

Bioenergy, Sustainability, and Land-Use Change Report Oak Ridge National Laboratory (ORNL) June 2017

Publications

- Parish ES, Dale VH, Kline KL, Abt RC (in press) Reference scenarios for evaluating wood pellet production in the Southeastern United States. WIREs.
- Parish ES, Dale VH, Tobin E, Kline KL (2017) Dataset of timberland variables used to assess forest conditions in two Southeastern United States' fuelsheds. Data in Brief 13: 278-290.
- Koponen K, Soimakallio S, Kline KL, Cowie A, Brandão M (In Press) Quantifying the climate effects of bioenergy - choice of reference system. Renewable & Sustainable Energy Reviews [published and accessible on line at <http://www.sciencedirect.com/science/article/pii/S1364032117309759>] doi.org/10.1016/j.rser.2017.05.292

Presentations

June 6: As corresponding author of the IEA bioenergy report '*Status and prospects for renewable energy using wood pellets from the southeastern United States*,' Virginia Dale presented this paper to the bioenergy working group of the European Commission as requested by Giulio Volpi, European Commission Directorate General for Energy, Unit C1: Renewable Energy and Carbon Capture and Storage (CCS) Policy.

June 9: Virginia Dale spoke in the ORNL postdoc research seminar on "From disturbance to sustainability: following interesting questions and fun opportunities."

June 15: Esther Parish presented an overview of our environmental, social and economic sustainability research at the ORNL summer workshop for local teachers entitled "Bioenergy Workforce Development for Educators." This June 14-16 workshop provided instruction and content for teaching about bioenergy in Tennessee's high school and middle school classrooms.



June 21: Keith Kline and Virginia Dale gave a presentation to the United States Agency for International Development (USAID) in Guatemala on "Progress toward Sustainable Farming Systems and Landscapes." Keith also gave presentations to local stakeholders working on sustainable development in Chimaltenango and CIMMYT partners in Huehuetenango in the Western Highlands of Guatemala.

June 26: Esther Parish helped kick off the new ORNL Climate Change Science Institute's (CCSI's) series of conversations about Sustainable Communities by presenting the prototype Urban Climate Adaptation Tool (Urban-CAT) developed through ORNL Lab Directed Research and Development (LDRD) funding and collaboration with the City of Knoxville.

Other ORNL Activities

Brian Davison has been awarded a Fellow of the Society of Industrial Microbiology and Biotechnology.

June 1: Virginia Dale and Keith Kline joined a meeting of environmental groups across Tennessee on May 30 to discuss environmental issues of concern for the state.

June 5-9: Esther Parish spoke with a group of Master Teachers as part of the preparations for the "Bioenergy Workforce Development for Educators" workshop. This collaboration focused on her upcoming Bioenergy Sustainability presentation and facilitated the creation of lesson plans on bioenergy sustainability that directly link to state standards. As a result of these discussions, three 9th grade Algebra lessons were developed using the timberland dataset described in the new Parish et al. (2017) data article.

June 6-8: Keith Kline represented ORNL teams at the Bioenergy Technologies Office workshop titled

“Biofuels and Bioproducts from Wet and Gaseous Waste Streams: Market Barriers and Opportunities” in Berkeley, CA. Converting wastes to energy must overcome NIMBY, multiple jurisdictions and regulatory frameworks (air, water, zoning) that complicate permitting, and inconsistent definitions and policy goals at local, state and federal levels. The importance of economic analysis and clearly documenting assumptions underlying resource assessments were emphasized.

June 12: Esther Parish passed her comprehensive exam and thus is now formally a PhD candidate in the Bredesen Center for Interdisciplinary Research and Graduate Education at the University of Tennessee. Esther’s dissertation investigates the overall environmental, economic and social sustainability of exporting wood pellets from the Southeast US to Europe to use in place of coal in electric power plants.

June 12-16: Rebecca Efrogmson presented results from resource analysis and sustainability research to Devinn Lambert, an algae sponsor at the DOE Bioenergy Technologies Office.

June 14-16: Maggie Davis and Tim Theiss, assisted by ORAU, led the development of a summer workshop for local teachers entitled “Bioenergy Workforce Development for Educators.” This workshop provided instruction and content for teaching about bioenergy in High School and Middle School classrooms. Participants heard presentations from Oak Ridge National Laboratory researchers Esther Parish, Terry Matthews, Brian Davison, and others on topics such as Sustainable bioenergy, Algal biofuels, and Cellulosic biofuels R&D. The teachers also took tours of the UT Arboretum and ORNL’s National Transportation Research Center, Manufacturing Demonstration Facility, Bioenergy Science Center, and Water Ecology lab.



June 19-23: Virginia Dale and Keith Kline worked with Strategic Partnership Project sponsors from the International Maize and Wheat Improvement Center (CIMMYT) in Guatemala, where ORNL is helping projects such as “Buena Milpa” identify appropriate indicators to assess progress toward sustainable agricultural landscape goals. The group also met with USAID counterparts interested in the ORNL-CIMMYT collaborations.



The team met with local farmers from Todos Santos to discuss opportunities and constraints in making progress toward sustainable agriculture.

June 22: Carrie Annand, Executive Director of the Biomass Power Association, asked Esther Parish to provide an overview of the ORNL 2016 Bioenergy Day outreach event as a successful case study for a well done event. Carrie Asked Esther to tell the organizations on the teleconference how ORNL worked across several organizations, got the word out for attendance, got media coverage, etc. so that other groups can better prepare for the 2017 National Bioenergy Day coming up on October 18th.

June 26: Keith Kline and Virginia Dale met with the director of CONAP (the National Council for Protected Areas) in Guatemala City and discussed needs to support conservation and the sustainable use of the biological diversity and protected areas of Guatemala.

June 26: The proposal for the US-China Food-Energy-Water Systems Transdisciplinary Environmental Research Network was accepted by the National Science Foundation to support an environmental research network. <https://ag.tennessee.edu/news/Pages/NR-2017-06-FEWSTERNannouncement.aspx> The project will identify transdisciplinary research opportunities and collaborations for scientists in the United States and China working to achieve sustainable use of natural resources for food, energy and water systems (FEWS). U.S. collaborators establishing the network include scientists with the University of Tennessee Institute of Agriculture (UTIA), the University of Tennessee, Knoxville (UT), and Oak Ridge National Laboratory (ORNL).

June 29: Virginia Dale submitted the annual progress report for her University of Tennessee’s Institute for

Secure and Sustainable Environment Seed Funding project: Evaluating sustainability and resilience in agricultural systems using an integrated, web-based App for on-farm self-assessment and resource discovery. [Virginia Dale (EEB), Don Hodges (FFW), Sarah Eichler Inwood (Bredesen Center student)].

Upcoming ORNL Visits/Events

July 12: Several ORNL scientists will participate in Bioeconomy 2017: Domestic Resources for a Vibrant Future.

- Rebecca Efrogmson will speak on the Billion Ton report.
- Keith Kline will speak in session IV: Catalyzing a Global Advanced Bioeconomy.
- Virginia Dale, Mike Hilliard, Esther Parish and Keith Kline will present a poster on “Developing a Tool to Visualize Progress toward a Sustainable Bioeconomy.”

Aug. 6-11: Several ORNL scientist will participate in the upcoming annual meeting of the Ecological Society of America meeting in Portland.

- Virginia Dale organized a special session on Large Infrequent Disturbances for the Ecological Society of America meeting in Portland. Speakers are Monica Turner, Jerry Franklin, Ariel Lugo, and Ólafur Arnalds.
- Gangsheng Wang will present “Simulated Response of Avian Biodiversity to Biomass Production in the Conterminous United States” with coauthors Henriette Jager, Jasmine Kreig, Nathan Sutton, and Ingrid Busch.
- Keith Kline will present “Estimating land-use change effects associated with supplying a billion-ton U.S. bioeconomy.”
- Virginia Dale will present “Status and prospects for renewable energy using wood pellets from the southeastern United States.”
- Virginia Dale will help lead a field trip to Mount St. Helens on August 5.
- Virginia Dale and Keith Kline will participate in a side meeting organized by Brian Kittler of the Pinchot Institute on opportunities and constraints of wood based bioenergy.

Sept. 12-15: Virginia Dale is invited to give a presentation at the International Association for Landscape Ecology (IALE) 2017 European Congress in Ghent, Belgium, in a symposium on “Integrating renewable and non-renewable energy development with landscape service trade-offs.” She will speak on “Assessing Progress toward Sustainability of Bioenergy Systems.”

Sept. 18: Virginia Dale is invited by Felix Kienast to speak at the Landscape Ecology Group at the Swiss Federal Institute for Forest, Snow and Landscape Research. She will speak on “Sustainability Considerations for Energy Options.”

Sept. 23–27: Yetta Jager is invited to participate in a symposium highlighting authors in an upcoming Renewable Energy and Wildlife book to be published by Johns Hopkins Press in conjunction with The Wildlife Society. The Symposium is sponsored by the Renewable Energy Working Group of The Wildlife Society and will be held at the annual meeting in Albuquerque, NM.

Oct. 18: ORNL will participate in the Fifth Annual National Bioenergy Day (led by Esther Parish).

Nov. 15-17: Latha Baskaran and Virginia Dale had their abstract accepted for presentation at the annual Society of American Foresters National Convention in Albuquerque, NM. The presentation is on “Framework to Identify Effects of Forest Management for Wood-based Pellets on Biodiversity.”

Dec. 7-6: Virginia Dale and Keith Kline will participate in the first workshop of the US-China Food-Energy-Water Systems Transdisciplinary Environmental Research Network in Nashville, TN.

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