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Note

Modern *n*-Alkane Abundances and Isotopic Composition of Vegetation in a Gymnosperm-Dominated Ecosystem of the Southeastern U.S. Coastal Plain

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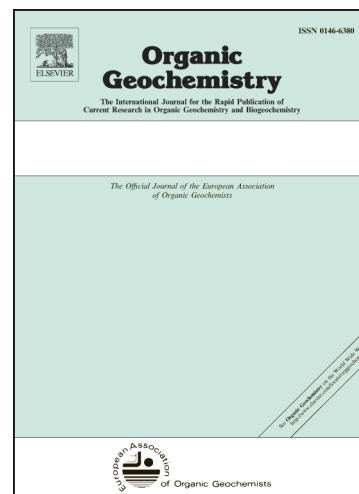
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Modern *n*-Alkane Abundances and Isotopic Composition of Vegetation in a
Gymnosperm-Dominated Ecosystem of the Southeastern U.S. Coastal Plain

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Abstract

Prior analyses of *n*-alkyl lipids in vegetation indicate low concentrations of *n*-alkanes in gymnosperm leaves and significant offsets in lipid carbon isotope values of angiosperms and gymnosperms. This finding has implications for paleoenvironmental studies utilizing *n*-alkyl lipid proxies in gymnosperm-dominated ecosystems, such as the pine ecosystems of the U.S. southeastern coastal plain. I provide here the *n*-alkane abundances and distributions for 19 of the most dominant taxa in the longleaf pine ecosystem along with *n*-C₂₉ alkane $\delta^{13}\text{C}$ values ($\delta^{13}\text{C}_{n\text{-c29}}$). Additionally, I assess modern relationships between stable hydrogen isotope values of *n*-C₂₉ alkanes ($\delta^2\text{H}_{n\text{-c29}}$) and mean annual precipitation to constrain apparent fractionations ($\delta^2\text{H}_{n\text{-C29}/\text{MAP}}$) necessary to conduct regional paleoclimate reconstructions. Gymnosperms of the coastal plain have extremely low *n*-alkane abundances relative to angiosperms and are unlikely to contribute significantly to sedimentary archives. Lake surface sediment *n*-alkane distributions, $\delta^2\text{H}_{n\text{-c29}}$, and $\delta^{13}\text{C}_{n\text{-c29}}$ values indicate that they are primarily sourced from less-dominant angiosperms. The $\delta^2\text{H}_{n\text{-C29}/\text{MAP}}$ values are $\sim 10.0\text{‰}$ VSMOW more positive for gymnosperms relative to angiosperms and $\delta^{13}\text{C}_{\text{alkane/leaf}}$ values are $\sim 1.5\text{‰}$ VPDB more positive for gymnosperms relative to angiosperms, but with overlap.

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