c).
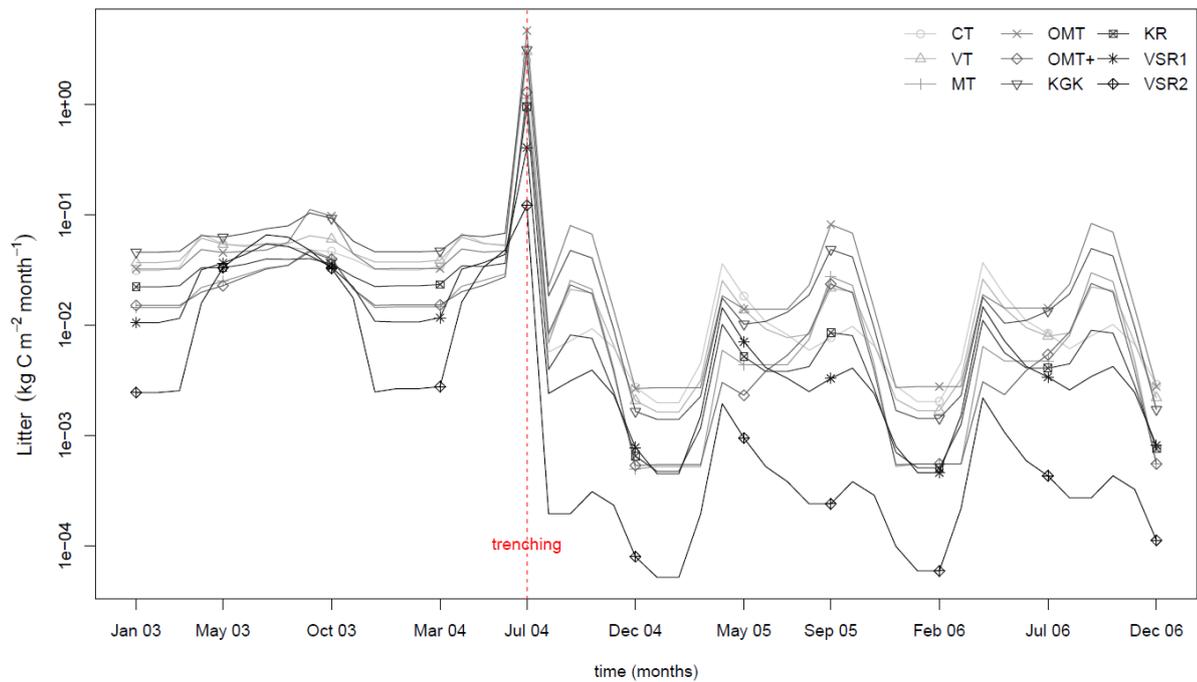
35   Figure S3. Monthly time series of the total litter input of nine forest/mire types.