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RESEARCH INTERESTS

Global methane cycle, greenhouse gases, remote sensing, land-atmospheric interaction, climate-carbon feedback, biogeochemical modeling, dynamic global vegetation models, atmospheric chemistry, forestry, geography

EDUCATION

Nanjing University, China	Geography	Ph.D. 2013
Nanjing Institute of Meteorology, China	Geography	B.Sc. 2006

POSITIONS HELD

Postdoctoral Researcher	2017-present
Department of Geographical Sciences, University of Maryland College Park, United States	

Visiting Scientist	2017-present
Biospheric Sciences Laboratory NASA Goddard Space Flight Center	

Guest Scientist	2017-present
Dynamic Macroecology Group Swiss Federal Research Institute WSL, Switzerland	

Postdoctoral Scientist	2014-2017
Dynamic Macroecology Group Swiss Federal Research Institute WSL, Switzerland	

Affiliated Assistant Professor 2014-2017
Department of Ecology
Montana State University, United States

Research Faculty 2013-2014
Laboratory of Remote Sensing and Geospatial Science
Cold and Arid Regions Environmental and Engineering Research Institute
Chinese Academy of Science

Graduate Research Assistant 2009-2013
Department of Geography
Nanjing University, China

High Performance Cluster (HPC) Administrator 2009-2013
Department of Geography
Nanjing University, China

PEER REVIEWED PUBLICATIONS

Manuscripts in pipeline

In review

8. **Zhang Z.**, Poulter, B., Knox S., Stavert A., McNicol G., Fluets-Chouinard E., Feinberg A., Zhao Y., Bousquet P., Canadell J.G., Ganesan A., Hugelius G., Hurtt G., Jackson R.B., Patra P.K., Saunio M., Höglund-Isaksson L., Huang C., Chatterjee A., Li X., Dominant role of anthropogenic emissions in the recent growth of atmospheric methane concentrations, Science Advances.

7. Weir B., Crisp D., O'Dell C., Basu S., Chatterjee A., Oda T., Ott L., Pawson S., Poulter B., **Zhang Z.**, Ciais P., Zhu L., Davis S., Monitoring the impacts of COVID-19 on carbon dioxide from space, Science Advances.

6. Delwiche, K. B., Knox, S. H., Malhotra, A., Fluets-Chouinard, E., McNicol, G., Feron, S., Ouyang, Z., Papale, D., Trotta, C., Canfora, E., Cheah, Y.-W., Christianson, D., Alberto, M. C. R., Alekseychik, P., Aurela, M., Baldocchi, D., Bansal, S., Billesbach, D. P., Bohrer, G., Bracho, R., Buchmann, N., Campbell, D. I., Celis, G., Chen, J., Chen, W., Chu, H., Dalmagro, H. J., Dengel, S., Desai, A. R., Detto, M., Dolman, H., Eichelmann, E., Euskirchen, E., Famulari, D., Friborg, T., Fuchs, K., Goeckede, M., Gogo, S., Gondwe, M. J., Goodrich, J. P., Gottschalk, P., Graham, S. L., Heimann, M., Helbig, M., Helfter, C., Hemes, K. S., Hirano, T., Hollinger, D., Hörtnagl, L., Iwata, H., Jacotot, A., Jansen, J., Jurasinski, G., Kang,

M., Kasak, K., King, J., Klatt, J., Koebsch, F., Krauss, K. W., Lai, D. Y. F., Mammarella, I., Manca, G., Marchesini, L. B., Matthes, J. H., Maximon, T., Merbold, L., Mitra, B., Morin, T. H., Nemitz, E., Nilsson, M. B., Niu, S., Oechel, W. C., Oikawa, P. Y., Ono, K., Peichl, M., Peltola, O., Reba, M. L., Richardson, A. D., Riley, W., Runkle, B. R. K., Ryu, Y., Sachs, T., Sakabe, A., Sanchez, C. R., Schuur, E. A., Schäfer, K. V. R., Sonnentag, O., Sparks, J. P., Stuart-Haëntjens, E., Sturtevant, C., Sullivan, R. C., Szutu, D. J., Thom, J. E., Torn, M. S., Tuittila, E.-S., Turner, J., Ueyama, M., Valach, A. C., Vargas, R., **Zhang Z.**, et al.: FLUXNET-CH₄, 2021. A global, multi-ecosystem dataset and analysis of methane seasonality from freshwater wetlands, 1–111, *Earth System Science Data Discussion*, <https://doi.org/10.5194/essd-2020-307>.

Submitted

5. Yi X., Peng S., Ducharne A., Ciais P., Gumbrecht T., Saunois M., Poulter B., **Zhang Z.**, Dynamics of global wetlands by TOPMODEL. *Nature Scientific Data*.
4. Stavert A., Canadell J. G., Saunois M., Bousquet P., Poulter B., Jackson R. B., Raymond P. A., Regnier P., Lauerwald R., Patra P. K., Allen G. H., Bergamaschi P., Ciais P., Chandra N., Ishizawa M., Ito A., Kleinen T., Maksyutov S., McNorton J., Gustafson A., Melton J. R., Müller J., Niwa Y., Peng S., Riley W. J., Segers A., Tian H., Tsuruta A., Yin Y., **Zhang Z.**, Zheng B., Zhuang Q., Regional trends and drivers of the 2000-2017 global methane budget. *Global Change Biology*.
3. Liu J., Sleeter B., Zhu Z., Cochrane M., Yuan Q., Zhu Q., Hawbaker T., Wilson T., Sherba J., **Zhang Z.**, Lu X., Price D. T., Selmants P., Trends and vulnerability of ecosystem productivity as related to natural environmental drivers in the conterminous U.S. from 1971 to 2015. *Global Biogeochemical Cycles*.
2. Gloor M., Gatti L., Wilson C., Parker R., Boesch H., Popa E., Chipperfield M., Poulter B., Basso L., Miller J., McNorton J., **Zhang Z.**, Interesting seasonality of Pantanal wetland methane emissions revealed by regularly measured lower troposphere CH₄ profiles. *Global Biogeochemical Cycle*.
1. Knox S., Bansal S., McNicol G., Schafer K., Sturtevant C., Ueyama M., Valach A. C., Baldocchi D., Delwiche K., Desai A. R., Euskirchen E., Liu J., Lohila A., Malhotra A., Melling L., Riley W. J., Runkle B. K., Turner J., Vargas R., Zhu Q., Aalto T., Fluett-Chouinard E., Göeckede M., Melton J. R., Sonnentag O., Vesala T., Ward E. J., **Zhang Z.**, Feron S., Ouyang Z., Alekseychik P., Aurela M., Bohrer G., Campbell D. I., Chen J., Chu H., Dalmagro H. J., Goodrich J. P., Gottschalk P., Hirano T., Iwata H., Jurasinski G., Kang M., Koebsch F., Mammarella I., Nilsson M. B., Ono K., Peichl M., Peltola O., Ryu Y., Sachs T., Sakabe A., Sparks J., Tuittila E., Vourlitis G. L., Xhuan G., Jackson R. B. Environmental controls on global

freshwater wetland CH₄ fluxes across diurnal to seasonal time scales. *Global Change Biology*.

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36. **Zhang, Z.**, Poulter B., Fluët-Chouinard E., Jensen K., McDonald K., Hugelius G., Gumbrecht T., Carroll M., Prigent C., Bartsch A., Poulter B., 2021. Development and evaluation of the global Wetland Area and Dynamics for Methane Modeling dataset (WAD2M). *Earth System Science Data*, <https://doi.org/10.5194/essd-2020-262>, (accepted).

35. Chang K., Riley W.J., Knox S.H., Jackson R.B., McNicol G., Poulter B., Aurela M., Baldocchi D., Bansal S., Bohrer G., Campbell D.I., Cescatti A., Chu H., Delwiche K.B., Desai A., Euskirchen E., Friborg T., Goeckede M., Kang M., Keenan T., Krauss K.W., Lohila A., Mammarella I., Miyata A., Nilsson M.B., Noormets A., Papale D., Runkle B.R.K., Ryu Y., Sachs T., Schäfer K.V.R., Schmid H.P., Shurpali N., Sonnentag O., Tang A.C.I., Torn M.S., Trotta C., Ueyama M., Vargas R., Vesala T., Windham-Myers L., **Zhang Z.**, Zona D., 2021. Substantial hysteresis in temperature sensitivity of global wetland methane emissions *Nature Communications* (accepted).

2020

34. Poulter B., Fluët-Chouinard E., Hugelius G., Koven C., Fatoyinbo L., Page S., Rosentreter J., Smart L., Taillie P., Thomas N., **Zhang Z.**, Wijedasa L., 2020. A review of global wetland carbon stocks and management challenges (Chapter 3), *Wetland Carbon and Environmental Management*. AGU Books (accepted).

33. Zhang X., Xu X., Jia G., Poulter B., **Zhang Z.**, 2020. Hiatus of wetland methane emissions associated with recent La Niña episodes in the Asian Monsoon region. *Climate Dynamics*. <https://doi.org/10.1007/s00382-020-05219-0>

32. Pandey, S., Houweling, S., Lorente, A., Borsdorff, T., Tsvilidou, M., Bloom, A. A., Poulter, B., **Zhang, Z.**, and Aben, I., 2020. Using satellite data to identify the methane emission controls of South Sudan's wetlands, *Biogeosciences*, <https://doi.org/10.5194/bg-2020-251>.

31. Pazúr, R., Lieskovský, J., Bürgi, M., Müller, D., Lieskovský, T., **Zhang, Z.** and Prischchepov, A. V., 2020. Abandonment and Recultivation of Agricultural Lands in Slovakia—Patterns and Determinants from the Past to the Future, *Land*, 9(9), 316, doi:10.3390/land9090316.

30. Sweeney, C., Chatterjee, A., Wolter, S., McKain, K., Bogue, R., Newberger, T., Hu, L., Ott, L., Poulter, B., Schiferl, L., Weir, B., **Zhang, Z.** and Miller, C. E., 2020. Atmospheric carbon cycle dynamics over the ABoVE domain: an integrated analysis using aircraft observations (Arctic-CAP) and model simulations (GEOS), *Atmospheric Chemistry and Physics*, 1–30, doi:<https://doi.org/10.5194/acp-2020-609>.
29. Tunnicliffe L. R., Ganesan L. A., Parker J. R., Boesch H., Gedney N., Poulter B., **Zhang Z.**, Lavric J., Walter D., Rigby M., Young D., O'Doherty S., 2020. Quantifying sources of Brazil's CH₄ emissions between 2010 and 2018 from satellite data, *Atmospheric Chemistry and Physics*, <https://doi.org/10.5194/acp-2020-438>.
28. 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-Isakson, 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., Murgia-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., Rosentreter, J.A., Segers, A., Simpson, I.J., Shi, H., Smith, S.J., Steele, P.L., Thornton, B.F., Tian, H., Tohjima, Y., Tubiello, F.N., Tsuruta, A., Viovy, N., Voulgarakis, A., Weber, T.S., Weele, M. van, Werf, G.R. van der, Weiss, R.F., Worthy, D., Wunch, D., Yin, Y., Yoshida, Y., Zhang, W., **Zhang, Z.**, Zhao, Y., Zheng, B., Zhu, Qing, Zhu, Qian, Zhuang, Q., 2020. The Global Methane Budget 2000-2017. *Earth System Science Data*, 1–138. <https://doi.org/10.5194/essd-2019-128>.

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27. Natali, S.M., Watts, J.D., Rogers, B.M., Potter, S., Ludwig, S.M., Selbmann, A.-K., Sullivan, P.F., Abbott, B.W., Arndt, K.A., Birch, L., Björkman, M.P., Bloom, A.A., Celis, G., Christensen, T.R., Christiansen, C.T., Commane, R., Cooper, E.J., Crill, P., Czimczik, C., Davydov, S., Du, J., Egan, J.E., Elberling, B., Euskirchen, E.S., Friborg, T., Genet, H., Göckede, M., Goodrich, J.P., Grogan, P., Helbig, M., Jafarov, E.E., Jastrow, J.D., Kalhori, A.A.M., Kim, Y., Kimball, J.S., Kutzbach, L., Lara, M.J., Larsen, K.S., Lee, B.-Y., Liu, Z., Lorant, M.M., Lund, M., Lupascu, M., Madani, N., Malhotra, A., Matamala, R., McFarland, J., McGuire, A.D., Michelsen, A., Minions, C., Oechel, W.C., Olefeldt, D., Parmentier, F.-J.W., Pirk,

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26. Knox, S.H., Jackson, R.B., Poulter, B., McNicol, G., Fluet-Chouinard, E., **Zhang, Z.**, Hugelius, G., Bousquet, P., Canadell, J.G., Saunois, M., Papale, D., Chu, H., Keenan, T.F., Baldocchi, D., Torn, M.S., Mammarella, I., Trotta, C., Aurela, M., Bohrer, G., Campbell, D.I., Cescatti, A., Chamberlain, S., Chen, J., Chen, W., Dengel, S., Desai, A.R., Euskirchen, E., Friborg, T., Gasbarra, D., Goded, I., Goeckede, M., Heimann, M., Helbig, M., Hirano, T., Hollinger, D.Y., Iwata, H., Kang, M., Klatt, J., Krauss, K.W., Kutzbach, L., Lohila, A., Mitra, B., Morin, T.H., Nilsson, M.B., Niu, S., Noormets, A., Oechel, W.C., Peichl, M., Peltola, O., Reba, M.L., Richardson, A.D., Runkle, B.R.K., Ryu, Y., Sachs, T., Schäfer, K.V.R., Schmid, H.P., Shurpali, N., Sonnentag, O., Tang, A.C.I., Ueyama, M., Vargas, R., Vesala, T., Ward, E.J., Windham-Myers, L., Wohlfahrt, G., Zona, D., 2019. FLUXNET-CH₄ Synthesis Activity: Objectives, Observations, and Future Directions. *Bull. Amer. Meteor. Soc.* <https://doi.org/10.1175/BAMS-D-18-0268.1>

25. Fu, Z., Stoy, P.C., Poulter, B., Gerken, T., **Zhang, Z.**, Wakkulcho, G., Niu, S., 2019. Maximum carbon uptake rate dominates the interannual variability of global net ecosystem exchange. *Global Change Biology* 0. <https://doi.org/10.1111/gcb.14731>

24. Stofferahn, E., Fisher, J.B., Hayes, D.J., Schwalm, C.R., Huntzinger, D.N., Hantson, W., Poulter, B., **Zhang, Z.**, 2019. The Arctic-Boreal vulnerability experiment model benchmarking system. *Environ. Res. Lett.* 14, 055002. <https://doi.org/10.1088/1748-9326/ab10fa>

23. Barba, J., Mark A. B., Paul E. B., Dan B., Kristofer C., Joost van H., J. Patrick Megonigal, M., Teis N., Pangala, S. R., Pihlatie, Mari, Poulter, B., Rivas-Ubach, A., S., Christopher W., Terazawa, K., Warner, D. L., **Zhang, Z.**, Vargas, R., 2019. Methane Emissions from Tree Stems: A New Frontier in the Global Carbon Cycle. *New Phytologist*, 222, 1: 18-28.

22. Wang, J., Fu, X., Ni, H., **Zhang Z.**, Li, M., 2019. Response of soil respiration to nitrogen deposition on the Sanjiang Plain wetland in northeastern China, *PLOS One* 14:e0211456.

2018

21. Babst, F., Bodesheim P., Charney N., Friend A., Girardin M., Klesse S., Moore D., Seftigen K., Björklund J., Bouriaud O., Dawson A., DeRose R., Dietze M., Eckes A., Enquist B., Frank D., Mahecha M., Poulter B., Record S., Trouel T., Turton R., **Zhang, Z.**, Evans M., 2018. When tree rings go global: challenges and opportunities for retro- and prospective insight, *Quaternary Science Reviews* 197, 1-20.
20. **Zhang, Z.**, Zimmermann, N.E., Calle L., Hurtt G., Chatterjee A., Poulter B., 2018, Enhanced response of global wetland methane emissions to recent El Niño-Southern Oscillation events, *Environmental Research Letter*, 13(7):074009.
19. Wang, C., Chen Z., **Zhang, Z.**, Tang J., Li J., Brunner I., Zheng X., Zhao T., Geng Z., Li M., 2018. Global patterns of dead and living fine root stocks in forest ecosystems, *Journal of Biogeography*, 00, 1-17.
18. Fisher, J., Hayes, J. D., Schwalm, R. C., Huntzinger, N. D., Stofferahn, E., Schaefer, K., Luo, Y., Wullschleger, D. S., Goetz, S., Miller, E. C., Griffith, P., Chadburn, S., Chatterjee, A., Ciais, P., Douglas, T., Genet, H., Ito, A., Neigh, C., Poulter, B., Rogers, B., Sonnentag, O., Tian, H., Wang, W., Xue, Y., Yang, Z.-L., and Zeng, N., **Zhang, Z.**, 2018. Missing pieces to modeling the Arctic-Boreal puzzle, *Environmental Research Letters*. 13, 020202.

2017

17. **Zhang, Z.**, Zimmermann, N.E., Stenke, A., Li, X., Hodson, E.L., Zhu, G., Huang, C., Poulter, B., 2017. Emerging role of wetland methane emissions in driving 21st century climate change, *Proceedings of the National Academy of Sciences*, 114, 9647-9652.
16. Saunio, M., Bousquet, P., Poulter, B., Peregon, A., Ciais, P., Canadell, J. G., Dlugokencky, E. J., Etiope, G., Bastviken, D., Houweling, S., Janssens-Maenhout, G., Tubiello, F. N., Castaldi, S., Jackson, R. B., Alexe, M., Arora, V. K., Beerling, D. J., Bergamaschi, P., Blake, D. R., Brailsford, G., Bruhwiler, L., Crevoisier, C., Crill, P., Covey, K., Frankenberg, C., Gedney, N., Höglund-Isaksson, L., Ishizawa, M., Ito, A., Joos, F., Kim, H. S., Kleinen, T., Krummel, P., Lamarque, J. F., Langenfelds, R., Locatelli, R., Machida, T., Maksyutov, S., Melton, J. R., Morino, I., Naik, V., O'Doherty, S., Parmentier, F. J. W., Patra, P. K., Peng, C., Peng, S., Peters, G. P., Pison, I., Prinn, R., Ramonet, M., Riley, W. J., Saito, M., Santini, M., Schroeder, R., Simpson, I. J., Spahni, R., Takizawa, A., Thornton, B. F., Tian, H., Tohjima, Y., Viovy, N., Voulgarakis, A., Weiss, R., Wilton, D. J., Wiltshire, A., Worthy, D., Wunch, D., Xu, X., Yoshida, Y., Zhang, B., **Zhang, Z.**, and Zhu, Q., 2017. Variability and quasi-decadal changes in the methane budget over the period 2000–2012, *Atmos. Chem. Phys.*, 17, 11135-11161, 2017.

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14. **Zhang, Z.**, Babst, F., Bellassen, V., Frank, D., Launois, T., Tan, K., Ciais, P., Poulter, B., 2017. Converging Climate Sensitivities of European Forests Between Observed Radial Tree Growth and Vegetation Models, *Ecosystems*.
13. Pandey, S., Houweling, S., Krol, M., Aben, I., Monteil, G., Nechita-Banda, N., Dlugokencky, E.J., Detmers, R., Hasekamp, O., Xu, X., Riley, W.J., Poulter, B., **Zhang, Z.**, McDonald, K.C., White, J.W.C., Bousquet, P., Röckmann, T., 2017. Enhanced methane emissions from tropical wetlands during the 2011 La Niña, *Scientific Reports* 7, 45759.
12. Jin, J., Wang, Y., **Zhang, Z.**, Magliulo V., Jiang, H. and Cheng, M., 2017. Phenology Plays an Important Role in the Regulation of Terrestrial Ecosystem Water-Use Efficiency in the Northern Hemisphere, *Remote Sensing* 9, 664.

2016

11. Saunois, M., Bousquet, P., Poulter, B., Peregon, A., Ciais, P., Canadell, J.G., Dlugokencky, E.J., Etiope, G., Bastviken, D., Houweling, S., Janssens-Maenhout, G., Tubiello, F.N., Castaldi, S., Jackson, R.B., Alexe, M., Arora, V.K., Beerling, D.J., Bergamaschi, P., Blake, D.R., Brailsford, G., Brovkin, V., Bruhwiler, L., Crevoisier, C., Crill, P., Covey, K., Curry, C., Frankenberg, C., Gedney, N., Höglund-Isaksson, L., Ishizawa, M., Ito, A., Joos, F., Kim, H.S., Kleinen, T., Krummel, P., Lamarque, J.F., Langenfelds, R., Locatelli, R., Machida, T., Maksyutov, S., McDonald, K.C., Marshall, J., Melton, J.R., Morino, I., Naik, V., O'Doherty, S., Parmentier, F.J.W., Patra, P.K., Peng, C., Peng, S., Peters, G.P., Pison, I., Prigent, C., Prinn, R., Ramonet, M., Riley, W.J., Saito, M., Santini, M., Schroeder, R., Simpson, I.J., Spahni, R., Steele, P., Takizawa, A., Thornton, B.F., Tian, H., Tohjima, Y., Viovy, N., Voulgarakis, A., van Weele, M., van der Werf, G.R., Weiss, R., Wiedinmyer, C., Wilton, D.J., Wiltshire, A., Worthy, D., Wunch, D., Xu, X., Yoshida, Y., Zhang, B., **Zhang, Z.**, Zhu, Q., 2016. The global methane budget 2000–2012, *Earth Syst. Sci. Data* 8, 697-751.
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observed seasonal methane emissions in northern wetlands. *Biogeosciences* 13, 5043-5056.

9. Lu X., Jiang H., Liu J., Zhang X., Jin J., Zhu Q., **Zhang Z.**, Peng C., 2016. Simulated effects of nitrogen saturation on the global carbon budget using the IBIS model *Scientific Reports* 6 39173.

8. **Zhang, Z.**, Zimmermann, N.E., Kaplan, J.O., Poulter, B., 2016. Modeling spatiotemporal dynamics of global wetlands: comprehensive evaluation of a new sub-grid TOPMODEL parameterization and uncertainties. *Biogeosciences* 13, 1387-1408.

2015 and earlier

7. **Zhang, Z.**, Jiang, H., Liu, J., Zhang, X., Huang, C., Lu, X., Jin, J., Zhou, G., 2014. An analysis of the global spatial variability of column-averaged CO₂ from SCIAMACHY and its implications for CO₂ sources and sinks. *International Journal of Remote Sensing* 35, 2047-2066.

6. **Zhang, Z.**, Jiang, H., Liu, J., Ju, W., & Zhang, X., 2013. Effect of heterogeneous atmospheric CO₂ on simulated global carbon budget. *Global and Planetary Change*, 101, 33-51.

5. **Zhang, Z.**, Jiang, H., Liu, J., Han, J., Zhu, Q., & Zhang, X., 2013. Implications of Future Water Use Efficiency for Ecohydrological Responses to Climate Change and Spatial Heterogeneity of Atmospheric CO₂ in China. *Terrestrial, Atmospheric & Oceanic Sciences*, 24(3): 451-465.

4. Lu, X., Jiang, H., Liu, J., Zhou, G., Zhu, Q., Peng, C., Wei, X., Chang, J., Liu, S., Liu, S., **Zhang, Z.**, Wang, K., Zhang, X., and Solomon, A., 2012. Spatial and Temporal Variability of Nitrogen Deposition and Its Impacts on the Carbon Budget of China, *International Journal of Remote Sensing*, 13, 1997-2030.

3. Zhang X., Jiang, H., Zhou, G., Xiao, Z., and **Zhang, Z.**, 2011 Geostatistical interpolation of missing data and downscaling of spatial resolution for remotely sensed atmospheric methane column concentrations, *International Journal of Remote Sensing*, 33, 120-134.

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2. **Zhang, Z.**, Jiang, H., Liu, J.X., Zhou, G.M., Liu, S.R., Zhang, X., 2012. Assessment on water use efficiency under climate change and heterogeneous carbon dioxide in China terrestrial ecosystems. *Procedia Environmental Sciences*, 13, 2031-2044.

1. **Zhang Z.**, Jiang H., Liu J., 2011. Modeling the spatial–temporal dynamics of water use efficiency in Yangtze River Basin using IBIS model. *Acta Ecologica Sinica*, 31, 246-253,10.1016/j.chnaes.2011.06.004.

RESEARCH PROJECTS

- 2020-present **NASA Research Grant (80NSSC20K0731) Modeling Arctic Methane Emissions (Role: PI)**
- 2017-present **GEOS-5 Forecasting and Modeling in Support of ABoVE airborne research** funded by **NASA ABoVE** Phase II research: simulation, scaling and benchmarking for key indicators of Arctic-boreal ecosystem dynamics. **(Role: Co-PI)**
- 2014-present **Global Carbon Project Methane** funded by EU FP7 GEOCARBON Programme (283080). Bottoms-up estimates group using Land surface models. **(Role: Participant)**
- 2017-2019 **Quantifying Sources and Sinks in the Global Methane Cycle** funded by US Gordon and Betty Moore Foundation. This is an international collaborative project dedicating to investigate the role of methane in global methane cycle and to estimate the methane source and sink with multiple model technologies. **(Role: Participant)**
- 2012-2017 **Modelling and experiments on land-surface interactions with atmospheric chemistry and climate II (MAIOLICA II)** funded by ETH-CCES Project (42-01). **(Role: Participant)**
- 2013-2016 **Joint estimation of states and parameters for simulated effect of heterogeneous rising atmospheric CO₂ on carbon budget of terrestrial ecosystems in China** funded by National Natural Science Foundation of China for Young Scientists (Y411391001). **(Role: PI)**
- 2010-2013 **Application of land cover map from remote sensing in land surface ecosystem modeling** funded by State High Technology Funds of China. **(Role: Participant)**
- 2009-2013 **Changing mechanisms and optimized computing research on the carbon sources and sink of global terrestrial ecosystems** funded by State Key Fundamental Science Funds of China. **(Role: Participant)**

TEACHING & PROFESSIONAL SERVICE

- Referee for: *Nature Climate Change*, *Science Advances*, *Global Change Biology*, *Atmospheric Chemistry and Physics*, *Global Biogeochemical Cycles*, *Environmental Research Letter*, *Geoscientific Model Development*,

Biogeosciences, Journal of Geophysical Research-Biogeosciences, Geophysical Research Letters, Carbon Balance and Management, Global and Planetary Change, International Journal of Climatology, Sensors, Forests, PLOS ONE, Ecological Research, Ecological Indicators, China Science Bulletins

- Reviewer for: National Natural Science Foundation of China (NSFC) (2017), NSFC 2016, NSFC 2015, NSFC 2014.
- Teaching:
 - Supervising graduate students at Swiss Federal Institute of Technology in Zurich (ETHZ) for course “Spatial Modeling from Climate & Land Use Change to Biodiversity Conservation”, Aug-Dec, 2016.
 - Teaching in a workshop ‘Macroecology, Species Distribution and Climate Change’ held in Peking University, China, 2016, June.
 - Supervising graduate students at Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences in 2013-2014

EXPERTISE&SKILLS

- Experience with software engineering, high performance computing and advanced statistical methods.
- Experience with Linux operating system, Git, Fortran, and C/C++
- Experience with land surface modeling, biogeochemical modeling, numerical modeling, and atmospheric chemistry modelling
- Experience with data file formats and conventions (e.g. Netcdf, HDF), large data manipulation and analysis packages (e.g. R, NCO, CDO, NCL, Matlab)

INVITED TALK& PUBLIC SERVICE OUTREACH

Invited Talks

- North American Carbon Programs 7th virtual meeting on Mar 12th., 2021. Oral talk title “Dominant role of anthropogenic emission in driving the recent rise in atmospheric methane”.
- Invited Reviewer for *Climate Feedback*, a global network platform dedicative to provide assessment of influential climate change media coverage.
- Our study “Emerging role of wetland methane emissions in driving 21st century climate change” was selected to exhibit at United Nations Climate Change Conference (COP23) in Bonn, Germany, 2017 by Center for Global Sustainability, University of Maryland.
- An interview by China Meteorological Newspaper (in Chinese) “Wetland could play an important role in future climate change” on Sep. 22nd 2017.

- Invited Research News by Chinese Academy of Sciences, “Radiative forcing feedback caused by wetland methane emissions could overwhelm anthropogenic counterpart in 21st century” on Aug 22nd 2017.
- Invited talk “Emerging role of wetland methane emissions in driving 21st century climate change” by NOAA Science Seminar Series, Sep 7th, 2017.

Conferences

- North American Carbon Program 7th meeting. Oral presentation: “dominant role of anthropogenic emission in driving the rise of atmospheric methane”, 2021
- USGS Powell Center 2nd meeting on “Wetland FLUXNET synthesis for methane: understanding and predicting methane fluxes at daily to interannual timescales”, Fort Collins, USA, 2020.
- American Geophysical Union Fall meeting 2019 as a co-convenor for the session “Understanding the Interactions Between Hydrological and Biogeochemical Dynamics in Permafrost Environments with Observations and Models”, San Francisco, USA, 2019.
- USGS Powell Center 1st meeting on “Wetland FLUXNET synthesis for methane: understanding and predicting methane fluxes at daily to interannual timescales”, Fort Collins, USA, 2019.
- American Geophysical Union Fall meeting 2018, Poster presentation. Title: Reconciling conflicting estimates of the global methane budget during 1980-2012 using ensemble-based accounting, Washington DC, USA, 2018.
- OSPA Judge for American Geophysical Union Fall meeting 2018, Washington DC, USA.
- NASA ABoVE 1st STM meeting, Poster: A Biogeochemical Forecasting System for Arctic Wetland Methane Emissions, 2018, Seattle, USA.
- American Geophysical Union Fall meeting 2017, San Francisco, USA Poster presentation. Title: Enhanced response of global wetland methane emissions to the 2015-2016 El Niño-Southern Oscillation event
- International Workshop “Mapping the Global Extent and Dynamics of Freshwater Wetlands for methane emissions modeling”, 2017, Washington DC, USA
- International Conference on Permafrost ICOP 2016, Potsdam, Germany. Oral presentation. Title: Role of wetlands in projected future permafrost carbon-climate feedbacks: A model analysis with land surface model LPJ-wsl.

- American Geophysical Union Fall meeting 2015, San Francisco, USA Poster presentation. Title: Modeling spatio-temporal dynamics of global wetlands: a TOPMODEL parameterization and uncertainties
- “Mining FLUXNET and other carbon data sources to inform earth system models”, FLUXNET Workshop 2015, Beijing, China.
- American Geophysical Union Fall meeting 2014, San Francisco, USA