



Disproportionate contribution of riparian inputs to organic carbon in freshwater systems.

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A lack of appropriate proxies has traditionally hampered our ability to distinguish riverine organic carbon (OC) sources at the landscape scale. However, the dissection of tropical and sub-tropical C4 savannah grasslands by C3 riparian vegetation, and the distinct carbon stable isotope signature ($\delta^{13}\text{C}$) of these two photosynthetic pathways, provides a unique setting to assess the relative contribution of riparian and more distant sources to riverine C pools. Here, we show through the comparison of $\delta^{13}\text{C}$ signatures of bulk sub-basin vegetation ($\delta^{13}\text{C}_{\text{VEG}}$) with those of riverine OC pools, that in contrasting C3- and C4-dominated sub-tropical drainage basins, riverine OC is disproportionately sourced from bordering riparian vegetation, irrespective of climatic season. Our findings carry implications for the use of sedimentary $\delta^{13}\text{C}$ signatures as proxies for past forest-grassland distribution and climate, as the C4 component may be considerably underestimated due to its disconnection from riverine OC pools.