

I. Research Interests

I study vegetation-climate interactions in the context of climate change. My research work includes spatial ecology, plant physiology, remote sensing, and climate change. Specifically, I am interested in the climatic controls on vegetation photosynthesis and related plant functioning and structure, the feedbacks of vegetation to the climate, and the impact of climate change on vegetation phenology. I develop novel approaches to quantify photosynthesis, leaf traits, and canopy structure remotely, and I use advanced computation approaches such as data assimilation to bridge the gap between observations and models to improve our predictions of carbon, water and energy fluxes.

II. Education

2012-2014	Ph.D. Geological Sciences	Brown University-Marine Biological Laboratory advisors: John Mustard, Jim Tang
2009-2012	M.Sc. Geological Sciences	Brown University-Marine Biological Laboratory advisors: John Mustard, Jim Tang
2006-2009	M.Sc. Geography	Beijing Normal University advisors: Peijun Shi, Jianjun Wu
2002-2006	B.Sc. Geography	Beijing Normal University

III. Professional Appointments

1. Associate Professor, University of Virginia. 2022-
2. Assistant Professor, University of Virginia. 2016-2022
3. Postdoctoral research associate, Brown University. 2014-2016

IV. Funding

1. NASA Coastal Resilience Team. "THELORACS: Tree Health Evaluated using LiDAR, Optical, and Radar Applications across Coastal Systems" (UVA: \$1,006,265). PI. 2022-2025.
2. DOE Research and Development Partnership Pilots. "Building an interdisciplinary and interagency collaboration between DOE BER and the University of Virginia" (UVA: \$150,000). PI. 2022-2024.

3. DOE BER. "MACROCOSM: Monitor And Constrain tROPical eCOsystem Sensitivity to Moisture" (UVA: \$250,299). PI. 2022-2025.
4. National Aeronautics and Space Administration, "Diurnal and day-to-day variations of vegetation photosynthesis from novel remote sensing measurements." (UVA: \$145,000, Total: \$145,000) PI. 2022-2025 - Fellowship on Behalf of FI Rong Li.
5. USDA. "LRGV NWR Remote Sensing of Invasive Species with University of Texas Rio Grande Valley" (UVA: \$97,941, Total: \$97,941), PI. 2021-2022.
6. National Science Foundation. "DISES RCN: SWISLR - Saltwater Intrusion and Sea Level Rise in rural landscapes: Assessing Risk and Identifying Mitigation and Adaptation Options for Rural Coastal Plain Communities". (UVA: \$0, Total: \$499,661), Co-PI. 2021-2024.
7. National Science Foundation. "Collaborative Research: The coordinated structural and physiological responses of trees to water stress: an organismal approach" (UVA: \$714,863, Total: \$1,108,118), PI. 2020-2023.
8. National Science Foundation. "Collaborative Research: Environmental and biological controls on carbon uptake phenology in permafrost affected boreal forests" (UVA: \$452,486, Total: \$1,080,000), PI. 2020-2023.
9. Center For Innovative Technology. "Novel Automated System to Measure Plant Health" (UVA: \$150,000, Total: \$150,000), PI. 2020-2023.
10. National Aeronautics and Space Administration, "The influence of functional trait assemblages on drought-induced mortality of trees during the 2012 - 2016 California drought." (UVA: \$145,000, Total: \$145,000) PI. 2020-2023 - Fellowship on Behalf of FI Andrew Jablonski.
11. Environmental Resilience Institute, University of Virginia. "Coastal Water Future Initiative" (\$100,450), PI. 2019.
12. 4VA. "Forest resilience in a warmer world: using novel technologies to advance interdisciplinary understanding of thermal controls over ecosystem functions at the Virginia Forest Laboratory" (\$30,000), PI. 2019.
13. National Aeronautics and Space Administration, "Dynamic Modeling of Ecosystem Processes and Services in North American Boreal Forests within the ABOVE Study Region" ((UVA: \$286,875, Total: \$659,000), Co-PI. 2019-2022.
14. National Aeronautics and Space Administration, New Investigator (Early Career) Program, "From leaf to landscape: multi-scale quantification of terrestrial vegetation photosynthesis using solar-induced chlorophyll fluorescence" ((UVA: \$269,753), PI. 2018-2021. [Recommended but not awarded due to the Greencard requirement].
15. 4VA. "Atmosphere-Forest Ozone Exchange at the Virginia Forest Lab: A University of Virginia-Virginia Tech Interdisciplinary Research Partnership" (\$30,000), Co-PI. 2017.
16. National Science Foundation. "Collaborative Research: Understanding Ozone-Ecosystem Controls and Feedbacks across Landscapes through Leaf- and Canopy-Scale Measurements" ((UVA: \$366,619), Co-PI. 2018-2021.

17. National Aeronautics and Space Administration, "Chlorophyll Fluorescence and Soil Moisture Observations to Characterize Terrestrial Vegetation Photosynthesis and Biosphere Carbon Uptake in North America" ((UVA: \$263,000), Institutional PI. 2017-2020.
18. Institute at Brown for Environment and Society Small Grants "Quantifying the temporal and spatial variability of forest photosynthesis in northeastern United States using solar-induced fluorescence" (\$30,000), Co-PI. 2014-2015.

V. Awards

1. Tice prize, Department of Environmental Sciences, University of Virginia. 2021.
2. Stanley Waston Fellowship (\$45,000), Brown University. 2012-2013.
3. Best Student Paper Award (\$500), Phenology 2012 Conference. 2012.
4. Hartnett Fellowship (\$45,000), Brown University. 2009-2010.
5. Sino-Eco Rising Ecologist Award. June 29, 2009.

VI. Publications (lab members are denoted with an underline)

Under review or in revision

1. **Yang, X.**, Li, R., Jablonski, A., et al., (in review). Leaf angle as a leaf and canopy trait: a new frontier for ecosystem science. *New Phytologist*.
2. Koong, Y., Zhang, Q., Wang, L., Hwang, T., **Yang, X.**, Novick, K. (in review) Variability of marginal and intrinsic water-use efficiency in response to changing atmospheric water demand. *Plant, Cell, and Environment*.

Published peer-review articles

3. Wu, G., Jiang, C., Kimm, H., Wang, S., Bernacchi, C., Moore, C. E., Suyker, A., **Yang, X.**, et al. (2022). Difference in seasonal peak timing of soybean far-red SIF and GPP explained by canopy structure and chlorophyll content. *Remote Sensing of Environment*, 279, 113104.
4. Zeng, Y., Chen, M., Hao, D., Damm, A., Badgley, G., Rascher, U., et al. (2022). Combining near-infrared radiance of vegetation and fluorescence spectroscopy to detect effects of abiotic changes and stresses. *Remote Sensing of Environment*, 270, 112856.
5. Zhan, W., **Yang, X.**, Ryu, Y., Dechant, B., Huang, Y., Goulas, Y., Kang, M., Gentine, P., 2022, Two for one: Partitioning CO₂ fluxes and understanding the relationship between solar-induced chlorophyll fluorescence and gross primary productivity using machine learning. *Agricultural and Forest Meteorology*.
6. Li, R., Lombadozzi, D., Shi, M., Frankenberg, C., Parazoo N., Kohler, P., Yi, K., Suyker, A., Guan, K., **Yang, X.**, 2022, Representation of leaf-to-canopy radiative transfer processes improves simulation of far-red solar-induced chlorophyll fluorescence in the Community Land Model version 5. *Journal of Advances in Modeling Earth Systems*.

7. White, E., Bernhardt, E., Ury, E., **Yang, X.**, 2021, Climate Change Driving Widespread Loss of Forested Wetlands throughout the North American Coastal Plain. *Ecosystems*.
8. Stovall, A., Masters, B., Fatoyinbo, L., and **Yang, X.**. 2021. TLSLeAF: automatic leaf angle estimates from single-scan terrestrial laser scanning. *New Phytologist*.
9. **Yang, X.**, Xu, X., Stovall, A., Chen, M., Lee, J., 2021. Recovery: Fast and Slow - vegetation response during the 2012-2016 California Drought. *Journal of Geophysical Research - Biogeosciences*.
10. Hao, D., Asrar, G., Zeng, Y., **Yang, X.**, Li, X., Xiao, J., Guan, K., Wen, J., Xiao, Q., Berry, J., Chen, M., 2021, Potential of hotspot solar-induced chlorophyll fluorescence for better tracking terrestrial photosynthesis. *Global Change Biology*.
11. Kimm, H., Guan, K., Burroughs, C., Peng, B., Ainsworth, E., Bernacchi, C., Moore, C., Kumagai, E., **Yang, X.**, Berry, J., and Wu, G., 2021, Quantifying high-temperature stress on soybean canopy photosynthesis: the unique role of sun-induced chlorophyll fluorescence. *Global Change Biology*.
12. Ury, E., **Yang, X.**, Wright, J., Bernhardt, E., 2021, Rapid deforestation of a coastal landscape by climate change. *Ecological Applications*.
13. Wu, S., Wang, J., Yan, Z., Song, G., Chen, Y., Ma, Q., Deng, M., Wu, Y., Zhao, Y., Guo, Z., Yuan, Z., Dai, G., Xu, X., **Yang, X.**, Su, Y., Liu, L., Wu, J., 2021. Monitoring tree-crown scale autumn leaf phenology in a temperate forest with an integration of PlanetScope and drone remote sensing observations. *ISPRS Journal of Photogrammetry and Remote Sensing*, 171, pp.36-48.
14. Shan, N., Zhang, Y., Chen, J.M., Ju, W., Migliavacca, M., Peñuelas, J., **Yang, X.**, Zhang, Z., Nelson, J.A. and Goulas, Y., 2021. A model for estimating transpiration from remotely sensed solar-induced chlorophyll fluorescence. *Remote Sensing of Environment*, 252, p.112134.
15. Shugart, H.H., Foster, A., Wang, B., Druckenbrod, D., Ma, J., Lerdau, M., Saatchi, S., **Yang, X.**, and Yan, X., 2020. Gap models across micro-to mega-scales of time and space: examples of Tansley's ecosystem concept. *Forest Ecosystems*, 7(1), pp.1-18.
16. Atkins, J.W., Stovall, A.E. and **Yang, X.**, 2020. Mapping Temperate Forest Phenology Using Tower, UAV, and Ground-Based Sensors. *Drones*, 4(3), p.56.
17. Stovall, A., Shugart, H.H. and **Yang, X.**, 2020. Reply to "Height-related changes in forest composition explain increasing tree mortality with height during an extreme drought". *Nature communications*, 11(1), pp.1-4.
18. Helm, L., Shi, H., Lerdau, M.T. and **Yang, X.**, 2020. Solar-induced chlorophyll fluorescence and short-term photosynthetic response to drought. *Ecological Applications*, 30(5), p.e02101. [Top-cited paper in Ecological Applications]
19. Wang, C., Guan, K., Peng, B., Chen, M., Jiang, C., Zeng, Y., Wu, G., Wang, S., Wu, J., **Yang, X.**, and Frankenberg, C., 2020. Satellite footprint data from OCO-2 and TROPOMI reveal significant spatio-temporal and inter-vegetation type variabilities of solar-induced fluorescence yield in the US Midwest. *Remote Sensing of Environment*, 241, p.111728.

20. Zhang, Z., Zhang, Y., Porcar-Castell, A., Joiner, J., Guanter, L., **Yang, X.**, Migliavacca, M., Ju, W., Sun, Z., Chen, S. and Martini, D., 2020. Reduction of structural impacts and distinction of photosynthetic pathways in a global estimation of GPP from space-borne solar-induced chlorophyll fluorescence. *Remote Sensing of Environment*, 240, p.111722.
21. Wu, G., Guan, K., Jiang, C., Peng, B., Kimm, H., Chen, M., **Yang, X.**, Wang, S., Suyker, A.E., Bernacchi, C.J. and Moore, C.E., 2020. Radiance-based NIRv as a proxy for GPP of corn and soybean. *Environmental Research Letters*, 15(3), p.034009.
22. Yi, K., Smith, J.W., Jablonski, A.D., Tatham, E.A., Scanlon, T.M., Lerdau, M.T., Novick, K.A. and **Yang, X.**, 2020. High Heterogeneity in Canopy Temperature Among Co-occurring Tree Species in a Temperate Forest. *Journal of Geophysical Research: Biogeosciences*, 125(12), p.e2020JG005892.
23. Magney, T.S., Barnes, M.L. and **Yang, X.**, 2020. On the covariation of chlorophyll fluorescence and photosynthesis across scales. *Geophysical Research Letters*, 47(23), p.e2020GL091098.
24. Carter, K.R., Wood, T.E., Reed, S.C., Schwartz, E.C., Reinsel, M.B., **Yang, X.**, and Cavaleri, M.A., 2020. Photosynthetic and respiratory acclimation of understory shrubs in response to in situ experimental warming of a wet tropical forest. *Frontiers in Forests and Global Change*, 3, pp.765-785.
25. Miao, G., Guan, K., Suyker, A.E., **Yang, X.**, Arkebauer, T.J., Walter-Shea, E.A., Kimm, H., Hmimina, G.Y., Gamon, J.A., Franz, T.E. and Frankenberg, C., 2020. Varying contributions of drivers to the relationship between canopy photosynthesis and far-red Sun-induced fluorescence for two maize sites at different temporal scales. *Journal of Geophysical Research: Biogeosciences*, 125(2), p.e2019JG005051.
26. Li, Z., Zhang, Q., Li, J., **Yang, X.**, Wu, Y., Zhang, Z., Wang, S., Wang, H. and Zhang, Y., (2020). Solar-induced chlorophyll fluorescence and its link to canopy photosynthesis in maize from continuous ground measurements. *Remote Sensing of Environment*, 236, p.111420.
27. Stovall, A., Shugart, H., **Yang, X.**, (2019) Tree height explains mortality risk during an intense drought. *Nature Communication*. 10(1), pp.1-6.
28. Raczka, B., Porcar-Castell, A., Magney, T., Lee, J., Kohler, P., Frankenberg, C., Grossmann, K., Logan, B., Stutz, J., Blanken, P., Burns, S., Duarte, H., **Yang, X.**, Lin, J., Bowling, D., (2019) Sustained Non-Photochemical Quenching Shapes the Seasonal Pattern of Solar-Induced Fluorescence at a High-Elevation Evergreen Forest. *Journal of Geophysical Research - Biogeosciences*.
29. **Yang, X.**, Shi, H., Stovall, A., Guan, K., Miao, G., Zhang, Y., Zhang, Y., Xiao, X., Ryu, Y. and Lee, J.E., (2018). FluoSpec 2 —An Automated Field Spectroscopy System to Monitor Canopy Solar-Induced Fluorescence. *Sensors*, 18(7), 2063.
30. Yang, K., B. Dechant, J., Berry, Hwang, Y., Jiang, C., Kang, M., Kim, J., Kimm, H., Kornfeld, A., **Yang, X.** (2018). Sun-induced chlorophyll fluorescence is more strongly related to absorbed photosynthetically active radiation than gross primary productivity in a rice paddy. *Remote Sensing of Environment*. 216, 658-673.
31. Miao, G., Guan, K., **Yang, X.**, Bernacchi, C.J., Berry, J.A., DeLucia, E.H., Wu, J., Moore, C.E., Meacham, K., Cai, Y. and Peng, B., (2018). Sun-induced Chlorophyll Fluorescence, Photosynthesis, and Light Use Efficiency of a Soybean Field from Seasonally Continuous Measurements. *Journal of Geophysical Research: Biogeosciences*, 123(2), 610-623.

32. Zhang, Y., Xiao, X., Zhang, Y., Wolf, S., Zhou, S., Joiner, J., Guanter, L., Verma, M., Sun, Y., **Yang, X.** and Paul-Limoges, E., (2018). On the relationship between sub-daily instantaneous and daily total gross primary production: Implications for interpreting satellite-based SIF retrievals. *Remote Sensing of Environment*, 205, 276-289.
33. Liu, L., **Yang, X.**, Zhou, H., Liu, S., Zhou, L., Li, X., ... & Wu, J. (2018). Evaluating the utility of solar-induced chlorophyll fluorescence for drought monitoring by comparison with NDVI derived from wheat canopy. *Science of The Total Environment*, 625, 1208-1217.
34. Yang, H., **Yang, X.**, Heskell, M., Sun, S., & Tang, J. (2017). Seasonal variations of leaf and canopy properties tracked by ground-based NDVI imagery in a temperate forest. *Scientific reports*. 7(1), 1267.
35. Yang, H., **Yang, X.**, Y. Zhang, M. A. Heskell, X. Lu, J. W. Munger, S. Sun, and J. Tang. (2017) Chlorophyll fluorescence tracks seasonal variations of photosynthesis from leaf to canopy in a temperate forest. *Global Change Biology*. 23(7), 2874-2886.
36. Wu, J., C. Chavana-Bryant, N. Prohaska, S. Serbin, K. Guan, L. Albert, **Yang, X.**, ..., and S. Saleska. (2017) Convergence in relations among leaf traits, spectra and age across two contrasting tropical forests. *New Phytologist*. 214(3), 1033-1048.

Published peer-review articles before UVA

37. Zhang, Y., L. Guanter, J. A. Berry, C. van der Tol, **X. Yang**, J. Tang, and F. Zhang. (2016) Model-based analysis of the relationship between sun-induced chlorophyll fluorescence and gross primary production for remote sensing applications. *Remote Sensing of Environment* 187:145-155.
38. Tang J, C. Korner, H. Muraoka, S. Piao, M. Shen, S.J. Thackeray, **X. Yang**, (2016) Emerging opportunities and challenges in phenology: a review. *Ecosphere*, 7.
39. **Yang, X.**, J. Tang, J. Mustard et al., Seasonal variability of multiple leaf traits captured by leaf spectroscopy at two temperate deciduous forests. *Remote Sensing of Environment.*, 179, 1-12.
40. Chen, J., Rao, Y., Shen, M., Wang, C., Zhou, Y., Ma, L., Tang, Y., **X. Yang**, (2016). A Simple Method for Detecting Phenological Change From Time Series of Vegetation Index. *IEEE Transactions on Geoscience and Remote Sensing*, 54(6),1-14
41. **Yang, X.**, J. Tang, J.F. Mustard, J-E. Lee, M. Rossini, J. Joiner, J.W. Munger, A. Kornfeld, and A.D. Richardson (2015), Solar-induced chlorophyll fluorescence that correlates with canopy photosynthesis on diurnal and seasonal scales in a temperate deciduous forest. *Geophysical Research Letters*. 42, 2977–2987. doi: 10.1002/2015GL063201. [News coverage: Brown University, Marine Biological Laboratory, Science360, Department of Energy, Phys.org, Optics and Photonics News, Environmental News Network, BioPhotonics]
42. Lee, J-E, J. Berry, C. van der Tol, **X. Yang**, L. Guanter, A. Damm, I. Baker, C. Frankenberg (2015), Simulations of chlorophyll fluorescence incorporated into the Community Land Model version 4. *Global Change Biology*, 21: 3469–3477. doi: 10.1111/gcb.12948.
43. Xu, H., T. Twine, **X. Yang** (2014), Evaluating Remotely Sensed Phenological Metrics in a Dynamic Ecosystem Model. *Remote Sensing*. 6: 4660-4686.

44. Huang, Q., **X. Yang**, B. Gao, Y. Yang, Y. Zhao. (2014), Application of DMSP/OLS Nighttime Light Images: A Meta-Analysis and a Systematic Literature Review. *Remote Sensing*. 6: 6844-6866.
45. **Yang, X.**, J. Tang, J. Mustard (2014), Beyond leaf color: comparing camera-based phenological metrics with leaf biochemical, biophysical and spectral properties throughout the growing season of a temperate deciduous forest. *Journal of Geophysical Research-Biogeosciences.*, 119, 181–191, doi:10.1002/2013JG002460. [News coverage: Brown University; Marine Biological Lab; Vineyard Gazette] [Most accessed paper in April 2014 in JGR]
46. Shen, M., Y. Tang, J. Chen, **X. Yang**, C. Wang, X. Cui, Y. Yang, L. Han, J. Du, G. Zhang, S. Piao, L. Li (2014), Earlier-season vegetation has greater temperature sensitivity of spring phenology in Northern Hemisphere. *PloS one*. 9(2), e88178.
47. **Yang, X.**, J. Mustard, J. Tang, and H. Xu (2012), Regional-scale phenology modeling based on meteorological records and remote sensing observations, *Journal of Geophysical Research-Biogeosciences*, 117(G3), G03029.
48. Zhao, L., J. Wu, A. Lv, M. Liu, **X. Yang**, and B. He, (2010), Vegetation responses to precipitation in Beijing-Tianjin sand source region. *Journal of Beijing Normal University*, 46(5).
49. Cao, G., P. Hou, J. Fan, and **X. Yang**, (2010), VSWI Retrieved and Compared between TM and MODIS. *Remote sensing technology and application*, 25(1): 63-68.
50. **Yang, X.**, J. Wu, F. Yan, and J. Zhang, (2009), An interpretation of surface temperature/vegetation index space for assessing regional soil moisture status. *Acta Sinica Ecologica*, 29(3): 1205-1216.
51. **Yang, X.**, T. He, P. Shi, and T. Zhou, (2008), Community survey method and risk response strategy with GIS for improving ambient air risk monitoring service in Shenzhen, China. *Journal of Natural Disaster*, 18, 1: 54-61.

VII. Invited presentations

1. **Yang, X.** (2022), Remote sensing of fluorescence. FluxCourse
2. **Yang, X.** (2020), From leaves to ecosystems: what can we learn about plants using novel remote sensing techniques? Duke University.
3. **Yang, X.** (2020), From leaves to ecosystems: what can we learn about plants using novel remote sensing techniques? Cornell University.
4. **Yang, X.** (2019), Remote sensing of fluorescence. FluxCourse
5. **Yang, X.** (2018), Let there be light: solar-induced fluorescence as a tool to understand vegetation photosynthesis. Blandy Experimental Farm.
6. **Yang, X.** (2016), From leaf to landscape: Understanding the terrestrial carbon cycle using novel remote sensing techniques. University of Virginia.
7. **Yang, X.** (2015), Seasonality of plant physiology under changing climate. Carnegie Institute for Science.

8. **Yang, X.** (2014), The times they are a-changin': what can we learn about the seasonality of plant functioning using remote sensing?. Harvard University Herbaria.
9. **Yang, X.** (2013) Regional scale phenological modeling using PhenoCam data. NEON Phenocam Workshop, Boulder, CO.

VIII. Conferences and seminars

1. L Barry, M Miles, E Rekhelman, K Yi, X Yang, E Tatham, TM Scanlon, Observing canopy-scale relationships between ozone flux, conductance, photosynthesis (SIF), and leaf skin temperature. AGU Fall Meeting 2020.
2. R Li, DL Lombardozzi, M Shi, N Parazoo, X Yang. Improving the simulation of the leaf-to-canopy scaling of solar-induced chlorophyll fluorescence in Community Land Model version 5. AGU Fall Meeting 2020.
3. A Jablonski, X Yang, MT Lerdau Biotic and physical mediation of whole-canopy solar-induced chlorophyll fluorescence in eastern deciduous trees. AGU Fall Meeting 2020.
4. Koong, Y., Smith, J., Jablonski, A., ..., **Yang, X.** Species-specific relationship between leaf cooling and transpiration inferred from continuous on-site thermal imaging of tree canopy. AGU Fall Meeting 2019.
5. Pusede, S., Lerdau, M., **Yang, X.**, Lambert, C. New laboratory constraints on ozone uptake, stomatal conductance, and photosynthesis relationships. AGU Fall Meeting 2019.
6. **Yang, X.**, Stovall, A., Helm, L., Euskirchen, E., Parazoo, N., and Yin, Y. (2018) Multi-scale observations of solar-induced chlorophyll fluorescence as a proxy for photosynthesis. Workshop on the Arctic Greening and Browning 2018.
7. **Yang, X.**, Stovall, A., Shi, H., Helm, L., and Lerdau, M. (2018) Multi-scale observations of solar-induced chlorophyll fluorescence as a proxy for photosynthesis. Ecological Society of America 2018.
8. Stovall, A., Maini, R., Nardacci, R., Shi, H., Shugart, H., **Yang, X.**, (2018) Seasonal structure-function interactions: fusing solar induced fluorescence and terrestrial LiDAR for holistic ecosystem measurement. ForestSAT 2018.
9. Stovall, A., **Yang, X.**, Shugart, H., Khuu, A., Smith, J. (2018) Widespread tree mortality mapping suggests size-dependent risk for extreme drought stress. ForestSAT 2018.
10. Helm, L., Lerdau, M., Wang, W. and **Yang, X.** (2017), Measuring Photosynthetic Response to Drought Stress using Active and Passive Fluorescence. *American Geophysical Union Fall meeting*, New Orleans, USA.
11. H. Epstein, U. Bhatt, D. Walker, M. Raynolds and **Yang, X.**, (2017), ARCTIC TUNDRA GREENING AND BROWNING AT CIRCUMPOLAR AND REGIONAL SCALES. *American Geophysical Union Fall meeting*, New Orleans, USA.
12. Raczka, B., Bowling, D., Lin, J., Lee, J.E., **Yang, X.**, Duarte, H., and Zuromski, L. (2017), Simulating Canopy-Level Solar Induced Fluorescence with CLM-SIF 4.5 at a Sub-Alpine Conifer Forest in the Colorado Rockies. *American Geophysical Union Fall meeting*, New Orleans, USA.

13. Moore, K., Meacham, K., Miao, G., Pederson, T., Montes, C., **Yang, X.**, Guan, K., Bernacchi, C. (2017), Linking solar induced fluorescence with genetic variability in productivity of biomass sorghum. *American Geophysical Union Fall meeting*, New Orleans, USA.
14. **Yang, X.**, Lee, J.E., (2016), The shifting seasonality of productivity in California during the 2015 drought. *American Geophysical Union Fall meeting*, San Francisco, USA.
15. Kellner, J., Cushman, K., Kendrick, J., Silva, C., Wiseman, S., **Yang, X.**, (2015), A framework to quantify the determinants of canopy photosynthesis and carbon uptake using time series of chlorophyll fluorescence. *American Geophysical Union Fall meeting*, San Francisco, USA.
16. Silva, C., Cushman, K., Wiseman, S., **Yang, X.**, Kellner, J., (2015), Simultaneous Measurement of Leaf and Whole-Canopy Solar-Induced Fluorescence using Very-High-Resolution Imaging Spectroscopy. *American Geophysical Union Fall meeting*, San Francisco, USA.
17. **Yang, X.**, J. Tang, J. Mustard, K. Zhao, (2013), Seasonal variations of leaf spectra in relation with leaf biochemical and biophysical properties. *American Geophysical Union Fall meeting*, San Francisco, USA.
18. **Yang, X.** (2013) The times they are a-changin': monitoring and modeling of vegetation phenology under changing climate. Graduate Climate Change Conference 2013, Woods Hole Oceanographic Institution, Woods Hole, MA.
19. **Yang, X.** (2013) The times they are a-changin': monitoring and modeling of vegetation phenology under changing climate. The Ecosystem Center Seminar, Marine Biological Laboratory, Woods Hole, MA.
20. **Yang, X.**, J. Tang, J. Mustard, J. Schmitt, K. Laushman, S. Hackley, (2012), Linking the near-surface camera-based phenological metrics with leaf chemical and spectroscopic properties. *Phenology 2012 meeting*. Milwaukee, WI. [Won a \$500 student travel grant]
21. **Yang, X.**, J. Mustard, J. Tang, (2011), Regional scale budburst and senescence modeling based on meteorological records and remote sensing observations. *The 96th Ecological Society of America Annual Meeting*, Austin, TX.
22. Tang, J., T. Savas, S. Hackley, **X. Yang**, J. Melillo, S. Peline, and A. Ellison, (2011), How do soil respiration and its sensitivity to temperature change with different warming experiments? *The 96th Ecological Society of America Annual Meeting*, Austin, TX.
23. **Yang, X.**, H. Xu, Q. Huang, W. Fang, P. Shi, (2009), Study of impact of urbanization on vegetation phenology using multi-source data – a case study of Beijing Metropolitan Area. *1st International Young Ecologist Forum*, Lanzhou University, Lanzhou, China.
24. **Yang, X.**, J. Tang, (2009), Regional Reforestation and Afforestation in Northern China: a Remote Sensing Perspective. *Workshop on Socioeconomic and Ecological Effects of Regional Reforestation and Afforestation in Northern China*. Environmental Center, Chinese Academy of Science, Beijing, China.

IX. Teaching

1. Advanced Remote Sensing, University of Virginia. 2017-

2. Terrestrial Ecology, University of Virginia. 2017-
3. Introduction to Remote Sensing, University of Virginia. 2017-
4. Remote Sensing Seminar, University of Virginia. 2016-
5. Teaching Assistant, Brown University, GE132 Introduction to Geographic Information Systems 2010
6. Graduate Mentor, Harvard Forest, Harvard Forest REU Program 2012
7. Mentor, Marine Biological Laboratory REU Program 2011,2012,2013
8. Mentor, Woods Hole Partnership Education Program (PEP) 2011, 2012
9. Mentor, Undergraduate student at Brown University: Eugene Robinson, Monica Caparas
10. Lecturer, Global Water Cycle, Global Environmental Remote Sensing

X. Research Advising

Postdoctoral Researcher

- Dr. Jongmin Kim; 2022.4 -
- Dr. Atticus Stovall; 2018.1 - 2018.12. Tree mortality analysis using remote sensing. Ground-based solar-induced fluorescence. (Assistant Professor at the University of Maryland, College Park)
- Dr. Koong Yi; 2019.1 - 2021.8. Ground-based solar-induced fluorescence, thermal remote sensing, water-use efficiency. (Postdoctoral researcher at Ameriflux)
- Dr. Elliott White; 2020.1 - 2021.12. Coastal remote sensing and the impact of sea-level rise and salt-water intrusion. (Assistant Professor at Stanford University)

Graduate Students

- Henry Yeung; 2022.8 - .
- Kelsey Huelsman; 2021.6 - . Remote sensing of invasive species.
- Wayne Dawson; 2021.6 - . Boreal forest photosynthesis.
- Andrew Jablonski; 2018.6 - . Drone-based remote sensing of vegetation photosynthesis.
- Rong Li, 2019.8 - . Radiative transfer of vegetation canopy.
- Hannah Mast, 2019.8 - . Carbon Cycle of Salt Marsh.
- Hanyu Shi; 2017.6 - 2018.6.
- Chris So; 2018.6 - 2019.6.

Undergraduate Students

- Audrey Root, 2021.9 - . Canopy traits, structure, and LiDAR.

- Carmen Petras, 2021.6 - . Canopy traits, structure, and LiDAR.
- Karis Roberts, 2019.10 - 2020.06. Remote sensing of canopy traits.
- Jake Smith, 2017.9 - 2020.6. Distinguished Major Program. Sap flow measurement and thermal remote sensing.
- Benjamin Masters., 2019.3 - 2020.6. Distinguished Major Program. Drone remote sensing of forest structure
- Levi Helm; 2017.1 - 2018.6. Distinguished Major Program. Highest Honorary Degree in Department of Environmental Sciences at University of Virginia. Using solar-induced fluorescence as a tool to monitor drought response.
- Madeline Reinsel; 2017.1 - 2018.6. Distinguished Major Program. Photosynthetic responses to warming in the tropical forest.
- Bailey Castello, 2018.3 - Working on the Distinguished Major Program. Drone-based vegetation phenology.
- Rahat Maini. 2016.10 - . Drone-based remote sensing, and high resolution remote sensing image analysis.
- Annie Khuu. 2016.9 - 2017.9. Tree mortality analysis using remote sensing data.
- Nihaal Rahman. 2017.9 - 2018.6. Thermal remote sensing.
- Khalil Sekander. 2017.9 - 2018.6. Land use classification.
- Eric Jess. 2017.9 - 2018.6. USOAR program.

XI. Service

Departmental Committee

- Chair of the search committee for the joint EVSC-SDS faculty hire, 2022.
- Department Award Committee Chair, 2021-.
- Chair of the search committee for general faculty in Plant Ecology, 2021.
- Graduate Academic Review Committee, 2020-
- Department Award Committee, 2019-.
- Graduate Admission Committee. 2016-2018.
- Department Seminar Chair, 2016-2018.
- Search Committee (Research scientist in Atmospheric science). 2017

External Committee

- North American Carbon Program Meeting 2017 Organizing Committee.
- Fluxcourse organizing committee and instructor. 2018-.

- NEON Foliar Sampling Working Group. 2018-2022.
- SPEC School Guidance Team. 2022-.

PhD & Masters committee

- Runze Zhang, Ph.D. student in Engineering System and Environment.
- Elise Heffernan, Ph.D. student in Environmental Sciences.
- Yuan Li, Ph.D. student in Environmental Sciences.
- Huiyu Liu, Ph.D. student in Environmental Sciences.
- Cate Porter, M.S. student in Environmental Sciences.
- Laura Barry, Ph.D. student in Environmental Sciences.
- Cal Buelo, Ph.D. student in Environmental Sciences.
- Allie Parisien, Ph.D. student in Environmental Sciences.
- Jacob Malcomb, Ph.D. student in Environmental Sciences.
- Angelique Demitello. Ph.D. student in Environmental Sciences.
- Clare Rodenberg. Ph.D. student in Environmental Sciences.
- Zane Havens. Ph.D. student in Environmental Sciences.
- Israel Agorsor, Ph.D. student in Biology.
- Rouyou (Roy) Zhang, Ph.D. Student in Environmental Sciences.
- Kelsey Huelsman, Ph.D. Student in Environmental Sciences.
- Zane Havens, Ph.D. Student in Environmental Sciences.
- Elise Heffernan, Ph.D. student in Environmental Sciences.
- Emily Ury, Ph.D. student (Duke University).

XII. Reviews

- Journals: Journal of Plant Ecology (2012), International Journal of Remote Sensing (2013 x5, 2015, 2016), Remote Sensing of Environment (2014, 2016 x2, 2017 x2, 2018 x2, 2019 x6, 2020 x4, 2021, 2022), Science of Remote Sensing (2020), Climatic Change Letters (2014), Biogeosciences (2014, 2020 x2), Journal of Geophysical Research - Biogeosciences (2015, 2017, 2019 x2, 2020, 2022), International Journal of Climatology (2015), International Journal of Biometeorology (2015), Geoscientific Model Development (2015, 2020 x2), Agriculture and Forest Meteorology (2016 x3, 2017, 2019), Geophysical Research Letters (2016, 2017 x2, 2018 x3), Global Change Biology (2017, 2022x2), Science of Total Environment (2017), New Phytologist (2018 x2, 2019 x2, 2021), Remote Sensing (2018), Ecological Applications (2018), Environmental Research Letters (2018), PLOS One (2018), ISPRS journal of Photogrammetry and Remote Sensing (2019 x2), Wetland (2019), PNAS (2019), Nature Ecology Evolution (2020).

- Ad hoc reviewer: Fonds de recherche du Québec - Nature et technologies (2017); NSF (2017-2021); DOD (2017); UK-NERC (2021); DOE (2021).
- Panelist: NASA (2017, 2018, 2019); NSF(2020, 2021, 2022); DOE (2019)

XIII. Professional Organizations

1. American Geophysical Union
2. Sino-Eco (Sino-Ecologists Association Overseas)
3. Ecological Society of America