YONGHONG YI, Ph.D.

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Research interests

- Cold region hydrology, permafrost-hydrology-carbon interactions
- Remote sensing algorithms and modeling development, applications in regional water and carbon cycle studies
- Climate change studies in the high latitude and high-altitude region

Education

- Ph.D. *Hydrology*, Tsinghua University, Beijing, China, 2008
- M.S. *Photogrammetry and Remote Sensing*, Peking University, China, 2005
- B.E. *Hydrology*, Wuhan University, Wuhan, China, 2002

Professional Experience:

- 2021/10-present: Research Professor, Tongji University, China.
- 2020/03-2021/09:   Assistant researcher at JIFRESSE, University of California, Los Angeles, USA
- 2018/04-2020/03:   NPP senior fellow at NASA Jet Propulsion Lab (JPL), USA
- 2009/09-2018/03:   Research Scientist, Numerical Terradynamic Simulation Group, University of Montana, USA
- 2008/09-2009/08:   Postdoc, Dept. Civil Engineering, University of Manitoba, Canada

Refereed Publications

Papers Under Review:

1. Jiang, H., **Yi, Y.***, Yang, K., Zhao, L., Chen, D., Kimball, J.S., Lu, F. Soil Freeze/Thaw Dynamics Strongly Influences Runoff Regime in a Tibetan Permafrost Watershed: Insights from a Process-Based Model. *Catena*, in review.
2. Liu, Li, **Yi, Y.***, Jiang, H., Ran, Y., Chen, D., Cao, B. Evaluation of ERA5-Land reanalysis in representing runoff production and its freeze/thaw sensitivity in the central Tibetan Plateau. *Journal of Hydrology: Regional studies,* in review.
3. Zhao, Y., Bakian-Dogaheh, L., Whitcomb, J., Chen, R.H., **Yi, Y.**, Kimball, J.S., Moghaddam, M. Mapping boreal forest properties in Interior Alaska from Multi-source remote sensing data in support of radar modeling. *Environ. Res. Lett*,

in review.

4. He, M., Cui, J.*, **Yi, Y.***, et al. Increases global climate vulnerability risk by shifting climate zones in response to rising atmospheric Vegetation CO2. *Science of The Total Environment, in review.*

5. He, M., **Yi, Y.***, Li, X., Wigneron, J.P., Kimball, J.S., Endsley, A., Reichle, R., Fan, L. The capability of multi-frequency VOD products to monitor vegetation dynamics under changing climate in China. *International Journal of Digital Earth*, in review.

6. **Yi, Y.***, Wu, T., Wu, M., Jiang, H., et al. Recent advances in remote sensing and modeling of abrupt thaw and the potential carbon feedback in the Tibetan Plateau. To be submitted to *Earth-Science Reviews*.

Papers published in referred journals:

7. Miller, C. et al (including **Yi, Y.**). The ABoVE L-band and P-band Airborne SAR Surveys. ESSD, accepted. The ABoVE L-band and P-band Airborne SAR Surveys, *Earth Syst. Sci. Data*. in press.

8. Whitcomb, J., Chen, R., Clewley, D., Kimball, J. S., Pastick, N. J., **Yi, Y.**, & Moghaddam, M. (2024). Maps of active layer thickness in northern Alaska by upscaling P-band polarimetric synthetic aperture radar retrievals. *Environmental Research Letters*, 19(1), 014046.

9. Liu, Z., Kimball, J. S., Ballantyne, A., Watts, J. D., Natali, S. M., Rogers, B. M., **Yi, Y.** et al. (2024). Widespread deepening of the active layer in northern permafrost regions from 2003 to 2020. *Environmental Research Letters*, 19(1), 014020.

10. Jiang, H., **Yi, Y.***, Xu, J., Chen, D., Lu, F., Li, R., Wang, X., Zhou, B. Characterizing precipitation uncertainties in a high-altitudinal permafrost watershed of the Tibetan Plateau based on regional water balance and hydrological model simulations. *Journal of Hydrology: Regional Studies*. 2023.

11. Lu, P., Han, J., **Yi, Y.**, Hao, T., Zhou, F., Meng X., Zhang, Y., Li, R. InSAR unveils dynamic permafrost disturbances on Tibetan Plateau hinterland. *IEEE Trans. Geosci. Remote Sensing*, 2023.

12. **Yi, Y.**, Bakian-Dogaheh, Moghaddam, M., Mishra, M., Kimball, J.S. Mapping surface organic soil properties in Arctic tundra using C-band SAR data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing.* 2023.

13. Schiferl, L., Arndt, K., Biraud, S., Euskirchen, E.S., Henderson, J., Larson, E., McKain, K., Munger, J.W., Oechel, W., Sweeney, C., Watts, J.D., **Yi, Y.**, Zona, D., and Commane, R. Using atmospheric observations to quantify annual biogenic carbon dioxide fluxes on the Alaska North Slope. *Biogeosciences, 2023.*

14. Chang, T., **Yi, Y.***, Wen, Y., Lu, P., Zhou, F., Meng, X., et al. (2022). Bias Correction for ERA5-Land Soil Moisture Product Using Variational Mode Decomposition in the Permafrost Region of Qinghai–Tibet Plateau. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 15, 7025–7041.

15. Byrne, B., Liu, J., **Yi, Y.**, Chatterjee, A., Basu, S., Cheng, R., Doughty, R.,

Chevallier, F., Bowman, K. W., Parazoo, N. C., Crisp, D., Li, X., Xiao, J., Sitch, S., Guenet, B., Deng, F., Johnson, M. S., Philip, S., McGuire, P. C., and Miller, C. E.: Multi-year observations reveal a larger than expected autumn respiration signal across northeast Eurasia, *Biogeosciences, 2022.*

16. **Yi, Y.**, Chen, R. H., Kimball, J. S., Moghaddam, M., Xu, X., Euskirchen, E. S., et al. (2022). Potential Satellite Monitoring of Surface Organic Soil Properties in Arctic Tundra From SMAP. *Water Resources Research*, 58(4).

17. Bakian-Dogaheh, K., Chen, R. H., **Yi, Y.**, Kimball, J. S., Moghaddam, M., & Tabatabaeenejad, A. (2022). A model to characterize soil moisture and organic matter profiles in the permafrost active layer in support of radar remote sensing in Alaskan Arctic tundra. *Environmental Research Letters*, 17(2), 025011.

18. **Yi, Y.**, Chen, R.H., Moghaddam M., Kimball J.S., Jones, B.A., Jandt, R., Miller,E. Miller, C., Sensitivity of multi-frequency polarimetric SAR data to post-fire permafrost changes and recovery processes in Arctic tundra. *IEEE Trans. Geosci. Remote Sensing*, 2021, doi: 10.1109/TGRS.2021.3125715

19. Kim, J., Kim, Y., Zona, D., Oechel, Park, S., Lee, B., **Yi, Y.**, Erb, A., Schaaf, C. Carbon response of tundra ecosystems to advancing greenup and snowmelt in Alaska. *Nature Communications*, 12(1), 6879.

20. **Yi, Y.**, Kimball, J.S., Watts, J., Natali, S., Zona, D., Liu, J., Ueyama, M., Kobayashi, H., Oechel, W., and Miller, C.E.: Investigating the sensitivity of soil heterotrophic respiration to recent snow cover changes in Alaska using a satellite-based permafrost carbon model. *Biogeosciences,* 17, 5861-5882, 2020.

21. Jiang, H., Zhang, G., **Yi, Y.***, Chen, D., Zhang, W., Yang, K., Miller, C.E. Progress and challenges in studying regional permafrost in the Tibetan Plateau using satellite remote sensing and models (Invited). *Frontiers in Earth Science,* 8:560403.

22. Zheng, G., Yang, Y., Yang, D., Dafflon, B., **Yi, Y.**, Zhang, S., Chen, D., Gao, B., Wang, T., Shi, R., and Wu, Q. (2020). Remote sensing spatiotemporal patterns of frozen soil and the environmental controls over the Tibetan Plateau during 2002–2016. *Remote Sensing of Environment,* 247, 111927.

23. Jiang, H., **Yi, Y.**, Zhang, W., Yang, K., Chen, D.: Investigating the sensitivity of soil freeze/thaw dynamics to environmental conditions at different scales in the Central Tibetan Plateau. *Science of the Total Environment.* 734, 129261, 2020.

24. **Yi, Y.**, Kimball, J.S., Chen, R.H., Moghaddam, M., and Miller, C.E.: Sensitivity of active-layer freezing process to snow cover in Arctic Alaska, *The Cryosphere,* 13, 197-218, 2019.

25. He, M., Kimball, J.S., **Yi, Y.**, Mu, Q., Running, S.W., Guang, K., Maneta, M.: Satellite data-driven modeling of field scale evapotranspiration in croplands using the MOD16 algorithm framework. *Remote Sensing of Environment*, 230, 2019.

26. He, M., Kimball, J.S., **Yi, Y.** et al. Impacts of the 2017 flash drought in the US Northern plains informed by satellite-based evapotranspiration and solar-induced fluorescence. *Environ. Res. Lett.*, 14, 074019, 2019.

27. **Yi, Y.**, Kimball, J.S., Chen, R., Moghaddam, M., Reichle, R.H., Mishra, U., Zona, D., Oechel, W.: Characterizing permafrost soil active layer dynamics and sensitivity to landscape spatial heterogeneity in Alaska. *The Cryosphere*, 12,

145-161, 2018.

28. Jiang, H., Zhang, W., **Yi, Y.** et al.: The impacts of soil freeze/thaw dynamics on soil water transfer and spring phenology in the Tibetan Plateau. *Arctic, Antarctic and Alpine Research*, 50(1), e1439155, 2018.

29. Wang, J., Dong, J., **Yi, Y.** et al.: Decreasing net primary production due to drought and slight decreases in solar radiation in China from 2000 to 2012. *Journal of Geophysical Research-Biogeosciences*, 122, doi:10.1002/2016JG003417. 2017.

30. Zhang, W., **Yi, Y.**, Song, K., Kimball, J.S.: Hydrological sensitivity of alpine wetlands to climate warming in the eastern Tibetan Plateau. *Remote Sensing*, 8, 336, 2016.

31. **Yi, Y.**, Kimball, J. S., Rawlins, M. A., Moghaddam, M., Euskirchen, E. S.: The role of snow cover affecting boreal-arctic soil freeze-thaw and carbon dynamics, *Biogeosciences*, 12, 5811-5829, 2015.

32. Zhang, W., **Yi, Y.**, Kimball, J.S., Kim, Y.: Climatic controls on spring onset of Tibetan Plateau grasslands from 1982 to 2008. *Remote Sensing*, 7(12), 2015.

33. **Yi, Y.**, Kimball, J. S., Reichle, R. H.: Spring hydrology determines summer net carbon uptake in northern ecosystems, *Environ. Res. Lett*., 9, 064003, 2014.

34. **Yi, Y.**, Kimball, J. S., Jones, L. A., Reichle, R. H., Nemani, R., Margolis, H. A.: Recent climate and fire disturbance impacts on boreal and arctic ecosystem productivity estimated using a satellite-based terrestrial carbon flux model, *Journal of Geophysical Research-Biogeosciences*, 118, 606-622, 2013.

35. McGuire, A. D. et al. (including **Yi, Y.)**: An assessment of the carbon balance of Arctic tundra: comparisons among observations, process models, and atmospheric inversions, *Biogeosciences*, 9, 3185-3204, doi:10.5194/bg-9-3185-2012, 2012.

36. **Yi, Y.**, Kimball, J. S., Jones, L. A., Reichle, R. H., McDonald, K. C.: Evaluation of MERRA land surface estimates in preparation for the Soil Moisture Active Passive Mission, *Journal of Climate*, 24, 3797-3816, 2011.

37. **Yi, Y.** and Yang, D.: An operational method to estimate evapotranspiration using MODIS data during winter wheat growing season, *International Journal of Remote Sensing*, 32, 4915-4932, 2011.

38. Zhang, W., Wang, H., Yang, F., **Yi, Y.** et al.: Underestimated effects of low temperature during early growing season on carbon sequestration of a subtropical coniferous plantation, *Biogeosciences*, 8, 1667-1678, 2011.

39. **Yi, Y.**, Yang, D., Huang, J., Chen, D.: Evaluation of MODIS surface reflectance products for wheat leaf area index (LAI) retrieval, *ISPRS Journal of Photogrammetry and Remote Sensing*, 63, 661-677, 2008.

40. Xu, J., Yang, D., **Yi, Y.** et al.: Spatial and temporal variation of runoff in the Yangtze River basin during the past 40 years, *Quaternary International*, 186, 32-42, 2008.

41. **Yi, Y.**, Yang, D. W., Chen, D. Y., Huang, J.: Retrieving crop physiological parameters and assessing water deficiency using MODIS data during the winter wheat growing period, *Canadian Journal of Remote Sensing*, 33, 189-202, 2007.

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Research Projects

Current projects:

- *Shanghai 1000-talent program,* China, 2021-2026, ￥2,000K, PI
- *The National Natural Science Foundation of China*, "Joint retrieval of soil organic carbon content and soil moisture in the pan-Arctic permafrost region using SMAP Tb data", 2024-2027, ￥480K, PI
- *2023 Shanghai Action Plan for Science, Technology and Innovation Program,* "Potential soil carbon emissions with permafrost degradation in the Tibetan Plateau grasslands", 2023-2026, ￥500K, PI.
- *Changjiang River Scientific Research Institute,* "The changing trends of evapotranspiration and blue/green water partitioning in the Yangtze river basin*",* *2024-2025,* ￥200K, PI.
- *The Second Tibetan Plateau Scientific Expedition and Research Program*, "Understanding the driving processes of runoff production in the Tibetan Permafrost region". 2023-2024, ￥900K, co-I

Completed projects:

- *NASA Terrestrial Hydrology* Program, "Enhancement of High-Resolution Soil Moisture Algorithm and Product for Arctic Region Using the Multi-Sensor Data Fusion Approach", 2021-2024, $600K, co-I
- *Ministry of Science and Technology Collaborative Program*, "Investigating pan-Arctic abrupt thaw and associated carbon emissions", 2022-2023, ￥290K, PI
- *NASA Terrestrial Ecology Program,* "Improving Understanding and Prediction of Permafrost Active Layer Processes Using a Coupled Radar Inversion and Soil Process Model Framework", Co-PI, 2019-2022, $780K
- *NASA NPP fellowship*, "Developing an Integrated Modeling Framework to Characterize Soil Moisture Effects on Boreal-Arctic Soil Freeze/thaw Dynamics and Cold-season Carbon Emissions", PI, 2018-2020, $180K

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