

## Curriculum Vitae

### Contact Information

Qianlai Zhuang, Professor  
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### Professional Preparation

- Post-Doc, 2001-2005, The Ecosystems Center of the Marine Biological Laboratory, Woods Hole, MA; Advisor: Dr. Jerry M. Melillo
- Ph.D. Biological Sciences, 1997-2001, University of Alaska at Fairbanks, USA; Advisor: Dr. A. David McGuire
- M.S. Biomathematics and Botany, 1988-1991, Chinese Academy of Sciences, Institute of Botany, Beijing, P.R. China; Advisor: Dr. Kexue Xu

### Professional Experience

- 2014-present: Professor of Earth, Atmospheric, and Planetary Sciences, and Professor of Agronomy, Department of Earth, Atmospheric, and Planetary Sciences and Department of Agronomy, Purdue University, West Lafayette, IN
- 2010-2014: William F. and Patty J. Miller Associate Professor of Earth, Atmospheric, and Planetary Sciences, and Associate Professor of Agronomy, Department of Earth, Atmospheric, and Planetary Sciences and Department of Agronomy, Purdue University, West Lafayette, IN
- 2011-2012: Visiting Professor/Scientist at Joint Program on the Science and Policy of Global Change, Massachusetts Institute of Technology, Cambridge, MA
- 2005-2010: Assistant Professor at Department of Earth & Atmospheric Sciences and Department of Agronomy, Purdue University, West Lafayette, IN
- 2001-2005: Post-Doctoral Scientist, the Ecosystems Center of Marine Biological Laboratory (MBL), Woods Hole, and Research Associate at Massachusetts Institute of Technology (MIT), Joint Program on the Science and Policy of Global Change, Cambridge, MA. From January to June of 2005, Research Associate Professor at South Dakota School of Mines and Technology.
- 1997-2001: Research Assistant, Department of Biology and Wildlife, the Institute of Arctic Biology, University of Alaska Fairbanks, AK, USA.

### Current and Past Research Grants as PI (Totally raised \$15M)

- 11/01/2022 – 10/30/2025, NASA – Role of linked hydrological, permafrost, ground ice, and land cover changes in regional carbon balance across boreal and arctic landscapes. PI in collaboration with USGS (Neal Pastick), UAF (Tamara Harms), and Alaskan Ecoscience (Torre Jorgenson). Award: \$913,015

- 08/05/2021- 08/04/2024, NASA - The role of boreal wildfires in the global carbon budget: A process-based analysis using satellite-derived fire burn severity data, (PI in collaboration with Nancy French at Michigan Tech. and Ron Prinn at MIT), Award: \$675,583
- 9/1/2022 – 8/31/2024, Federal Aviation Administration, Direct and indirect land use change emissions due to SAF and PTL Pathways: Data and model improvements and role of soil organic carbon, CoPI in collaboration with Taheripour, Farzad; van der Mensbrugge, Dominique; Armstrong, Shalamar; Singh, Shweta; Corong, Erwin; Chepeliev, Maksym; Lusk, Jayson, Award Amount: \$789,688
- 08/1/2018- 07/30/2023, NSF - Collaborative Research: MSB-FRA: Peat Expansion in Arctic Tundra - Pattern, Process, and the Implication for the Carbon Cycle (TundraPEAT) (Award # 1802832, PI in collaboration with Julie Loisel, Texas A&M University; Philip Camill, Bowdoin College; Steve Froking, University of New Hampshire; Zicheng Yu, Lehigh University), \$304,493.
- 07/1/2017- 06/30/2020NASA/U. of Colorado, Boulder, Process-level investigation of revised global methane budget based on in situ and remote sensing of atmospheric composition and the land surface (PI in collaboration with Stefan Schwietzke, Sourish Basu; Lori Bruhwiler; Owen Sherwood; John Miller; Gabrielle Petron; Sylvia Englund Michel; Ed Dlugokencky; Pieter Tans; Giuseppe Etiope; Martin Schoell; Bell, Jennifer) \$468,997 out of \$1,282,569
- 9/1/2017-8/31/2020NASA Earth and Space Science Fellowship, High Affinity Methanotrophs are an Important Overlooked Methane Sink in the Pan-Arctic Methane Budget (PI for Youmi Oh) \$135,000
- 07/10/2017 - 07/09/2019USGS, Quantifying Alaskan Landscape Changes and Their Impacts on Greenhouse Emissions of Carbon Dioxide and Methane (PI in collaboration with A. D. McGuire and H. Genet) \$140,000
- 07/01/2016 – 06/30/2019, NASA/JPL: Dynamic inundation mapping for boreal methane studies on seasonal to inter-seasonal scales (PI in collaboration with Seungbum Kim at JPL), \$152,909.
- 08/01/2015-07/31/2018, Department of Energy / Chapman University: Understanding mechanistic controls of heterotrophic CO<sub>2</sub> and CH<sub>4</sub> fluxes in a peatland with deep soil warming and atmospheric CO<sub>2</sub> enrichment (PI in collaboration with Scott Bridgham and Jason Keller), \$416,551
- 04/2014-05/2017, NASA - Regional and Global Climate and Societal Impacts of Land-Use and Land-Cover Change in Northern Eurasia: A Synthesis Study Using Remote Sensing Data and an Integrated Global System Model (Lead PI in collaboration with J. Reilly at MIT and J. Melillo at MBL), \$ 855,934.
- 02/14/2014 - 02/13/2017, NSF-Ecosystem Program. Collaborative Research: Forest productivity and hydrological patterns regulate methane fluxes from peatlands in the Amazon basin (PI in collaboration with Cadillo-Quiroz, Hinsby), \$120,000.
- 11/2013-11/2015, USGS - Assessing Wetland Methane Emissions in Alaska (PI), \$ 156,159.
- 08/2012-07/2015, Department of Energy / U. of Oregon, Understanding the Mechanisms Underlying Heterotrophic CO<sub>2</sub> and CH<sub>4</sub> Fluxes in a Peatland with Deep Soil Warming and Atmospheric CO<sub>2</sub> Enrichment (PI in collaboration with Scott Bridgham and Jason Keller), \$124,370

- 09/2011-08/2014, Department of Energy, Collaborative Research: Quantifying Climate Feedbacks of the Terrestrial Biosphere under Thawing Permafrost Conditions in the Arctic (Lead PI in collaboration with C. A. Schlosser at MIT, J. M. Melillo at MBL, Woods Hole MA, and K. Anthony Walter at UAF), \$540,000 out of \$1,620,000
- 08/2009-07/2012, NSF - Collaborative Research: CDI-II: A Paradigm Shift in Ecosystem and Environmental Modeling: An Integrated Stochastic, Deterministic, and Machine Learning Approach (Lead PI in collaboration with M. Crawford, H. Zhang, J. Zhang, D. Xiu, J. Melillo, J. Reilly, D. Kicklighter), \$1,600,004 out of \$2,000,000.
- 08/2009-07/2012, NSF - Collaborative Research: Impacts of Climate Seasonality on Carbon Accumulation and Methane Emissions of Alaskan Ecosystems during the Holocene Thermal Maximum (PI in collaboration with Z. Yu, B. Felzer, and M. Jones), \$202,916 out of \$602,384.
- 04/2009-04/2012, NASA Land-use and Land-cover Program - Changes of Land Cover and Land Use and Greenhouse Gas Emissions in Northern Eurasia: Impacts on Human Adaptation and Quality of Life at Regional and Global Scales (Lead PI in collaboration with J. M. Melillo, D. Kicklighter, J. Reilly, A. Shvidenko, N. Tchebakova, E. Parfenova, A. Peregona, A. Sirin, S. Maksyutov, and G. Zhou), \$824,701
- 09/2008 -08/1013, Department of Energy / Lawrence Berkeley National Laboratory – Investigation of the Magnitudes and Probabilities of Abrupt Climate Transitions (IMPACTS) (PI in collaboration with Bill Riley, Mac Post, and Margaret Torn), \$75,000
- 10. 07/2008-07/2011, Department of Energy - Quantifying Climate Feedbacks From Abrupt Changes in High-Latitude Trace-Gas Emissions (PI in collaboration with A. Schlosser, J. Melillo, K. Walter), \$89,999 out of \$560,000
- 01/2008-05/2009, Office of the President of Purdue University, Visiting Indian and Chinese Scholars (VICS) grant, \$10,000
- 09/2007-09/2010, Department of Energy - Analysis of global economic and environmental impacts of a substantial increase in bioenergy production (PI in collaboration with Wally Tyner and Tom Hertel), \$209,900 out of \$659,783.
- 09/2007-09/2010, NASA Earth System Science Fellowship: Improving a process-based biogeochemistry model using an atmospheric transport chemistry model and in-situ and remotely- sensed terrestrial and atmospheric data (PI) for Mr. Jinyun Tang, \$84,000
- 01/2007-12/2011, NSF - Collaborative Research: Impact of Permafrost Degradation on Carbon and Water in Boreal Ecosystems (Lead PI with Jennifer Harden, Robert Striegl, Yuri Shur, and Torre Jorgenson), \$756,578 out of \$1,693,883.
- 01/2007-12/2007, The Energy Center, Discovery Park, Purdue University - Global Biomass and Bioenergy Supply in a Coupled Natural and Human System (Lead PI with Wally Tyner), \$50,000.
- 01/2007-12/2007, The Center for Environment, Purdue University - Quantifying Carbon Sequestrations across Indiana's Forest Landscapes (PI in collaboration with Guofan Shao, Phillip Pope, Charles Michler, Melba Crawford), \$30,000.
- 01/2006-01/2009, NSF - National Center for Ecological Analysis and Synthesis. Toward an adequate quantification of CH<sub>4</sub> emissions form land ecosystems: Integrating field and in-situ observations, satellite data, and modeling (Lead PI with Jerry Melillo, Ron Prinn, and Dave McGuire), \$103,350.
- 08/2005-09/2009, NSF - Collaborative Research: synthesis of Artic system carbon cycle research through model-data fusion studies using atmospheric inversion and process-based approaches (PI in collaboration with Dave McGuire, Jerry Melillo, and Michael Follows).

\$245,883 out of \$1,179,591.

**Refereed publication (Underlines indicate post-docs or students: 225; H-index=57)**

\* = Primary author    Bold = candidate    underlined = Student author    P = Post-doc

- (225) Zhao, B. and **Zhuang, Q\***: Peatlands and their carbon dynamics in northern high latitudes from 1990 to 2300: a process-based biogeochemistry model analysis, *Biogeosciences*, 20, 251–270, <https://doi.org/10.5194/bg-20-251-2023>, 2023.PDF
- (224) Oh, Y., **Zhuang, Q\***, Welp, L.R. et al. Improved global wetland carbon isotopic signatures support post-2006 microbial methane emission increase. *Commun Earth Environ* 3, 159 (2022). <https://doi.org/10.1038/s43247-022-00488-5>
- (223) Wang, S., **Q. Zhuang**, M. Zhou, X. Jin, N. Yu, T. Yuan, Temporal and spatial changes in soil organic carbon and soil inorganic carbon stocks in the semi-arid area of northeast China, *Ecological Indicators*, Volume 146, 2023, 109776, ISSN 1470-160X, <https://doi.org/10.1016/j.ecolind.2022.109776.PDF>
- (222) Wu, T., Wu, Q., **Zhuang, Q.** et al. Optimal Sample Size for SOC Content Prediction for Mapping Using the Random Forest in Cropland in Northern Jiangsu, China. *Eurasian Soil Sc.* 55, 1689–1699 (2022). <https://doi.org/10.1134/S1064229322600816> PDF
- (221) Kou, D. Tarmo Virtanen, Claire C. Treat, Juha-Pekka Tuovinen, Aleksi Räsänen, Sari Juutinen, Juha Mikola, Mika Aurela, Lauri Heiskanen, Maija Heikkilä, Jan Weckström, Teemu Juselius, Sanna R. Piilo, Jia Deng, Yu Zhang, Nitin Chaudhary, Conghong Huang, Minna Väiliranta, Christina Biasi, Xiangyu Liu, Mingyang Guo, **Q. Zhuang**, Atte Korhola, Narasinha J. Shurpali (2022). Peatland heterogeneity impacts on regional carbon flux and its radiative effect within a boreal landscape. *Journal of Geophysical Research: Biogeosciences*, 127, e2021JG006774. <https://doi.org/10.1029/2021JG006774>
- (220) Huang, C., **Zhuang, Q.**, Meng, X. et al. A fine spatial resolution modeling of urban carbon emissions: a case study of Shanghai, China. *Sci Rep* 12, 9255 (2022). <https://doi.org/10.1038/s41598-022-13487-5>
- (219) Zhao, B., **Zhuang, Q\***, Treat, C., & Frolking, S. (2022). A model intercomparison analysis for controls on C accumulation in North American peatlands. *Journal of Geophysical Research: Biogeosciences*, 127, e2021JG006762. <https://doi.org/10.1029/2021JG006762>
- (218) Liu, X.; Wang, S.; **Zhuang, Q.**; Jin, X.; Bian, Z.; Zhou, M.; Meng, Z.; Han, C.; Guo, X.; Jin, W.; et al. A Review on Carbon Source and Sink in Arable Land Ecosystems. *Land* 2022, 11, 580. <https://doi.org/10.3390/land11040580> PDF

- (217) Xi, X., Gentine, P., **Zhuang, Q\***, & Kim, S. (2022). Evaluating the variability of surface soil moisture simulated within CMIP5 using SMAP data. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD035363. <https://doi.org/10.1029/2021JD035363> PDF
- (216) Liu, L., **Zhuang, Q.**, Zhao, D., Zheng, D., Kou, D., & Yang, Y. (2022). Permafrost degradation diminishes terrestrial ecosystem carbon sequestration capacity on the Qinghai-Tibetan plateau. *Global Biogeochemical Cycles*, 36, e2021GB007068. <https://doi.org/10.1029/2021GB007068>
- (215) <sup>P</sup>Zhang, L., **Q. Zhuang**, Zhi Wen, Peng Zhang, Wei Ma, Qingbai Wu, Hanbo Yun, Spatial state distribution and phase transition of non-uniform water in soils: Implications for engineering and environmental sciences, *Advances in Colloid and Interface Science*, 2021, 102465, ISSN 0001-8686, <https://doi.org/10.1016/j.cis.2021.102465>.
- (214) <sup>P</sup>Wang, S., M. Zhou, K. Adhikari, **Q. Zhuang**, Z. Bian, Y. Wang, X. Jin, Anthropogenic controls over soil organic carbon distribution from the cultivated lands in Northeast China, *CATENA*, Volume 210, 2022, 105897, ISSN 0341-8162, <https://doi.org/10.1016/j.catena.2021.105897>.
- (213) Yun, H., J. Tang, L. D'Imperio, X. Wang, Y. Qu, L. Liu, **Q. Zhuang**, W. Zhang, Q. Wu, A. Chen, Q. Zhu, D. Chen, B. Elberling (2021). Warming and increased respiration have transformed an alpine steppe ecosystem on the Tibetan Plateau from a carbon dioxide sink into a source. *Journal of Geophysical Research: Biogeosciences*, 126, e2021JG006406. <https://doi.org/10.1029/2021JG006406>
- (212) Zha, J. and **Zhuang, Q\***: Quantifying the role of moss in terrestrial ecosystem carbon dynamics in northern high latitudes, *Biogeosciences*, 18, 6245–6269, <https://doi.org/10.5194/bg-18-6245-2021>, 2021.
- (211) Stavert, A. R., Saunois, M., Canadell, J. G., Poulter, B., Jackson, R. B., Regnier, P., Lauerwald, R., Raymond, P. A., Allen, G. H., Patra, P. K., Bergamaschi, P., Bousquet, P., Chandra, N., Ciais, P., Gustafson, A., Ishizawa, M., Ito, A., Kleinen, T., Maksyutov, S., ... **Zhuang, Q.** (2021). Regional trends and drivers of the global methane budget. *Global Change Biology*, 00, 1– 19. <https://doi.org/10.1111/gcb.15901>
- (210) Zhang, L., T. Ren, Y. Yu, Y. Yao, C. Li, Y. Zhao, **Q. Zhuang**, Z. Liu, X. Zhang, S. Li, Optimization of environmental variable functions of GPP quantitative model based on SCE-UA and minimum loss screening method, *Ecological Informatics*, Volume 66, 2021, 101479, ISSN 1574-9541, <https://doi.org/10.1016/j.ecoinf.2021.101479>.
- (209) Liu, S., and **Zhuang, Q\***. 2021. Leaf 13C data constrain the uncertainty of the carbon dynamics of temperate forest ecosystems. *Ecosphere* 12(10):e03741. 10.1002/ecs2.3741
- (208) <sup>P</sup>Wang, S.; Zhou, M.; **Zhuang, Q.**; Guo, L. Prediction Potential of Remote Sensing-Related Variables in the Topsoil Organic Carbon Density of Liaohekou Coastal Wetlands, Northeast China. *Remote Sens.* 2021, 13, 4106. <https://doi.org/10.3390/rs13204106>

- (207) Liu, X., **Q. Zhuang**, L. Lai, J. Zhou, Q. Sun, S. Yi, B. Liu, Y. Zheng, Soil water use sources and patterns in shrub encroachment in semiarid grasslands of Inner Mongolia, *Agricultural and Forest Meteorology*, Volumes 308–309, 2021, 108579, ISSN 0168-1923, <https://doi.org/10.1016/j.agrformet.2021.108579>.
- (206) Guo, M., **Zhuang, Q\***, Yao, H., Golub, M., Leung, L. R., & Tan, Z. (2021). Intercomparison of thermal regime algorithms in 1-D lake models. *Water Resources Research*, 57, e2020WR028776. <https://doi.org/10.1029/2020WR028776>
- (205) Lan, X., Basu, S., Schwietzke, S., Bruhwiler, L. M. P., Dlugokencky, E. J., Michel, S. E., O. A. Sherwood, P. P. Tans, K. Thoning, G. Etiope, **Zhuang, Q.** L. Liu, Y. Oh, J. B. Miller, G. Pétron, B. H. Vaughn, M. Crippa (2021). Improved constraints on global methane emissions and sinks using  $\delta^{13}\text{C-CH}_4$ . *Global Biogeochemical Cycles*, 35, e2021GB007000. <https://doi.org/10.1029/2021GB007000> PDF
- (204) Zhao, B., **Q. Zhuang\***, N. Shurpali, K. Köster, F. Berninger & J. Pumpanen, North American boreal forests are a large carbon source due to wildfires from 1986 to 2016, *Scientific Reports*, (2021) 11:7723, <https://doi.org/10.1038/s41598-021-87343-3>
- (203) Huang, C., **Q. Zhuang**, X. Meng, H. Guo, J. Han, An improved nightlight threshold method for revealing the spatiotemporal dynamics and driving forces of urban expansion in China, *Journal of Environmental Management* 289 (2021) 1125740301-4797
- (202) **Zhuang, Q\***, Wang, S., Zhao, B., Aires, F., Prigent, C., Yu, Z., et al. (2020). Modeling Holocene peatland carbon accumulation in North America. *Journal of Geophysical Research: Biogeosciences*, 125, e2019JG005230. <https://doi.org/10.1029/2019JG005230> . PDF.
- (201) Liu, L., D. Zhao, J. Wei, **Q. Zhuang**, X. Gao, Y. Zhu, J. Zhang, C. Guo and D. Zheng, (2021) Permafrost sensitivity to global warming of 1.5°C and 2°C in the Northern Hemisphere, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/abd6a8>.
- (200) Zheng, J., J. Fan, F. Zhang, J. Guo, S. Yan, **Q. Zhuang**, N. Cui, L. Guo (2021), Interactive effects of mulching practice and nitrogen rate on grain yield, water productivity, fertilizer use efficiency and greenhouse gas emissions of rainfed summer maize in northwest China, *Agricultural Water Management*, Volume 248, 106778, ISSN 0378-3774, <https://doi.org/10.1016/j.agwat.2021.106778>.
- (199) Guo, M., **\*Zhuang, Q.**, Yao, H., Golub, M., Leung, L. R., Pierson, D., & Tan, Z. (2021). Validation and sensitivity analysis of a 1-D lake model across global lakes. *Journal of Geophysical Research: Atmospheres*, 126, e2020JD033417. <https://doi.org/10.1029/2020JD033417>.
- (198) Zheng, J., J. Fan, F. Zhang, L. Wu, **Q. Zhuang**. 2021. Estimation of rainfed maize transpiration under various mulching methods using modified Jarvis-Stewart model and

hybrid support vector machine model with whale optimization algorithm. *Agricultural Water Management*. In press.

- (197) Zheng, J., J. Fan, F. Zhang, **Q. Zhuang**, J. Guo, S. Yan. 2020. Wheat straw mulching with nitrification inhibitor application improves grain yields, nitrogen use efficiency and reduces greenhouse gas emissions of rainfed summer maize in northwest China. In press in *Field Crops Research*.
- (196) Zheng, J., J. Fan, F. Zhang, **Q. Zhuang**. 2021. Evapotranspiration partitioning and water productivity of rainfed maize under contrasting mulching conditions in Northwest. *Agricultural Water Management*.243:106473
- (195) Wang, S., L. Xu, **Q. Zhuang**, et al., Investigating the spatio-temporal variability of soil organic carbon stocks in different ecosystems, *Science of the Total Environment*, <https://doi.org/10.1016/j.scitotenv.2020.143644>.
- (194) **Zhuang, Q.**, Wang, S., Zhao, B., Aires, F., Prigent, C., Yu, Z., et al. (2020). Modeling Holocene peatland carbon accumulation in North America. *Journal of Geophysical Research: Biogeosciences*, 125, e2019JG005230. <https://doi.org/10.1029/2019JG005230>.
- (193) Zha, J. and **\*Zhuang, Q.**: Microbial dormancy and its impacts on northern temperate and boreal terrestrial ecosystem carbon budget, *Biogeosciences*, 17, 4591–4610, <https://doi.org/10.5194/bg-17-4591-2020>, 2020.
- (192) Zheng, J., J. Fan, F. Zhang, **Q. Zhuang**, Evapotranspiration partitioning and water productivity of rainfed maize under contrasting mulching conditions in Northwest China, *Agricultural Water Management*, Volume 243, 2021, 106473, ISSN 0378-3774, <https://doi.org/10.1016/j.agwat.2020.106473>.
- (191) Saunio, M., Stavert, A. R., Poulter, B., Bousquet, P., Canadell, J. G., Jackson, R. B., Raymond, P. A., Dlugokencky, E. J., Houweling, S., Patra, P. K., Ciais, P., Arora, V. K., Bastviken, D., Bergamaschi, P., Blake, D. R., Brailsford, G., Bruhwiler, L., Carlson, K. M., Carrol, M., Castaldi, S., Chandra, N., Crevoisier, C., Crill, P. M., Covey, K., Curry, C. L., Etiope, G., Frankenberg, C., Gedney, N., Hegglin, M. I., Höglund-Isaksson, L., Hugelius, G., Ishizawa, M., Ito, A., Janssens-Maenhout, G., Jensen, K. M., Joos, F., Kleinen, T., Krummel, P. B., Langenfelds, R. L., Laruelle, G. G., Liu, L., Machida, T., Maksyutov, S., McDonald, K. C., McNorton, J., Miller, P. A., Melton, J. R., Morino, I., Müller, J., Murguía-Flores, F., Naik, V., Niwa, Y., Noce, S., O'Doherty, S., Parker, R. J., Peng, C., Peng, S., Peters, G. P., Prigent, C., Prinn, R., Ramonet, M., Regnier, P., Riley, W. J., Rosentretter, J. A., Segers, A., Simpson, I. J., Shi, H., Smith, S. J., Steele, L. P., Thornton, B. F., Tian, H., Tohjima, Y., Tubiello, F. N., Tsuruta, A., Viovy, N., Voulgarakis, A., Weber, T. S., van Weele, M., van der Werf, G. R., Weiss, R. F., Worthy, D., Wunch, D., Yin, Y., Yoshida, Y., Zhang, W., Zhang, Z., Zhao, Y., Zheng, B., Zhu, Q., Zhu, Q., and **Zhuang, Q.**: The Global Methane Budget 2000–2017, *Earth Syst. Sci. Data*, 12, 1561–1623, <https://doi.org/10.5194/essd-12-1561-2020>, 2020.



- (190) Yu, T. and \***Zhuang, Q.**: Modeling biological nitrogen fixation in global natural terrestrial ecosystems, *Biogeosciences*, 17, 3643–3657, <https://doi.org/10.5194/bg-17-3643-2020>, 2020.
- (189) Liu, L., \***Zhuang, Q.**, Oh, Y., Shurpali, N. J., Kim, S., & Poulter, B. (2020). Uncertainty quantification of global net methane emissions from terrestrial ecosystems using a mechanistically based biogeochemistry model. *Journal of Geophysical Research: Biogeosciences*, 125, e2019JG005428. <https://doi.org/10.1029/2019JG005428>.
- (188) Guo, M., **Q. Zhuang\***, Z. Tan, N. Shurpali, S. Juutinen, P. Kortelainen and P. Martikainen, 2020, Rising methane emissions from boreal lakes due to increasing ice-free days, *Environ. Res. Lett.* 15 064008. <https://doi.org/10.1088/1748-9326/ab8254>.
- (187) Wang S., Adhikari K, **Zhuang Q.**, Yang Z, Jin X, Wang Q, Bian Z. 2020. An improved similarity-based approach to predicting and mapping soil organic carbon and soil total nitrogen in a coastal region of northeastern China. *PeerJ* 8:e9126 <http://doi.org/10.7717/peerj.9126>.
- (186) Zheng, Y., Zhou, G., **Zhuang, Q.**, & Shimizu, H. (2020). Long-term elimination of grazing reverses the effects of shrub encroachment on soil and vegetation on the Ordos Plateau. *Journal of Geophysical Research: Biogeosciences*, 125, e2019JG005439. <https://doi.org/10.1029/2019JG005439>.
- (185) Oh, Y., \***Zhuang, Q.**, Liu, L. et al. Reduced net methane emissions due to microbial methane oxidation in a warmer Arctic. *Nat. Clim. Chang.* (2020). <https://doi.org/10.1038/s41558-020-0734-z>.PDF Supp
- (184) Wang, S.; **Zhuang, Q.**; Jin, X.; Yang, Z.; Liu, H. Predicting Soil Organic Carbon and Soil Nitrogen Stocks in Topsoil of Forest Ecosystems in Northeastern China Using Remote Sensing Data. *Remote Sens.* 2020, 12, 1115.
- (183) Wang, S., K. Adhikari, **Q. Zhuang**, H. Gu, X. Jin, Impacts of urbanization on soil organic carbon stocks in the northeast coastal agricultural areas of China, *Science of The Total Environment*, Volume 721, 2020, 137814,ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.137814>.
- (182) Guseva, S., Bleninger, T., Jöhnk, K., Polli, B. A., Tan, Z., Thiery, W., **Zhuang, Q.**, Rusak, J. A., Yao, H., Lorke, A., and Stepanenko, V.: Multimodel simulation of vertical gas transfer in a temperate lake, *Hydrol. Earth Syst. Sci.*, 24, 697–715, <https://doi.org/10.5194/hess-24-697-2020>, 2020.
- (181) Wang, S., J. Gao, **Q. Zhuang**, Y. Lu, H. Gu, and X. Jin, Multispectral Remote Sensing Data Are Effective and Robust in Mapping Regional Forest Soil Organic Carbon Stocks in a Northeast Forest Region in China, *Remote Sens.* 2020, 12(3), 393; <https://doi.org/10.3390/rs12030393>.



- (180) Liao, C., **Q. Zhuang\***, L. R. Leung, and L. Guo, Quantifying Dissolved Organic Carbon Dynamics Using a Three-Dimensional Terrestrial Ecosystem Model at High Spatial-Temporal Resolutions, minor revision in *Journal of Advances in Modeling Earth Systems*.
- (179) Zheng, Y. G. Zhou, **Q. Zhuang**, H. Shimizu, Long-term elimination of grazing reverses the effects of shrub encroachment on soil and vegetation on the Ordos Plateau, minor revision in *JGR-Biogeoscience*.
- (178) Ding, Y., W. Wang; **Q. Zhuang**, Shifting Sowing Date and Increasing Irrigation Can Offset the Negative Impacts of Climate Change on Chinese Paddy Rice Yield, in print in *Agricultural Water Management*.
- (177) Kicklighter, D. W., J. M. Melillo, E. Monier, A. P. Sokolov, and **Q. Zhuang** (2019) Future nitrogen availability and its effect on carbon sequestration in Northern Eurasia. *Nature Communications* 10, 3024, doi: 10.1038/s41467-019-10944-0.
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- (12) Balshi M.S., A. D. McGuire, **Q. Zhuang**, J. M. Melillo, D.W. Kicklighter, E. Kasischke, C. Wirth, M. Flannigan, J. Harden, J. S. Clein, T.J. Burnside, J. McAllister, W. A. Kurz, M. Apps, and A. Shvidenko (2007), The role of historical fire disturbance in the carbon dynamics of the an-boreal region: A process-based analysis. *J. Geophys. Res.*, 112, G02029.
- (11) **Zhuang, Q.**, J. M. Melillo, A. D. McGuire, D. W. Kicklighter, R. G. Prinn, P. A. Steudler, B. S. Felzer, and S. Hu (2007), Net emissions of CH<sub>4</sub> and CO<sub>2</sub> in Alaska: implications for the region's greenhouse gas budget, *Ecological Applications*: 17, 1, 203–212.
- (10) Sitch, S., A.D. McGuire, J. Kimball, N. Gedney, J. Gamon, R. Rengstrom, A. Wolf, **Q. Zhuang**, J. Clein, and K. C. McDonald (2007), Assessing the carbon balance of circumpolar arctic tundra using remote sensing and process modeling, *Ecological Applications*, 17, 1, 213-234.
- (9) **Zhuang, Q.**, J. M. Melillo, M. C. Sarofim, D W. Kicklighter, A. D. McGuire, B. S. Felzer, A. Sokolov, R. G. Prinn, P. A. Steudler, and S. Hu (2006), CO<sub>2</sub> and CH<sub>4</sub> exchanges between land ecosystems and the atmosphere in northern high latitudes over the 21st century, *Geophys. Res. Lett.*, 33, L17403, doi:10.1029/2006GL026972.
- (8) Euskirchen, E.S., A.D. McGuire, D.W. Kicklighter, **Q. Zhuang**, J.S. Clein, R.J. Dargaville, D.G. Dye, J.S. Kimball, K.C. McDonald, J.M. Melillo, V.E. Romanovsky, N.V. Smith (2006), Importance of recent shifts in soil thermal dynamics on growing season length, productivity, and carbon sequestration in terrestrial high-latitude ecosystem, *Global Change Biology*, 12, 731-750, doi:10.1111/j.1365-2486.2006.01113.x.
- (7) Felzer B., J. Reilly, J. Melillo, D. Kicklighter, C. Wang, R. Prinn, M. Sarofim, **Q. Zhuang** (2005) Past and future effects of ozone on net primary production and carbon sequestration using a global biogeochemical model, *Climatic Change* 73:345-373, doi:10.1007/S10584-005-6776-4.
- (6) **Zhuang, Q.**, J. M. Melillo, D. W. Kicklighter, R. G. Prinn, D. A. McGuire, P. A. Steudler, B. S. Felzer, and S. Hu (2004), Methane fluxes between terrestrial ecosystems and the atmosphere at northern high latitudes during the past century: A retrospective analysis with a process-based biogeochemistry model, *Global Biogeochemical Cycles*, 18, GB3010, doi:10.1029/2004GB002239.
- (5) Felzer B., D. Kicklighter, J. Melillo, C. Wang, **Q. Zhuang**, and R. Prinn (2004), Ozone effects on net primary production and carbon sequestration in the conterminous United States using a Biogeochemistry Model. *Tellus* 56B, 230-248.
- (4) McGuire, A.D., M. Apps, F.S. Chapin III, R. Dargaville, M.D. Flannigan, E.S. Kasischke, D. Kicklighter, J. Kimball, W. Kurz, D.J. McRae, K. McDonald, J. Melillo, R. Myneni, B.J. Stocks, D.L. Verbyla, and **Q. Zhuang** (2004) Land cover disturbances and feedbacks to the climate system in Canada and Alaska. In: *Land Change Science: Observing, Monitoring, and Understanding Trajectories of Change on the Earth's Surface* (eds. Gutman G., Janetos A.C., Justice C.O, Moran E.F., Mustard J.F., Rindfuss R.R., Skole D., Turner II B.L., Cochrane, M.A.), pp. 139-161. Kluwer Academic Publishers, Dordrecht, Netherlands.
- (3) **Zhuang, Q.**, A. D. McGuire, J. M. Melillo, J. S. Clein, R. J. Dargaville, D. W. Kicklighter,

R. B. Myneni, J. Dong, V. E. Romanovsky, J. Harden, and J. E. Hobbie (2003), Carbon cycling in extratropical terrestrial ecosystems of the Northern Hemisphere during the 20th Century: A modeling analysis of the influences of soil thermal dynamics, *Tellus*, 55B, 751-776.

- (2) **Zhuang, Q.**, A. D. McGuire, K. P. O'Neill, J. W. Harden, V. E. Romanovsky, J. Yarie (2002). Modeling the soil thermal and carbon dynamics of a fire chronosequence in Interior Alaska, *J. Geophys. Res.*, 107, 8147, doi:10.1029/2001JD001244. [Printed 108(D1), 2003]
- (1) **Zhuang, Q.**, V. E. Romanovsky, A. D. McGuire (2001) Incorporation of a permafrost model into a large-scale ecosystem model: Evaluation of temporal and spatial scaling issues in simulating soil thermal dynamics, *J. Geophys. Res.*, 106, D24, 33,649-33,670.

### **Invited Seminars (55):**

- (1) The modeling of terrestrial ecosystem carbon dynamics at high latitudes: the use of atmospheric CO<sub>2</sub> measurements, atmospheric transport models and remote sensing, Boston University, Boston. March 1, 2002.
- (2) Modeling the influences of climate change, soil thermal and hydrological dynamics, and fire disturbance on carbon dynamics of terrestrial ecosystems, MIT, Boston. MA. January 18, 2002.
- (3) Modeling responses of terrestrial ecosystems to fire disturbance and climate change, the Ecosystems Center of Marine Biological Laboratory, Woods Hole, MA. July, 2001
- (4) Carbon dioxide and methane fluxes between the atmosphere and terrestrial ecosystems in northern high latitudes: Implications for the climate system, Rapid City, Institute of Atmospheric Science, South Dakota School of Mines and Technology, April 21-23, 2004.
- (5) Modeling emissions of multiple greenhouse gases from terrestrial ecosystems: Toward a full greenhouse gas accounting, NASA Ames Research Center, May 23-24, 2005.
- (6) Net Carbon Dioxide and Methane Exchanges between the Atmosphere and Ecosystems in the Pan-Arctic: Implications for the Climate system and Society, Purdue University, March 28-29, 2005.
- (7) Net methane and carbon dioxide exchanges between the atmosphere and ecosystems in northern high latitudes: implications for the climate system. Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China, 28 July 2006.
- (8) Net Methane Emissions in Northern High Latitudes, the Center for Satellite Applications and Research, NOAA, Lanham, Maryland, July 3, 2006.
- (9) CO<sub>2</sub> and CH<sub>4</sub> exchanges between land ecosystems and the atmosphere in northern high latitudes over the 21st century, Institute of Botany, Chinese Academy of Sciences, Beijing, China, January 8, 2007.
- (10) Modeling permafrost, hydrological, and biogeochemical dynamics in the Arctic, Department of Civil Engineering, Purdue University, West Lafayette, IN, April 9, 2008
- (11) Carbon Cycling and Warming Arctic, Department of Earth Sciences, Indiana Univ. – Purdue Univ. at Indianapolis (IUPUI), October 16th, 2008.
- (12) Global biomass, bioenergy potentials, and environmental consequences, Department of Agronomy, Purdue University, West Lafayette, IN, November 17th, 2008.
- (13) Challenges and Opportunities in Quantifying Global Methane Emissions, Earth & Atmospheric Sciences, Purdue University, West Lafayette, IN, November 20th, 2008.

- (14) The role of ecosystem and biogeochemical modeling in global climate and environment change studies, Texas A&M University, College Station March 31, 2009.
- (15) Investigating the impacts of climate change, wildfires, and permafrost degradation on carbon and water dynamics in northern high latitudes, International Institute for Applied System Analysis (IIASA), Laxenburg, Austria, April 22nd, 2009.
- (16) Studying Human and Natural Systems with an Integrated Global System Model, College of Global Change and Earth System Science, Beijing Normal University, July 14, 2009.
- (17) Investigating Interactions between the biosphere, atmosphere, and human dimension with an Integrated Global System Model, Institute of Botany, Chinese Academy of Sciences, Beijing, July 13, 2009.
- (18) Feedbacks between the biosphere and atmosphere in the pan-arctic, International Institute for Earth System Science, Nanjing University, July 8, 2009.
- (19) Uncertainty and Sensitivity Study of Terrestrial Ecosystem Model and Its Adjoint Form, The MIT Joint Program On the Science and Policy of Global Change, MIT, Cambridge, MA. July 23, 2010.
- (20) Feedbacks between the terrestrial biosphere and atmosphere in northern high latitudes, Pennsylvania State University, University Park, PA, November 19, 2010.
- (21) Challenges in Modeling Feedbacks between Terrestrial Biosphere and Atmosphere in Northern High Latitudes, Dell Services Federal Government-NOAA/NESDIS/STAR, Camp Springs, MD, January 7th, 2011.
- (22) Analysis of carbon balance on the Tibetan Plateau during the 20th century, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China, April 22, 2011.
- (23) Climate Change and Global Carbon Cycling, Henan Academy of Sciences, Zhengzhou, China, April 25, 2011.
- (24) Dynamics of Land use and land cover change and biogeochemistry in Northern Eurasia, Institute of Botany, Chinese Academy of Sciences, Beijing, China, April 29, 2011.
- (25) The Role of Climate Change and Human Activities in Northern Eurasia on Global Changes of Land Cover and Land Use and Carbon Biogeochemistry, University of Toronto, June 29, 2012.
- (26) Impacts of soil thermal and hydrological dynamics on vegetation and carbon dynamics in northern high latitudes, Institute of Botany, Chinese Academy of Sciences, Oct. 18, 2012.
- (27) Impacts of soil thermal and hydrological dynamics on vegetation and carbon dynamics in northern high latitudes, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Oct. 17, 2012.
- (28) Quantifying feedbacks of greenhouse gas dynamics in the Arctic to the global climate system, Department of Geography, Northern Illinois University, DeKalb, IL, Oct. 25, 2013.
- (29) Quantifying feedbacks of greenhouse gas dynamics in the Arctic from plot to region, Department of Biology, San Diego State University, San Diego, CA, March 26, 2014.
- (30) Arctic Carbon biogeochemical feedbacks to the global climate system, Zhengzhou University, Zhengzhou, China, May 22, 2014.
- (31) A vision on climate and global environmental and socioeconomic change research, Purdue University, West Lafayette, IN, July 23, 2014.
- (32) Quantifying feedbacks of greenhouse gas dynamics in the Arctic to the global climate system, Environmental Science Division of Argonne National Laboratory, June 11, 2015

- (33) Quantifying greenhouse gases cycling in the Arctic, NASA Goddard Space Flight Center, Greenbelt, MD, September 3, 2015.
- (34) Methane emissions, sea ice decline, and Arctic amplification, Department of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN, October 15, 2015.
- (35) Modeling wildfires with statistical approaches, Statistics Department, Purdue University, West Lafayette, IN, Nov. 11, 2015
- (36) A vision on global climate and environmental and socioeconomic change research, Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, September 23, 2016.
- (37) Quantifying methane emissions from wetlands and lakes in the Arctic, University of Puerto Rico, January 25, 2017.
- 38) Quantifying Methane Emissions from Arctic Wetlands and Freshwater Ecosystems, Kyoto University, May 25, 2017.
- 39) Arctic Biogeochemical and Biophysical Feedbacks to the Global Climate System, The Institute of Tibetan Plateau Research, the Chinese Academy of Sciences, May 31, 2017.
- 40) Arctic Biogeochemical and Biophysical Feedbacks to the Global Climate System, PSL – LSCE, CEA CNRS UVSQ UPSaclay, Centre d'Etudes Orme des Merisiers, 91191 Gif sur Yvette France, September 22.
- 41) Quantifying Methane Emissions from Arctic Wetlands and Freshwater Ecosystems, Observatory of Paris, September 18, 2017.
- 42) Quantifying Methane Emissions from Arctic Wetlands and Freshwater Ecosystems, Observatory of Paris, September 18, 2017.
- 43) Arctic Biogeochemical and Biophysical Feedbacks to the Global Climate System, National Institute of Water and Atmosphere (NIWA), New Zealand, Feb. 25-28, 2018.
- 44) The role of modeling in the global climate and environmental research, the State Key Laboratory of Cryospheric Sciences, Cold and Arid regions Environmental and Engineering Institute, the Chinese Academy of Sciences, Lanzhou, June 10-17, 2018.
- 45) Arctic biogeochemistry and climate, University of Oslo, Sept. 13-19, 2018.
- 46) Modeling biogeochemical cycling in the Arctic, University of Eastern Finland, Sept. 21, 2018.
- 47) Modeling arctic biogeochemical feedbacks to the climate system, Moscow State University, Sept. 26 – Oct. 1, 2018.
- 48) Arctic biogeochemical feedbacks to the global climate system, St. Petersburg State University, Oct. 2-6, 2018.
- 49) The changing Arctic, University of Turku, Oct. 10-14, 2018.
- 50) Arctic biogeochemical modeling, University of Copenhagen, Oct. 26- 29, 2018.
- 51) Arctic biogeochemical feedbacks to the global climate system, Lund University, Oct. 29- Nov. 2, 2018.
- 52) Quantifying CO<sub>2</sub> and CH<sub>4</sub> cycling in the Arctic, University of Latvia, Riga, Latvia, Nov. 11-14, 2018.
- 53) Quantifying Arctic Biogeochemical Feedbacks to the Global Climate System, University of Costa Rica, San Jose, Costa Rica, March 12-20, 2019.
- 54) Modeling greenhouse gas emissions from the Arctic ecosystems, The Technical

University of Munich, Munich, Germany, April 16, 2019.

55) Arctic carbon-climate feedbacks, National Taiwan University, Taipei, Taiwan, May 23, 2019.

**Professional Services:**

- (1) NASA Panels and DOE Panels (2021, 2022)
- (2) Panelist of the EPA STAR Grant Program (2014)
- (3) Panelist of the NASA Carbon Monitoring System (CMS) (2012).
- (3) Networks of Centers of Excellence (NCE) Expert Panel to review the Canadian Advanced Polar Science Network (CAPSNet) (2011).
- (4) Panelist of the NSF Graduate Research Fellowship Program (GRFP) in the field of Ecology (2010).
- (5) Panelist of the NSF Climate & Large-Scale Dynamics Program (2010)
- (6) Session Chair of Influence of Northern Eurasia terrestrial ecosystems on global biogeochemical cycles: past, present and future in International Conference and Early Career Scientists School on Environmental Observations, Modeling and Information Systems ENVIROMIS-2010, 5-11 July 2010, Tomsk, Russia.
- (7) Convener and Chair of Session of Atmosphere: Global methane cycle and its impacts on climate system and atmospheric chemistry, American Geophysical Union annual meeting, 14-18 December 2009, San Francisco, CA.
- (8) Co-Chair Climate Change, Energy and Environment at the Twelfth Annual Conference "Trade Integration and Sustainable Development: Looking for an Inclusive World" in Economic Commission for Latin America and the Caribbean, Santiago, Chile, June 10-12, 2009.
- (9) Panelist of the NSF Graduate Research Fellowship Program (GRFP) in the field of Ecology (2009).
- (10) Convener and Chair of Session of Biogeosciences: Methane: Toward accurate estimates of fluxes over regional scales, American Geophysical Union annual meeting, 15-19 December 2008, San Francisco, CA.
- (11) Chair a Land Use and Land Cover on Carbon Emission session of NASA Active Sensing of CO<sub>2</sub> Emissions over Nights, Days, and Seasons (ASCENDS) Workshop, July 23-25, 2008 University of Michigan, Ann Arbor, Michigan
- (12) Panelist of the NSF Graduate Research Fellowship Program (GRFP) in the field of Ecology (2007).
- (13) Panelist of NASA Carbon Cycle Science, 2007.
- (14) Convener and Chair of Session of Biogeosciences: Methane: Toward a Multiscale approach to Reducing Uncertainties in its Emissions, American Geophysical Union annual meeting, 11-15 December 2006, San Francisco, CA.
- (15) Panelist of the NSF Graduate Research Fellowship Program (GRFP) in the field of Ecology (2006).
- (16) Chair and organizer of a Working Group funded by National Center for Ecological Analysis and Synthesis (NCEAS): Toward an adequate quantification of CH<sub>4</sub> emissions form land ecosystems: Integrating field and in-situ observations, satellite data, and modeling. 01/2006 -08/2009. Santa Barbara, CA.
- (17) Convener and Chair of Session of Biogeosciences: Observation and Simulation in

- Understanding the Methane Exchanges between the Atmosphere and Ecosystems, American Geophysical Union annual meeting, 13-17 December 2004, San Francisco, CA.
- (18) Presider of Biogeochemistry session: Carbon Cycling, Ecological Society of America annual meeting, August 1 - 6, 2004, Portland Convention Center, Portland, OR.
  - (19) Organizer and Co-host of the Ecosystems Center Seminars at Marine Biological Laboratory for Fall 2003 and Spring 2004.
  - (20) Judge for the Murray F. Buell Award for the outstanding oral presentation and the E. Lucy Braun Award in the Ecological Society of America (ESA), 2002, 2003.
  - (21) External reviewer for NASA publication.
  - (22) Reviewer for book publishers: Wiley-VCH; Pearson.
  - (23) Reviewer for international peer-review journals:  
 Tree Physiology; Global Change Biology; Journal of Geophysical Research-Atmospheres; Mitigation and Adaptation Strategies for Global Change; Mathematical Medicine and Biology; Journal of Environmental Management; Ecological Modeling; Global and Planetary Change; Journal of Geophysical Research-Biogeosciences; Climatic Change; Earth Interactions; Environmental Management; Environmental Research Letters; Climate Dynamics; Climate Research; Global Biogeochemical Cycles; Energy and Fuels; Geophysical Research Letters; Bioscience; Atmospheric Chemistry and Physics; Tellus B; Physical Geography; Remote Sensing of Environment; Remote Sensing; Arctic, Antarctic, and Alpine Research; Nature; Earth Science Reviews; Applied Geography; Ecosystems; Biogeoscience; Ecological Applications; Atmosphere; Ecosphere; Chinese Journal of Plant Ecology
  - (24) Proposal reviewer for:  
 U.S. Funding Agencies and Foundations:  
 NSF Ecosystem Studies Program, Hydrological Sciences Program, and Office of Polar Program, Climate Dynamics Program; NASA Carbon Cycle Program; NOAA Global Carbon Cycle Program; DOE; The U.S. Civilian Research & Development Foundation (CRDF); The U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) International Funding Agencies:  
 Canadian Foundation for Climate and Atmospheric Sciences (CFCAS); Natural Environment  
 Research Council of UK (NERC); Natural Sciences and Engineering Research Council of Canada (NSERC); Netherlands Organization for Scientific Research (NWO)- Earth and Life Sciences; Asia-Pacific Network for Global Change Research (APN); The Austrian Science Fund (FWF); Helmholtz-Gemeinschaft Deutscher Forschungszentren (the Helmholtz Association of German Research Centres); The Japan Aerospace Exploration Agency (JAXA); The Netherlands Organisation for Scientific Research
  - (25) Subject Editor for Journal Geophysical Research –Biogeosciences
  - (26) Editorial Board for Journal of Geology & Geosciences
  - (27) Editorial Board of Dataset Papers in Atmospheric Sciences
  - (28) Editorial Board of Open Journal of Ecology
  - (29) Subject Editor for Environmental Research Letters
  - (30) External thesis/dissertation examiner of McGill University

**Professional Honors and Awards:**

- (1) U.S. Fulbright Scholar (2018-2019)

- (2) University Faculty Scholar (2015-2020)
- (3) Executive Committee Member of the Purdue Climate Research Center, 2013-
- (4) Graduate Student Mentoring Award, College of Sciences at Purdue, 2013
- (5) Seed for Success Award (Given in recognition of the accomplishments of single investigators and teams of investigators for their efforts in obtaining a \$1 million or more research grant at Purdue), 2011.
- (6) Named as William F. and Patty J. Miller Associate Professor of Earth & Atmospheric Sciences at Purdue, 2010.
- (7) Award of the Excellence (First Place) of Advances of Science and Technology of China for the project "The Scientific Database and Management Systems", Beijing, P. R. China, 1997.

### **Course Teaching:**

- (1) Modeling of Biological Systems, Spring 2001 (Guest Lecturer) at University of Alaska Fairbanks
- (2) Earth System Modeling, Spring 2005, (Guest Lecturer) at South Dakota School of Mines and Technology
- (3) EAS 591E, GIS & Geoscience, Fall 2005, (Guest Lecturer) at Purdue University
- (4) EAS 591W&AGRY 598A, Modeling Ecosystems and Biogeochemical Cycles (Spring, 2006, 2007, 2008, 2010, 2012, 2014) at Purdue University
- (5) EAS 591T/&AGRY598T, Principles of Terrestrial Ecosystem Ecology (Fall, 2006, 2007, 2008, 2009, 2010, 2013, 2015) at Purdue University.
- (6) EAS191 Freshman seminar in EAS (Spring, 2008) at Purdue University.
- (7) EAS591A, Topics in Climate Change (Fall, 2008) at Purdue University
- (8) EAPS 591: Integrated Global System Modeling (Fall, 2016, 2017) at Purdue University
- (9) EAPS 120: Introduction to Geography (Spring, 2017, 2018) at Purdue University
- (10) EAPS 590: Environmental data-model assimilation (Fall, 2021) at Purdue University

### **Advising Students and Post-docs**

#### ***Current Graduate Students (Total 5):***

- 1) Bailu Zhao (PhD, Fall 2019 -)
- 2) Xuan Xi (PhD, Fall 2020 -)
- 3) Yiming Xu (PhD, Fall 2021-)
- 4) Ye Yuan (PhD, Fall 2021 -)
- 5) Xingyu Liu (PhD, Fall 2021 -)

#### ***Graduated Students (31 PhD and 7 MS)***

- (1) **Yueyang Jiang** (MS, 0/2009)  
Thesis: Wildfire Regimes in Northern North America  
Placement: Continue PhD program at Purdue University
- (2) **Jinyun Tang** (PhD, 05/2011)



Dissertation title: Improving a process-based biogeochemistry model using an atmospheric transport chemistry model and in-situ and remotely-sensed terrestrial and atmospheric data  
Placement: Employed as Post-Doctoral Scientist at Lawrence Berkeley National Laboratory, Berkeley, CA

(3) **Yueyang Jiang** (PhD, 05/2012)

Dissertation title: Modeling permafrost impacts on vegetation and carbon dynamics in northern high latitudes

Placement: Employed as Post-Doctoral Scientist at the Ecosystems Center, Marine Biological Laboratory at Woods Hole MA

(4) **Xiaoliang Lu** (PhD, 05/2012)

Dissertation title: Evaluating impacts of land cover change and permafrost and hydrological dynamics on greenhouse gas emissions and carbon lateral transport in the Yukon River Basin of Alaska

Placement: Employed as Post-Doctoral Scientist at the Ecosystems Center, Marine Biological Laboratory at Woods Hole MA

(5) **Zhiwei Zhang** (MS, 05/2012)

Thesis title: Modeling Carbon Dynamics of the terrestrial ecosystems in Northern Eurasia during the 21st Century

Placement: Seeking private sector position.

(6) **Xinhua Sui** (PhD at Chinese Academy of Sciences, Beijing, Spring 2009 – Fall, 2012)

Dissertation: Sensitivity and uncertainty analysis of carbon budget of Chinese temperate steppe Ecosystem

Placement: Research Scientist at Sun Yat-sen University / South China Botanical Garden, Chinese Academy of Sciences.

(7) **Yujie He** (MS, 12/2012)

Thesis title: Alternative ways of using experimental data to calibrate ecosystem models and implications for carbon cycle studies

Placement: Continue PhD program at Purdue

(8) **Min Chen** (PhD, 05/2013)

Dissertation title: Modeling the effects of atmospheric ozone and aerosol on global ecosystem carbon dynamics

Placement: Employed as Post-Doctoral Scientist at Harvard University, Cambridge MA

(9) **Lulu Song** (PhD at Chinese Academy of Sciences, July/2013)

Dissertation title: Modeling the evapotranspiration on Tibetan Plateau

Placement: Chinese Academy of Sciences

(10) **Linyuan Shang** (08/2011 – 08/2013)

Thesis title: Improving leaf phenology simulations using satellite data and model-data assimilation approach in the conterminous US

Placement: Seeking research or technical position

(11) **Zhangcai Qin** (PhD, 12/2013)

Dissertation title: Quantifying Crop Yield, Bioenergy Production, and Greenhouse Gas Emissions from Cropland and Marginal Land Using a Model-Data Fusion Approaches

Placement: Post-Doctoral Scientist at Argonne National Laboratory

(12) **Qing Zhu** (PhD, 5/2014)

Dissertation title: "Improving Quantification of Regional Net Carbon Exchanges between the Terrestrial Ecosystems and Atmosphere with Models of Process-Based Biogeochemistry and Atmospheric Transport Chemistry and in situ Carbon Flux and Satellite Atmospheric CO<sub>2</sub> Data

Placement: Post-doc at Lawrence Berkeley National Laboratory

(13) **Xudong Zhu** (PhD, 5/2014)

Dissertation title: Modeling land-atmospheric exchange of greenhouse gases in natural terrestrial ecosystems in northern high latitudes

Placement: Post-doc at Lawrence Berkeley National Laboratory

(14) **Yaling Liu** (PhD, 12/2014)

Dissertation: Quantifying Water and Carbon Dynamics in Northern Eurasia during the 20th and 21st Centuries

Placement: Post-doc at Pacific Northwest National Laboratory (PNNL)

(15) **Yujie He** (PhD, 12/2014)

Dissertation: Modeling ecosystem carbon dynamics with various complexities of soil carbon decomposition processes

Placement: Post-doctoral Scientist at University of California - Irvine

(16) **Guangcun Hao** (PhD, 05/2015)

Dissertation: Modeling the Response of Soil Heterotrophic Respiration to Climate Scenario Using Process-Based Models

Placement: Assistant Scientist at Southern China Botanical Garden, the Chinese Academy of Sciences

(17) **Tong Yu** (MS, 12/2015)

Thesis: Modeling global N<sub>2</sub>O emissions from natural ecosystems using an process-based biogeochemistry model

Placement: Continuing PhD at Purdue

(18) **Zhou Lyu** (MS, 12/2015)

Thesis: The role of snow in affecting soil thermal dynamics

Placement: Continuing PhD at Purdue

(19) **Zeli Tan** (PhD, 12/2015)

Dissertation: Quantifying terrestrial and aquatic ecosystem methane emissions with process-based biogeochemistry and atmospheric transport and chemistry models

Placement: Post-Doctoral Scientist at the Pacific Northwest National Laboratory (PNNL)

20) **Zhenong Jin** (PhD, 05/2016)

Dissertation: Quantifying extreme climate events on crop physiological responses and yields in the United States

Placement: Post-Doctoral Scientist at Stanford University

21) **Shaoqing Liu** (PhD, 12/2016)

Dissertation: Quantifying terrestrial ecosystem carbon dynamics with mechanistically-based biogeochemistry models and in situ and remotely sensed data

Placement: Post-Doctoral Scientist at University of Minnesota

22) **Chang Liao** (PhD, 05/2017)

Dissertation: Three-Dimensional Water and Carbon Cycle Modeling at High Spatial-Temporal Resolutions

Placement: Post-doc Scientist at Northwest Pacific National Lab

23) **Tong Yu** (PhD, 5/2018)

Dissertation: Quantifying Nitrogen Fixation and Nitrous Oxide Emissions in Global Natural Terrestrial Ecosystems Using Trait-Based Biogeochemistry Models

Placement: Employed as Data Scientist in Inspur

24) **Peng Zhu** (PhD, 5/2018)

Dissertation: Climate Mitigation and Adaptation in US Agricultural System

Placement: Post-doctoral Scientist at University of California at San Diego.

25) **Yang Qu** (PhD, 5/2018)

Dissertation: Quantifying Carbon and Water Dynamics Of Terrestrial Ecosystems At High Temporal And Spatial Resolutions Using Process-Based Biogeochemistry Models And In Situ And Satellite Data

Placement: Post-doctoral Scientist at University of Illinois at Urbana-Champaign.

26) **Zhou Lyu** (PhD, 8/2018)

Dissertation: Quantifying Arctic Terrestrial Ecosystem Carbon Dynamics Using Mechanistically-Based Biogeochemistry Models and In Situ and Satellite Data

Placement: Employed as Post-Doctoral Scientist at Lawrence Berkeley National Lab.

27) **Shuai Wang** (PhD, 6/2018)

Dissertation: Spatial Distribution Characteristics and Predictive Mapping of Key Soil Properties in the Middle Reaches of the Heihe River Basin

Placement: Assistant Professor at Shenyang Agricultural University

28) **Sirui Wang** (PhD, 5/2019)

Dissertation: Quantifying Peatland Carbon Dynamics Using Mechanistically-Based Biogeochemistry Models

Placement: Private sector/industry

29) **Junrong Zha** (PhD, 8/2019)

Dissertation: Modeling the Impacts of Changes in Soil Microbes and Mosses on Arctic Terrestrial Ecosystem Carbon Dynamics.

Placement: Private sector/industry

30) **Weiwei Li** (PhD, 7/2019): Joint with Northwest A&F University

Dissertation: Effects of ridge–furrow mulching on soil CO<sub>2</sub> efflux in a maize field in the Chinese Loess Plateau

Placement: Post-doctoral Scientist at Nanjing Agricultural University

31) **Licheng Liu** (PhD, Fall, 2014 - Spring, 2020)

Dissertation: quantifying global exchanges of methane and carbon monoxide between Terrestrial ecosystems and the atmosphere using process-based biogeochemistry Models

Placement: Post-doctoral Scientist at University of Minnesota

32) **Youmi Oh** (PhD, Co-advise with Prof. Lisa Welp, Fall 2016- Spring 2020)

Dissertation: quantifying carbon fluxes and isotopic signature changes across global terrestrial ecosystems

Placement: Post-Doctoral Scientist at NOAA

33) **Cheng Huang** (PhD, with CSC Scholarship, Fall 2017 – Fall 2020): Joint with Eastern China Normal University

Placement: Assistant Professor at Jiangxi Agricultural University

34) **Yuan Yao** (MS, 2021) Joint with China Agricultural University

Thesis: Optimization of environmental variable functions of GPP quantitative model based on SCE-UA and minimum loss screening method

Placement: Scientist at Chinese Academy of Sciences

35) **Yimin Ding** (PhD, with CSC Scholarship, Fall 2017 – Fall Spring 2020): Joint with Hohai University

36) **Jing Zheng** (PhD, with CSC Scholarship, 11/2019 –Spring, 2021)

Dissertation: Evapotranspiration partitioning and water productivity of rainfed maize under contrasting mulching conditions in Northwest China

Placement: Research Scientist at Institute of Mountain Hazards and Environment, Chinese Academy of Sciences.

37) **Mingyang Guo** (PhD, Fall/2018 – Spring/2022)

Dissertation: Modeling thermal and methane dynamics from the global freshwater ecosystems

Placement: Facebook/Meta

- 38) **Lei Liu** (PhD, Fall/2019 – Summer/2022)  
Dissertation: Modeling carbon and nitrogen dynamics in northern high latitudes  
Placement: Zhengzhou University

**Former Post-Docs and Visiting Scholars (Total 15):**

- (1) Dr. Yanyu Lu (10/2008 – 01/2010)  
Employed as Associate Professor at Anhui Climate Center, China
- (2) Dr. Kai Xu (05/2007 - 05/2009)  
Employed as Associate Professor at China University of Geosciences, Wuhan, China
- (3) Dr. Jingfeng Xiao (06/2006-08/2008)  
Employed as Research Assistant Professor at University of New Hampshire
- (4) Dr. Yunfeng Hu (06/2007-12/2007)  
Employed as Associate Scientist at Institute of Geographic Sciences and Natural Resources, Chinese Academy of Sciences, Beijing, China
- (5) Dr. Jicheng He (01/2007-07/2007)  
Employed as Associate Scientist at Institute of Tibetan Plateau, Chinese Academy of Sciences, Beijing, China
- 6) Dr. Weimin Song (11/2013 – 4/2014)  
Employed as Scientist at Tsinghua University
- 7) Dr. Liming Zhang (08/2014 – 08/2015)  
Employed as Associate Professor at Fujian Agriculture and Forestry University
- 8) Dr. Xibao Xu (09/2015 - )  
Associate Professor at Nanjing Institute of Geography and Limnology, the Chinese Academy of Sciences
- 9) Dr. Ying Xin (02/2016 - )  
Associate Professor at Northeast Forestry University
- 10) Dr. Xiaodong Song (09/2016 - )  
Assistant Professor at Zhejiang University
- 11) Mr. Hanbo Yun (11/2016 - )  
Engineer at the Cold and Arid Regions Environmental and Engineering Research Institute, the Chinese Academy of Sciences
- 12) Mr. Shuai Wang (02/2017 - )  
Shenyang Agricultural University

13) Dr. XuRi (08/2017 -)  
Associate Professor at the Institute of Tibetan Plateau Research, the Chinese Academy of Sciences

14) Dr. Dan Guo (11/2017 -)  
Assistant Professor at the Shenyang Agricultural University

15) Dr. Dan Kou (Summer/2019 - )  
Joint Post-doctoral Scientist with University of Eastern Finland

**Research Assistants (Total 3):**

- (1) Mr. Chris Reilly (Majored in Computer Science at Purdue) (Fall, 2010-)
- (2) Ms. Jayne Piepenburg (BS in Nature Resources and BS in English) (Fall, 2011-)
- (3) Mr. Elijah Waterman (Majored in Meteorology and Mathematics at Purdue, Fall 2012-)