



## **Xiaoying Shi, Ph.D.**

R&D Staff Scientist

Terrestrial System Modeling Group

[Climate Change Science Institute](#)

[Environmental Sciences Division](#)

[Oak Ridge National Laboratory](#)

Mailing address: P.O. Box 2008, MS 6301, Oak Ridge, Tennessee 37831-6201, USA

Phone: +1 (865) 241-9199 (work); +1(865) 804-1900 (cell phone); Fax: +1 (865) 574-9501

Email: [shix@ornl.gov](mailto:shix@ornl.gov)

## **EDUCATION**

- PhD, Atmospheric Sciences, 2007, Graduate University of the Chinese Academy of Sciences, Beijing, China
- MS, Meteorology, 2004, Chinese Academy of Atmospheric Sciences, Beijing, China
- BS, Meteorology, 1998, Nanjing University of Information Science and Technology (Nanjing Institute of Meteorology), Nanjing, China

## **RESEARCH AND PROFESSIONAL EXPERIENCE**

11/2011 – present Member of R&D Staff, Oak Ridge National Laboratory (ORNL)

08/2009 – 11/2011 Postdoctoral Research Fellow, ORNL

05/2008 – 05/2009 Joint Research Scientist, Climate Change Research Center of University of New South Wales and CSIRO Marine and Atmospheric Research, Australia.

07/2007 – 04/2008 Assistant Research Scientist, State Key Laboratory of Severe Weather, Chinese Academy of Meteorological Sciences, Beijing, China

## **CURRENT RESEARCH AND OTHER PROJECTS AWARDED**

- “The Accelerated Climate Modeling for Energy (ACME)”, 2014-2017, Department of Energy's (DOE's) Office of Biological and Environmental Research.
- “The Terrestrial Ecosystem Science Scientific Focus Area”, 2016-2018, the Office of Biological & Environmental Research within the Department of Energy (DOE) Office of Science (Development and testing the hydrological dynamics of vegetated wetland, and soil biogeochemistry and vegetation processes for the land surface model of ACME)
- “Quantifying Feedbacks and Uncertainties of Biogeochemical Processes in Earth System Models”, 2014–2017, the Office of Biological & Environmental Research within the DOE Office of Science
- “Evaluation of the Large-Scale and Regional Climatic Response Across North Africa to Natural Variability in Oceanic Modes and Terrestrial Vegetation Among the CMIP5 Models”, 2014-2017, the Office of Biological & Environmental Research within the Department of Energy (DOE) Office of Science (\$739,000, Co-PI with Dr. Michael Notaro at the University of Wisconsin-Madison)
- “The effects of land use/cover conversion assumptions on the global carbon cycle and climate in historical CESM simulations”, 2015-2016, NCAR SDWG computer allocation for historical land conversion simulations (Co-PI with Dr. Alan V. Di Vittorio, LBNL)
- The evaluation of Earth System Model with remote sensing products, and terrestrial ecosystem carbon and hydrology dynamics. 2010–present, the “Quantification and Reduction of Critical Uncertainties Associated with Carbon Cycle–Climate System Feedbacks”, Department of Energy, (DOE C-Climate project)
- The coupling among CESM/CLM, GCAM and GLM. 2009-2014, the “Improving the Representations of Human-Earth Interactions”, Department of Energy (Main participant, DOE iESM project)

- “Stochastic parameterization of the influence of subgrid scale land heterogeneity on convective initiation”, 2012-2015, the Laboratory Directed Research and Development (LDRD) fund, ORNL (Co-PI with Dr. Daniel S. McKenna, and responsible for the stochastic coupling of Community Land Model (CLM) to the atmosphere component of the Community Atmosphere Model (CAM), and the analysis of different results from the fully stochastic ensemble simulations).
- The coupling of CESM/CLM with IMAGE. 2008-2011, the “Prognostic land use and land cover change for a coupled climate-biogeochemistry model”, Laboratory Directed Research and Development (LDRD) fund, ORNL (\$634,330, Main participant, ORNL LDRD project)

## ACEDMIC AWARDS

- ORNL Supper Performance Award, November 2016, Oak Ridge National Laboratory
- Significant Event Award for the significant contribution to the Intergovernmental Panel on Climate Change and National Climate Assessment Work by UT-BATTELLE (2014).
- Computers & Geosciences Best paper Award of 2013 (2014).
- Excellent paper Award by Chinese Climate Committee (2007).
- Excellent forecaster Award by Guangxi province Meteorological Bureau, China (2000).
- Outstanding Graduate, Nanjing Institute of Meteorology, 1998
- Scholarship for undergraduate, Nanjing Institute of Meteorology, 1997
- Scholarship for undergraduate, Nanjing Institute of Meteorology, 1996
- Scholarship for undergraduate, Nanjing Institute of Meteorology, 1995

## PEER-REVIEWED PUBLICATIONS

1. **Xiaoying Shi**<sup>1\*</sup>, Daniel M. Ricciuto<sup>1</sup>, Peter E. Thornton<sup>1</sup>, Paul J. Hanson<sup>1</sup>, Fengming Yuan<sup>1</sup>, Xiao feng Xu<sup>2</sup>, Jiafu Mao<sup>1</sup>, Jeffrey Warren<sup>1</sup>, Richard J. Norby<sup>1</sup>, Steve Sebestyen<sup>3</sup>, 2017. Modeling the hydrology and physiology of Moss within ALM model. To be submitted to Biogeosciences.
2. Vittorio Di Alan, Jiafu Mao, and **Xiaoying Shi**, 2017. The effects of land cover uncertainty on the global carbon cycle are comparable to those of CO<sub>2</sub> fertilization, climate change, and nitrogen deposition. To be submitted to GRL.
3. Katherine V. Calvin, Benjamin Bond-Lamberty, Andy Jones, **Xiaoying Shi**, Alan Di Vittorio, and Peter Thornton, 2017. Variance decomposition shows the important of human climate feedback in the Earth system. Finished and to be submitted to NCC.
4. Ben Bond-Lamberty, Alan Di Vittorio, Andrew D. Jones, **Xiaoying Shi**, Katherine Calvin, 2017. Effects of land model variability in a coupled ESM-IAM system. Finished and to be submitted
5. Yan Yu, Michael Notaro, Fuyao Wang, Jiafu Mao, **Xiaoying Shi**, Yaxing Wei, 2017. Observed vegetation-climate feedback in the Sahel: Is the classic albedo feedback mechanism truly dominant?. Finished and to be submitted to JGR.
6. Wang, F., Y. Yu, M. Notaro, J. Mao, **X. Shi**, Y. Wei, 2017. Advancing a model-validated statistical method for decomposing the key oceanic drivers of regional climate: Focus on North African climate variability in CESM. Under preparation.
7. Yu, Y., M. Notaro, F. Wang, J. Mao, **X. Shi**, Y. Wei, 2017. Validation of a statistical methodology for extracting vegetation feedbacks: focus on North African ecosystems in the Community Earth System Model. Under Preparation
8. Natalie A. Griffiths, Paul J. Hanson, Colleen M. Iversen, Avni Malhotra, Karis J. McFarlane, Richard J. Norby, Daniel M. Ricciuto, Khachik Sargsyan, Stephen D. Sebestyen, **Xiaoying Shi**, Anthony P. Walker,

- Eric J. Ward, Jeffrey M. Warren, and David J. Weston, 2017. Temporal and spatial variation in peatland carbon processes and implications for interpreting the warming responses an ecosystem-scale experiment. Submitted to Soil Science Society of America Journal.
9. Ostro Stu, Jay Gulledge, Dale Kaiser, Whitney Forbes, Thomas Karnowski, Shih-Chieh Kao, Jiafu Mao, **Xiaoying Shi** Vincent Paquit, Tianyu Jiang, Joe Casola, Robert X. Black, Katherine J. Evans, Mingzhou Jin, Daniel Ricciuto, and Daniel Huber, 2017. Human-induced changes in mid-tropospheric geopotential heights and mid-latitude extreme ridging events in the northern hemisphere. Submitted to Nature.
  10. Wenting Fu; Ying Sun; Lianhong Gu; Robert E. Dickinson; Roger Seco; Alex Guenther; Mark J. Potosnak; Thomas Karl; **Xiaoying Shi**, 2017. Disentangling the Roles of Soil Moisture and Air Temperature in Predicting Isoprene Emissions during Drought: A Case Study in a Temperate Forest in the Missouri Ozarks. Submitted to PLOS ONE.
  11. Binyan Yan, Jiafu Mao\*, **Xiaoying Shi**, Robert E. Dickinson, Xiaoyang Zhang, Jin Wu and Daniel M. Ricciuto, 2017. Seasonally asymmetric responses of Amazon forests to El Nino. Finished and to be submitted.
  12. Zhenzhong Zeng, Laurent Zhaoxin Li, Philippe Ciais, Mengtian Huang, Jiafu Mao, Ranga Myneni, **Xiaoying Shi**, and Tao Wang, 2016a. Terrestrial water cycle intensified by recent Earth greening. Under review, *Nature Ecology & Evolution*.
  13. Zhenzhong Zeng, Laurent Zhaoxin Li, Liming Zhou, Philippe Ciais, Yue Li, Xu Lian, Pierre Friedlingstein, Jiafu Mao, Ranga Myneni, Shushi Peng, **Xiaoying Shi**, Sonia Seneviratne, Tao Wang and Yingping Wang, 2016b. Climate mitigation from vegetation biophysical feedbacks during the past three decades, Under review, *Nature Climate Change*.
  14. Jiafu Mao, Aurélien Ribes, Binyan Yan, **Xiaoying Shi**, Peter E. Thornton, Roland Séférian, Philippe Ciais, Ranga B. Myneni, Hervé Douville, Shilong Piao, Zaichun Zhu, Robert E. Dickinson, Yongjiu Dai, Daniel M. Ricciuto, Mingzhou Jin, Forrest M. Hoffman, Bin Wang, Mengtian Huang, and Xu Lian, 2016. Human-induced greening of the northern high-latitude land surface. *Nature Climate Change*, 10.1038/nclimate3056.
  15. Lianhong Gu, Stephen G. Pallardy, Bai Yang, Kevin P. Hosman, Jiafu Mao, Daniel Ricciuto, **Xiaoying Shi**, and Ying Sun, 2016. Testing a land model in ecosystem functional space via a comparison of observed and modeled ecosystem flux responses to precipitation regimes and associated stresses in a central USA forest. *Journal of Geophysical Research-Biogeosciences*, 121 (7), 1884-1902.
  16. Yuanyuan Fang, Anna M. Michalak, Christopher Schwalm, Deborah Huntzinger, Joseph A. Berry, Phillippe Ciais, Shilong Piao, B. Poulter, J.B., Fisher, R.B. Cook, D. Hayes, M. Huang, A. Ito, H. Lei, J. Mao, N. Parazoo, **X. Shi**, Bo Tao, W. Wang, Yaxing Wei, and Jia Yang, 2016, Global land carbon sink response to temperature and precipitation varies with ENSO phase. Under review, *Proceedings of the National Academy of Sciences*.
  17. Fisher, J.B., M. Sikka, D.N. Huntzinger, C.R. Schwalm, J. Liu.,Y. Wei, R.B. Cook, A.M. Michalak, K. Schaefer, A.R. Jacobson, M.A. Arain, P. Ciais, D.J. Hayes, M. Huang, S. Huang, A. Ito, A.K. Jain, H. Lei, C. Lu, F. Maignan, J. Mao, N. Parazoo, C. Peng, S. Peng, B. Poulter, D.M. Ricciuto, H. Tian, **Xiaoying Shi**, W. Wang, N. Zeng, F. Zhao, and Q. Zhu 2016. CMS: Modeled Net Ecosystem Exchange at 3-hourly Time Steps, 2004-2010. ORNL DAAC, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORN LDAAC/1315>.
  18. Junjiong Shao, Xuhui Zhou\*, Yiqi Luo, Guodong Zhang, Bo Li, Li Dan, Zhiqiang Gao, Yong He, Deborah Huntzinger, Atul Jain, Jiafu Mao, Jihua Meng, Anna Michalak, Changhui Peng, Benjamin Poulter, Christopher R. Schwalm, **Xiaoying Shi**, Rui Sun, Fulu Tao, Ning Zeng, Qiuan Zhu, and Wenquan Zhu, 2016. Uncertainty analysis of terrestrial net primary productivity and net biome productivity in China during 1901-2005. *Journal of Geophysical Research-Biogeosciences*, 121, doi:10.1002/2015JG003062.
  19. Rebecca T. Thomas\*, Iain Colin Prentice, Heather Graven, Philippe Ciais, Joshua B. Fisher, Maoyi Huang, Deborah N. Huntzinger, Akihiko Ito, Andy Jacobson, Atul Jain, Jiafu Mao, Anna Michalak,

- Shushi Peng, Benjamin Poulter, Daniel M Ricciuto, **Xiaoying Shi**, Christopher Schwalm, Hanqin Tian, and Ning Zeng, 2016. CO<sub>2</sub> and greening observations indicate increasing light-use efficiency in northern terrestrial ecosystems. Under review, *Geophysical Research Letters*.
20. Daniel B. Metcalfe, Daniel Ricciuto, Jiafu Mao, **Xiaoying Shi**, Peter E. Thornton, Sari Palmroth, Catherine Campbell, Vaughan Hurry, Sonja G. Keel, Sune Liner, Torgny Nasholm, K. E. Anders Ohlsson and Ram Oren, 2016. Informing climate models with rapid chamber measurements of forest carbon uptake. *Global Change Biology*, doi: 10.1111/gcb.13451.
  21. Ito, A., Inatomi, M., Huntzinger, D.N., Schwalm, C., Michalak, A.M., Cook, R., King, A.W., Mao, J., Wei, Y., Post, W.M., Wang, W., Arain, M.A., Hayes, D.J., Ricciuto, D.M., **Shi, X.**, Huang, M., Lei, H., Tian, H., Lu, C., Yang, J., Tao, B., Jain, A., Poulter, B., Peng, S., Ciais, P., Fisher, J.B., Parazoo, N., Schaefer, K., Peng, C., Zeng, N., Zhao, F., 2016. Decadal trends in the seasonal-cycle amplitude of terrestrial CO<sub>2</sub> exchange: an analysis of Multi-scale Terrestrial Model Intercomparison Project ensemble of terrestrial biosphere models. *Tellus B*, 68, 28968, <http://dx.doi.org/10.3402/tellusb.v68.28968>.
  22. **Shi Xiaoying**, Peter E. Thornton, Daniel M. Ricciuto, Paul J. Hanson, Jiafu Mao, Stephen D. Sebestyen, Natalie A. Griffiths, and G. Bisht (2015), Representing northern peatland microtopography and hydrology with the Community Land Model, *Biogeosciences*, 12, 6463-6477, 2015.
  23. Zhang Li, Jiafu Mao, **Xiaoying Shi**, Daniel Ricciuto, Honglin He, Peter Thornton, Guirui Yu, Shijie Han, Yingnian Li, Junhua Yan, Yanbin Hao, huimin Wang, 2016, Evaluation of the Community Land Model simulated carbon and water fluxes against observations over ChinaFLUX sites, Accepted, *Agricultural and Forest Meteorology*.
  24. Mao Jiafu, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Anthony W. King, **Xiaoying Shi**, Colleen M. Inversen and Richard J. Norby, 2016. Evaluating the Community Land Model in a pine stand with <sup>13</sup>CO<sub>2</sub> and shading manipulations. *Biogeosciences*, 13, 641-657, doi:10.5194/bg-13-641-2016.
  25. Huntzinger, D.N., A. M. Michalak, C. Schwalm, P. Ciais, K. Schaefer, A.W. King, Y. Wei, R.B. Cook, J.B. Fisher, D. Hayes, M. Huang, A. Ito, A. K. Jain, H. Lei, C. Lu, F. Maignan, J. Mao, N. Parazoo, S. Peng, B. Poulter, D. Riccuito, **X. Shi**, H. Tian, W. Wang, N. Zeng, F. Zhao, 2015. Multiple drivers important for controlling trends in net land sink since 1959. Finished and to be submitted to *Nature*.
  26. Peter E. Thornton, Katherine Calvin, Andrew D. Jones, Alan V. Di Vittorio, Ben Bond-Lamberty, Louise Chini, **Xiaoying Shi**, Jiafu Mao, William D. Collins, Jae Edmonds, Allison Thomson, John Truesdale, Anthony Crais, Marcia L. Branstetter and George Hurtt, 2015. Biospheric feedbacks on land ecosystems alter future greenhouse gas emissions and land use. Under review, *Nature Climate Change*.
  27. Shilong Piao, Zhuo Liu, Tao Wang, Sushi Peng, Philippe Ciais, Mengtian Huang, Ivan A Janssens, Su-Jong Jeong, Xin Lin, **Jiafu Mao**, John Miller, Anwar Mohammat, Ranga B Myneni, Josep Penuelas, Xiaoying Shi, Zhenzhong Zeng, and Pieter P Tans, 2016. Weakening temperature control on the variations of spring carbon uptake across northern lands. Under review, *Nature Climate Change*.
  28. Sun, Y., Piao, S., Huang, M., Ciais, P., Zeng, Z., Cheng, L., Li, X., Zhang, X., Mao, J., Peng, S., Poulter, B., **Shi, X.**, Wang, X., Wang, Y.-P. and Zeng, H., 2016. Global patterns and climate drivers of water-use efficiency in terrestrial ecosystems deduced from satellite-based datasets and carbon cycle models. *Global Ecology and Biogeography*, 25(3), 311-323, doi: 10.1111/geb.12411.
  29. Huang, M.T., Piao, S., Zeng, Z., Peng, S., Philippe C., Cheng, L., Mao, J., Poulter, B., **Shi, X.**, Yaang, H., Wang, Y.P., 2016. Seasonal responses of terrestrial ecosystem water-use efficiency to climate change. *Global Change Biology*. 22, 2165-2177, doi: 10.1111/gcb.13180.
  30. Wang Dali, Xiaoying Shi, Daniel Ricciuto, Jiafu Mao and Jens Domke, 2016. A scalable framework for global offline Community Land Model ensemble simulation. *International Journal of Computational Science and Engineering*, 12(1): 73-85, doi:10.1504/IJCSE.2016.074565.
  31. Mao Jiafu, Wenting Fu, **Xiaoying Shi**, Daniel M. Ricciuto, and MstMIP participants, 2015. Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends. *Environ. Res. Lett.*, 10(9):094008. doi:10.1088/1748-9326/10/9/094008.

32. Collins, W. D., Craig, A. P., Truesdale, J. E., Di Vittorio, A. V., Jones, A. D., Bond-Lamberty, B., Calvin, K. V., Edmonds, J. A., Kim, S. H., Thomson, A. M., Patel, P., Zhou, Y., Mao, J., **Shi, X.**, Thornton, P. E., Chini, L. P., and Hurtt, G. C.: The integrated Earth system model version 1: formulation and functionality, *Geosci. Model Dev.*, 8, 2203-2219, doi:10.5194/gmd-8-2203-2015, 2015.
33. Huntzinger, D.N., C.R. Schwalm, Y. Wei, R.B. Cook, A.M. Michalak, K. Schaefer, A.R. Jacobson, M.A. Arain, P. Ciais, J.B. Fisher, D.J. Hayes, M. Huang, S. Huang, A. Ito, A.K. Jain, H. Lei, C. Lu, F. Maignan, J. Mao, N. Parazoo, C. Peng, S. Peng, B. Poulter, D.M. Ricciuto, H. Tian, **X. Shi**, W. Wang, N. Zeng, F. Zhao, and Q. Zhu (in press). NACP MsTMIP: Global 0.5-deg Terrestrial Biosphere Model Outputs (version 1) in Standard Format. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. DOI: 10.3334/ORNLDAAAC/1225.
34. Wei, Y., S. Liu, D. Huntzinger, A.M. Michalak, N. Viovy, W.M. Post, C. Schwalm, K. Schaefer, A.R. Jacobson, C. Lu, H. Tian, D.M. Ricciuto, R.B. Cook, J. Mao, and **X. Shi**. 2014. NACP MsTMIP: Global and North American Driver Data for Multi-Model Intercomparison. Data set. Available on-line [<http://daac.ornl.gov>] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, USA. <http://dx.doi.org/10.3334/ORNLDAAAC/1220>
35. Tian Hanqin, Chaoqun Lu, Jia Yang, Kamaljit Banger, Deborah N. Huntzinger, Christopher R. Schwalm, Anna M. Michalak, Robert Cook, Philippe Ciais, Daniel Hayes, Maoyi Huang, Akihiko Ito, Andrew Jacobson, Atul Jain, Huimin Lei, Jiafu Mao, Shufen Pan, Wilfred M. Post, Shushi Peng, Benjamin Poulter, Wei Ren, Daniel Ricciuto, Kevin Schaefer, **Xiaoying Shi**, Bo Tao, Weile Wang, Yaxing Wei, Qichun Yang, Bowen Zhang, Ning Zeng, 2015, Global patterns of soil carbon stocks and fluxes as simulated by multiple terrestrial biosphere models: sources and magnitude uncertainty, *Global Biogeochemical Cycles*, 29, 775–792. doi:10.1002/2014GB005021.
36. Shilong Piao, Guodong Ying, Jianguang Tan, Lei Chen, Ronggao Liu, Yongwen Liu, Jiafu Mao, Ranga B Myneni, Shushi Peng, Ben Poulter, **Xiaoying Shi**, Zhiqiang Xiao, Ning Zeng and Yingping Wang, 2015. Detection and attribution of vegetation greening trend in China over the last 30 years. *Global Change Biology*, 21, 1601-1609, doi: 10.1111/gcb.12795.
37. Shilong Piao, Huijuan Nan, Chris Huntingford, Philippe Ciais, Pierre Friedlingstein, Stephen Sitch, Shushi Peng, Anders Ahlstrom, Josep G. Canadell, Sam Levis, Peter E. Levy, Lingli Liu, Mark R Lomas, Jiafu Mao, Ranga B. Myneni, Philippe Peylin, Ben Poulter, **Xiaoying Shi**, Guodong Ying, Nicolas Viovy, Tao Wang, Xuhui Wang, Soenke Zaehle, Ning Zeng, Zhenzhong Zeng and Anping Chen. Evidence for a weakening relationship between temperature variability and northern vegetation activity, 2014. *Nature Communications* 5, 5018, doi:10.1038/ncomms6018.
38. Christopher R. Schwalm, Deborah N. Huntzinger, Joshua B. Fisher, Anna M. Michalak, Kevin Bowman, Robert Cook, Bassil El-Masri, Daniel Hayes, Maoyi Huang, Akihiko Ito, Andrew Jacobson, Atul Jain, Anthony W. King, Huimin Lei, Junjie Liu, Chaoqun Lu, Jiafu Mao, Shushi Peng, Benjamin Poulter, Daniel Ricciuto, Kevin Schaefer, **Xiaoying Shi**, Bo Tao, Hanqin Tian, Weile Wang, Yaxing Wei, Jia Yang, Ning Zeng, 2015. Toward “optimal” integration of terrestrial biosphere model ensembles. *Geophysical Research Letters*, 42, 4418–4428. doi: 10.1002/2015GL064002.
39. Wang Shusen, Ming Pan, Qiaozhen Mu, **Xiaoying Shi**, Jiafu Mao, Christian Brummer, Rachhpal S. Jassal, Praveena Krishnan, Junhua Li and T. Andrew Black, 2015. Assessing evapotranspiration from eddy covariance measurements, water budgets, remote sensing, and land surface models over Canada. *Journal of Hydrometeorology*, 16, 1540–1560, doi: <http://dx.doi.org/10.1175/JHM-D-14-0189.1>.
40. A. V. Di Vittorio, L. P. Chini, B. Bond-Lamberty, J. Mao, **X. Shi**, J. Truesdale, A. Craig, K. Calvin, A. Jones, W. D. Collins, J. Edmonds, G. C. Hurtt, P. Thornton and A. Thomson, 2014. From land use to land cover: Restoring the afforestation signal in a coupled integrated assessment-earth system model and the implications for CMIP5 RCP simulations. *Biogeosciences* 11, 6435-6450, 2014.
41. Jianguang Tan, Shilong Piao, Anping Chen, Zhenzhong Zeng, Philippe Ciais, Ivan Janssens, Jiafu Mao, Ranga Myneni, Shushi Peng, Josep Penuelas, **Xiaoying Shi** and Sara Vicca, 2015. Seasonally different

response of photosynthetic activity to daytime and night-time warming in the Northern Hemisphere. *Global Change Biology*, 21: 377-387, doi:10.1111/gcb.12724.

42. Jakob Zscheischler, Anna Michalak, Christopher Schwalm, Miguel Mahecha, Deborah Huntzinger, Markus Reichstein, Gwenaelle Berthier, Philippe Ciais, Robert Cook, Bassil El-Masri, Maoyi Huang, Akihiko Ito, Atul Jain, Anthony W. King, Huimin Lei, Chaoqun lu, Jiafu Mao, Shushi Peng, Ben Poulter, Daniel Ricciuto, **Xiaoying Shi**, Bo Tao, Hanqin Tian, Nicolas Viovy, Weile Wang, Yaxing Wei, Jia Yang, Ning Zeng. Impact of Large-Scale Climate Extremes on Biospheric Carbon Fluxes: An Intercomparison Based on MsTMIP Data, 2014, *Global Biogeochemical Cycles*, 28, 585-600.
43. Ben Bond-Lamberty, Katherine Calvin, Andrew D. Jones, Jiafu. Mao, Pralit Patel, **Xiaoying Shi**, Allison Thomson, Peter Thornton, and Yuyu Zhou, 2014. Coupling earth system and integrated assessment models: the problem of steady state. *Geosci. Model Dev. Discuss.*, 7, 1499–1524.
44. R. Langan, R. Archibald, M. Plumlee, S. Mahajan, D. Ricciuto, C. Yang, R. Mei, J. Mao, **X. Shi** and J. Fu, 2014. Stochastic parameterization to represent variability and extremes in climate modeling, International Conference on Computational Science (ICCS) 2014 (Accepted).
45. Z. Zeng, T. Wang, F. Zhou, P. Ciais, J. Mao, **X. Shi** and S. Piao, 2014. A worldwide analysis of spatiotemporal changes in water balance based evapotranspiration from 1982 to 2009. *Journal of Geophysical Research-Atmosphere*, 119, 1186-1202, DOI:10.1002/2013JD020941.
46. Y. Wei, S. Liu, D. Huntzinger, A.M. Michalak, N. Viovy, W.M. Post, C. Schwalm, K. Schaefer, A. Jacobson, C. Lu, D.M. Ricciuto, R.B. Cook, J. Mao, and **X. Shi**, 2014. The North American Carbon Program Multi-Scale Synthesis and Terrestrial Model Intercomparison Project: Part 2 – Environmental Driver Data. *Geoscientific Model Development*, 7, 2875-2893, 2014, OI:10.5194/gmd-7-2875-2014.
47. Huntzinger, D. N., Schwalm, C., Michalak, A. M., Schaefer, K., King, A. W., Wei, Y., Jacobson, A., Liu, S., Cook, R. B., Post, W. M., Berthier, G., Hayes, D., Huang, M., Ito, A., Lei, H., Lu, C., Mao, J., Peng, C. H., Peng, S., Poulter, B., Ricciuto, D., **Shi, X.**, Tian, H., Wang, W., Zeng, N., Zhao, F., and Zhu, Q.: The North American Carbon Program Multi-Scale Synthesis and Terrestrial Model Intercomparison Project – Part 1: Overview and experimental design, *Geosci. Model Dev.*, 6, 2121-2133, doi:10.5194/gmd-6-2121-2013, 2013.
48. Liu Zhen\*, Ray P. Bambha, Joseph Pinto, Tao Zeng, Jim Boylan, Maoyi Huang, Huimin Lei, Chun Zhao, Shishi Liu, Jiafu Mao, Christopher R. Schwalm, **Xiaoying Shi**, Yaxing Wei and Hope A. Michelsen, 2014. Toward verifying fossil fuel CO<sub>2</sub> emissions with the Community Multi-scale Air Quality (CMAQ) model: motivation, model description and initial simulation. *Journal of the Air & Waste Management Association*, 64(4), 419-435, DOI:10.1090/10962247.2013.816642.
49. R. Langan, R. Archibald, M. Plumlee, S. Mahajan, D. Ricciuto, C. Yang, R. Mei, J. Mao, **X. Shi** and J. Fu, 2014. *Procedia Computer Science*, Volume 29, Pages 1146-1155, ISSN 1877-0509, <http://dx.doi.org/10.1016/j.procs.2014.05.103>.
50. Lei Huimin, Maoyi Huang\*, L. Ruby Leung, Dawen Yang, **Xiaoying Shi**, Jiafu Mao, Daniel J. Hayes, Christopher R. Schwalm, Yaxing Wei and Shishi Liu. 2014. Sensitivity of global terrestrial gross primary production to hydrologic states simulated by the Community Land Model using two runoff parameterizations. *Journal of Advances in Modeling Earth Systems*, 6(3), 658-679, doi:10.1002/2013MS000252.
51. Steed, C. A., D. M. Ricciuto, G. Shipman, B. Smith, P. E. Thornton, D. Wang, **X. Shi** and D. N. Williams (2013). “Big Data visual analytics for Earth system simulation exploratory analysis.” *Computers and Geoscience* 61 71-82 DOI: 10.1016/j.cageo.2013.07.025.
52. **Shi Xiaoying**, Jiafu Mao, Peter E. Thornton and Maoyi Huang. Spatiotemporal patterns of evapotranspiration in response to multiple environmental factors simulated by the Community Land Model. *Environmental Research Letters*, 2013(8), 0424012.
53. Wang Kai, Jiafu Mao\*, Robert E. Dickinson, **Xiaoying Shi**, Wilfred M. Post, Zaichun Zhu and Ranga B. Myneni. 2013. Evaluation of CLM4 solar radiation partitioning scheme using remote sensing and site level FPAR datasets. *Remote Sensing*, 5(6), 2857-2882; doi:10.3390/rs5062857.

54. Jiafu Mao, **Xiaoying Shi**, Peter E. Thornton, Forrest M. Hoffman, Zaichun Zhu and Ranga B. Myneni. 2013. Global latitudinal-asymmetric vegetation growth trends and their driving mechanisms: 1982-2009. *Remote Sensing*. 2013, 5(3), 1484-1497.
55. Jones, A. D., Collins, W.D., Edmonds, J., Torn, M.S., Janetos, A.C., Calvin, K., Thomson, A., Chini, L., Mao, J., **Shi, X.**, Thornton, P., Hurtt, G. C. and Wise, M., 2013. Greenhouse gas policy influences climate via direct effects of land-use change. *Journal of Climate*, doi: <http://dx.doi.org/10.1175/JCLI-D-12-00377.1>.
56. Mao Jiafu, Peter E. Thornton, **Xiaoying Shi**, Maosheng Zhao and Wilfred M. Post, 2012. Remote sensing evaluation of CLM4 GPP for the period 2000 to 2009. *Journal of Climate*, 25, 5327-5342.
57. Mao Jiafu, Xiaoying Shi, Peter E. Thornton, Shilong Piao and Xuhui Wang, 2012. Causes of spring vegetation growth trends in the northern mid-high latitudes from 1982 to 2004, 2012. *Environmental Research Letters*, 7 014010 doi:10.1088/1748-9326/7/1/014010.
58. Piao Shilong, A.Ito, S.Li, Y.Huang, P.Ciais, X.Wang, S.Peng, R R. J. Andres, J. Fang, S. Jeong, J. Mao, A. Mohammat, H. Muraoka, H. Nan, C. Peng, P. Peylin, **X. Shi**, S. Sitch, S. Tao, H. Tian, M. Xu, G. Yu, N. Zeng, and B. Zhu, 2012. The carbon budget of the terrestrial ecosystems in East Asia over the last two decades. *Biogeosciences Discuss.*, 9, 4025-4066
59. **Shi Xiaoying**, Jiaffu Mao, Peter E. Thornton, Forrest Hoffman and Wilfred M. Post, 2011. The impact of climate change, CO<sub>2</sub>, nitrogen deposition and land use change on contemporary global river flow, *Geophysical Research Letters* 38, L08704, doi:10.1029/2011GL046773.
60. **Shi Xiaoying**, Jiafu Mao, Yingping Wang, Yongjiu Dai and Xuli Tang, 2011. Coupling a Terrestrial Biogeochemical model to the Common Land Model, *Adv. Atmos. Sci.*, 28(5), 1129-1142
61. Mao Jiafu, **Xiaoying Shi**, Lijuan Ma, Dale P. Kaiser, Qingxiang Li and Peter E. Thornton, 2010. Assessment of re-analysis daily extreme temperatures with China's homogenized historical dataset during 1979 to 2001 using Probability Density Functions, *Journal of Climate* 23(24): 6605-6623.
62. **Shi Xiaoying**, Xiaohui Shi and Jiafu Mao. Interdecadal variation of Water Vapor Transport over East Asia and Its Impacts on Rainfall over Eastern China in summer. *ACTA GEOGRAPHICA SINICA* (in Chinese with English Abstract), 2009, Vol.39, No.7.
63. **Shi Xiaoying**, Yuqing Wang, Xu Xiangde, 2008. Effect of Mesoscale Topography over the Tibetan Plateau on Summer Precipitation in China: A Regional Model Study. *Geophys. Res. Lett.*, VOL. 35, L19707, doi: 10.1029/2008GL034740.
64. Xu Xiangde, **Xiaoying Shi**, Yuqing Wang, and et al, 2008. Data analyses and numerical simulation of moisture source and transport associated with summer precipitation in the Yangtze River Valley over China. *Meteorol Atmos Phys*, 100, 217-231.
65. **Shi Xiaoying**, Xiangde Xu, Hao Wang, Dayong Qin, 2008. Characteristics of Moisture Transport Structure and its Variation Trend of Drought-Flood Anomalies over Middle and Lower Reaches of the Yangtze River. *Journal of Hydraulic Engineering* (in Chinese with English Abstract), Vol.39, No.5, 596-603.
66. **Shi Xiaoying**, Xiaohui Shi, 2008. Climatological Characteristics of Summertime Moisture Budget over Southeastern Tibetan Plateau and Its Impacts. *Journal of Applied meteorological Science* (in Chinese with English Abstract), Vol. 19, No.1 41-46
67. **Shi Xiaoying**, Xiangde Xu, Ying Xu, 2005. The Comparison of Temperature between Six Hundreds Stations in China and Output of IPCC Models. *Meteorological Monthly* (in Chinese with English Abstract), vol. 31, No.7, 49-53
68. Miao Qiuju, Xiangde Xu, **Xiaoying Shi**, 2005. Water Vapor Transport Structure of Anomalous Rainy Centers in the Ambient Area of Tibetan Plateau. *Meteorological Monthly* (in Chinese with English Abstract), vol.31, No.12, 44-47
69. Bai Jingyu, **Xiaoying Shi**, Yu Shuqiu, 2003. Preliminary Research on Soil Moisture in Eastern Part of Northwest China. *Meteorological Science and Technology* (in Chinese with English Abstract), vol.3,

## Academic activities

1. Binyan Yan and coauthors. Seasonally asymmetric responses of Amazon forests to El Niño. December 2016, NGEE-Tropics ENSO research meeting, San Francisco, CA.
2. Fuyao Wang and coauthors. Advancing a model-validated statistical method for decomposing the key oceanic drivers of observed regional climate variability and evaluating model performance: focus on North African rainfall in CESM. December 2016, AGU Fall Meeting, San Francisco, CA.
3. Yan Yu and coauthors. Vegetation-rainfall feedbacks across the Sahel: a combined observational and modeling study. December 2016, AGU Fall Meeting, San Francisco, CA.
4. Mengtian Huang and coauthors. Seasonal responses of terrestrial ecosystem water-use efficiency to climate change. December 2016, AGU Fall Meeting, San Francisco, CA.
5. Alan Di Vittorio, Jiafu Mao and **Xiaoying Shi**. Evaluating the need for integrated land use and land cover analysis for robust assessment of carbon-related climate adaptation and mitigation strategies. December 2016, AGU Fall Meeting, San Francisco, CA.
6. Mao Jiafu and coauthors. Human-induced greening of the northern extratropical land surface. December 2016, AGU Fall Meeting, San Francisco, CA.
7. Jiafu Mao, **Xiaoying Shi** and coauthors. Disentangling natural and anthropogenic controls on terrestrial evapotranspiration and vegetation growth trends, National Center for Meteorological Research at Meteorology France, November 2016, Toulouse, France (**Invited**).
8. Jiafu Mao, **Xiaoying Shi** and co-authors. Human-induced greening of the northern extratropical land surface. November 29-December 1, 2016. DOE Regional & Global Climate Modeling (RGCM) Program, Rockville, MD, USA.
9. **Xiaoying Shi**, Peter E. Thornton and coauthors. Improving representations of Human-Earth system interactions. July 4<sup>th</sup>, 2016, National Climate center, Beijing, China (**Invited**).
10. Kate Calvin , Ben Bond-Lamberty , Andy Jones , and **Xiaoying Shi**. Human-component Progress and FY17 plans. June 7-10, 2016, ACME all hands meeting, Rockvill, MD, USA.
11. **Xiaoying Shi** and coauthors. Representing northern peatland hydrology and biogeochemistry with the Community Land Model. April 26-27, 2016. The 2016 Environmental System Science (ESS) PI meeting, Potomac, MD, USA.
12. **Xiaoying Shi** and coauthors. Representing hydrology and biogeochemistry with ALM. May 9-11, 2016. SPRUCE all hands meeting, minneapolis Minnesota, USA.
13. Daniel M. Ricciuto, **Xiaoying Shi**. SPRUCE MIP. May 9-11, 2016. SPRUCE all hands meeting, minneapolis Minnesota, USA.
14. Jiafu Mao, Whitney Forbes, Daniel M. Ricciuto, Mingzhou Jin, **Xiaoying Shi**, Peter E. Thornton, and Forrest M. Hoffman. A framework of detecting and attributing terrestrial ecosystem dynamics. April 26-27, 2016. The 2016 Environmental System Science (ESS) PI meeting, Potomac, MD, USA.
15. **Jiafu Mao**, Whitney Forbes, Daniel M. Ricciuto, Mingzhou Jin, Xiaoying Shi, Peter E. Thornton, and Forrest M. Hoffman. A framework of detecting and attributing terrestrial ecosystem dynamics. Mar 30, 2016, CCSI SAB meeting, Oak Ridge, TN.
16. **Xiaoying Shi**, Peter Thornton, Jae Edmonds, William Collins, Kate Calvin, Andy Jones and **Jiafu Mao**. Improving representation of human-Earth system interactions. Mar 30, 2016, CCSI SAB meeting, Oak Ridge, TN.



17. Forrest M. Hoffman, Jiafu Mao, Xiaojuan Yang, Nathan Collier, **Xiaoying Shi**, Gangsheng Wang, Min Xu and Chengen Yang. Biogeochemistry-Climate Feedbacks Scientific Focus Area. Mar 30, 2016, CCSI SAB meeting, Oak Ridge, TN.
18. Jiafu Mao, **Xiaoying Shi** and coauthors. Disentangling natural and anthropogenic controls on terrestrial evapotranspiration and vegetation growth trend, Mar 28, 2016. Seminar at the Yale School of Forestry & Environmental Studies, Yale University, New Haven, Connecticut, US (**Invited**).
19. Alan Di Vittorio, Jiafu Mao and Xiaoying Shi. Evaluation the need for integrated land use and land cover analysis for robust assessment of climate adaptation and strategies. April 2016, EGU Meeting, Vienna, Austria.
20. Forrest M. Hoffman, Jiafu Mao, Xiaojuan Yang, Nathan Collier, **Xiaoying Shi**, Gangsheng Wang, Min Xu, and Cheng-En Yang. Biogeochemistry-Climate Feedbacks. February, 2016, CCS Directorate Advisory Committee Meeting.
21. Fuyao Wang, Michael Notaro, Yan Yu, Jiafu Mao, **Xiaoying Shi** and Yaxing Wei. Evaluating CMIP5 Models' representation of oceanic drivers of north African precipitation. January 2016, AMS 96<sup>th</sup> Annual Meeting, New Orleans, Louisiana.
22. Yan Yu, Michael Notaro, Fuyao Wang, Jiafu Mao, **Xiaoying Shi** and Yaxing Wei. Observed Oceanic and Terrestrial Drivers of North African Climate. December 2015, AGU Fall Meeting, San Francisco, CA.
23. **Xiaoying Shi**, Daniel Ricciuto, Xiaofeng Xu, Peter Thornton, Paul Hanson, Jiafu Mao, Steven Sebestyen and Natalie Griffiths. Representing Northern Peatland Hydrology and Biogeochemistry within the Community Land Model. December 2015, AGU Fall Meeting, San Francisco, CA.
24. Alan Di Vittorio, Jiafu Mao and **Xiaoying Shi**. The Influence of Historical Land Use and Land Cover Change Assumptions, CO<sub>2</sub> Fertilization, and Nitrogen Deposition on Global Carbon Balance in an Earth System Model. December 2015, AGU Fall Meeting, San Francisco, CA.
25. Michael Notaro, Fuyao Wang, Yan Yu, Jiafu Mao, **Xiaoying Shi** and Yaxing Wei. Evaluating CMIP5 Models' Representation of Oceanic Drivers of North African Climate. December 2015, AGU Fall Meeting, San Francisco, CA.
26. Jiafu Mao et al. Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends. December 2015, AGU Fall Meeting, San Francisco, CA.
27. **Xiaoying Shi**, Jiafu Mao, Zhenzhong Zeng, Peter Thornton, Forrest Hoffman and Daniel Ricciuto. Biophysical feedbacks of vegetation to the global climate change for the past three decades. Nov., Albuquerque, New Mexico.
28. Mao Jiafu, **Xiaoying Shi et al.** Human-induced greening of the northern high-latitude land surface, Sep 18, 2015, the Nelson Institute Center for Climatic Research (CCR) Climate, People, and the Environment Program (CPEP) seminar, University of Wisconsin-Madison, Madison, US.
29. Mao Jiafu, Daniel M. Ricciuto and **Xiaoying Shi**, Biogeophysical controls on land-atmosphere fluxes in the Community Earth System Model, Aug 9-14, 2015, ESA Annual Meeting, Baltimore, MD.
30. Mao Jiafu, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Anthony W. King, **Xiaoying Shi**, Colleen M. Inversen and Richard J. Norby, Evaluating the Community Land Model in a pine stand with <sup>13</sup>CO<sub>2</sub> and shading manipulations, June 23-24, 2015, ORNL TES-SFA Triennial Review, Gaithersburg, MD.
31. Mao Jiafu, Wenting Fu, **Xiaoying Shi et al.** Impacts of natural and human forcings on the global land evapotranspiration and vegetation growth, May 26, 2015, International workshop on "Quantifying uncertainties in land surface models", Beijing Normal University, Beijing, China.
32. Daniel M. Ricciuto, Mao Jiafu and **Xiaoying Shi**. Sensitivity of the Community Land Model to biogeochemical and biogeophysical parameters, May 26, 2015, International workshop on "Quantifying uncertainties in land surface models", Beijing Normal University, Beijing, China.
33. **Xiaoying Shi**, Peter Thornton, James Edmonds, Bill Collins, Kate Calvin, Andy Jones, Alan Di Vittorio,

- Jiafu Mao, Ben Bond-Lamberty, et al., Improving representation of Human-Earth system interactions, May 5-7, 2015, ACME all hands meeting, Washington, DC, USA.
34. **Xiaoying Shi**, Peter E. Thornton, Daniel M. Ricciuto, Paul J. Hanson, Jiafu Mao, Stephen D. Sebestyen, Natalie A. Griffiths, and Gautam Bisht, Representing northern peatland microtopography and hydrology within the Community Land Model. April 28-29, 2015, Environmental System Science Principal Investigator (PI) Meeting, Potomac, MD, USA.
  35. **Xiaoying Shi**, Daniel M., Ricciuto, Peter E. Thornton, Paul J. Hanson, Xiaofeng Xu, and et al., Representing hydrology and biogeochemistry within the Community Land Model. June 23-24, 2015, ORNL TES-SFA review meeting, MD, USA.
  36. Yang, Xiaojuan, Peter Thornton, Daniel Ricciuto, Gengsheng Wang, **Xiaoying Shi**, and Forrest Hoffman. Integration of prognostic phosphorus cycle dynamics into ACME. May 5-7, 2015, ACME all hands meeting, Washington, DC, USA.
  37. Mao Jiafu, Daniel M. Ricciuto and **Xiaoying Shi**, Biogeophysical controls on land-atmosphere fluxes in the Community Earth System Model, Aug 9-14, 2015, ESA Annual Meeting, Baltimore, MD.
  38. Mao Jiafu, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Anthony W. King, **Xiaoying Shi**, Colleen M. Inversen and Richard J. Norby, Evaluating the Community Land Model in a pine stand with  $^{13}\text{C}$  and shading manipulations, June 23-24, 2015, ORNL TES-SFA review meeting, MD, USA.
  39. Lianhong Gu et al., Climate variability as a key factor for model improvement: insights from observed and modeled ecosystem functional responses to precipitation regimes and associated stresses in a central US forest. April 28-29, 2015, Environmental System Science Principal Investigator (PI) Meeting, Potomac, MD, USA.
  40. Daniel M. Ricciuto et al., Sensitivity of Community Land Model carbon fluxes and biomass to parameters. April 28-29, 2015, Environmental System Science Principal Investigator (PI) Meeting, Potomac, MD, USA.
  41. Mao Jiafu, Daniel M. Ricciuto, Peter E. Thornton, Jeffrey M. Warren, Anthony W. King, **Xiaoying Shi**, Colleen M. Inversen and Richard J. Norby. Evaluating the Community Land Model in a pine stand with  $^{13}\text{C}$  and shading manipulations, April 28-29, 2015, Environmental System Science Principal Investigator (PI) Meeting, Potomac, MD, USA.
  42. Mao Jiafu et al., Disentangling Climatic and Anthropogenic Controls on Global Terrestrial Evapotranspiration Trends. April 9, 2015, CCSI SAB meeting, Oak Ridge, TN.
  43. Yaxing Wei et al., The North American Carbon Program Multi-scale Synthesis and Terrestrial Model Intercomparison Project: Environmental driver data. April 9, CCSI SAB meeting, Oak Ridge, TN.
  44. **Xiaoying Shi**, Peter E. Thornton, Daniel M. Ricciuto, Paul J. Hanson, Jiafu Mao, Stephen D. Sebestyen, Natalie A. Griffiths, and Gautam Bisht, Representing northern peatland microtopography and hydrology within the Community Land Model. April 9, 2015, CCSI SAB meeting, Oak Ridge, TN.
  45. Alan Di Vittorio et al., From Land Use to Land Cover: Restoring the Afforestation Signal in a Coupled Integrated Assessment - Earth System Model and the Implications for CMIP5 RCP Simulations. April 12-17, 2015, European Geosciences Union General Assembly, Vienna, Austria.
  46. Yang, xiaojuan, Peter thornton, Daniel Ricciuto, **Xiaoying Shi**, and Forrest Hoffman. Influence of phosphorus cycle coupling on land model response to  $\text{CO}_2$  fertilization and climate variability, CESM land model and biogeochemistry working group meetings, March 2-4, 2015, Boulder, Colorado.
  47. Jiafu Mao, Wenti Fu, **Xiaoying Shi**, and et al., How anthropogenic effects modulate the climate-dominated land evapotranspiration. CESM land model and biogeochemistry working group meetings, March 2-4, 2015, Boulder, Colorado.
  48. Yaxing Wei et al., The North American Carbon Program Multi-scale Synthesis and Terrestrial Model Intercomparison Project: Environmental driver data. Jan. 26-29, 2015, NACP and AmeriFlux Joint Meeting, Washington D.C.
  49. Alan Di Vittorio, Louise Chini, Ben Bond-Lamberty, Jiafu Mao, **Xiaoying Shi**, and et al., From Land Use to Land Cover: Restoring the Afforestation Signal in a Coupled Integrated Assessment - Earth System Model and the Implications for CMIP5 RCP Simulations. December 2014, AGU Fall Meeting, San

- Francisco, CA.
50. Daniel M. Ricciuto, Jiafu Mao, and **Xiaoying Shi** Biogeophysical controls on land-atmosphere fluxes in the Community Earth System Model. December 2014, AGU Fall Meeting, San Francisco, CA.
  51. Li Zhang, Jiafu Mao, **Xiaoying Shi**, and et al., Evaluation of the Community Land Model simulated carbon and water fluxes against observations over ChinaFLUX sites. December 2014, AGU Fall Meeting, San Francisco, CA.
  52. **Xiaoying Shi** et al., Investigating the biogeophysical impacts of land cover change on future climate. December 2014, AGU Fall Meeting, San Francisco, CA.
  53. Shilong Piao et al., Evidence for A Weakening Relationship between Interannual Temperature Variability and Northern Vegetation Activity. December 2014, AGU Fall Meeting, San Francisco, CA.
  54. Jiafu Mao, **Xiaoying Shi**, Alan Di Vittorio, Peter Thornton, and et al., Dynamics of global vegetation biomass simulated by the integrated Earth System Model. December 2014, AGU Fall Meeting, San Francisco, CA.
  55. Zhenzhong Zeng, Tao Wang, Feng Zhou, Philippe Ciais, Jiafu Mao, **Xiaoying Shi**, and Shilong Piao. A Worldwide Analysis of Spatiotemporal Changes in Water Balance-based Evapotranspiration from 1982 to 2009. December 2014, AGU Fall Meeting, San Francisco, CA.
  56. Yuanyuan Fang et al., Can terrestrial biosphere models capture the response of atmospheric CO<sub>2</sub> growth rate to ENSO? December 2014, AGU Fall Meeting, San Francisco, CA.
  57. Deborah Huntzinger et al., Trends in the Global Net Land Sink and Their Sensitivity to Environmental Forcing Factors: Results From the Multi-Scale Synthesis and Terrestrial Model Intercomparison Project (MsTMIP). December 2014, AGU Fall Meeting, San Francisco, CA.
  58. Daniel Hayes et al., Model and Inventory Perspectives on the Role of Forests in the Global Carbon Cycle: Results from the Multi-scale Synthesis and Terrestrial Model Intercomparison Project (MsTMIP). December 2014, AGU Fall Meeting, San Francisco, CA.
  59. Mao Jiafu, **Xiaoying Shi**, Wenti Fu, and et al., The impact of natural and human forcings on the global terrestrial hydrology cycle and vegetation dynamics for the past 3 decades, Oct 24, 2014, Department of Industrial and Systems Engineering Graduate Seminar, The University of Tennessee at Knoxville, Knoxville, US
  60. Roisin Langan, R. Archibald, R. Mei, M. Plumlee, C. Yang, S. Mahajan, Jiafu Mao, D. Ricciuto, X. Shi and J. Fu. Stochastic parameterization for extreme precipitation in Climate Models. March 31-April 3, 2014, SIAM Conference on Uncertainty Quantification, Savannah, Georgia, USA.
  61. Alan Di Vittorio, Louise Chini, Ben Bond-Lamberty, Jiafu Mao **Xiaoying Shi**, John Truesdale. From land use to land cover: Restoring the afforestation signal in GCAM to CESM land coupling and the implications for CMIP5 RCP simulations. February 2014, SDWG Winter Meetings, Boulder, CO.
  62. Peter E. Thornton, Ben Bond-Lamberty, Kate Calvin, Louise Chini, Bill Collins, Tony Craig, Alan Di Vittorio, Jae Edmunds, George Hurtt, Andy Jones, Jiafu Mao, **Xiaoying Shi**, Allison Thomson, John Truesdale. The influence of prognostic land use and land cover change representations in CESM simulations over the period 1850-2100. February 2014, SDWG Winter Meetings, Boulder, CO.
  63. Jiafu Mao, Binyan Yan, **Xiaoying Shi**, Peter E. Thornton, Forrest M. Hoffman and David M. Lawrence. Synthesis of long-term remote sensing LAI for applications in land surface and earth system models: Homogenization and intercomparison. February 2014, CESM Land Model and Biogeochemistry Working Group Meetings, Boulder, CO.
  64. Jiafu Mao, Binyan Yan, **Xiaoying Shi**, Peter E. Thornton, Forrest M. Hoffman, Shilong Piao, Shunlin Liang and David M. Lawrence. Synthesis of remote sensing LAI for benchmark of global land surface models. Part 1: Homogenization and intercomparison. December 2013, AGU Fall Meeting, San Francisco, CA.
  65. R. Langan, R. Archibald, S. Mahajan, D. Ricciuto, C. Yang, R. Mei, Jiafu Mao and **Xiaoying Shi**. Stochastic Parameterization for extreme precipitation. December 2013, AGU Fall Meeting, San Francisco, CA.

66. Jianguan Tan, Xuhui Wang, Jiafu Mao, **Xiaoying Shi**, Shushi Peng, Zhenzhong Zeng and Shilong Piao. Detection and attribution of vegetation growth change in China during the last thirty years. December 2013, AGU Fall Meeting, San Francisco, CA.
67. **Xiaoying Shi**, Peter E. Thornton, Daniel M. Ricciuto, Paul J. Hanson and Jiafu Mao. Development and testing the hydrological dynamics of vegetated wetland for CLM. December 2013, AGU Fall Meeting, San Francisco, CA
68. **Xiaoying Shi** and coauthors. Development and testing the hydrological dynamics of vegetated wetland for CLM, June, 2013, 18th annual CESM workshop, Breckenridge, CO.
69. R. Archibald, S. Mahajan, J.Mao, B.Mayer, R. Mei, D. Ricciuto, **X. Shi**. Parameterization of the Influence of Sub-grid Scale Land Heterogeneity on Convection in a Climate Model, June, 2013, 18th annual CESM workshop, Breckenridge, CO.
70. Daniel M. Ricciuto, Jiafu Mao, **Xiaoying Shi**, Daniel J. Hayes, Anthony W. King, Peter E. Thornton. Modeling the terrestrial carbon cycle at regional to global scales: Parameter sensitivity and evaluation against benchmarks, May, 2013, TES/SBR Joint Principal Investigator's Meeting, Washington DC.
71. **Xiaoying Shi** et al. Development and testing the hydrological dynamics of vegetated wetland for CLM. May, 2013, TES/SBR Joint Principal Investigator's Meeting, Washington DC.
72. Paul Hanson, and coauthor Long-term experiments and observations: Fertile ground for model benchmarking and improvement in the context of environmental change, May, 2013, TES/SBR Joint Principal Investigator's Meeting, Washington DC (Invited).
73. **Xiaoying Shi**, Wilfred M. Post, Peter E. Thornton Jiafu Mao, and Daniel M. Ricciuto. Evaluation and improvement of CLM4 litterfall and littermass based on the observed database, March, 2013, CCSI SAB meeting, Oak Ridge, TN.
74. Jiafu Mao, **Xiaoying Shi**, Peter E. Thornton, Forrest M. Hoffman, Zaichun Zhu, and Ranga B. Myneni. Global latitudinal-asymmetric vegetation growth trends and their driving mechanisms: 1982-2009, March, 2013, CCSI SAB meeting, Oak Ridge, TN.
75. **Xiaoying Shi**, Wilfred M. Post, Peter E. Thornton, jiafu Mao, and Dan M. Ricciuto. Evaluation of CLM4 litterfall based on the observed database. Feb., 2013, NACP&MISTMIP meeting, Albuquerque, NM.
76. Mao Jiafu, Hoffman, Forrest M., **Xiaoying Shi**, and coauthors. Global estimation of CMIP5 Earth System Models in simulating Leaf Area Index against remote-sensing products. April 2013, will present at a special symposium entitled "Phenology for Disturbance Detection and Monitoring" at the 2013 US International Association of Landscape Ecology (US- IALE) meeting, Austin, Texas (Invited).
77. Jiafu Mao, **Xiaoying Shi**, Peter E Thornton, and coauthors. Global simulations, evaluations and applications of CLM4 at ORNL. February 2013, CESM Land Model and Biogeochemistry Working Group Meetings, Boulder, CO.
78. Jiafu Mao, Peter Thornton, **Xiaoying Shi**, Daniel Ricciuto, Gangsheng Wang, Paul J. Hanson. The development of CLM4 two-layer soil biogeochemical model using EBIS observations. February 2013, CESM Land Model and Biogeochemistry Working Group Meetings, Boulder, CO.
79. **Xiaoying Shi**, Jiafu Mao, Peter E. Thornton, Forrest M. Hoffman. Spatiotemporal pattern of CLM4 simulated evapotranspiration in response to multifactor environmental changes. December 2012, AGU Fall Meeting, San Francisco, CA.
80. **Xiaoying Shi**, Mao, J. et al. The impact of climate change, CO<sub>2</sub>, nitrogen deposition and land use change on contemporary global river flow. April, 2012, TES Principal Investigator's Meeting, Washington DC.
81. Mao Jiafu and **Xiaoying Shi** et al. Remote sensing evaluation of CLM4. Jan, 2012, CCSI SAB meeting.
82. Mao Jiafu and **Xiaoying Shi** et al. Remote sensing evaluation of CLM4. April, 2012, TES Principal Investigator's Meeting, Washington DC.
83. **Xiaoying Shi**, Mao, J. et al. The impact of climate change, CO<sub>2</sub>, nitrogen deposition and land use change on contemporary global river flow. April, 2012, TES Principal Investigator's Meeting, Washington DC.
84. Hayes et al. Global carbon cycle model development, application and evaluation. April, 2012, TES Principal Investigator's Meeting, Washington DC.

85. Mao Jiafu, Peter E. Thornton and **Xiaoying Shi** et al. Two-layer treatment of litter and soil organic matter pools and fluxes for CLM. Feb. 2012, Joint Land, Biogeochemistry, and Chemistry-Climate Working Groups NCAR, Boulder, CO.
86. Mao Jiafu and **Xiaoying Shi** et al. Comparison of CLM predicted GPP, LAI, and NDVI against remote sensing-based estimates. Feb. 2012, Joint Land, Biogeochemistry, and Chemistry-Climate Working Groups NCAR, Boulder, CO.
87. Thornton, P.E., Mao, J, **Shi, X.** and coauthors Influence of prognostic land use on 21st century climate prediction. December 2011, AGU Fall Meeting (Invited).
88. Mao Jiafu, **Xiaoying Shi**, Peter E. Thornton, Shilong Piao and Xuhui Wang. Causes of spring vegetation growth in the northern mid-high latitudes from 1982 to 2004. December 2011, AGU Fall Meeting, San Francisco, CA.
89. Jones, A. D., Collins, W.D., Edmonds, J., Torn, M.S., Janetos, A.C., Calvin, K., Thomson, A., Chini, L., Mao, J., **Shi, X.**, Thornton, P., Hurtt, G. C. and Wise, M. Greenhouse gas policy influences climate via direct effects of land-use change. December 2011, AGU Fall Meeting, San Francisco, CA.
90. **Xiaoying Shi**, Mao, J. et al. Runoff of the 20th and 21st centuries simulated by CESM1. December 2011, AGU Fall Meeting, San Francisco, CA.
91. **Shi Xiaoying**, Jiafu Mao, Peter E. Thornton, Forrest Hoffman and Wilfred M. Post, 2010. The impact of climate change, CO<sub>2</sub>, nitrogen deposition and land use change on contemporary global river flow, poster presented to American Geophysical Union, Fall Meeting 2010, San Francisco, CA, December, 2010.
92. **Xiaoying Shi**, US-China Workshop on the Climate-Energy Nexus, Oak Ridge, US, November 11 to November 13, 2009.
93. **Xiaoying Shi**, North American Carbon Program Second Joint Workshop Site-level Interim synthesis Regional and Continental Interim Synthesis, Oak Ridge, US, November 9 to November 11, 2009.
94. **Xiaoying Shi**, Jiafu Mao 2008, Combination of CASACNP to Common Land Surface Model. Presentation on CABLE workshop, Sydney, Australia, December 10, 2008.
95. **Xiaoying Shi**, Xu Xiangde, 2007, The moisture transport structure associated with drought/flooding anomalies in Yangtzer River valley, presentation on Chinese Meteorological Society, Guangzhou, Guangdong Province, China, November, 2007.
96. **Xiaoying Shi**, Shi Xiaohui, Xu Xiangde, 2007, Climatological Characteristics of Summertime Moisture Budget over Southeastern Tibetan Plateau and Its Impacts, presentation on the fifth workshop of China-Japan cooperation JICA Project, Huangshan, Anhui Province, China, September, 2007.
97. **Xiaoying Shi**, Xu Xiangde, 2007, The impacts of subgrid topography over Tibetan Plateau on structure of moisture transport and downstream summer precipitation, presentation on the Third workshop of Expert workshop meeting for China-America STI cooperation research, Chengdu, Sichuan Province, China, June, 2007.
98. **Xiaoying Shi**, Xu Xiangde, 2007, The Interdecadal Variation of Water Vapor Transport over East Asia Monsoon Areas and its relationship to Rainfall in China, presentation on the fourth workshop of China-Japan cooperation JICA Project, Beijing, China, March, 2007.
99. **Xiaoying Shi**, Xu Xiangde, 2006, Teleconnection Structure of Moisture Transport and Its Interdecadal Variation Trend at Mid-low Latitude of Drought-flood Anomalies over Middle and Lower Reaches of Yangtzer River Valley, presentation on workshop of Regional Climate and Regional Environment, Taiwan, December, 2006
100. **Xiaoying Shi**, Xu Xiangde, 2006, The Channels of water Vapor Transport over Tibetan Plateau and the effect of its Middle Scale Topography, presentation on the second workshop of China-Japan cooperation JICA Project, chengdu , Sichuan Province ,China, October, 2006.
101. **Xiaoying Shi**, Xu Xiangde, 2006, Characteristics of Water Vapor Transport in Ambient Area of Tibetan Plateau and its Effect on Downstream Regions, presentation on the second workshop of China-Japan cooperation JICA Project, Beijing China, March, 2006.
102. Taking part in the first workshop of Expert workshop meeting for China-America STI

cooperation research, Beijing, China, August, 2005.

103. **Xiaoying Shi**, Xu Xiangde, The zonal and meridional Climate Change of China, presentation on the 8th meeting of Chinese outstanding youth scientist of atmospheric science, Chengdu, Sichun Province, China, July, 2004.

### **Collaborators**

P. E. Thornton (ORNL), J. Mao (ORNL), F. M. Hoffman (ORNL), P. J. Hanson (ORNL), D. M. Ricciuto (ORNL), C. A. Steer (ORNL), A. M Thomson (PNNL), M. Huang (PNNL), W. Collins (LBNL), J. Andrew (LBNL), T. Craig (NCAR), J. Truesdale (NCAR), R. B. Myneni (BU), Benjamin B. Lamberty (PNNL); Alan Di Vittorio (LBL); Andrew Jones (LBL), Katherine V. Calvin (PNNL), Y. Wang (University of Hawaii), Y. Wang (CSIRO), E. Kowalcayk(CSIRO), X. Xu (Chinese Academy of Meteorological Sciences), Y. Dai (Beijing Normal University), S. Piao (PeiKing University), Deborah N. Huntzinger (NAU); Mingzhou Jin (UTK); Michael Notaro (UW)

### **Graduate and Postdoctoral Advisors**

Postdoctoral Advisor in US: Peter E. Thornton (ORNL)

Graduate Advisor in China: Xiangde Xu, Chinese Academy of Meteorological Sciences