

Bioenergy, Sustainability, and Land-Use Change Report Oak Ridge National Laboratory (ORNL) December 2014

Publications:

Assessing multimetric aspects of sustainability: Application to a bioenergy crop production system in East Tennessee (In Review) (Parish, E. S., Dale, V. H., English, B. C., Jackson, S. W., Tyler D. D.) *Ecological Monographs*

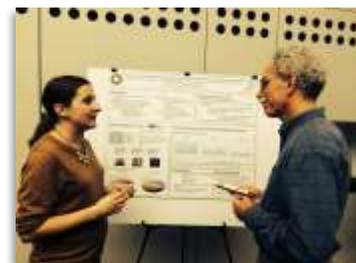
Development of mpi_EPIC Model for Global Agroecosystem Modeling (Accepted for publication in *Computers and Electronics in Agriculture*) S. Kang, D. Wang, J.A. Nichols, J. Schuchart, K.L. Kline, Yaxing Wei, D.M. Ricciuto, S.D. Wullschleger, W.M. Post, R.C. Izaurralde. “Paper documents high-speed computational platform for global scale application of EPIC model for calculation of productivity and environmental effects of bioenergy crops. (Contact: Kline)

ORNL Presentations:

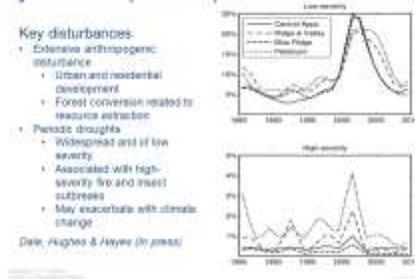


Dec 1 – Keith Kline presented an invited seminar titled, “Biomass for bioenergy: an overview of research at ORNL” for the Copernicus Institute and BE-Basic Sustainable Bio-Economy team at Utrecht University, Netherlands. BE-Basic is an international public-private partnership, funded by the Dutch government along with universities, research institutes and industries working in the field of sustainable chemistry and ecology, working together to develop industrial bio-based solutions for a sustainable society.

December 2-5 – Virginia Dale participated in the Advisory Committee review of the Energy Biosciences Institute (EBI) in Berkeley, California.



Each year, 5-25% of SE US forest area was impacted by disturbance (1985-2010)



Dec 2 – Keith Kline gave an invited presentation on “Integrating pellet production into sustainable landscape design for the Southeastern USA” for a workshop involving BE-Basic and other European stakeholders and utility representatives. The presentations and group discussions reviewed results to date for BE-Basic in assessing sustainable bioenergy expansion in Brazil and the plans for conducting a sustainability assessment for woody biomass production expansion in the Southeast USA.

December 15-19 – Natalie Griffiths presented a poster titled “Water quality response after two years of short-rotation pine management for bioenergy in the southeastern U.S.” with co-authors C.R. Jackson, J.J. McDonnell, M. Bitew, E. Du, and J. Klaus at the American Geophysical Union (AGU) fall meeting.



Stream flume and water quality sampling site at the outlet of one of the 3 study watersheds

CBES FORUM



December 17 - “Bringing Sustainability into the Assessment of our Nation’s Bioenergy Future” Speakers: Matthew Langholtz, Rebecca Efrogmson, Laurence Eaton, Craig Brandt, and Yetta Jager.

Other ORNL Activities:

Dec 2 – Keith Kline participated in the workshop, “Biobased economy (BBE) in northwest Europe, wishful thinking or real opportunities?” The goal was to review current issues and barriers to the BBE and develop scenarios for growth within the context of global bioenergy trade. The workshop assembled stakeholders from multiple sectors (materials, chemicals, pharmaceuticals, energy) to identify and qualify development pathways of biomass uses for energy, traditional and new material purposes. Participants acknowledged that the future of bio-based economies (technologies and rates of growth) is dependent on national and regional European Union policies. Many policies remain uncertain or are undergoing revision as is the case for biofuels. The uncertainty undermines long-term investments and supports a “least first-cost” approach to meeting renewable targets, such as the increasing use of US biomass (wood pellets) to co-fire in coal power plants.

December, 3-4, ORNL hosted Amy Schwab, John Lewis, and Anelia Milbrandt from NREL. Discussions included NREL-SI mission and function, membrane work, codes and standards, catalyst upgrading-Vertimass story, corrosion labs, land-use change visualizations, advanced manufacturing and fuels and engines labs, the BT16 effort, the Bioenergy Technologies Office (BETO) Market Assessment Report, BioAtlas, sustainability indicator approach, BSM (Biomass Scenarios Model), BioTrans, GTAP (Global Trade Analysis Project), and SWAT (Soil Water Assessment Tool).

December 11 – Virginia Dale joined a conference call organized by Tat Smith regarding the IEA (International Energy Agency) Task 43 report being prepared for delivery to the IEA Executive Committee. ORNL participants in this effort include Keith Kline, Esther Parish, and Matt Langholtz as well as Virginia. They will provide information about landscape design approaches, opportunities and barriers, a case study on switchgrass in east Tennessee for the lignocellulosic supply chain, and information on US feedstock supply availability from the Billion Ton Update.

December 19 – Virginia Dale joined a conference call of a new GBEP (Global Bioenergy Partnership) working group on capacity building for sustainable bioenergy focused on bioenergy and water. The goal of this Activity Group is to identify and disseminate ways of integrating bioenergy systems into agriculture and forestry landscapes to improve sustainable management of water resources, including waste water. This includes sharing knowledge and experiences on best management practices as well as on policies and instruments supporting bioenergy implementation that contributes positively to the state of water. This group was convened by Göran Berndes (IEA Bioenergy Task 43) and Uwe Fritsche (International Institute for Sustainability Analysis and Strategy (IINAS), and International Energy Agency (IEA), Bioenergy Task 40)

Upcoming ORNL Visits/Events:

January 6-7 - Hans Langeveld of Biomass Research (a research organization in The Netherlands focused on sustainable production of biomass for food, feed, biofuels and biobased products) will visit ORNL's Center for Bioenergy Sustainability (CBES) and lead a forum on "Harvesting more from less land: Changes in land use intensity and its impact on the food vs. fuel debate."

January 17-23 – Keith Kline and Maggie Davis plan to attend the International Organization for Standardization (ISO) PC 248 Plenary as U.S. delegates to review comments and prepare revisions to the draft ISO 13065, "Sustainability Criteria for Bioenergy."

January 26-Feb 01 – Keith Kline is invited to participate in meetings for NSF PIRE Project, "Sustainability, Ecosystem Services, and Bioenergy Development across the Americas" to share experience with sustainability indicators among interdisciplinary team; Tabasco, Mexico.

February 2-4 – Virginia Dale and Esther Parish will participate in the SunGrant Initiative Regional conference entitled *Southern Crossroads: Progress in Biomass Production, Processing and Use*.