# B&ESD Newsletter
# August 2012

## Pubs and Products

Brown, S. D., Utturkar, S. M., Klingeman, D. M., Johnson, C. M., Martin, S. L., Land, M. L., Lu, T.-Y.S., Schadt, C. W., Doktycz, M. J. and D. A. Pelletier. 2012. Twenty-one genome sequences from pseudomonas species and 19 genome sequences from diverse bacteria isolated from the rhizoshpere and endosphere of *Populus deltoides*. *J. Bacteriol*. 194: 1-3.

Brown, S. D., Podar, M., Klingeman, D. M., Johnson, C. M., Yang, Z. K., Utturkar, S. M., Land, M. L., Mosher, J. J., Hurt, R. A., Jr., Phelps, T. J., Palumbo, A. V., Arkin, A. P., Hazen, T. C., and D. A. Elias. 2012. Draft genome sequences for two metal-reducing *Pelosinus fermentans* strains isolated from a Cr(VI)-contaminated site and for type strain R7. *J. Bacteriol.* 194: 5147-5148.

Castro, H. F., Classen, A. T., Austin, E. E., Crawford, K. M., and C. W. Schadt. 2012. Development and validation of a citrate synthase directed quantitative PCR marker for soil bacterial communities. *Appl. Soil Ecol.* 61: 69-75.

Davison, B. 2012. The increasing importance and capabilities of biomass characterization. *Indust. Biotechnol.* 8: 189-190.

Griffiths, N. A., Tank, J. L., Roley, S. S., and M. L. Stephen. 2012. Decomposition of maize leaves and grasses in restored agricultural streams. *Freshwater Sci.* 31: 848-864.

Guo, J., Morrell-Falvey, J. L., Labbé, J. L., Muchero, W., Kalluri, U. C., Tuskan, G. A., and J. G. Chen. 2012. Highly efficient isolation of *Populus* mesophyll protoplasts and its application in transient expression assays. *PLoS One*. 7: e44908.

Kostka, J. E., Green, S. J., Rishishwar, L., Prakash, O., Katz, L. S., Mariño-Ramírez, L., Jordan, I. K., Munk, C., Ivanova, N., Mikhailova, N., Watson, D. B., Brown, S. D., Palumbo, A. V., and S. C. Brooks. 2012. Genome sequences for six *Rhodanobacter* strains, isolated from soils and the terrestrial subsurface, with variable denitrification capabilities. *J. Bacteriol.* 194: 4461-4462.

Labbé, J., Murat, C., Morin, E., Tuskan, G. A., Le Tacon, F., and F. Martin. 2012. Characterization of transposable elements in the *Laccaria bicolor* genome. *PLoS One*. 7: e40197.

Luyssaert, S., Abril, G., Andres, R., Bastviken, D., Bellassen, V., Bergamaschi, P., Bousquet, P., Chevallier, F., Ciais, P., Corazza, M., Dechow, R., Erb, K.-H., Etiope, G., Fortems-Cheiney, A., Grassi, G., Hartman, J., Jung, M., Lathière, J., Lohila, A., Mayorga, E., Moosdorf, N., Njakou, D. S., Otto, J., Papale, D., Peters, W., Peylin, P., Raymond, P., Rödenbeck, C., Saarnio, S., Schulze, E.-D., Szopa, S., Thompson, R., Verkerk, P. J., Vuichard, N., Wang, R., Wattenbach, M., and S. Zaehle. 2012. The European land and inland water CO2, CO, $CH_4$ and $N_2O$ balance between 2001 and 2005. *Biogeoscences.* 9: 3357-3380.

Martin, M. Z., Allman, S., Brice, D. J., Martin, R. C., and N. O. Andre. 2012. Exploring laser-induced breakdown spectroscopy for nuclear materials analysis and in-situ applications.

*Spectrochim. Acta B.* 74-75:177-183.

Rubin, J. and P. N. Leiby. 2012. Tradable credits system design and cost savings for a national low carbon fuel standard for road transport. *Energ. Policy.* Available online. DOI: 10.1016/j.enpol.2012.05.031

Tetard, L., Passian, A., Jung, S., Ragauskas, A. J., and B. H. Davison. 2012. Development of new methods in scanning probe microscopy for lignocellulosic biomass characterization. *Industr. Biotechnol.* 8: 245-249.

Wagner, R. J., Kaye, M. W., Abrams, M. D., Hanson, P. J., and M. Martin. 2012. Tree-ring growth and wood chemistry response to manipulated precipitation variation for two temperate Quercus species. *Tree-Ring Res.* 68: 17-29.

Wolfe, A. K., Downing, M. E., and C. S. Hoagland. 2012. The perennial question: Farmers' choices and a bioenergy future. ORNL/TM-2012/36964, 2012.

**Notable Achievements**

At the Hydrovision International 2012 conference in Louisville, KY, during July 15th-20th, Rocío Martinez presented "New Pumped Storage Hydropower in the United States: Benefits, Risks, Revenues and Potential" and received a "Hydrovision International: 2012 Technical Papers of the Year" award for third place in the area of Market Trends & Strategies.

On July 16th Katherine Zhang attended the American Society of Mechanical Engineers' (ASME) Hydro Power Technical Committee (HPTC) 2012 Annual Meeting in Louisville, KY. During the meeting she was voted as full committee member, and the book revision of "The Guide to Hydropower Mechanical Design" and the mission of the HPTC were discussed.

The 2012 BioEnergy Science Center (BESC) Science Retreat was held during July 16th-19th. Below is a full list of posters with authors from Oak Ridge National Laboratory (ORNL):
Focus Area 1:

- Use of the *Populus* mesophyll protoplast transient expression system to characterize genes associated with secondary cell wall biosynthesis and sugar release. Jay Chen*, Jim Guo, Wellington Muchero, Jennifer L. Morrell-Falvey, Udaya C. Kalluri, and Gerald A. Tuskan.
- Establishing a Proteome Atlas for *Populus*: Putting the Pieces Together for Effective Plant Proteomics. Paul Abraham*, Richard J. Giannone, Rachel Adams, Gerald A. Tuskan, and Robert L. Hettich.
- Comparative analysis of lignin biosynthesis pathway among *Agave*, *Arabidopsis*, *Oryza*, *Populus* and *Setaria.* Hengfu Yin*, Chun Ju Chen, James Wachira, Sara Jawdy, Timothy J. Tschaplinski, David Weston, Anne M. Borland, Udaya C. Kalluri, Stan D. Wullschleger, Gerald A. Tuskan, and Xiaohan Yang.
- Characterization of *Populus* modified in candidate cellulose biosynthesis pathway genes. Udaya Kalluri*, Lee Gunter, Poornima Sukumar, Sara Jawdy, Zack Moore, Wellington Muchero, Xiaohan Yang, Tim Tschaplinski, Angela Ziebell, Garima Bali, Steve Decker, Art Ragauskas, Mark Davis, and Jerry Tuskan.
- First year field results of altered lignin COMT-knockdown switchgrass. Holly Baxter*, Mitra Mazarei, Nicole Labbe, Lindsey Kline, Mark Windham, David Mann, Chunxiang

Fu, Angela Ziebell, Robert Sykes, Crissa Doeppke, Geoff Turner, Steve Decker, Melvin Tucker, Miguel Rodriguez, Mark Davis, Jonathan Mielenz, Zeng-Yu Wang, and C. Neal Stewart, Jr.

- Untreated PvMYB4 overexpresing switchgrass yields ethanol as much as hot water pretreated control switchgrass. Charleson R. Poovaiah, Hui Shen, Wegi A. Wuddineh, Mitra Mazarei*, Miguel Rodriguez, Choo Hamilton, Jonathan Mielenz, Timothy J. Tschaplinski, Fang Chen, Richard A. Dixon, and C. Neil Stewart, Jr*.

Focus Area 2:

- Comparison of Consolidated Microbial Bioconversion of Genetically Modified Switchgrass. Kelsey L. Yee*, Choo Y. Hamilton, Miguel Rodriguez Jr., Timothy J. Tschaplinski, Nancy L. Engle, Madhave Z. Martin, Chunxiang Fu, Zeng-Yu Wang, Scott D. Hamilton-Brehm, James G. Elkins, and Jonathan R. Mielenz.
- Proteomic profiles of *C. obsidiansis* and *C. thermocellum* in the presence and absence of a non-degradable surface. Zhiwu Wang, Richard Giannone, Scott Hamilton-Brehm, James Elkins, Robert Hettich, and Jennifer Morrell-Falvey*.
- *Clostridium thermocellum* ATCC 27405 Transcriptomic Profiles after Exposure to Ethanol, Furfural and Heat Stress. Charlotte M. Wilson*, Shihui Yang, Courtney M. Johnson, Miguel Rodriguez Jr., Lezlee Dice, and Steven D. Brown.
- Engineered strain of *Clostridium thermocellum* for enhanced ethanol synthesis. Ranjita Biswas and Adam M. Guss*.
- Furan aldehyde detoxification in *Thermoanaerobacter pseudethanolicus.* Sonya M. Clarkson*, Scott D. Hamilton-Brehm, Richard J. Giannone, Robert L. Hettich, Adam Guss, and James G. Elkins.
- Towards Industrial Robustness: Comparison of Wild-Type and Populus Hydrolysate-Tolerant Mutant Strains of Clostridium Thermocellum. Jessica Linville*, Miguel Rodriguez, Adam M. Guss, Jonathan Mielenz and Chris D. Cox.

Focus Area 3:

- BESC Knowledgebase. Mustafa H. Syed*, Tatiana V. Karpinets, Morey Parang, Michael R. Leuze, Byung H. Park, Doug Hyatt, Steven D. Brown, and Edward C. Uberbacher.
- BESC sample information management system. Susan Holladay*, Sheryl Martin, Leslie Galloway, Guruprasad Kora, Ed Uberbacher, and Paul Gilna.
- The DOE Systems Biology Knowledgebase: Plant Science Domain. Priya Ranjan*, Doreen Ware, David Weston, Sergei Maslov, Shinjae Yoo, Dantong Yu, Michael Schatz, James Gurtowski, Matt Titmu, Jer-ming Chi, Sunita Kumari, Andrew Olson, Shiran Pasternak, Jim Thomason, Ken Youens-Clark, Mark Gerstein, Gang Fang, Darryl Reeves, Pam Ronald, Chris Henry, Sam Seaver, and Adam Arkin.
- Investigating lignocellulosic biomass at the nanoscale. Laurene Tetard*, Ali Passian* and Brian Davison.
- Linking SNP maps, protein isoforms and observed phenotype traits in *Populus*. Andrey Gorin*, Ranjan Priya, and Gerald Tuskan.
- Exploring genome architecture and gene functional roles in *Clostridium thermocellum*. Nikita Arnold, Andrey Gorin*, Robert Cottingham, Steve Brown, Tamah Fridman, Loren Hauser, Israel Huff, Daniel Quest, and Edward Uberbacher.
- Quantification of selected redox metabolites in cell supernatants. Bruce A. Tomkins*, Keiji G. Asano, and Gary J. Van Berkel, Timothy J. Tschaplinski, and Jonathan Lo.
- Binding affinities of monolignols to *Arabidopsis thaliana* peroxidase (ATP A2). Amandeep Sangha*, Jerry Parks, and Jeremy Smith.
- Initial binding of cellulose chain into the cellulase catalytic tunnel. Pavan K. Ghatty*, M. Emal Alekozai, Gregg Beckham, Michael F. Crowley, Edward C. Uberbacher, and Xiaolin Cheng.

- Comparative proteomics unveils functional signatures of cellulose formation (*Populus*) and deconstruction (cellulolytic microorganisms) at a cellular level. Richard J. Giannone*, Paul Abraham, Rachel Adams, Andrew Dykstra, Gerald A. Tuskan, and Robert L. Hettich.
- Protease-Optimized Spectral Indexing (POSI) improves quantification in shotgun proteomics datasets of bioenergy-related organisms. Rachel Adams*, Richard Giannone, Paul Abraham, and Robert Hettich.

Presenters are indicated with an asterisk.

On August 1st ORNL Distributed Active Archive Center (DAAC) Deputy Manager, Tammy Beaty, ORNL DAAC Chief Scientist, Bob Cook, and ORNL DAAC Metadata Coordinator, Les Hook, participated in the Terrestrial Ecology Telecon, discussing both North American Carbon Program (NACP) and Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA) data archival.

On August 1st Terry Mathews presented the 3rd lecture in the "Ecological Assessment Research" series entitled, "Mercury in Oak Ridge: from biological monitoring to clean up" for the Oak Ridge Institute for Continued Learning (ORICL) at Roane State Community College.

Amy Wolfe presented an update on U.S. Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE) Federal Energy Management Program (FEMP) Institutional Change Team progress and products to Timothy Unruh, the FEMP Program Manager, during his visit to ORNL on August 1st. Wolfe leads the multi-national laboratory Institutional Change Team. Team members include Elizabeth Malone and Tom Sanquist from Pacific Northwest National Laboratory (PNNL), and Rick Diamond and Christopher Payne from Laurence Berkeley National Laboratory (LBNL). The team supports FEMP efforts to help agencies take action to achieve and maintain federal sustainability goals.

On August 2nd ORNL DAAC Deputy Manager, Tammy Beaty, ORNL DAAC Chief Scientist, Bob Cook, and ORNL DAAC Metadata Coordinator, Les Hook, participated in a Regional and Global Data (RGD) telecon.

Also on August 2nd ORNL DAAC Deputy Manager, Tammy Beaty, and ORNL DAAC User Services Coordinator, Jim Lay, participated in the Earth Science Data and Information System (ESDIS) American Society of Agronomy (ASA)/Crop Science Society of America (CSSA)/Soil Science Society of America (SSSA) planning Telecon.

On August 2nd & 23rd ORNL DAAC Deputy Manager, Tammy Beaty, ORNL DAAC Chief Scientist, Bob Cook, ORNL DAAC Metadata Coordinator, Les Hook, and ORNL DAAC Lead Developer, Suresh K. SanthanaVannan participated in the NACP Regional Synthesis Archival Planning Meeting.

On August 2nd WBIR news interviewed Mark Bevelhimer and students conducting a study in the quarter acre ponds behind the Aquatic Ecology Laboratory. The study is using solar-powered underwater speakers to mimic underwater noise from hydropower turbines and examining fish movement and behavior in fish. Watch the news piece online at http://www.wbir.com/rss/article/228918/2/Fish-are-part-of-research-into-new-energy-sources.

On Sunday, August 4th, Tammy Beaty presented a talk entitled "Data Preservation and Stewardship" on behalf of Chief Scientist, Bob Cook, in the Data Observation Network for Earth (DataOne) workshop "WK 16- Managing Ecological Data for Effective Use and Re-Use: A

Workshop for Early Career Scientists" on Sunday. Amber Budden (University of New Mexico) and Carley Sasser (California Digital Library) organized the workshop. Speakers included Bill Michener, University of New Mexico, Stephanie Hampton, National Center for Ecological Analysis and synthesis, and Viv Hutchinson, the United States Geological Survey (USGS).

Allison Fortner attended the Ecological Society of America (ESA) annual meeting in Portland, OR, during August 4th-10th. Allison participated in a workshop on August 5th entitled "Managing Ecological Data for Effective Use and Re-Use" and gave a presentation on August 6th entitled "Spatial-temporal characterization of carbon dioxide and methane emissions from four electric power-producing reservoirs in the southeastern U.S." Co-authors on her presentation were Jennifer Mosher, Art Stewart, Jana Phillips, Pat Mulholland, and Mark Bevelhimer.

Tammy Beaty and Jim Lay attended the 7th Annual Meeting of the ESA 2012, supporting the National Aeronautics and Space Administration (NASA) OneDATA Booth (Portland, OR). Tammy presented the following mini-workshops:

- August 7th and 8th: MODIS Land Product Subsets for Field Ecologists
- August 7th and 8th: ORNL DAAC Spatial Data Access Tool (SDAT)
- August 9th: NASA Land Validation Campaign Data Products and Services available from the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Natalie Griffiths attended the ESA meeting in Portland, OR, and presented on organic matter decomposition work from Walker Branch (with co-authors Scott Tiegs and Pat Mulholland).

The presentation, “Roles of genotype-by-environment interactions in shaping the root-associated microbiome of *Populus”* was given at the ESA meeting. Coauthors were Schadt, C. W., Shakya, M., Gottel, N., Castro, H., Yang, Z., Kerley, M., Bonito, G., Labbé, J., Muchero, W., Vilgalys, R., Tuskan, G., Podar, M., and M. Doktycz.

Peter Schweizer attended a special session debate at the ESA Meeting on the sustainability of biomass production for energy, and a symposium on ecosystem services valuation in environmental decision-making.

Xiaofeng Xu presented "A global analysis of soil microbial biomass carbon, nitrogen, and phosphorus in terrestrial ecosystems" at the 2012 ESA annual meeting.

At the ESA Meeting in Portland, OR, Yetta Jager was the organizer and Rebecca Efroymson represented the “for” position at a special session, "A Debate on the Sustainability of Biomass Production for Energy," focusing on the proposition “Producing bioenergy can be sustainable for habitat availability and biodiversity, and can eschew the risk of new invaders.” Virginia Dale spoke in the symposium "Bioenergy and Biodiversity: Oxymoron or Opportunity?" on “Environmental and socioeconomic indicators of bioenergy sustainability.” Keith Kline spoke in the session on “Sustainability” presenting “Models, causal analysis and scientific methods for understanding land-use change (LUC) dynamics.”

Yetta Jager also attended the ESA Meeting in Portland, OR, to present a power point presentation entitled “Getting the most out of rivers – Sustainable river development.”

On August 9th ORNL DAAC Manager, Chris Lenhardt, participated in a telecon of the Earth Science Information Partners (ESIP) Federation Executive Committee in his role as interim Chair of the Constitution and Bylaws Committee.

“Identification of proteins interacting with MAX2, the key signaling component of the strigolactone pathway in plants” by J. Adcock, O. Czarnecki, and J. Chen was presented at the DOE Summer Undergraduate Laboratory Internship Program poster session.

Tatiana Vishnivetskaya presented the talk "Metagenomic analyses of active-layer and permafrost microbial communities during short-term thawing" at the Society for Industrial Microbiology and Biotechnology (SIMB) annual meeting held August 12th-16th at the Washington Hilton in Washington, DC. Co-authors on this presentation were B. Stackhouse, R. Sanders, C. Lau, G. Saarunya, J. Murphy, D. Williams, A. Layton, S. Pfiffner, T. Phelps, L. Whyte, and T. C. Onstott.

Dwayne Elias gave two invited talks at the SIMB meeting.

Keith Kline and Maggie Davis continued to support the initiative to develop an International Organization for Standardization (ISO) standard on “Sustainability Criteria for Bioenergy” (ISO 13065) by planning, facilitating and participating in 16 webinars, consolidating comments, identifying issues and proposing solutions. Keith was selected to lead the 18-member international editing committee toward consensus on a first “committee draft” document that will be distributed for review in September and discussed in the next TC-248 plenary meeting in January 2013.

Bob Andres attended the Asia Oceania Geosciences Society (AOGS)- American Geophysical Union (AGU) Western Pacific Geophysics Meeting (WPGM) Joint Assembly 2012 in Singapore, from August 12th-17th. He gave an invited talk, “The magnitude and uncertainty of Asian fossil-fuel-carbon-dioxide emissions in a global context” (co-authors included T. Boden, Carbon Dioxide Information Analysis Center [CDIAC]) and chaired a session.

On August 13th the U.S. Army issued a Finding of No Significant Impact (FONSI) for the proposed deployment and use of explosive destruction technology (EDT) at the Pueblo Chemical Depot in Colorado. The FONSI was issued in conjunction with the publication of an Environmental Assessment (EA) prepared by the ORNL team of Greg Zimmerman, Mengdawn Cheng, Bo Saulsbury, and Harry Quarles. The environmental impact analyses in the EA focused on the proposed use of EDT to destroy problematic munitions that are filled with chemical warfare agent, also called mustard agent. Due to their deteriorated or leaking condition, these problematic munitions cannot be destroyed by the chemical neutralization facilities that are being constructed at the Pueblo depot. The FONSI will allow the Army to proceed with the implementation of the action to complete the destruction of the entire inventory of chemical weapons currently being stored at the Pueblo depot. The chemical weapons destruction activities are being conducted by the Army in accord with U.S. laws and international chemical weapons disarmament treaties.

Peter Schweizer presented "Laboratory Studies to Evaluate Survivorship of Fish Early Life Stages upon Passage by Hydrokinetic Rotor-Blade Profiles" at the 142nd Annual Meeting of the American Fisheries Society in Saint Paul, MN. The principal investigator for these studies and co-author of the presentation is Glenn Cada.

On August 14th ORNL DAAC Deputy Manager Tammy Beaty presented “Mercury: Distributed Metadata Management, Data Discover, and Access System” at the National Climatic Data Center (NCDC) Metadata Workshop III – Interagency Collaboration between the National Oceanic and Atmospheric Administration (NOAA) National Data Centers, the United States Global Change Research Program (USGCRP)/National Climate Assessment (NCA)/Global Change Information

System (GCIS), the Cooperative Institute for Climate Science (CICS), ORNL, the Committee on Earth Observation Satellites (CEOS), NASA, and the USGS, held during August 14th-16th at the NCDC in Asheville, NC.

On August 15th Adam Guss presented "Genetic tool development and metabolic engineering of C. thermocellum for biofuel production" at the 2012 SIMB Annual Meeting and Exhibition. co-authors were R. Biswas, D. G. Olson, and L. R. Lynd.

During August 15th-16th Terry Mathews attended the National Center for Radioecology (NCoR) workshop at Savannah River National Laboratory to address the current status of radioecology research programs in the United States, identify key research priority areas, and to identify funding opportunities.

On August 16th ORNL published the press release "ORNL researchers improve soil carbon cycling models," highlighting work by Melanie Mayes, Gangsheng Wang, and Mac Post. Read the press release online at http://web.ornl.gov/info/press_releases/get_press_release.cfm?ReleaseNumber=mr20120816-00. Read the highlighted paper at http://www.esajournals.org/doi/abs/10.1890/12-0681.1.

Chris Schadt is co-organizing one of the 28 sessions at the 27th Fungal Genetics Conference in Asilomar, Pacific Grove, CA (March 12th-17th, 2013). The conference will include speakers featuring the latest developments in the field of "Ecological Metagenomics" of fungi. The Fungal Genetics Conferences are sponsored by the Genetics Society of America, and cover all aspects of the functional biology of fungi, as well as being one of the most prestigious and largest meetings for modern fungal biologists. Meeting summaries, programs and abstracts for this and past Asilomar meetings can be found at http://www.fgsc.net/asilmtg.html.

The proposal by T. Vishnivetskaya (PI), S. Pfiffner, A. Layton, A. Chauhan, and S. Hinsa-Leasure (Co-PIs), "Exiguobacterium psychrotrophic and thermophilic lifestyle: an example of genome evolution or genome adaptation," has been supported for sequencing by the Joint Genome Institute (JGI) Community Sequencing Program.

ORNL DAAC Manager, Chris Lenhardt, participated in a telecom of the Federation ESIP Commons governance working group on August 17th.

Jie Gao gave a presentation entitled, "Fe-C composite material for degradation of chlorinated solvents," as part of the Young Evolving Scientists Seminar Series (YESSS) group meeting on August 17th. Jie also shared advice on job-hunting with the group based on her recent experiences. She has obtained a position with Corning in product research and development. If you are an ORNL staff member or guest with access to the internal network and you are interested in subscribing to the YESSS email list, please visit the website https://email.ornl.gov/mailman/listinfo/yesss or send an email with just the word "subscribe" in the message body to yesss-request@email.ornl.gov.

The summer issue of the ORNL DAAC Newsletter was released. Read in online at http://daac.ornl.gov/news/summer12_newsletter.html.

On August 17th ORNL DAAC Deputy Manager, Tammy Beaty, met with Curt Tilmes, Goddard Space Flight Center (GSFC), and Ana Privette, NOAA, to discuss metadata requirements for reproducibility of the contents of the 2013 National Climate Assessment Report for the U.S. Global Change Research Program. Attendees included Christina Leif and Ted Haberman both of

NOAA.

During August 19th-23rd 'Debo Oladosu presented "Evaluating the Economic Benefits of the Advanced Biofuels Targets under the RFS2" paper at the 244th American Chemical Society (ACS) National Meeting in Philadelphia, PA.

"Root Associated Microbes of *Populus deltoides*" was presented at the International Symposium on Microbial Ecology (ISME), The Power of the Small, during August 19th-24th in Copenhagen, Denmark. M. Shakya, N. Gotte, H. Castro, Z. Yang, J. Labbé, W. Muchero, G. Tuskan, M. Doktycz, M. Podar, and C. W. Schadt were co-authors.

Ryan McManamay, Mark Bevelhimer, Glenn Cada and Shelaine Hetrick attended the American Fisheries Society annual meeting in Saint Paul, MN. The following presentations were given:

- In the "Development of Sustainable Fisheries Resources Internationally: Useful Tools in Simulations, Modeling and Planning" session, Glenn presented "The Use of Hydropower Projects on Fish Populations."
- Ryan McManamay was co-organizer of the "Free Data: Opportunities in Open-Access Network Databases to Advance Spatiotemporal Scales of Inquiry in Fisheries Science." session with Ryan Utz. In this session, Shelaine presented "Hydro-GIS: A Web-Based Interface with the National Hydropower Asset Assessment Program" and Ryan McManamay presented "Environmental Attribution for the National Hydropower Asset Assessment Program."

The ORNL Carbon Dioxide Information Analysis Center (CDIAC) released these three new/updated data products:
(1) Extended Edited Synoptic Cloud Reports from Ships and Land Stations Over the Globe, 1952-2009 (NDP-026C; http://cdiac.ornl.gov/epubs/ndp/ndp026c/ndp026c.html) compiled by Ryan Eastman and Steve Warren of the University of Washington, and Carole Hahn of the University of Arizona;
(2) Cloud Climatology for Land Stations Worldwide, 1971-2009 (NDP-026D; http://cdiac.ornl.gov/epubs/ndp/ndp026d/ndp026d.html), also compiled by Eastman, Warren, and Hahn, and
(3) Daily Temperature and Precipitation Data for 518 Russian Meteorological Stations (http://cdiac.ornl.gov/ndps/russia_daily518.html), compiled by O. N. Bulygina and V. N. Razuvaev of the All-Russian Research Institute of Hydrometeorological Information-World Data Centre, Obinsk.
All three of these products represent continued long-term cooperation between the PIs and CDIAC, with CDIAC serving as the official archival, distribution, and user support site.

The paper, Large methane emission upon spring thaw from natural wetlands in the nortern permafrost region, in *Environmental Research Letters* co-led by Xiaofeng Xu was featured on the website, Environmental Research Web. Read the original paper at http://iopscience.iop.org/1748-9326/7/3/034009/article and read the web web feature at http://environmentalresearchweb.org/cws/article/news/50608.

The DAAC senior staff held its monthly telecon with Nate James, ORNL DAAC Engineer, on August 21st.

Tommy Phelps gave an invited talk and poster presentation on "Monitoring of Geologic $CO_2$ Sequestration using Perfluorocarbon Tracers and Stable Isotope Tracers" at the Carbon Storage R&D Project Review Meeting of DOE-Fossil Energy (FE)- National Energy Technology

Laboratory (NETL) held in Pittsburgh, PA, during August 21st-23rd. His coauthor was Dave Cole of Ohio State University.

Amy Wolfe and two of her LBNL colleagues on the U.S. DOE EERE Federal Energy Management Program Institutional Change Team, Rick Diamond and Christopher Payne, organized and convened the following workshop in Washington, D.C. on August 22nd: Using Organizational Change Strategies to Improve Program Effectiveness: An Internal FEMP Workshop. It was attended by the FEMP Program Manager, and nearly all FEMP supervisors and staff.

On August 24th a delegation from Nissan Motor Company visited ORNL and met with Keith Kline, Matt Langholtz, Laurence Eaton and Shahab Sokhansanj. Keith presented "Bioenergy, Sustainability Science, and Standards."

Also on August 24th ORNL DAAC Deputy Manager, Tammy Beaty, ORNL DAAC Chief Scientist, Bob Cook, ORNL DAAC Metadata Coordinator, Les Hook and ORNL DAAC Lead Developer, Suresh K. SanthanaVannan, participated in the NACP Site Synthesis Archival Meeting.

On August 24th Latha Baskaran presented a talk "Effects of switchgrass related land-use changes on aquatic macroinvertebrates" at the Fishheads seminar series in ORNL.

On August 27th ORNL DAAC Deputy Manager, Tammy Beaty, ORNL DAAC Chief Scientist, Bob Cook, ORNL DAAC System Engineer, Ben McMurry, and ORNL DAAC Lead Developer, Suresh K. SanthanaVannan participated in the Citations Telecon.

On August 27th Virginia Dale met with Kristen Johnson (DOE EERE) in Washington, DC, and they discussed the Joule 4 Milestone on indicators and targets for bioenergy sustainability, the Council on Sustainable Biomass Production (CSBP), and other activities in which ORNL is engaged.

On August 31st Esther Parish and Latha Baskaran assisted University of Tennessee (UT) student Zachariah Seiden during his visits to water sampling sites around the Vonore switchgrass fields. These water quality and water quantity data are being collected through the United States Department of Agriculture (USDA)-funded Integrated Biomass Supply Systems (IBSS) project led by UT.

Esther Parish and Virginia Dale contributed information on switchgrass and woody biomass to a report entitled "Sustaining Tennessee in the Face of Climate Change: Grand Challenges and Great Opportunities." Researchers from across the State of Tennessee contributed information to this 72-page report led by ORNL's Climate Change Science Institute (CCSI). The report will be presented to the Mayor of Nashville and other Tennessee leaders in business, government, and nongovernmental organizations at a conference planned for September 11, 2012.

## BESD New Arrivals

Maxwell Brown arrived in August to work as post-master's research associate with Rocío Martinez. Maxwell will work on a Biomass Research and Development Initiative (BRDI) project "Technology to Enable Local Production of Biofuels from Energy Crops." He will play a large role in expanding/refining an optimization model of the national biofuel supply chain. In

particular, he will modify the model so that it includes the innovative production pathway being developed by two private companies (Ceres and Exelus) with which ORNL is partnering for this project.

John Goff Jr. reported to work in August, working with Aleisa Bloom in the Environmental Sciences Division (ESD) Earth and Aquatic Sciences group.

Anna Jensen arrived in August to work as a postdoctoral research associate with Jeff Warren. Anna will participate in experimental study to assess the response of northern peatland ecosystems to increases in temperature and exposures to elevated atmospheric $CO_2$ concentrations.

Michael Robeson arrived in August to work as a postdoctoral research associate with Chris Schadt. Michael will support DOE-funded research on the interactions of plants and microorganisms. This will include field, laboratory and data analysis research as well as assistance in the preparation of reports and scientific publications resulting from the research.