

Interactive comment on “Unusually negative nitrogen isotopic compositions ($\delta^{15}\text{N}$) of mangroves and lichens in an oligotrophic, microbially-influenced ecosystem” by et al.

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Received and published: 6 March 2008

This is a nice article that made me change a bit of my perspective on N cycling.

The article points out that although an earlier explanation by McKee et al. about low ^{15}N values in Belize mangroves was consistent with a hypothesis of isotope fractionation by red mangroves, new results indicate a different interpretation. The authors of the current study note in their Introduction that the earlier fractionation hypothesis was not consistent with measured porewater data; the newer results of this study show that a) lichens are picking up low ^{15}N signals from the air, b) badge and nutrient isotope work shows that an important atmospheric N source could be ammonia that had

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low ^{15}N , and finally c) it makes sense that slow-growing mangroves could be using a relatively dilute atmospheric ammonia source for their growth needs.

The article made me think that atmospheric ammonia contributions could be much more ubiquitous in ecosystem N budgets than recognized previously, perhaps also important in other systems such as grasslands or forests downwind of feedlots.

The article also left me thinking about some new experiments. The article really replaces an older "interpretation consistent with known data" with another "interpretation consistent with (newer) known data". Adding labeled nutrients to these mangroves might be a way out of this "consistency" world, and show in a more positive, definitive manner that labeled algal mats lead to labeled mangroves downwind of those mats. One could do the reverse as well, and try to block emissions and see the effect on mangrove growth and isotopes.

Interactive comment on Biogeosciences Discuss., 5, 937, 2008.

BGD

5, S118–S119, 2008

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