

WOODS HOLE RESEARCH CENTER

Major publications of the past five years

- Anderegg, W.R.L., C.R. **Schwalm**, F. Biondi, J.J. Camarero, G. Koch, et al. (2015). Pervasive drought legacies in forest ecosystems and their implications for carbon cycle models. *Science* 349(6247):528-532.
- Baccini**, A., S.J. **Goetz**, W.S. **Walker**, N.T. **Laporte**, M. **Sun**, D. Sulla-Menashe, J. **Hackler**, P.S.A. **Beck**, R. Dubayah, M.A. Friedl, S. **Samanta**, and R.A. **Houghton** (2012). Estimated carbon dioxide emissions from tropical deforestation improved by carbon-density maps. *Nature Climate Change* 2:182-185.
- Beck**, P.S.A., G.P. Juday, S.J. **Goetz**, C. Alix, S. Winslow, E. Sousa, and P. Heiser (2011). Changes in forest productivity across Alaska consistent with biome shift. *Ecology Letters* 14:373-379.
- Baldock, J.A., B. Hawke, J. **Sanderman**, and L.M. Macdonald (2013). Predicting contents of soil carbon and its component fractions from diffuse reflectance mid-infrared spectra. *Soil Research* 51:577-595.
- Brando**, P.M., et al. (2014). Abrupt increases in Amazonian tree mortality due to drought-fire interactions. *Proceedings of the National Academy of Sciences* 111(17):6347-6352.
- Brando**, P.M., M.T. **Coe**, R. DeFries, and A.A. Azevedo (2013). Ecology, economy, and management of an agroindustrial frontier landscape in the southeast Amazon. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368, 20120152.
- Brando**, P.M., S. **Goetz**, A. **Baccini**, D. Nepstad, and P. **Beck** (2010). Seasonal and interannual variability of climate and vegetation productivity across the Amazon. *Proceedings of the National Academy of Sciences* 107(33):14685-14690.
- Castanho**, A.D.A., M.T. **Coe**, M.H. Costa, Y. Malhi, D. Galbraith, and C.A. Quesada (2013). Response of simulated above ground biomass and net primary productivity in the Amazon to spatial and temporal variability in the physical environment. *Biogeosciences* 10:2255-2272.
- Chappell, A., J. Baldock, and J. **Sanderman** (2015). The significance of omitting Australian soil erosion dynamics from soil organic carbon cycling. *Nature Climate Change*. Accepted August 18, 2015.
- Coe**, M.T., T.R. Marthews, M.H. Costa, D. Galbraith, N. **Greenglass**, H.M.A. Imbuzeiro, N.M. Levine, Y. Malhi, P. Moorcroft, M.N. Muza, T.L. Powell, S. Saleska, L.A. Solorzano, and J. Wang (2013). Deforestation and climate feedbacks threaten the ecological integrity of south-southeastern Amazonia. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368, 20120155.
- Davidson**, E.A., A.C. de Araújo, P. Artaxo, J.K. Balch, I.F. **Brown**, M.M. da C. Bustamante, M.T. **Coe**, R.S. DeFries, M. Keller, M. Longo, J. W. Munger, W. Schroeder, B.S. Soares-Filho, C.M. Souza Jr., S.C. Wofsy (2012). The Amazon basin in transition. *Nature* 481:321-328.
- French, N.H.F., W.J. De Groot, L.K. Jenkins, B.M. **Rogers**, E. Alvarado, B. Amiro, B. De Jong, S. **Goetz**, E. Hoy, E. Hyer, R. Keane, B.E. Law, D. McKenzie, S.G. McNulty, R. Ottmar, D.R. Perez-Salicrup, J. Randerson, K.M. Robertson, and M. Turetsky (2011). Model comparisons for estimating carbon emissions from North American wildland fire. *Journal of Geophysical Research - Biogeosciences* 116, G00K05.
- Goetz**, S.J., M. Hansen, R.A. **Houghton**, W. **Walker**, N. **Laporte**, and J. Busch (2015). Measurement and Monitoring for REDD+: The Needs, Current Technological Capabilities and Future Potential. In F. Seymour & J. Busch (Eds.), *Why Forests? Why Now?* Center For Global Development, Washington, DC.
- Goetz**, S.J., and R.O. Dubayah (2011). Advances in remote sensing technology and implications for monitoring, reporting and verifying forest carbon stocks and emissions. *Carbon Management* 2:231-244.
- Goetz**, S.J., D. **Steinberg**, M. Betts, R. Holmes, P. Doran, R. Dubayah, and M. Hofton (2010). Lidar remote sensing variables predict breeding habitat of a Neotropical migrant bird. *Ecology* 91(6):1569-1576.
- Hansen, M.C., P.V. Potapov, R. Moore, M. Hancher, S.A. Turubanova, A. Tyukavina, D. Thau, S.V. Stehman, S.J.

- Goetz**, T.R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C.O. Justice, and J.R.G. Townshend (2013). High-Resolution Global Maps of 21st-Century Forest Cover Change. *Science* 342(6160):850-853.
- Holmes**, R.M., J.W. McClelland, B.J. Peterson, S.E. Tank, E. **Bulygina**, T.I. Eglinton, V.V. Gordeev, T.Y. Gurtovaya, P.A. Raymond, D.J. Repeta, R. Staples, R.G. Striegl, A.V. Zhulidov, and S.A. Zimov (2012). Seasonal and annual fluxes of nutrients and organic matter from large rivers to the Arctic Ocean and surrounding seas. *Estuaries and Coasts* 35:369-382.
- Houghton**, R.A., J.I. House, J., Pongratz, G.R. van der Werf, R.S. DeFries, M.C. Hansen, C. Le Quéré, and N. Ramankutty (2012). Carbon emissions from land use and land-cover change. *Biogeosciences* 9:5125-5142.
- Houghton**, R.A. (2013). The emissions of carbon from deforestation and degradation in the tropics: Past trends and future potential. *Carbon Management* 4:539-546.
- Houghton**, R.A., N. **Greenglass**, A. **Baccini**, A. Cattaneo, S. **Goetz**, J. **Kellndorfer**, N. **Laporte**, and W. **Walker** (2010). The role of science in Reducing Emissions from Deforestation and forest Degradation (REDD). *Carbon Management* 1(2):253-259.
- Jantz**, P., S.J. **Goetz**, and N. **Laporte** (2014). Tropical carbon corridors: mapping climate change mitigation and biodiversity co-benefits. *Nature Climate Change* 4:138-142.
- Kramer, M.G., J. **Sanderman**, O. Chadwick, J. Chorover, and P.M. Vitousek (2012). Sorption of dissolved oxidized lignin to reactive particles controls long-term carbon storage in soil. *Global Change Biology* 18(8):2594-2605.
- Lewis S., P. **Brando**, O. Phillips, G. van der Heijden, and D. Nepstad (2011). The 2010 Amazon drought. *Science* 331(6017):554-554.
- Macedo**, M.N., and E.A. **Davidson** (2014). Climate and land use: Forgive us our carbon debts. *Nature Climate Change* 4:538-539.
- Macedo** M.N., M.T. **Coe**, R. DeFries, M. Uriarte, P.M. **Brando**, C. Neill, and W.S. **Walker** (2013). Land-use-driven stream warming in southeastern Amazonia. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368:20120153.
- Macedo** M., R. DeFries, D. Morton, C. Stickler, G. Galford, and Y. Shimabukuro (2012). Decoupling of deforestation and soy production in the southern Amazon during the late 2000s. *Proceedings of the National Academy of Sciences* 109:1341-1346.
- Mann**, P.J., R.G.M. **Spencer**, B.J. Dinga, J.R. Poulsen, P.J. Hernes, G. **Fiske**, M.E. Salter, Z.A. Wang, K.A. Hoering, J. Six, and R.M. **Holmes** (2014). The biogeochemistry of carbon across a gradient of streams and rivers within the Congo basin. *Journal of Geophysical Research - Biogeosciences* 119.
- Natali**, S.M., E.A.G. Schuur, M. Mauritz, J. **Schade**, G. Celis, K.G. Crummer, K. Johnston, J. Krapek, E. Pegoraro, V. Salmon, and E. Webb (2015). Permafrost thaw and soil moisture driving CO₂ and CH₄ release from upland tundra. *Journal of Geophysical Research - Biogeosciences* 120.
- Natali**, S.M., E.A.G. Schuur, E. Webb, C.E. Hicks Pries, and C.G. Crummer (2014). Permafrost degradation stimulates carbon loss from experimentally warmed tundra. *Ecology* 95:602-608.
- Nepstad, D., D. McGrath, C. Stickler, A. Alencar, A. Azevedo, B. Swette, T. Bezerra, M. DiGiano, J. Shimada, R. Seroa da Motta, E. Armijo, L. Castello, P.M. **Brando**, et al. (2014). Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. *Science* 344(6188):1118-1123.
- Pan, Y., R.A. Birdsey, J. Fang, R.A. **Houghton**, P.E. Kauppi, W.A. Kurz, O.L. Phillips, A. Shvidenko, S.L. Lewis, J.G. Canadell, P. Ciais, R.B. Jackson, S.W. Pacala, A.D. McGuire, S. Piao, A. Rautiainen, S. Sitch, and D. Hayes (2011). A large and persistent carbon sink in the world's forests. *Science* 333:988-993.
- Panday**, P., M.T. **Coe**, M.N. **Macedo**, D.V. Silvério, and P.M. **Brando** (2015). Deforestation offsets water balance changes due to climate variability in the Xingu River in eastern Amazonia, Brazil. *Journal of Hydrology* 523:822-829.
- Pearson, R.G., S.J. Phillips, M.M. **Loranty**, P.S.A. **Beck**, T. Damoulas, S.J. Knight, and S.J. **Goetz** (2013). Shifts in Arctic vegetation and associated feedbacks under climate change. *Nature Climate Change* 3(7):673-677.

- Raupach, M.R., M. Gloor, J.L. Sarmiento, J.G. Canadell, T.L. Frölicher, T. Gasser, R.A. **Houghton**, C. Le Quéré, and C.M. Trudinger (2014). The declining uptake rate of atmospheric CO₂ by land and ocean sinks. *Biogeosciences* 11:3453-3475.
- Rogers**, B.M., A.J. Soja, M.L. Goulden, and J.T. Randerson (2015). Influence of tree species on continental differences in boreal fires and climate feedbacks. *Nature Geoscience* 8:228-234.
- Sanderman**, J., E. Krull, T. Kuhn, G. Hancock, J. McGowan, T. Maddern, and S. Fallon (2015). Deciphering sedimentary organic matter sources in a coastal estuary: Insights from radiocarbon measurements and NMR spectroscopy. *Limnology and Oceanography* 60:739-753.
- Sanderman**, J., and J.A. Baldock (2010). Accounting for soil carbon sequestration in national inventories: A soil scientist's perspective. *Environmental Research Letters* 5:034003
- Scholes & Settele, et al. **Goetz** - contributing author (2014). *IPCC 5th Assessment Report*, Working Group 2, Chapter 4. *Terrestrial and Inland Water Systems*. <http://www.ipcc.ch/report/ar5/wg2>
- Schuur, E.A.G., A.D. McGuire, G. Grosse, J. Harden, D.J. Hayes, H. Hugelius, C.D. Koven, P. Kuhry, D.M. Lawrence, S.M. **Natali**, D. Olefeldt, V.E. Romanovsky, C. Schädel, M. Turetsky, C. Treat, J. Vonk (2015). Climate change and the permafrost carbon feedback. *Nature* 520:171-179.
- Schwalm**, C.R., D.N. Huntzinger, J. Fisher, et al. (2015). Toward "optimal" integration of terrestrial biosphere models. *Geophysical Research Letters* 42.
- Schwalm**, C.R., C.A. Williams, K. Schaefer, D. Baldocchi, T.A. Black, A.H. Goldstein, B.E. Law, W.C. Oechel, U.K.T. Paw, and R.L. Scott (2012). Reduction in carbon uptake during turn of the century drought in western North America. *Nature Geoscience* 5:551-556.
- Soares-Filho, B., R. Rajão, M.N. **Macedo**, A. Carneiro, W. Costa, M.T. **Coe**, H. Rodrigues, and A. Alencar (2014). Cracking Brazil's Forest Code. *Science* 344(6182):363-364.
- Spencer**, R.G.M., P.J. **Mann**, T. Dittmar, T.I. Eglinton, C. McIntyre, R.M. **Holmes**, N. Zimov, and A. Stubbins (2015). Detecting the signature of permafrost thaw in arctic rivers. *Geophysical Research Letters* 42.
- Tian, H., C. Lu, J. Yang, K. Banger, D.N. Huntzinger, C.R. **Schwalm**, et al. (2015). Global Patterns and controls of soil organic carbon dynamics as simulated by multiple terrestrial biosphere models: current status and future directions. *Global Biogeochemical Cycles* 29:775-792.
- Treat, C., S.M. **Natali**, J. Ernakovich, C.M. Iversen, M. Lupascu, A.D. McGuire, R.J. Norby, T.R. Chowdhury, A. Richter, H. Santruckova, C. Schädel, E.A.G. Schuur, V.L. Sloan, M. Turetsky, and M. Waldrop (2015). A pan-arctic synthesis of CH₄ and CO₂ production from anoxic soil incubations. *Global Change Biology* 21:2787-2803.
- Trumbore, S., **P. Brando**, and H. Hartmann (2015). Forest health and global change. *Science* 349(6250):814-818.
- Tyukavina, A., A. **Baccini**, M.C. Hansen, P.V. Potapov, S.V. Stehman, R.A. **Houghton**, A.M. Krylov, S. Turubanova, and S.J. **Goetz** (2015). Aboveground carbon loss in natural and managed tropical forests from 2000 to 2012. *Environmental Research Letters* 10(7):074002.
- Vonk, J.E., P.J. **Mann**, S. Davydov, A. Davydova, R.G.M. **Spencer**, J. Schade, W.V. Sobczak, N. Zimov, S. Zimov, E. Bulygina, T.I. Eglinton, and R.M. **Holmes** (2013). High biolability of ancient permafrost carbon upon thaw. *Geophysical Research Letters* 40.
- Walker**, W., A. **Baccini**, S. Schwartzman, S. Ríos, M.A. Oliveira-Miranda, C. Augusto, et al. (2014). Forest carbon in Amazonia: the unrecognized contribution of indigenous territories and protected natural areas. *Carbon Management* 1-7.
- Zhang, K., A.D.A. **Castanho**, D.R. Galbraith, S. Moghim, N. Levine, R. Bras, M.T. **Coe**, M.H. Costa, Y. Malhi, M. Longo, R.G. Knox, S. McKnight, J. Wang, and P.R. Moorcroft (2015). The fate of Amazonian ecosystems over the coming century arising from changes in climate, land-use and CO₂. *Global Change Biology* 21:2569-2587.