Climate Change Science Institute at Oak Ridge National Laboratory
2014 Science Advisory Board Meeting

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1	**ORNL's Terrestrial Ecosystem Science Scientific Focus Area**
	Paul J. Hanson, Daniel Ricciuto and Peter Thornton
2	**CO_2 and CH_4 Net Carbon Flux from a High-carbon Peatland in Northern Minnesota: Plot Scale Observations of the Shrub, Forb, *Sphagnum* and Microbial Community**
	Jana R. Phillips, Paul J. Hanson, Jeffery S. Riggs
3	**Needle Age and Season Influence Photosynthetic Temperature Response in Mature *Picea mariana* Trees: Do We Overestimate the Importance of New Needles?**
	Anna M. Jensen, Jeffrey M. Warren, Paul J. Hanson, Joanne Childs and Stan D. Wullschleger
4	**Plant Water Relations at the SPRUCE S1 Ombrotrophic Bog– partitioning Water Use and Stress Tolerance Among Components**
	Jeffrey M. Warren, Joanne Childs, David J. Weston, Anna M. Jensen, Stan D. Wullschleger
5	**Water Quality in Forested Watersheds Prior to and During Conversion to Short-rotation Pine for Bioenergy**
	Natalie A. Griffiths, C. Rhett Jackson, Jeffrey J. McDonnell, John I. Blake, Julian Klau, Enhao Du, and Menberu Bitew
6	**Representation of Dormant and Active Microbial Dynamics for Ecosystem Modeling**
	Gangsheng Wang, Melanie A. Mayes, Lianhong Gu, Christopher W. Schadt, Sindhu Jagadamma, W. Mac Post
7	**Incorporating Molecular-Scale Mechanisms Stabilizing Soil Organic Carbon into Terrestrial Carbon Cycle Models**
	Melanie A. Mayes, Gangsheng Wang, Sindhu Jagadamma, W. Mac Post, Chris Schadt, Haile Ambaye, Loukas Petridis, Valeria Lauter, J. Megan Steinweg, and S. Michael Kilbey II
8	**The Unseen Iceberg: Plant Roots in Arctic Tundra**
	C.M. Iversen, V.L. Sloan, P.F. Sullivan, E. S. Euskirchen, A.D. McGuire, R. J. Norby, A.P. Walker, J.M. Warren, S. D. Wullschleger
9	**Photosynthesis, Earth System Models and the Arctic**
	Stan D. Wullschleger, Alistair Rogers, Victoria L. Sloan, and Chonggang Xu
10	**Geochemical Characterization of Arctic Tundra and Implications for Organic Matter Degradation**
	Baohua Gu, Elizabeth Herndon, Benjamin F. Mann, Taniya Roy Chowdhury, Noémie Janot, John Bargar, Nikola Tolic, Stephen J. Callister, Robby Robinson, Tommy Phelps, Stan Wullschleger, David Graham, Liyuan Liang
11	**CO2 and CH4 Production from Arctic Tundra Polygons: A Comparative Assessment of Temperature Sensitivity and Geochemical Controls**
	Taniya Roy Chowdhury, Elizabeth Herndon, Dwayne Elias, Tommy Phelps, Baohua Gu, Liyuan Liang, Stan Wullschleger, David Graham
12	**Multi-factor Analysis of the Forces Driving Carbon Dynamics in Canada's Managed Forest**
	Daniel J. Hayes, Guangsheng Chen, Graham Stinson, Werner A. Kurz, A. David McGuire
13	**Effects of Increasing Forest Plantation Area and Management Practices on Carbon Storage and Water Use in the United States**
	Guangsheng Chen, Daniel J. Hayes, Hanqin Tian
14	**A Reconnaissance Study in Identifying Thermokarst Gradients in Central Seward Peninsula, Alaska by Integrating Remote Sensing with in-situ Field Measurements**
	Santonu Goswami, Daniel J. Hayes, Guido Grosse, Victoria Sloan, Jennifer Liebig, Richard J. Norby, Stan Wullschleger

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15	**Plant Available Nutrients in a Polygonal Tundra Landscape**
	Victoria L. Sloan, Colleen M. Iversen, Richard J. Norby
16	**Modeling Active Layer and Permafrost Dynamics of Ice Wedge Polygon Dominated Arctic Ecosystems**
	Nathan Collier, Jitendra Kumar, Peter Thornton, Gautam Bisht
17	**Amazon-FACE Science Plan**
	Richard J. Norby and David M. Lapola
18	**The Role of Explicitly Modeling Bryophytes in Simulating Carbon Exchange and Permafrost Dynamics of an Arctic Coastal Tundra at Barrow, Alaska**
	Fengming Yuan, Peter E. Thornton, A. D. McGuire, Walter Oechel, Bai Yang, Craig Tweedie, Alistair Rogers, and Richard Norby
19	**Vegetation Turnover and Nitrogen Feedback Drive Temperate Forest Carbon Sequestration in Response to Elevated CO2. A Multi-model Analysis**
	Anthony Walker, Sönke Zaehle, Belinda Medlyn, Martin De Kauwe, Shinichi Asao, Thomas Hickler, William Parton, Dan Ricciuto, Ying-Ping Wang, David Wårlind, Richard Norby
20	**Next Generation Methane Module for Earth System Models**
	Xiaofeng Xu, Dwayne A. Elias, David E. Graham, Tommy J. Phelps, Sue L. Carroll, Peter E. Thornton, Melanie Hahn, Margaret Torn, Stan Wullschleger
21	**Simulation of the Community Land Model in a Pine Stand with 13CO2 and Shading Manipulations**
	Jiafu Mao, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Xiaoying Shi, Colleen M. Iversen, Anthony W. King and Richard J. Norby
22	**Synthesis of Long-term Remote Sensing LAI for Applications in Land Surface and Earth System Models: Homogenization and Intercomparison**
	Jiafu Mao, Binyan Yan, Xiaoying Shi, Peter E. Thornton, Forrest M. Hoffman and David M. Lawrence
23	**Development and Testing the Hydrological Dynamics of Vegetated Wetland for Community Land Model**
	Xiaoying Shi, Peter E Thornton, Daniel M Ricciuto, Paul J Hanson, Jiafu Mao, and Natalie A. Griffiths
24	**Nutrient Regulation of Tropical Ecosystem Responses to Environmental Changes**
	Xiaojuan Yang, Peter E. Thornton, Daniel M. Ricciuto, Xiaoying Shi, and Wilfred Post
25	**Quantitative Landscape Characterization and Network Representativeness Analysis in the Tropics**
	Damian M. Maddalena, Forrest M. Hoffman, Jitendra Kumar
26	**Causes and Implications of Persistent Atmospheric Carbon Dioxide Biases in Earth System Models**
	Forrest M. Hoffman, James T. Randerson, Vivek K. Arora, Qing Bao, Patricia Cadule, Duoying Ji, Chris D. Jones, Michio Kawamiya, Samar Khatiwala, Keith Lindsay, Atsushi Obata, Elena Shevliakova, Katharina D. Six, Jerry F. Tjiputra, Evgeny M. Volodin, and Tongwen Wu
27	**Software Engineering Practices for CLM Development via MODEX Approach**
	D. Wang, Y. Xu, J. Schuchart, T. Janjusic, F. Winkler, P. Thornton, A. King, L. Gu
28	**Web-based Exploratory Data Analysis for Climate Science**
	Chad A. Steed, John Harney, Brian C. Jewell, Galen Shipman, and Brian Smith

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	Bai Yang, Tom A. Boden, Misha B. Krassovski and Xia Song
30	**HIPPO Experiment Data Access and Subseting System**
	Misha Krassovski, Les Hook, Sigurd Christensen, Tom Boden
31	**The NGEE Arctic Data Archive -- Portal for Archiving and Distributing Data and Documentation**
	Tom Boden, Giri Palanisamy, Ranjeet Devarakonda, Terri Killeffer, Misha Krassovski, and Les Hook
32	**Characterizing Anomalous Mid-Tropospheric Ridges and Their Trends**
	Stu Ostro, Dale P. Kaiser, Thomas P. Karnowski, Vincent C. Paquit, Shih-Chieh Kao, Daniel Huber, Joe Casola, Jennifer Francis, and Jay Gulledge
33	**Data Discovery of Big and Diverse Climate Change Datasets – Options, Practices and Challenges**
	Giriprakash Palanisamy, Ranjeet Devarakonda, Raymond A McCord, Mike Thomas Frame and Tom Boden
34	**Semi-automated Data Set Submission Work Flow for Archival with the ORNL DAAC**
	Daine M. Wright, Tammy Beaty, Robert Cook, Ranjeet Devarakonda, Pete Eby, Les Hook, Ben McMurry, Harold Shanafield, Dave Sill, Suresh K. S. Vannan, Yaxing Wei
35	**ORNL DAAC – Access to Large Geospatial Data Sets – The Daymet Example**
	Michele M Thornton, Yaxing Wei, Ranjeet Devarakonda, Pete I Eby, Peter E Thornton, Daine M Wright, Suresh KS Vannan, Robert B Cook
36	**SimilarityExplorer: A Visual Inter-comparison Tool for Multifaceted Climate Data**
	Yaxing Wei, Bob Cook, Jorge Poco, Aritra Dasgupta, William (Bill) Hargrove, Christopher Schwalm, Enrico Bertini, Claudio T. Silva
37	**Advancing High-Performance Computing in the Earth Sciences: An Interagency Collaboration**
	Michael Frame, Jeff Falgout, John Cobb, Giri Palanisamy and Ranjeet Devarakonda
38	**High Resolution Improves Model Northern Hemisphere Winter Warming in Response to the Mount Pinatubo Eruption**
	Abigail L. Gaddis, Katherine J. Evans, and John B. Drake
39	**Verification and Validation Software for the Community Ice Sheet Model**
	Adrianna Boghozian, Katherine Evans, Matt Norman, Pat Worley, Ben Mayer (ORNL), and Nathan Matthews (UTK)
40	**Analysis of High Resolution Community Land Model (CLM4) Simulations when Coupled to the High Resolution Community Atmosphere Model (CAM4)**
	Marcia L. Branstetter, Katherine J. Evans, Abigail L. Gaddis, and Valentine G. Anantharaj
41	**Tracking South Asian Monsoon in the 21st Century**
	Deeksha Rastogi, Kevin I. Hodges, Moetasim Ashfaq
42	**Moisture Sources for South Asian Monsoon Precipitation from CMIP5 Simulations**
	Rui Mei, Deeksha Rastogi, Moetasim Ashfaq

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43	**Effects of Temporal Error Correlation on Quantification of Predictive Uncertainty in Groundwater Reactive Transport Modeling**
	Dan Lu, Ming Ye, Gary P. Curtis, Philip D. Meyer
44	**Projecting the Potential Impacts of Climate Change on Water Resources for the Conterminous United States Using a Large Scale, High Resolution Modeling Approach**
	Bibi S. Naz, Shih-Chieh Kao, Moet Ashfaq, Deeksha Rastogi , and Rui Mei
45	**Towards the Development of an Integrated Energy-Water Risk Assessment Tool for Probable Maximum Precipitation and Flood**
	Shih-Chieh Kao, Deeksha Rastogi, Bibi S. Naz, Moetasim Ashfaq, Benjamin L. Preston, Erik D. Kabela, Rui Mei, Nagendra Singh
46	**Production and Adaptation Assessments of Agricultural Crops under Climate Change in Southeastern United States**
	S. Mariya Absar, Danielle Touma, Rui Mei, Deeksha Rastogi, Sujithkumar S. Nair, Benjamin L. Preston and Moetasim Ashfaq
47	**Climate Change and Impacts, Adaptation, Resilience, and Sustainability for Energy Systems and Other Built Infrastructures**
	Tom Wilbanks, Sherry Wright, Steve Fernandez, et al.
48	**Socio-ecological Typologies for Understanding Adaptive Capacity of a Region to Natural Disasters**
	Sujithkumar Surendran Nair, Benjamin L Preston, and Anthony W King
49	**Bioenergy Sustainability**
	V.H. Dale, L.M. Baskaran, M. Davis, M.E. Downing, L.M. Eaton, R.A. Efroymson, C.T. Garten Jr., N. Griffiths, M. Hillliard, K.L. Kline, H.I. Jager, M. Langholtz, A.C. McBride, R. Middleton, P.J. Mulholland, G. Oladosu, E.S. Parish, P.E. Schweizer, A. Sorokine, J.M. Storey, and N. Thomas