

Final Report to DOE's Office of Science (BER) submitted by Ram Oren (PI) of DE-FG02-00ER63015 (ended on 09/14/2009) entitled "Controls of Net Ecosystem Exchange at an Old Field, a Pine Plantation, & a Hardwood Forest under Identical Climatic & Edaphic Conditions"

The project yielded papers on fluxes (energy, water and carbon dioxide) between each ecosystem and the atmosphere, and explained the temporal dynamics of fluxes based on intrinsic (physiology, canopy leaf area and structure) and extrinsic (atmospheric and edaphic conditions). Comparisons between any two of the ecosystems, and among all three followed, attributing differences in behavior to different patterns of phenology and differential sensitivities to soil and atmospheric humidity. Finally, data from one-to-three of the ecosystems (incorporated into FluxNet data archive) were used in syntheses across AmeriFlux sites and even more broadly across FluxNet sites.

The papers most relevant to the proposed research are listed below. Because the datasets are now in the public domain, and because we do not ask for co-authorships on papers using these data, we do not have a complete list of papers using data produced by the project. We still receive inquiries regarding potential authorships at a rate of roughly five per year.

Published Papers supported whole or in part by the project

The main papers with results pertinent to two or all three sites are:

Oishi AC, Palmroth S; Butnor JR, Johnsen KH, Oren R, 2013, Spatial and temporal variability of soil CO₂ efflux in three proximate temperate forest ecosystems. *Agricultural and Forest Meteorology* **171: 256-269 DOI: 10.1016/j.agrformet.2012.12.007**

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The main papers with results pertinent to one of the three sites are:

Kim D, Oren R, A. Oishi CA, Hsieh C-I, Phillips N, Novick KA, Stoy PC, 2014, Sensitivity of stand transpiration to wind velocity in a mixed broadleaved deciduous forest. *Agricultural and Forest Meteorology* **187**: 62-71

Oishi AC, Oren R, Novick KA, Palmroth S, Katul GG, 2010, Interannual invariability of forest evapotranspiration and its consequence to water flow downstream. *Ecosystems* **13**: 421-436 DOI: 10.1007/s10021-010-9328-3

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