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### **CURRENT POSITION**

Associate Professor, **Southern University of Science and Technology**, since 2019.09.04

### **PROFESSIONAL EXPERIENCE**

Postdoctoral Research Associate, **Princeton University**, 2016-2019 (Mentor: Dr. Eric F. Wood)

### **EDUCATION**

Ph.D. in Physical Geography, **Peking University**, 2011-2016 (Supervisor: Dr. Shilong Piao)

B.S. in Geography Science, **Sun Yat-Sen University**, 2007-2011

### **RESEARCH INTERESTS**

Global change and the earth system

Biosphere-atmosphere interactions

Terrestrial hydrology

Water and agriculture resources

Climate change and its impacts, with a focus on China and the tropics

### **AWARDS & HONORS**

2019 Shenzhen High Level Professionals – National Leading Talents

2018 “China Agricultural Science Major Progress” - Impacts of climate warming on global crop yields and feedbacks of vegetation growth change on global climate, Chinese Academy of Agricultural Sciences

2016 Outstanding Graduate of Peking University

2013 – 2016 Presidential (Peking University) Scholarship; 2014 – 2015 Peking University PhD Projects Award; 2013 – 2014 Peking University "Innovation Award"; 2013 – 2014 National Scholarship; 2012 – 2013 Guanghua Scholarship; 2011 – 2012 National Scholarship; 2011 – 2012 Founder Scholarship

2011 Outstanding Graduate of Sun Yat-Sen University

2009 National Undergraduate Mathematical Contest in Modeling (Provincial Award); 2009 – 2010 National Scholarship; 2008 – 2009 National Scholarship; 2007 – 2008 Guanghua Scholarship

### **PUBLICATION LIST**

1. Liu, X., Huang, Y., Xu, X., Li, X., Li, X.\*, Ciais, P., Lin, P., Gong, K., Ziegler, A. D., Chen, A., Gong, P., Chen, J., Hu, G., Chen, Y., Wang, S., Wu, Q., Huang, K., Estes, L. & **Zeng, Z.\*** High spatiotemporal resolution mapping of global urban change from 1985 to 2015. *Nature Sustainability*. 2020 (\*, accept; corresponding author).

2. Xu, P., Chen, A., Houlton, B., **Zeng, Z.**, Wei, S., Zhao, C., Lu, H., Liao, Y., Zheng, Z., Luan, S. & Zheng, Y. Spatial variation of reactive nitrogen emission from China's croplands codetermined by

regional urbanization and its feedback to global climate change. *Geophysical Research Letters*. 2020 (accept).

3. Lin, P., Pan, M., Allen, G., Frasson, R. P. M., **Zeng, Z.**, Yamazaki, D. & Wood, E. F. Global estimates of reach-level bankfull river width leveraging big data geospatial analysis. *Geophysical Research Letters*. 2020 (accept).

4. Yang, L., Villarini, G., **Zeng, Z.**, Smith, J., Liu, M., Li, X., Wang, L. & Hou, A. Riverine flooding and landfalling tropical cyclones over China, Earth's Future. doi: [10.1029/2019EF001451](https://doi.org/10.1029/2019EF001451), 2020.

5. Lian, X., Piao, S., Li, L., Li, Y., Huntingford, C., Ciais, P., Cescatti, A., Janssens, A., Penuelas, J., Buermann, W., Chen, A., Li, X., Myneni, R., Wang, X., Wang, Y., Yang, Y., **Zeng, Z.**, Zhang, Y. & McVicar T. Summer soil drying exacerbated by earlier spring greening of northern vegetation. *Science Advance*. doi: [10.1126/sciadv.aax0255](https://doi.org/10.1126/sciadv.aax0255), 2020.

6. **Zeng, Z.\***, Ziegler, A. D., Searchinger, T., Yang, L., Chen, A., Ju, K., Piao, S., Li, L., Ciais, P., Chen, D., Liu, J., Azorin-Molina, C., Chappell, A., Medvigy, D. & Wood, E. F. A reversal in global terrestrial stilling and its implications for wind energy production. *Nature Climate Change*. doi: [10.1038/s41558-019-0622-6](https://doi.org/10.1038/s41558-019-0622-6), 2019 (Cover).

7. Cai, X., Riley, W., Zhu, Q., Tang, J., **Zeng, Z.**, Bisht, G. & Randerson, J. Improving representation of deforestation effects on evapotranspiration in the E3SM land model. *Journal of Advances in Modeling Earth Systems*. doi, [10.1029/2018MS001551](https://doi.org/10.1029/2018MS001551), 2019.

8. Peng, L., **Zeng, Z.**, Wei, Z., Chen, A., Wood, E. F. & Sheffield, J. Determinants for the ratio of actual to potential evapotranspiration, *Global Change Biology*. doi: [10.1111/gcb.14577](https://doi.org/10.1111/gcb.14577), 2019.

9. **Zeng, Z.\***, Estes, L., Ziegler, A. D., Chen, A., Searchinger, T., Hua, F., Guan, K., Jintrawet, A. & Wood, E. F. Highland cropland expansion and forest loss in Southeast Asia in the twenty-first century. *Nature Geoscience*. doi: [10.1038/s41561-018-0166-9](https://doi.org/10.1038/s41561-018-0166-9), 2018.

10. **Zeng, Z.\***, Gower, B. & Wood, E. F. Accelerating forest loss in Southeast Asian Massif in the 21<sup>st</sup> century: a case study in Nan Province, Thailand. *Global Change Biology*. doi: [10.1111/gcb.14366](https://doi.org/10.1111/gcb.14366), 2018.

11. Li, Y., **Zeng, Z.\***, Huang, L., Lian, X. & Piao, S. Comment on “Satellites reveal contrasting responses of regional climate to the widespread greening of Earth”. *Science*. doi: [10.1126/science.aap7950](https://doi.org/10.1126/science.aap7950), 2018.

12. **Zeng, Z.#**, Peng, L.#, & Piao, S. Response of terrestrial evapotranspiration to Earth's greening. *Current Opinion in Environmental Sustainability*. doi: [10.1016/j.cosust.2018.03.001](https://doi.org/10.1016/j.cosust.2018.03.001), 2018 (# same contribution).

13. **Zeng, Z.**, Piao, S., Li, L., Wang, T., Ciais, P., Lian, X., Yang, Y., Mao, J., Shi, X. & Myneni, R. Impact of Earth greening on the terrestrial water cycle. *Journal of Climate*. doi: [10.1175/JCLI-D-17-0236.1](https://doi.org/10.1175/JCLI-D-17-0236.1), 2018.

14. **Zeng, Z.**, Piao, S., Li, L., Ciais, P., Li, Y., Cai, X., Yang, L., Liu, M. & Wood, E. F. Global terrestrial stilling: does Earth's greening play a role?. *Environmental Research Letters*. doi: <https://doi.org/10.1088/1748-9326/aaca84>, 2018.

15. Lian, X., Piao, S., Huntingford, C., Li, Y., **Zeng, Z.**, Wang, X., Ciais, P., McVicar, T., Peng, S., Otle, C., Yang, H., Yang, Y., Zhang, Y. & Wang, T. Partitioning global land evapotranspiration using CMIP5 models constrained by field observations. *Nature Climate Change*. doi: [10.1038/s41558-018-0207-9](https://doi.org/10.1038/s41558-018-0207-9), 2018.
16. Li, X., He, Y., **Zeng, Z.**, Lian, X., Wang, X., Du, M., Jia, G., Li, Y., Ma, Y., Tang, Y., Wang, W., Wu, Z., Yan, J., Yao, Y., Ciais, P., Zhang, X., Zhang, Y., Zhang, Y., Zhou, G. & Piao, S. Spatiotemporal pattern of terrestrial evapotranspiration in China during the past thirty years. *Agricultural and Forest Meteorology*. doi: [10.1016/j.agrformet.2018.04.020](https://doi.org/10.1016/j.agrformet.2018.04.020), 2018.
17. Li, Y., Piao, S., Li, L., Huang, L., Ciais, P., He, Y., Li, X., Lian, X., Peng, S., **Zeng, Z.**, Wang, K., Wang, X. & Zhou, L. Divergent hydrological response to large scale afforestation and vegetation greening in China. *Science Advance*. doi: [10.1126/sciadv.aar4182](https://doi.org/10.1126/sciadv.aar4182), 2018.
18. Guan, K., Li, Z., Rao, N., Gao, F., Xie, D., Hien, N. & **Zeng, Z.** Using MODIS-Landsat fused data and ALOS-2/PALSAR-2 to map paddy rice and estimate crop yields for Thai Binh Province in Viet Nam. *Remote Sensing of Environment*. doi: [10.1109/JSTARS.2018.2834383](https://doi.org/10.1109/JSTARS.2018.2834383), 2018.
19. **Zeng, Z.**, Piao, S., Li, L., Zhou, L., Ciais, P., Wang, T., Li, Y., Lian, X., Wood, E. F., Friedlingstein, P., Mao, J., Estes, L., Myneni, R., Peng, S., Shi, X., Seneviratne, S. & Wang, Y. Climate mitigation from vegetation biophysical feedbacks during the past three decades, *Nature Climate Change*. doi: [10.1038/nclimate3299](https://doi.org/10.1038/nclimate3299), 2017.
20. Yang, H., Piao, S., Zhou, F., Huang, M., Ciais, P., Peng, S. & **Zeng, Z.** Regional patterns of future runoff changes from Earth system models constrained by observation. *Geophysical Research Letters*. doi: [10.1002/2017GL073454](https://doi.org/10.1002/2017GL073454), 2017.
21. Lian, X., **Zeng, Z.**, Yao, Y., Peng, S., Wang, K. & Piao, S. Spatiotemporal variations in the difference between satellite-observed daily maximum land surface temperature and station-based daily maximum near-surface air temperature. *Journal of Geophysical Research: Atmospheres*. doi: [10.1002/2016JD025366](https://doi.org/10.1002/2016JD025366), 2017.
22. **Zeng, Z.**, Zhu, Z., Lian, X., Li, L., Chen, A., He, X. & Piao, S. Responses of land evapotranspiration to Earth's greening in CMIP5 Earth System Models, *Environmental Research Letter*. doi: [10.1088/1748-9326/11/10/104006](https://doi.org/10.1088/1748-9326/11/10/104006), 2016.
23. Feng, X., Fu, B., Piao, S., Wang, S., Ciais, P., **Zeng, Z.**, Lu, Y., Zeng, Y., Li, Y., Jiang, X. & Wu, B. Revegetation in China's Loess Plateau is approaching sustainable water resource limits. *Nature Climate Change*. doi: [10.1038/NCLIMATE3092](https://doi.org/10.1038/NCLIMATE3092), 2016.
24. Li, B., Gasser, T., Ciais, P., Zhou, F., Balkanski, Y., Boisier, J., Hauglustaine, D., Li, L., Li, Y., Liu, H., Liu, J., Peng, S., Piao, S., Shen, Z., Sun, Z., Wang, R., Wang, T., Yin, G., Yin, Y., **Zeng, Z.** & Tao S. The contribution of China's emissions to global climate forcing. *Nature*. doi: [10.1038/nature17165](https://doi.org/10.1038/nature17165), 2016.
25. Yue, L., Wang, T., **Zeng, Z.**, Peng, P., Lian, X. & Piao, S. Evaluating biases in simulated land surface albedo from CMIP5 earth system models. *Journal of Geophysical Research: Atmospheres*. doi: [10.1002/2016JD024774](https://doi.org/10.1002/2016JD024774), 2016.
26. Zhu, Z., Piao, S., Myneni, R., Huang, M., **Zeng, Z.**, Canadell, J., Ciais, P., Sitch, S., Friedlingstein, P., Arneeth, A., Cao, C., Cheng, L., Kato, E., Koven, C., Li, Y., Lian, X., Liu, Y., Liu, R.,

Mao, J., Pan, Y., Peng, S., Penuelas, J., Poulter, B., Pugh, T., Stocker, B., Viovy, N., Wang, X., Wang, Y., Xiao, Z., Yang, H., Zaehle, S. & Zeng, N. Greening of the Earth and its drivers. *Nature Climate Change*. doi: [10.1038/nclimate3004](https://doi.org/10.1038/nclimate3004), 2016.

27. Zhang, Y., Zhu, Z., Liu, Z., **Zeng, Z.**, Ciais, P., Huang, M, Liu, Y & Piao, S., Seasonal and interannual changes in photosynthetic activity of tropical forests in Southeast Asia. *Agricultural and Forest Meteorology*. doi: [10.1016/j.agrformet.2016.04.009](https://doi.org/10.1016/j.agrformet.2016.04.009), 2016.

28. Fu, Y., Piao, S., Ciais, P., Huang, M., Menzel, A., Peaucelle, M., Peng, S., Song, Y., Vitasse, Y., **Zeng, Z.**, Zhao, H., Zhou, G., Penuelas, J. & Jassens, I. Long-term linear trends mask phenological shifts. *International Journal of Biometeorology*. doi: [10.1007/s00484-016-1253-5](https://doi.org/10.1007/s00484-016-1253-5), 2016.

29. Zhao, C., Piao, S., Wang, X., Huang, Y., Ciais, P., Elliott, J., Huang, M., Janssens, I., Li, T., Lian, X., Liu, Y., Müller, C., Peng, S., Wang, T., **Zeng, Z.** & Peñuelas, J. Plausible rice yield losses under future climate warming. *Nature Plants*. doi: [10.1038/nplants.2016.202](https://doi.org/10.1038/nplants.2016.202), 2016.

30. Yao, Y., Wang, X., **Zeng, Z.**, Liu, Y., Peng S., Zhu, Z. & Piao, S. The effect of afforestation on soil moisture content in Northeastern China. *PLOS ONE*. doi: [10.1371/journal.pone.0160776](https://doi.org/10.1371/journal.pone.0160776), 2016.

31. 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, Y. & Zeng, H. Global patterns and climate drivers of terrestrial ecosystem water-use efficiency deduced from satellite-based datasets and carbon cycle models. *Global Ecology and Biogeography*. doi: [10.1111/geb.12411](https://doi.org/10.1111/geb.12411), 2016.

32. Zhao, C., Piao, S., Huang, Y., Wang, X., Ciais, P., Huang, M., **Zeng, Z.** & Peng, S. Field warming experiments shed light on the wheat yield response to temperature in China. *Nature Communications*. doi: [10.1038/ncomms13530](https://doi.org/10.1038/ncomms13530), 2016.

33. **Zeng, Z.**, Chen, A., Ciais, P., Li, Y., Li, L., Vautard, R., Yang, H., Zhou, L. & Piao, S. Regional air pollution brightening reverses the greenhouse gases induced warming-elevation relationship. *Geophysical Research Letters*. doi: [10.1002/2015GL064410](https://doi.org/10.1002/2015GL064410), 2015.

34. Li, Y., **Zeng, Z.**, Zhao, L. & Piao, S. Spatial patterns of climatological temperature lapse rate in mainland China. *Journal of Geophysical Research: Atmospheres*. doi: [10.1002/2014JD022978](https://doi.org/10.1002/2014JD022978), 2015.

35. Fu, Y., Zhao, H., Piao, S., Peaucelle, M., Peng, S., Zhou, G., Ciais, P., Huang, M., Menzel, A., Penuelas, J., Song, Y., Vitasse, Y., **Zeng, Z.** & Jassens, I. Declining global warming effects on the phenology of spring leaf unfolding. *Nature*. doi: [10.1038/nature15402](https://doi.org/10.1038/nature15402), 2015.

36. Yang, H., Piao, S., **Zeng, Z.**, Ciais, P., Yin, Y., Friedlingstein, P., Sitch, S., Anders, A., Guimberteau M., Huntingford, C., Levis, S., Levy, P., Li, Y., Lomas, M., Peylin, P., Poulter, B., Viovy, N., Zaehle, S., Zeng, N. & Zhao, Fang. Multi-criteria evaluation of discharge simulation in Dynamic Global Vegetation Models. *Journal of Geophysical Research: Atmospheres*. doi: [10.1002/2015JD023129](https://doi.org/10.1002/2015JD023129), 2015.

37. Yin, G., Zhang, Y., Sun, Y., Wang, T., **Zeng, Z.** & Piao, S. MODIS based estimation of forest above ground biomass in China. *PLOS ONE*. doi: [10.1371/journal.pone.0130143](https://doi.org/10.1371/journal.pone.0130143), 2015.

38. Zhou, F., Shang, Z., **Zeng, Z.**, Piao, S., Ciais, P., Raymond, P., Wang, X., Wang, R., Chen, M., Yang, C., Tao, S., Zhao, Y., Meng, Q., Gao, S. & Mao Q. New model for capturing the variations of

fertilizer-induced emission factors of N<sub>2</sub>O. *Global Biogeochemical Cycles*. doi: [10.1002/2014GB005046](https://doi.org/10.1002/2014GB005046), 2015.

39. Shen, M., Piao, S., Jeong, S., Zhou, L., **Zeng, Z.**, Ciais, P., Chen, D., Jin, C., Li, L., Myneni, R., Yang, K., Zhang, G., Zhang, Y. & Yao, T. Evaporative cooling over the Tibetan Plateau induced by vegetation growth. *Proceedings of the National Academy of Sciences*. doi: [10.1073/pnas.1504418112](https://doi.org/10.1073/pnas.1504418112), 2015.

40. Huang, M., Piao, S., **Zeng, Z.**, Peng, S., Ciais, P., Cheng, L., Mao, J., Poulter, B., Shi, X., Yang, H. & Wang, Y. Seasonal responses of terrestrial ecosystem water-use efficiency to climate change. *Global Change Biology*. doi: [10.1111/gcb.13180](https://doi.org/10.1111/gcb.13180), 2015.

41. Huang, M., Piao, S., Sun, Y., Ciais, P., Cheng, L., Mao, J., Poulter, B., Shi, X., **Zeng, Z.** & Wang, Y. Change in terrestrial ecosystem water use efficiency over the last three decades. *Global Change Biology*. doi: [10.1111/gcb.12873](https://doi.org/10.1111/gcb.12873), 2015.

42. Mao, J., Fu, W., Shi, X., Ricciuto, D., Fisher, J. B., Dickinson, R. E., Wei, Y., Shem, W., Piao, S., Wang, K., Schwalm, C. R., Tian, H., Mu, M., Arain, A., Ciais, P., Cook, R., Dai, Y., Hayes, D., Hoffman, R. M., Huang, M., Huang, S., Huntzinger, D. H., Ito, A., Jain, A., King, A. W., Lei, H., Lu, C., Michalak, A. M., Parazoo, N., Peng, C., Poulter, B., Schaefer, K., Jafarov, E., Thornton, P. E., Wang, W., Zeng, N., **Zeng, Z.**, Zhao, F., Zhu, Q. & Zhu, Z. Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends. *Environmental Research Letters*. doi: [10.1088/1748-9326/10/9/094008](https://doi.org/10.1088/1748-9326/10/9/094008), 2015.

43. Liu, Q., Fu, Y., **Zeng, Z.**, Huang, M., Li, X. & Piao, S. Temperature, precipitation, and insolation effects on autumn vegetation phenology in temperate China. *Global Change Biology*. doi: [10.1111/gcb.13081](https://doi.org/10.1111/gcb.13081), 2015.

44. Zhao, H., Fu, Y., Wang, X., Zhao, C., **Zeng, Z.**, Piao, S. Timing of rice maturity in China is affected more by transplanting date than by climate change. *Agricultural and Forest Meteorology*. doi: [10.1016/j.agrformet.2015.11.001](https://doi.org/10.1016/j.agrformet.2015.11.001), 2015.

45. Piao, S., Tan, J., Chen, A., Fu, Y., Ciais, P., Liu, Q., Janssens, I., Vicca, S., **Zeng, Z.**, Jeong, S., Li, Y., Myneni, R., Peng, S., Shen, M. & Penuelas, J. Leaf onset in the northern hemisphere triggered by daytime temperature. *Nature Communications*. doi: [10.1038/ncomms7911](https://doi.org/10.1038/ncomms7911), 2015.

46. Piao, S., Yin, G., Tan, J., Cheng, L., Huang, M., Li, Y., Liu, R., Mao, J., Myneni, R., Peng, S., Poulter, B., Shi, X., Xiao, Z., Zeng, N., **Zeng, Z.** & Wang, Y. Detection and attribution of vegetation greening trend in China over the last 30 years. *Global Change Biology*. doi: [10.1111/gcb.12795](https://doi.org/10.1111/gcb.12795), 2015.

47. **Zeng, Z.**, Chen, A., Piao, S., Rabin, S. & Shen, Z. Environmental determinants of tropical forest and savanna distribution: a quantitative model evaluation and its implication. *Journal of Geophysical Research: Biogeosciences*. doi: [10.1002/2014JG002627](https://doi.org/10.1002/2014JG002627), 2014.

48. **Zeng, Z.**, Wang, T., Zhou, F., Ciais, P., Mao, J., Shi, X. & Piao, S. A worldwide analysis of spatiotemporal changes in water balance based evapotranspiration from 1982 to 2009. *Journal of Geophysical Research: Atmospheres*. doi: [10.1002/2013JD020941](https://doi.org/10.1002/2013JD020941), 2014.

49. Peng, S., Piao, S., **Zeng, Z.**, Ciais, P., Zhou, L., Li, L.Z.X., Myneni, R.B., Yin, Y. & Zeng, H. Afforestation in China cools local land surface temperature. *Proceedings of the National Academy of Sciences*. doi: [10.1073/pnas.1315126111](https://doi.org/10.1073/pnas.1315126111), 2014.

50. Piao, S., Nan, H., Huntingford, C., Ciais, P., Friedlingstein, P., Sitch, S., Peng, S., Ahlström, A., Canadell, J., Cong, N., Levis, S., Levy, P., Liu, L., Lomas, M., Mao, J., Myneni, R., Peylin, P., Poulter, B., Shi, X., Yin, G., Viovy, N., Wang, T., Wang, X., Zaehle, S., Zeng, N., **Zeng, Z.** & Chen, A. Evidence for a weakening relationship between interannual temperature variability and northern vegetation activity. *Nature Communications*. doi: [10.1038/ncomms6018](https://doi.org/10.1038/ncomms6018), 2014.

51. Tan, J., Piao, S., Chen, A., **Zeng, Z.**, Ciais, P., Janssens, I., Mao, J., Myneni, R., Peng, S., Peñuelas, J., Shi, X. & Vicca, S. Seasonally different response of photosynthetic activity to daytime and night-time warming in the Northern Hemisphere. *Global Change Biology*. doi: [10.1111/gcb.12724](https://doi.org/10.1111/gcb.12724), 2014.

52. Zhou, F., Shang, Z., Ciais, P., Tao, S., Piao, S., Raymond, P., He, C., Li, B., Wang, R., Wang, X., Peng, S., **Zeng, Z.**, Chen, H., Ying, N., Hou, X. & Xu, P. A new high-resolution N<sub>2</sub>O emission inventory for China in 2008. *Environmental Science & Technology*. doi: [10.1021/es5018027](https://doi.org/10.1021/es5018027), 2014.

53. **Zeng, Z.**, Piao, S., Chen, A., Lin, X., Nan, H., Li, J. & Ciais, P. Committed changes in tropical tree cover under the projected 21<sup>st</sup> century climate change. *Scientific Report*. doi: [10.1038/srep01951](https://doi.org/10.1038/srep01951), 2013.

54. **Zeng, Z.**, Piao, S., Lin, X., Yin, G., Peng, S., Ciais, P. & Myneni, R. Global evapotranspiration over the past three decades: estimation based on the water balance equation combined with empirical models. *Environmental Research Letters*. doi: [10.1088/1748-9326/7/1/014026](https://doi.org/10.1088/1748-9326/7/1/014026), 2012.

#### **CONFERENCE CONVENED**

**Zeng, Z.**, Weng, E., Chen, A. & Yan, Z. Plant-Water Interactions Under a Changing Climate. *American Geophysical Union*, San Francisco, California, USA. 2019 (Session Chair)

Wood, E. F., **Zeng, Z.** & Chen, A. Agricultural Expansion and Forest Loss in Tropical Regions: Observations, Drivers, Impacts, and Solutions. *American Geophysical Union*, New Orleans, Louisiana, USA. 2017 (Session Chair)

#### **CONFERENCE PRESENTATIONS**

**Zeng, Z.** Biosphere feedbacks and climate change: the role of recent greening of the Earth. *National University of Singapore*, Singapore. 2020 (Invited Talk)

**Zeng, Z.** Revisiting the Pan Evaporation Paradox - An implication from the reversal in global terrestrial stilling. Tsinghua University, Beijing, China. 2019 (Invited Talk)

**Zeng, Z.** Agricultural expansion and forest loss in Southeast Asia: Observations, drivers, impacts, and solutions. *Sun Yat-sen University*, Guangzhou, Guangdong, China. 2019 (Invited Talk)

**Zeng, Z.** Implications of climate change for China. *Princeton University*, Princeton, New Jersey, USA. 2019 (Invited Talk)

**Zeng, Z.** Biosphere feedbacks and climate change: the role of recent greening of the Earth. *Pennsylvania State University*, Pennsylvania, USA. 2019 (Invited Talk)

**Zeng, Z.** Introduction to environment remote sensing. *Southern University of Science and Technology*, Shenzhen, China. 2019 (Invited Talk)

**Zeng, Z.** Biosphere feedbacks and climate change. *Southern University of Science and Technology*, Shenzhen, China. 2019 (Invited Talk)

**Zeng, Z.** Biophysical climate impacts of Earth's greening. *Princeton University*, Princeton, New Jersey, USA. 2019 (Oral)

**Zeng, Z.**, Piao, S., Li, L., Peng, L., Lian, X., Wang, T., Mao, J., Yang, Y., Shi, X. & Myneni R. Earth greening and terrestrial water cycle change. *American Geophysical Union*, San Francisco, California, USA. 2019 (Poster)

Wu, J., Peng, L. & **Zeng, Z.** Changes of evapotranspiration in Amazonia for the past four decades. *American Geophysical Union*, San Francisco, California, USA. 2019 (Poster)

Lin, P., Pan, M., Frasson, R., Allen, G., **Zeng, Z.** & Wood, E. F. Data-driven prediction of global river width. *American Geophysical Union*, San Francisco, California, USA. 2019 (Poster)

**Zeng, Z.**, Yang, L., Lin, P., Liu, M., Wei, Z., Peng, L., Pan, M. & Wood, E. F. Modelled hydrological impacts of the deforestation in Mainland Southeast Asia. *American Geophysical Union*, Washington DC, USA. 2018 (Oral)

**Zeng, Z.** Optimization of dam's locations and heights for controlling deforestation in Nan Province. *Sun Yat-sen University*, Guang Zhou, Guangdong, China. 2018 (Invited Talk)

**Zeng, Z.** Highland cropland expansion and forest loss in Southeast Asia in the 21<sup>st</sup> century. *Key Laboratory of Regional Climate-Environment for Temperate East Asia, Chinese Academy of Sciences*, Beijing, China. 2018 (Invited Talk)

**Zeng, Z.** Highland cropland expansion and forest loss in Southeast Asia in the 21<sup>st</sup> century. *Chiang Mai University*, Chiang Mai, Thailand. 2018 (Oral)

**Zeng, Z.**, Estes, L., Chen, A., Searchinger, T., Hua, F., Guan, K. & Wood, E. F. Rapid highland forest loss in Southeast Asia during the early 21<sup>st</sup> century. *American Geophysical Union*, New Orleans, Louisiana, USA. 2017 (Poster)

**Zeng, Z.** Engineering application for reducing highland deforestation. *Southern University of Science and Technology*, Shenzhen, China. 2017 (Invited Talk)

Chen, A., **Zeng, Z.**, Peng, L. & Fei, S. Estimated carbon emission from recent rapid forest loss in Southeast Asia. *American Geophysical Union*, New Orleans, Louisiana, USA. 2017 (Poster)

Gower, D., **Zeng, Z.**, Caylor, K. & Wood, E. F. Simulating the impact of water storage on agricultural intensification and deforestation in Northern Thailand. *American Geophysical Union*, New Orleans, Louisiana, USA. 2017 (Poster)

Yang, H., Zhou, F., Piao, S., Chen, A., Ciais, P., Lian, X., Peng, S. & **Zeng, Z.** Regional Patterns of Future Runoff Changes from Earth System Models Constrained by Observation. *American Geophysical Union*, New Orleans, Louisiana, USA. 2017 (Oral)

Yao, Y., Wang, X., **Zeng, Z.**, Liu, Y., Peng S., Zhu, Z. & Piao, S. The effect of afforestation on soil moisture content in Northeastern China. *American Geophysical Union*, San Francisco, California, USA. 2016 (Poster)

**Zeng, Z.**, Tian, D., Estes, L., Evans, T., Wood, E. F. & Caylor, K. Can we forecast farmers' yields? The relationships between rainfall variability, farmers' expectations, and actual yields in a tropical dryland. *American Geophysical Union*, San Francisco, California, USA. 2016 (Poster)

Huang, M., Piao, S., **Zeng, Z.**, Peng, S., Ciais, P., Cheng, L., Mao, J., Poulter, B., Shi, X., Yang, H. & Wang, Y. Seasonal responses of terrestrial ecosystem water-use efficiency to climate change. *American Geophysical Union*, San Francisco, California, USA. 2016 (Poster)

**Zeng, Z.** Altitudinal gradient of global warming. *The 1<sup>st</sup> Peking University Graduate Geography Forum*, Beijing, China. 2015 (Graduate Representative, Oral)

**Zeng, Z.**, Chen, A., Ciais, P., Li, Y., Li, L., Vautard, R., Yang, H., Zhou, L. & Piao, S. Anthropogenic aerosol forcing as indicated by the reversion of warming-elevation relationship. *American Geophysical Union*, San Francisco, California, USA. 2015 (Oral)

Yue, L., Wang, T., **Zeng, Z.**, Peng, P. & Piao, S. Evaluating biases in simulated land surface albedo from CMIP5 earth system models. *American Geophysical Union*, San Francisco, California, USA. 2015 (Poster)

Yang, H., Piao, S., **Zeng, Z.**, Ciais, P., Yin, Y., Friedlingstein, P., Sitch, S., Anders, A., Guimberteau M., Huntingford, C., Levis, S., Levy, P., Li, Y., Lomas, M., Peylin, P., Poulter, B., Viovy, N., Zaehle, S., Zeng, N. & Zhao, Fang. Multi-criteria evaluation of discharge simulation in Dynamic Global Vegetation Models. *American Geophysical Union*, San Francisco, California, USA. 2015 (Poster)

Huang, M., Piao, S., Sun, Y., Ciais, P., Cheng, L., Mao, J., Poulter, B., Shi, X., **Zeng, Z.** & Wang, Y. Change in terrestrial ecosystem water use efficiency over the last three decades. *American Geophysical Union*, San Francisco, California, USA. 2015 (Poster)

Mao, J., Fu, W., Shi, X., ..., **Zeng, Z.**, Zhao, F., Zhu, Q. & Zhu, Z. Disentangling climatic and anthropogenic controls on global terrestrial evapotranspiration trends. *American Geophysical Union*, San Francisco, California, USA. 2015 (Poster)

**Zeng, Z.**, Wang, T., Zhou, F., Ciais, P., Mao, J., Shi, X. & Piao, S. A worldwide analysis of spatiotemporal changes in water balance-based evapotranspiration from 1982 to 2009. *American Geophysical Union*, San Francisco, California, USA. 2014 (Oral)

Li, Y., **Zeng, Z.**, Zhao, L. & Piao, S. Spatiotemporal characteristics of altitudinal lapse rate of temperature in Mainland China. *American Geophysical Union*, San Francisco, California, USA. *American Geophysical Union*, San Francisco, California, USA. 2014 (Poster)

Zhang, Y., **Zeng, Z.** & Piao, S. Spatio-temporal dynamics of vegetation and their relationships with climate in southeast Asia based on three satellite NDVI products. *American Geophysical Union*, San Francisco, California, USA. 2014 (Poster)

Piao, S., Nan, H., Huntingford, C., Ciais, P., Friedlingstein, P., Sitch, S., Peng, S., Ahlström, A., Canadell, J.G., Cong, N., Levis, S., Levy, P.E., Liu, L., Lomas, M.R., Mao, J., Myneni, R.B., Peylin, P., Poulter, B., Shi, X., Yin, G., Viovy, N., Wang, T., Wang, X., Zaehle, S., Zeng, N., **Zeng, Z.** & Chen, A. Evidence for a weakening relationship between interannual temperature variability and northern vegetation activity. *American Geophysical Union*, San Francisco, California, USA. 2014 (Poster)

Shang, Z., Zhou, F., Ciais, P., Tao, S., Piao, S., Raymond, P., He, C., Li, B., Wang, R., Wang, X., Peng, S., **Zeng, Z.**, Chen, H., Ying, N., Hou, X. & Xu, P. A new high-resolution N<sub>2</sub>O emission inventory for China in 2008. *American Geophysical Union*, San Francisco, California, USA. 2014 (Poster)

Zhou, F., Shang, Z., Ciais, P., Piao, S., Raymond, P., Tao, S. & **Zeng, Z.** High-resolution upscaling of closed chamber fluxes for N<sub>2</sub>O emissions from China's agricultural soils. *American Geophysical Union*, San Francisco, California, USA. 2014 (Poster)

**Zeng, Z.**, Piao, S., Chen, A., Lin, X., Nan, H., Li, J. & Ciais, P. Committed changes in tropical tree cover under the projected 21st century climate change. *American Geophysical Union*, San Francisco, California, USA. 2013 (Poster)

Tan, J., Wang, X., Mao, J., Shi, X., Peng, S., **Zeng, Z.** & Piao, S. Detection and attribution of vegetation growth change in China during the last thirty years. *American Geophysical Union*, San Francisco, California, USA. 2013 (Poster)

Chen, A., Lin, X., Piao, S., Li, J. & **Zeng, Z.** Ecosystem responses to a recent drought episode in Southwest China. *American Geophysical Union*, San Francisco, California, USA. 2013 (Poster)

**Zeng, Z.**, Piao, S., Lin, X., Yin, G., Peng, S., Philippe, C. & Ranga, B. Global evapotranspiration over the past three decades: estimation based on the water balance equation combined with empirical models. *American Geophysical Union*, San Francisco, California, USA. 2012 (Poster)



Chen, A., **Zeng, Z.** & Piao, S. Environmental and anthropogenic determinants of tropical forest - savanna distribution: a global statistical analysis. *American Geophysical Union*, San Francisco, California, USA. 2012 (Poster)

## **PROJECTS**

Key Participant, Southern University of Science and Technology (G02296302), “Highlight Project on Water Security and Global Change of the Southern University of Science and Technology,” January 2020 – August 2021. (PI: Dr. Junguo Liu)

Key Participant, Lamsam-Thailand Sustainable Development (B0891), “Nan Province Deforestation Project,” July 2016 – July 2019. (PI: Dr. Eric F. Wood)

Key Participant, National Natural Science Foundation of China (41125004, 41530528, 41561134016), “Global Change and Terrestrial Ecosystem,” January 2012 – December 2015. (PI: Dr. Shilong Piao)

## **WORKSHOPS**

Southern University of Science and Technology, Shenzhen, China, March 8 – March 9, 2019: International Symposium on Water Security and Climate Change.

Laboratoire de Météorologie Dynamique, Université P. et M. Curie, Paris, France, February 3 – March 2, 2014: Coding to update two-way nested Earth system model of IPSLCM, and to install it in Tianhe 1A supercomputer.

International Space Science Institute, Bern, Switzerland, February 2014: A workshop on “Integrating Earth Observation Data and the Description of Land Management Practices into Global Carbon Cycle Models.”

## **REVIEWER**

Agricultural and Forest Meteorology (IF: 4.46), Atmosphere (IF: 1.70), Climate Dynamics (IF: 4.71), Energies (IF: 2.68), Environment Development and Sustainability (IF: 1.68), Environmental Research Letters (IF: 6.20), Geophysical Research Letter (IF: 4.33), Global Change Biology (IF: 8.88), IEEE Access (IF: 4.10), International Journal of Climatology (IF: 3.61), International Journal of Digital Earth (IF: 3.99), International Journal of Environmental Research and Public Health (IF: 2.47), ISPRS Journal of Photogrammetry and Remote Sensing (IF: 4.14), Journal of Climate (IF: 4.81), Journal of Geographical Sciences (IF: 2.35), Journal of Geophysical Research: Atmospheres (IF: 3.63), Journal of Geophysical Research: Biogeosciences (IF: 3.62), Journal of Water and Climate Change (IF: 1.01), Land Degradation and Development (IF: 4.28), Landscape Ecology (IF: 2.78); Nature Sustainability (IF: n.a.), PLOS ONE (IF: 2.78), Remote Sensing (IF: 4.12), Science Bulletin (IF: 6.23), Science of the Total Environment (IF: 5.59), Scientific Reports (IF: 4.12), Water (IF: 1.83)

### *IPCC AR6 WG2*

Guest Editor for the Special Issue on "Role of Vegetation in Land-Climate Interaction", *Remote Sensing* (IF: 4.12)

## **TEACHING and ADVISING EXPERIENCE**

2020 Teacher: *Global Climate Change*. Southern University of Science and Technology.

2019-2020 Advising: Dashan Wang, Rongrong Xu (postdoc), Yu Feng, He Chen, Xinyue He, Jie Wu, Junyu Zou, Wenxin Fan, Ziyu Lin, Lihong Zhou (graduate students), Yi Liu, Shijie Hu (undergraduate students)

2018-2019 Instructor: *The Land Crisis for Food, Climate and Wildlife* (Dr. Timothy D. Searchinger; Woodrow Wilson School, Princeton University)

2017-2018 Assistant to my advisor for: Alex Pogrebniak (high school student), Katherine Grace O'Malley (undergraduate student), Drew Gower (graduate student) (Dr. Eric F. Wood; Princeton University)

2016 - 2018 Grader: *Introduction to climate change* (Dr. Shilong Piao; Peking University)

2014-2016 Assistant to my advisor for: Binhui Chen (undergraduate student), Hui Yang, Yue Li, Yuan Zhang, Xu Lian (graduate students) (Dr. Shilong Piao; Peking University)

## **SKILLS**

- ✧ Language: Hakka (native), Mandarin (native), English, Cantonese
- ✧ Coding: Proficient in Matlab, C++, Linux; familiar with R, Fortran, IDL, VB
- ✧ Remote sensing and geographical information system theory and techniques: ArcGIS, ENVI
- ✧ Mathematical and statistical analysis: many machine learning algorithms (e.g., ANN, MTE, BRT), ANOVA, regressions, granger causality, and a broad variety of other statistical tests using Matlab, R, and SPSS
- ✧ Earth System Model: IPSL-CM, CESM, WRF
- ✧ Hydrology Model: SWAT, HYDROBLOCKs