



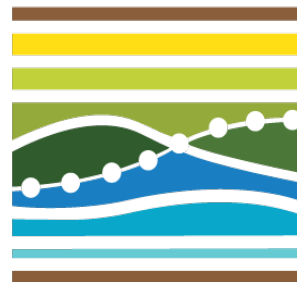
Eddy flux tower!

Coweeta (CWT)

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w/ Jennifer Knoepp & Chris Oishi

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LTER SCIENCE COUNCIL MEETING 2018
MADISON, WI



NATIONAL SCIENCE FOUNDATION

LTER NETWORK

LONG TERM ECOLOGICAL RESEARCH

Organic Matter - Who/How/New pubs

CWT measures **trends in soil carbon** from long term vegetation and soil plots

Knoepp, Jennifer, D. et al. (2018). Total C and N Pools and Fluxes Vary with Time, Soil Temperature, and Moisture Along an Elevation, Precipitation, and Vegetation, Gradient in Southern Appalachian Forests. *Ecosystems*.

CWT maintains **long-term DOC records in several streams**

Meyer, J., Webster, J.R., **Knoepp, J.D.**, Benfield, F. 2014. Dynamics of Dissolved Organic Carbon in a Stream during a Quarter Century of Forest Succession. In. Long-Term Response of a Forest Watershed Ecosystem: Clearcutting in the Southern Appalachians. W.T. Swank, and J. Webster (eds). Oxford Press.

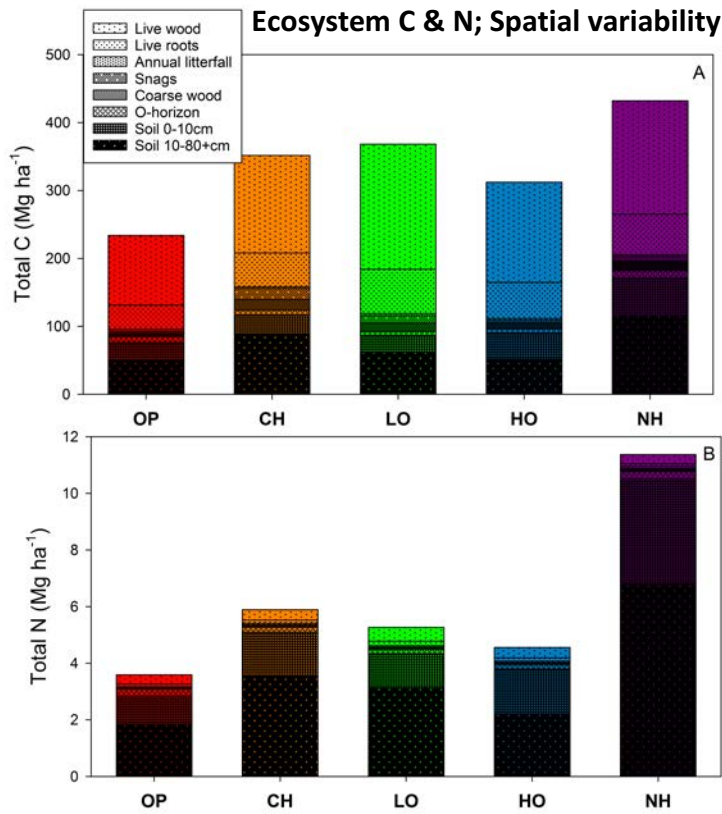
Singh, N.K., W.M. Reyes, E.S. Bernhardt, R. Bhattacharya, J.L. Meyer, **J.D. Knoepp**, R.E. Emanuel. 2016. Hydro-Climatological Influences on Long-Term Dissolved Organic Carbon in a Mountainous Stream of the Southeastern United States. *Journal Environmental Quality* 45:1286-1295.

CWT measures **long-term land-atmosphere carbon fluxes** from a flux tower within the basin (since 2010) and in a nearby farm (since 2016).

Oishi, A.C., et al. (2018) Warmer temperatures reduce net carbon uptake, but not water use, in a mature southern Appalachian forest. *Agricultural and Forest Meteorology* 252, 269-282.

Novick, K.A., et al. (2016) Cold air drainage flows subsidize montane valley ecosystem productivity. *Global Change Biology* 22, 4014–4027.

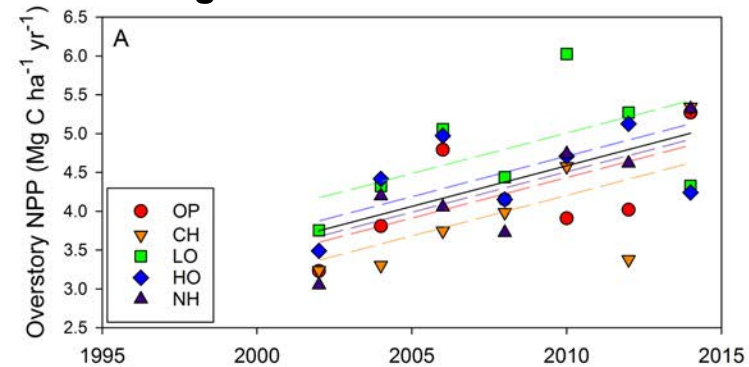
Organic Matter – LT soil trends (Knoepp et al. 2018. Ecosystems)



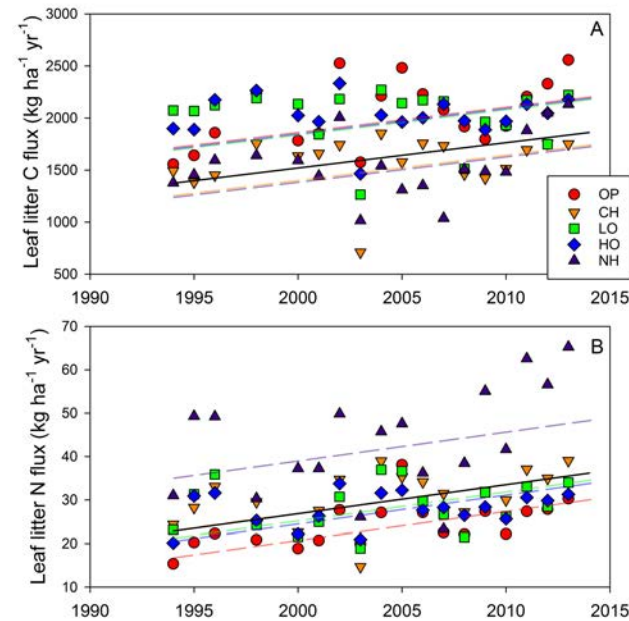
Oak pine
Cove Hardwood
Low Elevation Hardwood

Northern Hardwood
High Elevation Hardwood

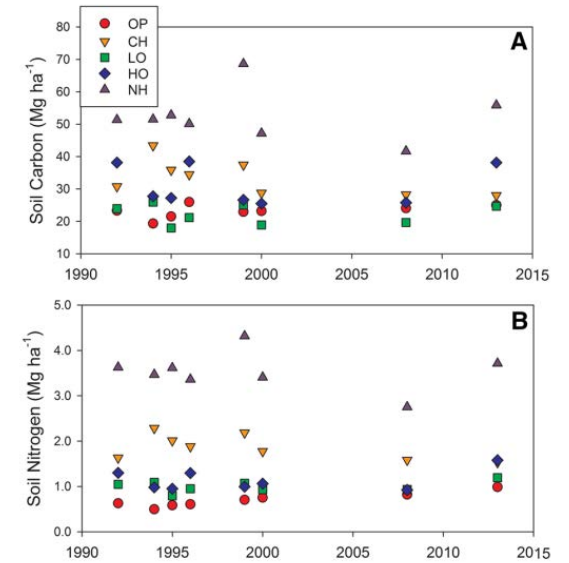
Aboveground NPP has been increasing



Leaf litter C&N fluxes have also been increasing

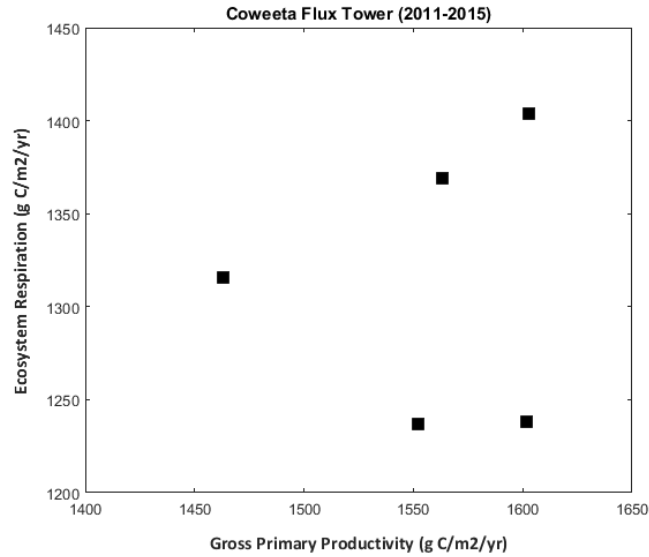


But there are no trends in soil C or N



Carbon Fluxes – Eddy Flux findings

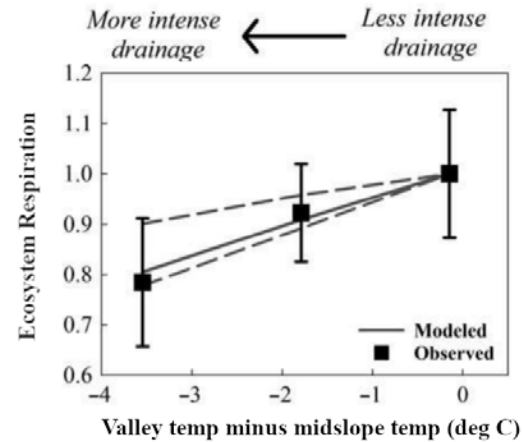
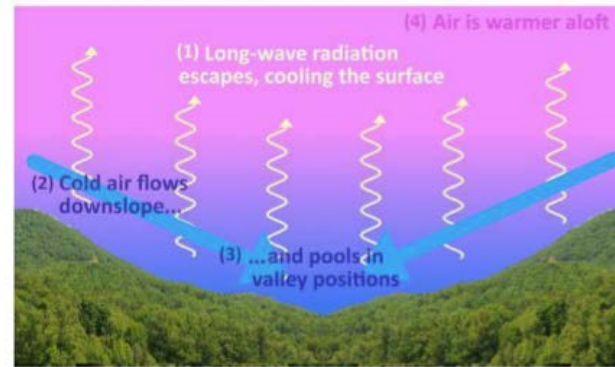
Are GPP and respiration coupled (explaining results from LT plots)?



need more data

Cold-air drainage suppresses ecosystem respiration (Novick et al. 2016)

(a) Clear-sky conditions



Combining models and flux tower data suggest a long-term respiration trend (Oishi et al. 2018)

