

Supplementary Material

Physical Processes Dictate Early Biogeochemical Dynamics of Soil Pyrogenic Organic Matter in a Subtropical Forest System

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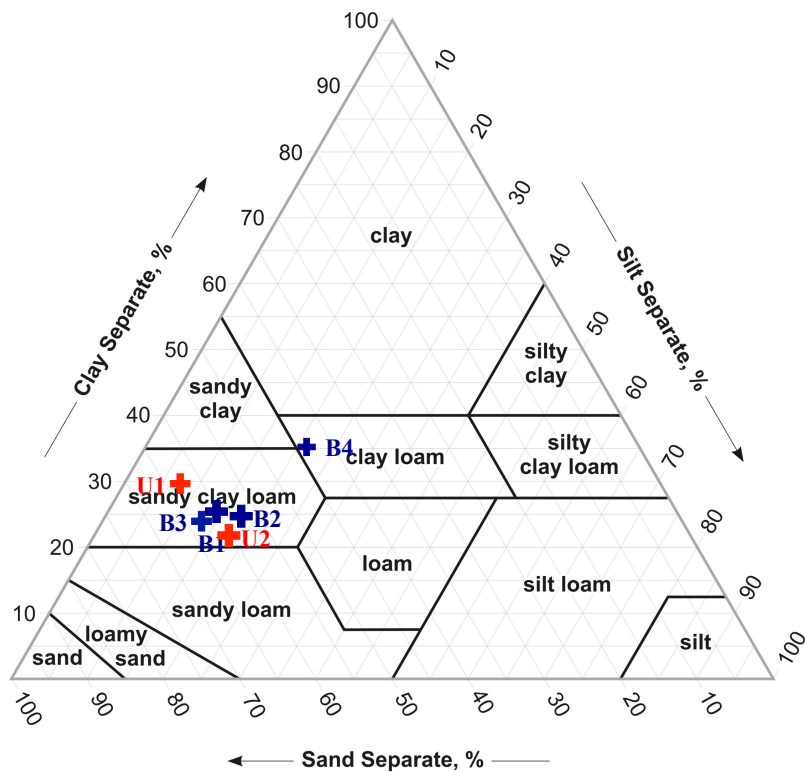
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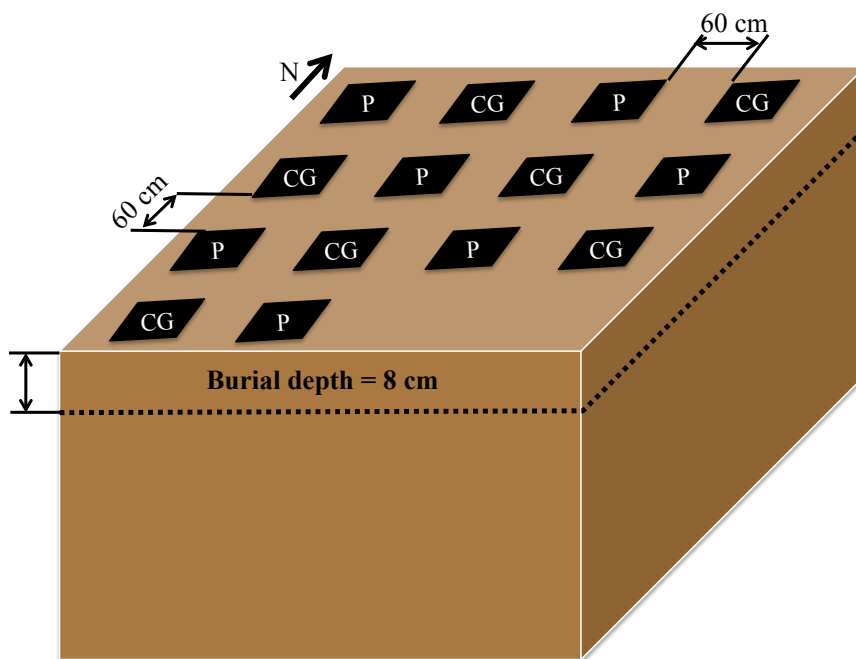
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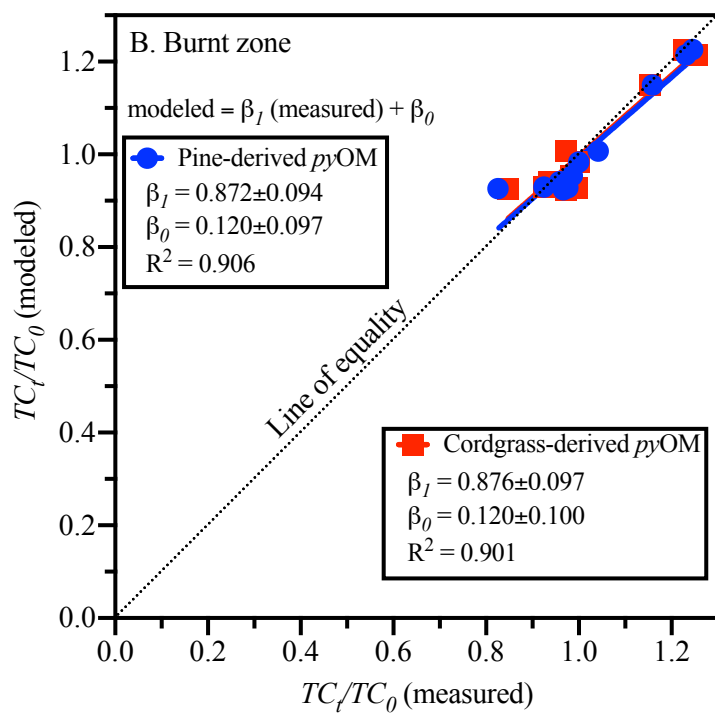
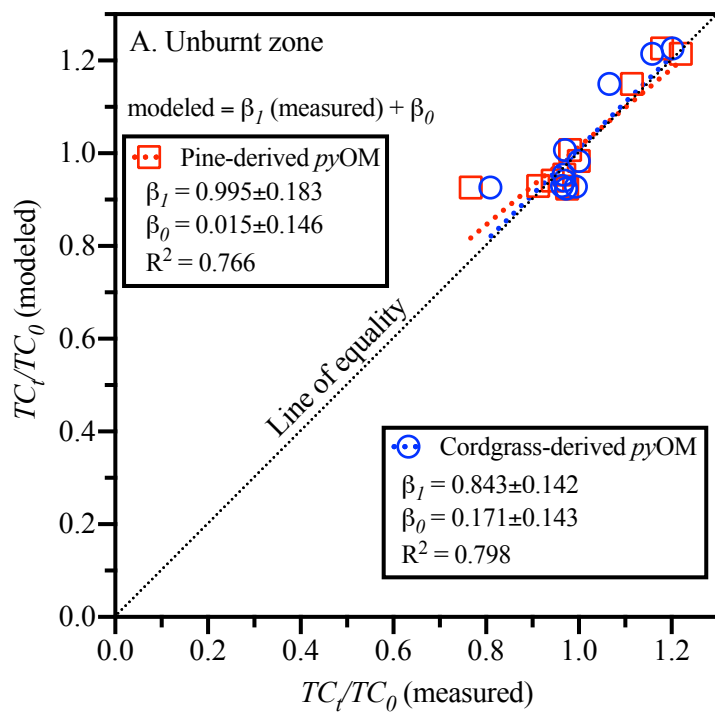
Supplementary Figure 1. Soil texture classes of the 0-10 cm deep soil samples collected at B1, B2, B3 , B4, U1 and U2 sample sites.



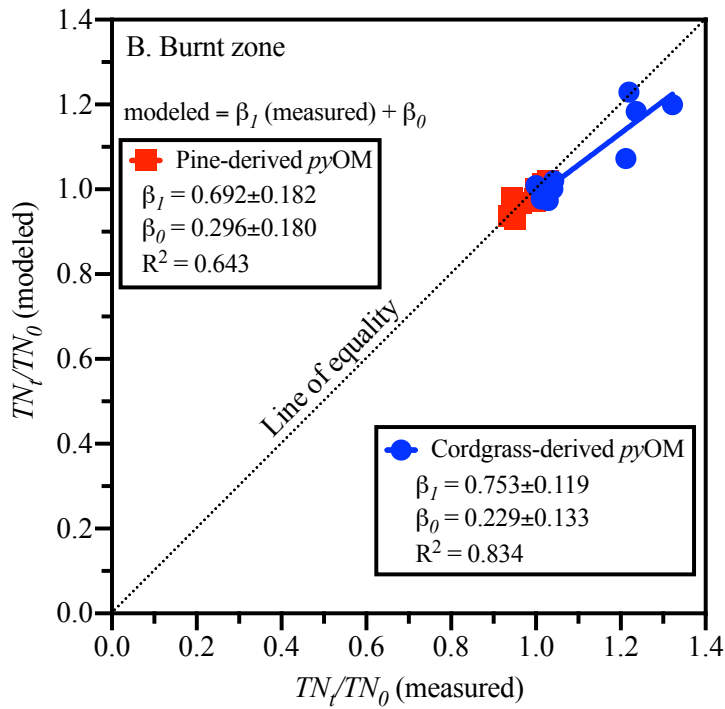
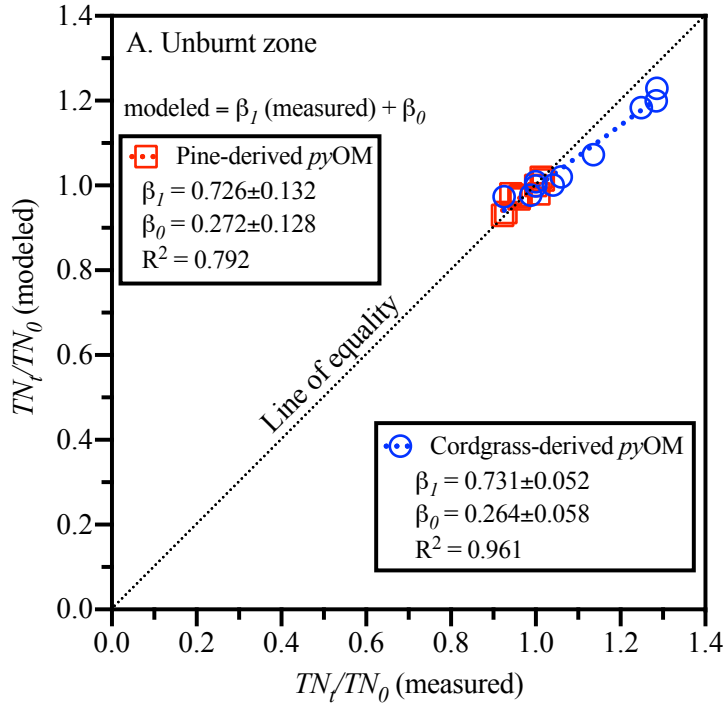
Supplementary Figure 2. Schematic showing how pine- (P) and cordgrass-derived (CG) *pyOM* were outlayed at each sampling location.

Supplementary Table 2. Repeated-measures analysis of variance showing total amount of variability in carbon content, nitrogen content and pH accounted for by time of sampling, sampling location and interactions between the two factors for pine- and cordgrass-derived *pyOM* buried in unburnt and burnt fire zones.

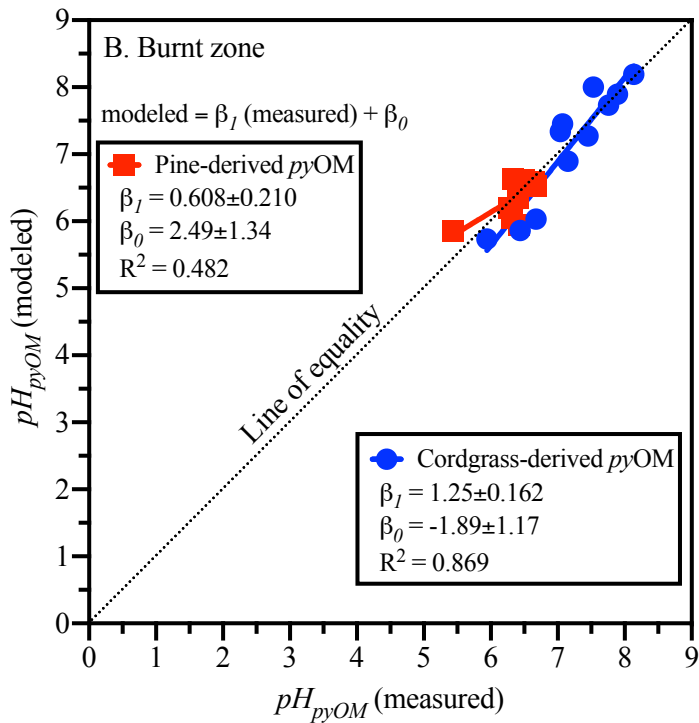
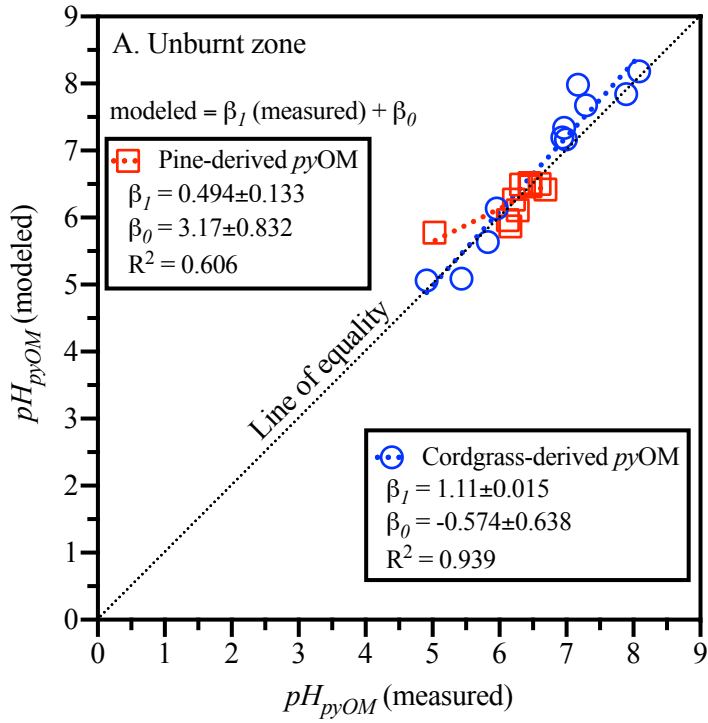
	Source of Variation		
	Time	Location	Interaction (Time x Location)
<u>Unburnt zone</u>			
Amount of total variation (%)			
Pine-derived <i>pyOM</i>			
TC	80.5	0.010 ^{ns}	16.6
TN	38.3	13.3	41.8
pH	83.1	2.29	12.8
Cordgrass-derived <i>pyOM</i>			
TC	91.3	2.53 ^{ns}	1.87
TN	78.6	3.41	13
pH	90.7	3.49	4.86
<u>Burnt zone</u>			
Pine-derived <i>pyOM</i>			
TC	83.4	0.706 ^{ns}	13.1
TN	59.3	0.941 ^{ns}	14.7
pH	88.0	0.978	6.76
Cordgrass-derived <i>pyOM</i>			
TC	91.3	2.53 ^{ns}	1.87
TN	85.6	0.081 ^{ns}	8.81
pH	80.7	2.35	14.3



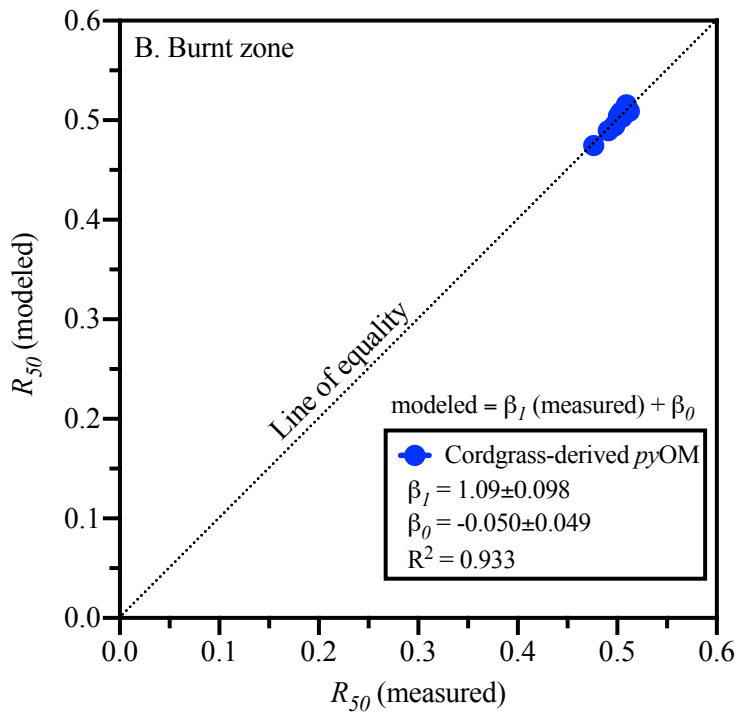
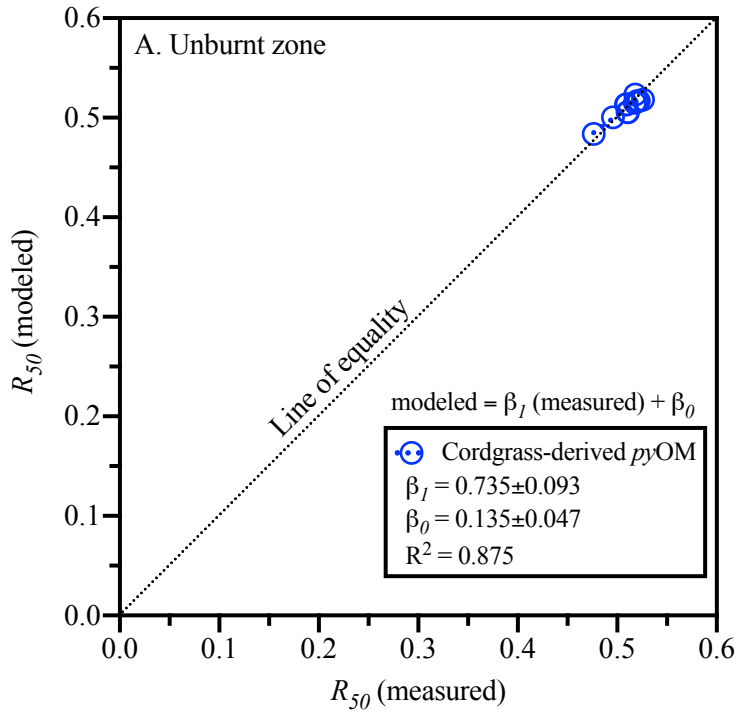
Supplementary Figure 3. Relationship between measured and model fitted relative total *py*OM-associated carbon based on generalized linear model.



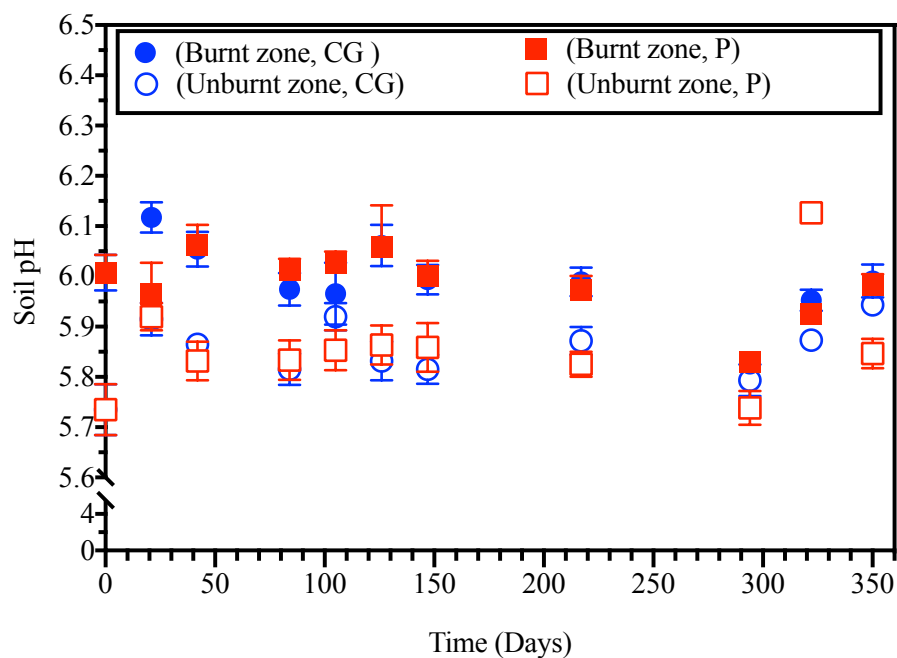
Supplementary Figure 4. Relationship between measured and model fitted relative total *pyOM*-associated nitrogen based on generalized linear model.



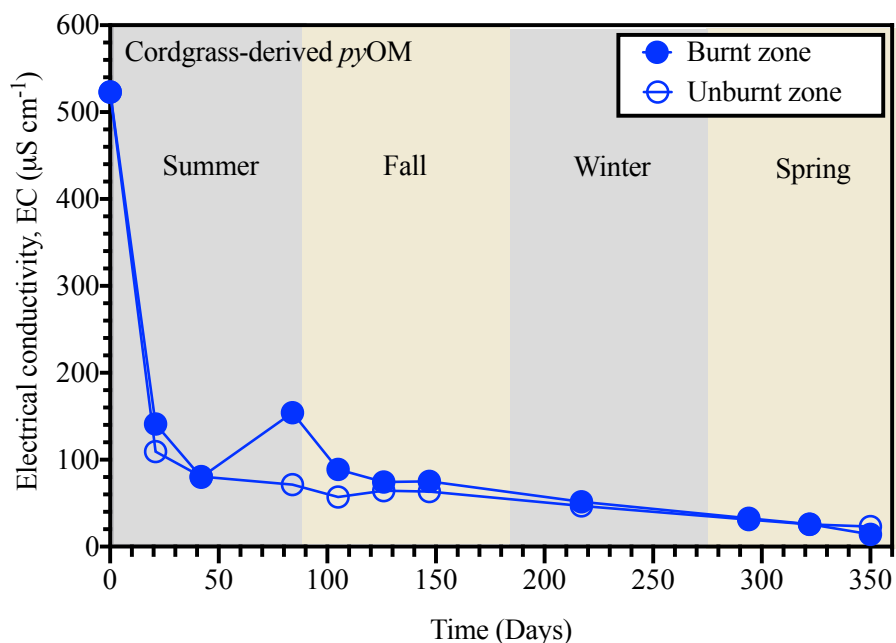
Supplementary Figure 5. Relationship between measured and model fitted *py*OM pH based on generalized linear model.



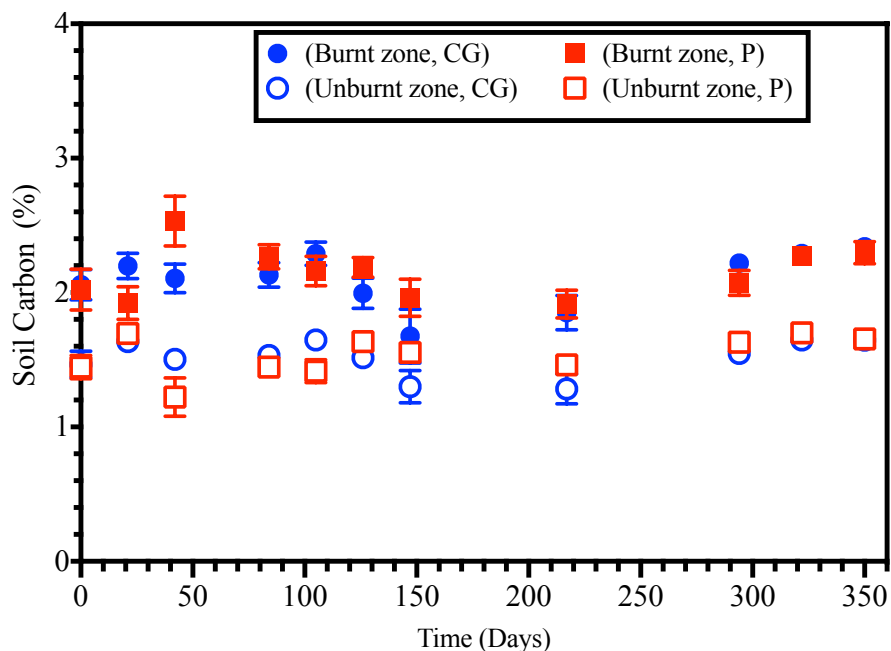
Supplementary Figure 6. Relationship between measured and model fitted *py*OM R_{50} based on generalized linear model.



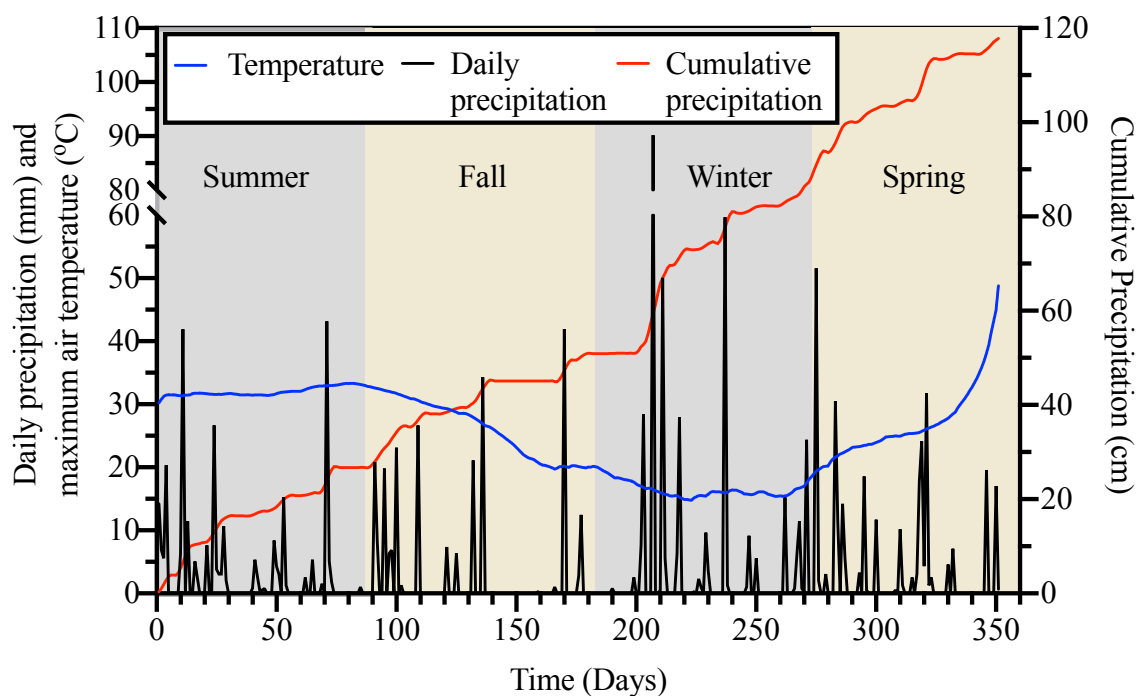
Supplementary Figure 7. Temporal variation in measure pH of the soil directly beneath litterbags of pine- (P) and cordgrass-derived (CG) *pyOM* that were buried in unburnt and burnt fire zones. Values are the spatially-averaged pH (\pm standard error) across 4 burnt and 2 unburnt sampling locations.



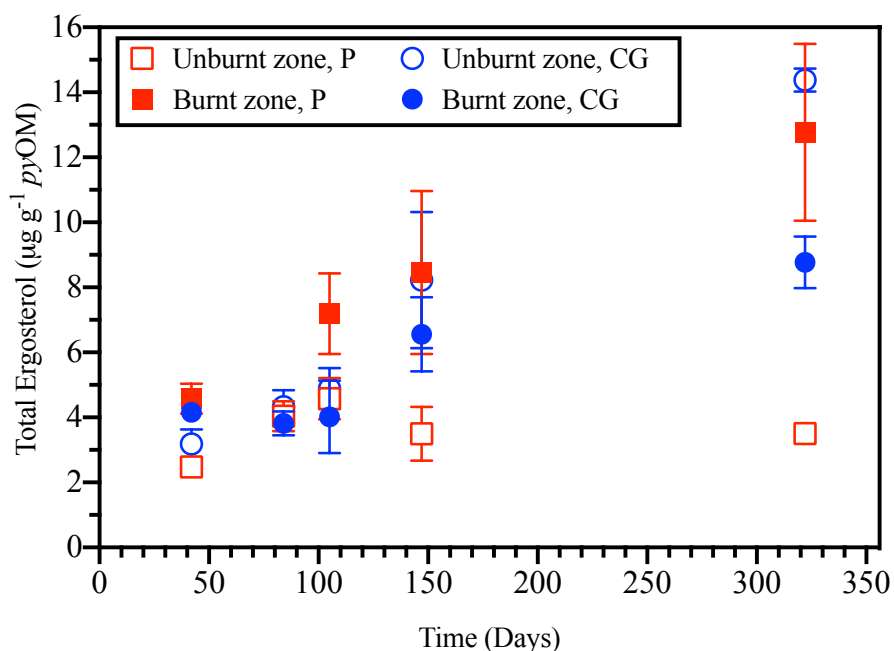
Supplementary Figure 8. Temporal variation in the electrical conductivity (EC) of cordgrass-derived (CG) *pyOM* buried in unburnt and burnt fire zones. Values are the spatially-averaged EC across 4 burnt and 2 unburnt sampling locations.



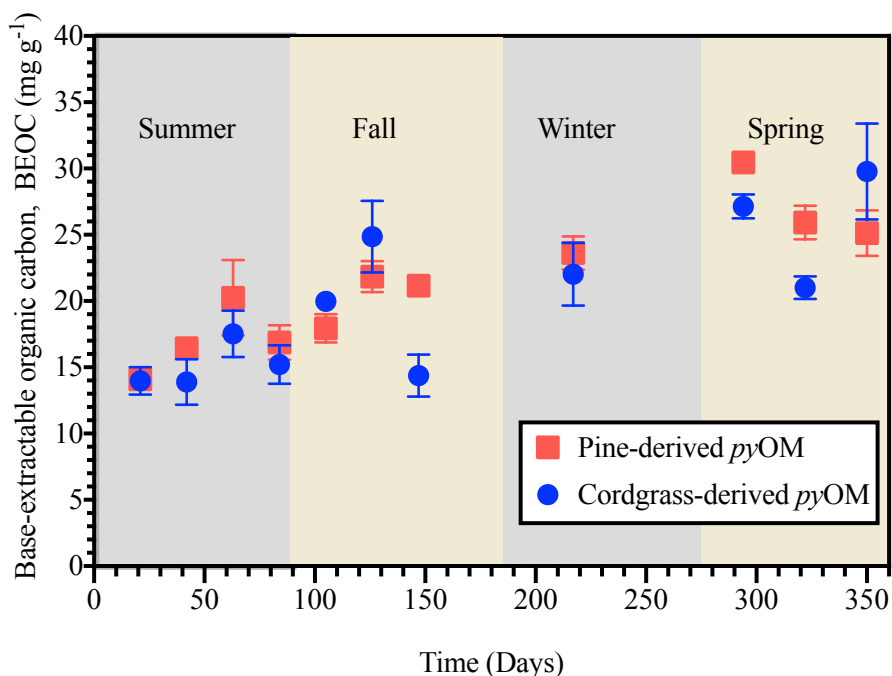
Supplementary Figure 9. Temporal variation in soil carbon directly beneath litterbags of pine- (P) and cordgrass-derived (CG) *pyOM* that were buried in unburnt and burnt fire zones. Values are the spatially-averaged soil carbon (\pm standard error).



Supplementary Figure 10. Daily precipitation and maximum air temperature measured at the study site (Lake Thoreau Environmental Center) over the course of the study.



Supplementary Figure 11. Temporal variation in ergosterol concentration in pine- (P) and cordgrass-derived (CG) *pyOM* that were buried in unburnt and burnt fire zones. Values are spatially-averaged ergosterol (\pm standard error) across 4 burnt and 2 unburnt sampling locations.



Supplementary Figure 12. Temporal variation in base-extractable organic carbon from pine- and cordgrass-derived *pyOM* buried in the burnt zone. Values are the spatially-averaged BEOC (\pm standard error) across 4 burnt sampling locations.