



Influence Of Vegetation Types On Carbon Composition Along The Litter- Fermentation Layer- Sediment Continuum In Apalachicola National Forest Wetlands

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Introduction

Globally, wetlands are major reservoirs of soil carbon (C) [1]. They are also inhabited by different vegetation types, however it remains unclear how vegetation types influence C composition along the litter-fermentation layer-sediment continuum and the consequences on C sequestration. The objective of the study is to determine the effects of vegetation types on C composition in Apalachicola Forest National Forest and to inform the best management practices for C sequestration.

Experimental

Soil samples were collected in wetlands supporting different vegetation types. Litter, fermentation layer and sediment were sampled up to a 30 cm depth. One site was dominated by cypress and the second by spikerush and water lily. Ground samples were analyzed using ^{13}C NMR at FSU NMR facility using 300 MHz instrumentation.

Results and Discussion

Results indicated dominance of alkyl C in the cypress site sediment which was mainly high thermal stable C and dominance of O-alkyl C in the spikerush+water lily site sediment, which was dominantly low thermal stable C (Fig.1). Dominance of O-alkyl C enhanced while alkyl C diminished methane (CH_4) and carbon dioxide (CO_2) production.

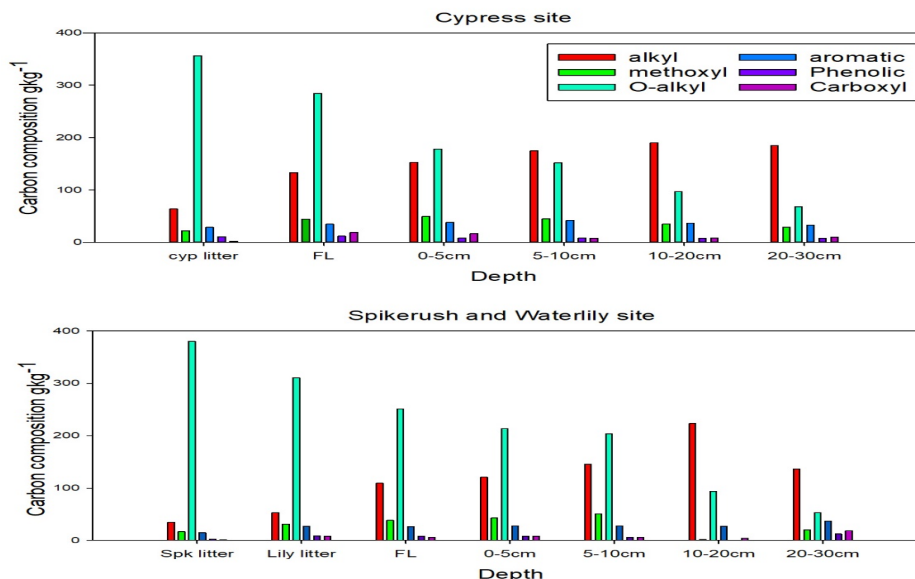


Fig.1 Soil Carbon composition in g kg^{-1} of fermentation layer, different sites and depths as determined by Solid state ^{13}C NMR.

Conclusions

Management practices that alter vegetation types in the wetlands influencing alkyl and O-alkyl C dominance concomitantly affect C sequestration and greenhouse gases production.

Acknowledgements

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References

[1] Nahlik, A.M., *et al.*, Nature Communications, **7**, 13835 (2016).