

EERD Quarterly Report

Project Title: Observing carbon fluxes and potential climate change impacts from forest land management

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Period: Apr 1,2011-Jun 30,2011 (2011 Q2)

Project Period: June 1,2010 – May 31, 2013

Activities:

Our project has continued to focus on maintaining operation of the flux tower at the Willow Creek site, installing new sensors and communication devices. We have started a new collaboration on belowground carbon data collection.

Major activities include:

- Continued operation of automated cellular system and QC/QA at:
http://flux.aos.wisc.edu/~bjorn/willow_creek/
- Automated upload and calibration of high-accuracy aspirated temperature sensors (WMO traceable).
- Installation of soil gas wells for CO₂ and 14C sampling with Lawrence Berkeley National Laboratory of the Dept of Energy (DOE). Periodic soil respiration sampling program started, and undergraduate student Ryan Harp from UW is assisting. Automated soil respiration sensors also are being installed.
- Flux analysis code is now in beta testing. First fluxes will be produced in July.
- Discussion of modeling activities using both LANDIS-II and a new approach with the Ecosystem Demography ED2 model with collaborator Mike Dietze, U. Illinois.
- Continued supervision of post-doc and research associate
- Relevant presentations:
 - [*April showers makes May ET? Wisconsin's ecosystem water use under climatic change*](#), 2nd Mini Conference of ET Trends Along the Western Great Lakes, Madison, WI, Apr 29, 2011 (invited)
 - [*Indirect and direct effects of climate change on forest carbon cycling*](#), Dept of Forest and Wildlife Ecology, University of Wisconsin, Madison, WI, Apr 20, 2011 (invited)

- [*Missing the "sink": What observations and models tell us about the future of land carbon dioxide uptake and why it matters for future climate change*](#), University of Virginia, Dept of Environmental Sciences seminar series, Charlottesville, VA, Apr 14, 2011 (invited)
- Relevant publications:
 - Richardson, A.R., Anderson, R.S., Altaf Arain, M., Barr, A.G., Bohrer, G., Chen, G., Chen, J.M., Ciais, P., Davis, K.J., **Desai, A.R.**, Dietze, M.C., Dragoni, D., el Maayar, M., Garrity, S., Gough, C.M., Grant, R., Hollinger, D.Y., Margolis, H.A., [McCaughey](#), H., Migliavacca, M., Monson, R.K., Munger, J.W., Poulter, B., Raczka, B.M., Ricciuto, D.M., Sahoo, A., Schaefer, K., Tian, H., Vargas, R., Verbeeck, H., Xiao, J., and Xue, Y., 2011. Land surface models need better representation of vegetation phenology: Results from the North American Carbon Program Site Synthesis. *Global Change Biology*, #GCB-11-0516, submitted.
 - Wu, C., Chen, J.M., **Desai, A.R.**, [LaFleur](#), P.M., and Verma, S.B., 2011. Positive impacts of precipitation intensity on monthly CO₂ fluxes in North America. *Global Change Biology*, #GCB-11-0543, submitted.
 - Yuan, W., Luo, Y., Liang, S., Yu, G., Niu, S., Stoy, P., Chen, J., **Desai, A.R.**, Lindroth, A., Gough, C., Ceulemans, R., Arain, A., Bernhofer, C., Cook, B.D., Cook, D.R., Dragoni, D., Gielen, B., Janssens, I., Longdoz, B., Liu, H., Lund, M., Matteucci, G., Moors, E., Scott, R.L., Seufert, G., and Varner, R., 2011. Thermal adaptation of net ecosystem exchange. *Biogeosciences*, 8, 1453-1463, [doi:10.5194/bg-8-1453-2011](#).