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Distinguished Staff Fellow

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RESEARCH INTERESTS

I am a broadly trained ecosystem ecologist and remote sensing scientist studying climate change impacts terrestrial ecosystems. The overarching goal of my research is to integrate Earth observations, ecological theories, and process models to advance our understanding of the interconnections between ecosystem dynamics and climate change. My research combines a diversity of approaches from ecology, remote sensing, biogeography, and numerical modeling, and develops cutting-edge technologies to monitor plant ecosystems across scales, improve model representation of vegetation function, biophysical processes, and structure, as well as evaluate model predictions.

EDUCATION

2017 - 2023 **Ph.D. in Ecology and Evolution**; Stony Brook University, Stony Brook, NY; Brookhaven National Laboratory, Upton, NY, USA.

2014 - 2017 **M.S. in Global Environmental Change**, Beijing Normal University, Beijing, China

2010 - 2014 **B.S. in Surveying and Mapping Engineering**, Central South University, Changsha, China

PROFESSIONAL APPOINTMENTS

Distinguished Staff Fellow, Oak Ridge National Laboratory. Since 2024

NASA FINESST Fellow, Stony Brook University, Brookhaven National Laboratory. 2022-2023

Research Assistant, Stony Brook University, Brookhaven National Laboratory. 2018-2022

Research assistant on Department of Energy's Next Generation Ecosystem Experiment Arctic project supervised by Dr. Shawn Serbin

Teaching Assistant, Stony Brook University 2017-2018

Teaching assistant on Landscape Ecology for Dr. Resit Akcakaya

Teaching assistant on Biology for Dr. John True and Ross Nehm

PUBLICATIONS

In Review, Revision, or Preparation

Gu, Y., Wu, Z, Detto, M., Wang, J., Zhao, Y., **Yang, D**., Yang, X., Wu, J. Improving leaf spring phenology modeling for temperate tree species: An integration of the Farquhar-Medlyn photosynthesis model with the optimality-based approach. Global Change Biology (In review)

Wang, X., Guo, Z., Zhang, K., Fu, Z., Lee, C.K.F., **Yang, D**., Detto, M., Ryu, Y., Zhang, Y., Wu, J. Evaluating the sensitivity of satellite-derived gross primary productivity to combined atmospheric dryness and soil water deficit. Geophysical Research Letters (In revision).

Yang, D., Hantson, W., Morrison, B.D., Davidson, K.J., Lamour, J., Salmon, V.G., Charles, E. M., Rogers, A., Serbin, S.P. Environmental Controls of Alnus and Salix Tall Shrub Distribution in Shrub Tundra Ecosystems in Western Alaska. JGR Biogeosciences. (In revision).

Frost, G.V., Bhatt, U.M., Macander, M.J., Berner, L.T., Bartsch, A., Bjerke, J.W., Epstein, H, E… **Yang, D**., The Changing Face of the Arctic: Four Decades of Greening and Implications for Tundra Ecosystems. Fronters in Environmental Sciences (In review)

Liu, Z., Feng Y., Cao X., Phnuelas, A., **Yang D.,** Cheung, KK., Liu S., Lin Z., Liu X., Wu S., Ma H., Li W., Xia H., Jin S., Liang S., Liu L., Liu L., Su Y., Chen., Wu. Scalable mapping of shrub fractional

abundance in arid and semi-arid ecosystems in China using machine learning on Google Earth imagery and Sentinel-2 time-series data. Remote Sensing of Environment (In review)

Orndahl M.O., Berner L.T., Macander M.J., Arndal M.F., … **Yang D**., … Virkkala A.M., Goetz S.J. Remote Sensing of Environment (In review)

Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Lara, M.J., Magnússon R.Í., Montesano, P.M, Phoenix, G.K., Serbin, S.P., Tømmerik, H., Waigl, C., Walker, D.A., and **Yang, D**. Tundra Greenness. Arctic Report Card 2024 (In review)

Shuman I., Serbin, S.P., Erb, A., Schaaff, C., **Yang, D**. Fine-scale Vegetation Composition and Structure Drives Variation in Spatial and Temporal Dynamics of Surface Albedo in Low Arctic Tundra. (In preparation, Target Journal: Environmental Research Letters)

Julien, L., Serbin Sp., Alistair R., Davidson K., **Yang D**., … Barbier N., Croft H., Global Spectra-Trait Initiative: Introducing a repository for paired leaf reflectance and leaf photosynthetic trait data — starting with photosynthetic traits. (In preparation, Target Journal: EGU Biogeosciences)

Miller C.E., Green R.O., Thompson D.R., Thorpe A., Eastwood M.L., Mccubbin I.B., Oslon-Duvall W., Bernas M.A., … **Yang D**., …Myers-Smith I., Goetz S.G., Hoy E., Larsen E., Hodkinson D., Margolis H., Falkowski M., Applejohn A., Griffith P.C., ABoVE Airborne Imaging Spectroscopy Surveys of Arctic and Boreal Alaska and Northwestern Canada, 2017-2023. (In preparation, Target Journal: Nature Scientific Data)

Published

1. **Yang, D**., Hantson, W., McMahon, A., Anderson, J., Hayes, D.J., Wang, J., Wu, J., Serbin S.P. Fine-scale Landscape Characteristics, Vegetation Composition, and Snowmelt Timing Control Phenological Heterogeneity across low-Arctic Tundra Landscapes in Western Alaska. Environmental Research Ecology (Accepted).
2. Hantson, W., Yang, D., Serbin, SP, Fisher, J., Hayes, DJ. Scaling Arctic landscape and permafrost features improves active layer depth modeling. Environmental Research Ecology (Accepted)
3. M. L. Druckenmiller, R. L. Thoman, and T. A. Moon, … **Yang, D**., 2024. The Arctic [in "State of the Climate in 2023"]. Bull. Amer. Meteor. Soc., 105 (8), S277–S330. https://doi.org/10.1175/BAMS-D-24-0101.1
4. Berner, L. T., Orndahl, K. M., Rose, M., Tamstorf, M., Arndal, M. F., Alexander, H. D., Humphreys, E. R., Loranty, M. M., Ludwig, S. M., Nyman, J., Juutinen, S., Aurela, M., Happonen, K., Mikola, J., Mack, M. C., Vankoughnett, M. R., Iversen, C. M., Salmon, V. G., Yang, D., … Goetz, S. J. (2024). The Arctic Plant Aboveground Biomass Synthesis Dataset. Scientific Data, 11(1), 305. https://doi.org/10.1038/s41597-024-03139-w
5. Zhao, Y, Wang, Z., Yan, Z., Moon, M., **Yang, D**., Meng, L., Bucher, S.F., Wang, J., Song, G., Guo, Z., Su, Y., Wu, J. Exploring the role of biotic factors in regulating the spatial variability in land surface phenology across four temperate forest sites. New Phytologist.
6. Lin, Z., Cheng, K. H., **Yang, D**., Xu, F., Song, G., Meng, R., Wang, J., Zhu, X., Ng, M., & Wu, J. (2024). Ecoregion-wise fractional mapping of tree functional composition in temperate mixed forests with sentinel data: Integrating time-series spectral and radar data. *Remote Sensing of Environment*, *304*, 114026. https://doi.org/10.1016/j.rse.2024.114026
7. Song, G., Wang, J., Zhao, Y., **Yang, D**., Lee, C. K. F., Guo, Z., Detto, M., Alberton, B., Morellato, P., Nelson, B., & Wu, J. (2024). Scale matters: Spatial resolution impacts tropical leaf phenology characterized by multi-source satellite remote sensing with an ecological-constrained deep learning model. *Remote Sensing of Environment*, *304*, 114027. https://doi.org/10.1016/j.rse.2024.114027
8. Ely K. **Yang D**., Serbin S P. (2023). ESS-DIVE Unoccupied Aerial Systems (UAS) Reporting Format v1. Environmental Systems Science Data Infrastructure for a Virtual Ecosystem (ESS-DIVE), ESS-DIVE repository. Dataset. doi:10.15485/2204420 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2204420 on 2024-06-29
9. Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Lara, M.J., Magnússon R.Í., Montesano, P.M, Phoenix, G.K., Serbin, S.P., Tømmerik, H., Waigl, C., Walker,

D.A., and **Yang, D**. 2023. Tundra Greenness. Arctic Report Card 2023, R.L. Thoman, T.A. Moon, and M.L. Druckenmiller (eds.). https://doi.org/10.25923/s86a-jn24

10. Schore, A. I. G., Fraterrigo, J. M., Salmon, V. G., **Yang, D**., & Lara, M. J. (2023). Nitrogen fixing shrubs advance the pace of tall-shrub expansion in low-Arctic tundra. Communications Earth & Environment, 4(1), 421. https://doi.org/10.1038/s43247-023-01098-5
11. **Yang, D**., McMahon, A., Hantson, W., Anderson, J., & Serbin, S. P. (2023). PiCAM: A Raspberry Pi-based open-source, low-power camera system for monitoring plant phenology in Arctic environments. Methods in Ecology and Evolution. https://doi.org/10.1111/2041-210x.14231
12. Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Lara M.J., Park, T., Phoenix, G.K., Serbin, S.P., Tommervik, H., Walker, D.A., **Yang, D**., 2023. State of the Climate in 2022 – The Arctic. Bulletin of American Meteorological Society. https://doi.org/10.1175/BAMS-D-23-0079.1
13. Wang, J., Song, G., Liddell, M., Morellato, P., Lee, C., **Yang, D**., Alberton, B., Detto, M., Ma, X., Zhao, Y., Yeung, H., Zhang, H., Ng, M., Nelson, B., Heute, A. An ecologically-constrained deep learning model for tropical leaf phenology monitoring using PlanetScope satellites. Remote Sensing of Environment. https://doi.org/10.1016/j.rse.2022.113429
14. **Yang, D**., Morrison, B.D., Hanston, W., McMahon, A., Baskaran, L., Hayes, D.J., Miller, C.E., Serbin, S.P., 2023. Integrating very-high-resolution UAS data and airborne imaging spectroscopy to map the fractional composition of Arctic plant functional types in Western Alaska. Remote Sens Environ 286, 113430. https://doi.org/10.1016/j.rse.2022.113430
15. Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Lara M.J., Park, T., Phoenix, G.K., Serbin, S.P., Tommervik, H., Walker, D.A., **Yang, D**., 2022, NOAA 2022 Arctic Report Card – Tundra Greenness. 10.25923/mhrv-gr76
16. Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Lara M.J., Park, T., Phoenix, G.K., Serbin, S.P., Tommervik, H., Walker, D.A., **Yang, D**., 2022. State of the Climate in 2021 – The Arctic. Bulletin of American Meteorological Society. https://www.ametsoc.org/index.cfm/ams/
17. **Yang, D**., Morrison, B.D., Davidson, K.J., Lamour, J., Li, Q., Nelson, P.R., Hantson, W., Hayes, D.J., Swetnam, T.L., McMahon, A., Anderson, J., Ely, K.S., Rogers, A., Serbin, S.P., 2022. Remote Sensing from Unoccupied Aerial Systems: Opportunities to Enhance Arctic Plant Ecology in a Changing Climate. Journal of Ecology. https://doi.org/10.1111/1365-2745.13976
18. Nelson, P.R., Maguire, A.J., Pierrat, Z., Orcutt, E.L., **Yang, D**., Serbin, S.P., Frost, G.V., Macander, M.J., Magney, T.S., Thompson, D.R., Wang, J., Oberbauer, S.F., Zesati, S.A.V., Davidson, S.J., Epstein, H., Unger, S., Campbell, P.K.E., Carmon, N., Velez-Reyes, M., Huemmrich, K.F., 2022. Remote Sensing of Tundra Ecosystems using High Spectral Resolution Reflectance: Opportunities and Challenges. https://doi.org/10.1002/essoar.10508585.1
19. Frost, G.V., Macander, M.J., Bhatt, U.S., Berner, L.T., Bjerke, J.W., Epstein, H.E., Forbes, B.C., Goetz, S.J., Lara M.J., Park, T., Phoenix, G.K., Serbin, S.P., Tommervik, H., Walker, D.A., **Yang, D**., 2021, NOAA 2021 Arctic Report Card – Tundra Greeness. DOI: 10.25923/8n78-wp73
20. **Yang, D**., Morrison, B.D., Hantson, W., Breen, A.L., McMahon, A., Li, Q., Salmon, V.G., Hayes, D.J., Serbin, S.P., 2021. Landscape-scale characterization of Arctic tundra vegetation composition, structure, and function with a multi-sensor unoccupied aerial system. Environ Res Lett. https://doi.org/10.1088/1748-9326/ac1291
21. Wang, J., **Yang, D**., Chen, S., Zhu, X., Wu, S., Bogonovich, M., Guo, Z., Zhu, Z., Wu, J., 2021. Automatic cloud and cloud shadow detection in tropical areas for PlanetScope satellite images. Remote Sens Environ 264, 112604. https://doi.org/10.1016/j.rse.2021.112604
22. Burnett, A.C., Anderson, J., Davidson, K.J., Ely, K.S., Lamour, J., Li, Q., Morrison, B.D., **Yang, D**., Rogers, A., Serbin, S.P., 2021. A best-practice guide to predicting plant traits from leaf-level hyperspectral data using partial least squares regression. J Exp Bot erab295-. https://doi.org/10.1093/jxb/erab295

23. Liu, X., Guo, L., Cui, X., Butnor, J.R., Boyer, E.W., **Yang, D**., Chen, J., Fan, B., 2021. An Automatic Processing Framework for In Situ Determination of Ecohydrological Root Water Content by Ground-Penetrating Radar. Ieee T Geosci Remote PP, 1–15. https://doi.org/10.1109/tgrs.2021.3065066
24. Burnett, A.C., Serbin, S.P., Lamour, J., Anderson, J., Davidson, K.J., **Yang, D**., Rogers, A., 2021. Seasonal trends in photosynthesis and leaf traits in scarlet oak. Tree Physiol. https://doi.org/10.1093/treephys/tpab015
25. Ely, K.S., Rogers, A., Agarwal, … **Yang, D**., 2021. A reporting format for leaf-level gas exchange data and metadata. Ecol Inform 101232. https://doi.org/10.1016/j.ecoinf.2021.101232
26. **Yang, D**., Meng, R., Morrison, B.D., McMahon, A., Hantson, W., Hayes, D.J., Breen, A.L., Salmon, V.G., Serbin, S.P., 2020. A Multi-Sensor Unoccupied Aerial System Improves Characterization of Vegetation Composition and Canopy Properties in the Arctic Tundra. Remote Sens-basel 12, 2638. https://doi.org/10.3390/rs12162638
27. Wang, J., **Yang, D**., Detto, M., Nelson, B.W., Chen, M., Guan, K., Wu, S., Yan, Z., Wu, J., 2020. Multi-scale integration of satellite remote sensing improves characterization of dry-season green-up in an Amazon tropical evergreen forest. Remote Sens Environ 246, 111865. https://doi.org/10.1016/j.rse.2020.111865
28. Meng, R., **Yang, D**., McMahon, A., Hantson, W., Hayes, D., Breen, A., Serbin, S., 2019. A UAS Platform for Assessing Spectral, Structural, and Thermal Patterns of Arctic Tundra Vegetation. Igarss 2019 - 2019 Ieee Int Geoscience Remote Sens Symposium 9113–9116. https://doi.org/10.1109/igarss.2019.8897953
29. Liu, X., Cui, X., Guo, L., Chen, J., Li, W., **Yang, D**., Cao, X., Chen, X., Liu, Q., Lin, H., 2019. Non-invasive estimation of root zone soil moisture from coarse root reflections in ground-penetrating radar images. Plant Soil 436, 623–639. https://doi.org/10.1007/s11104-018-03919-5
30. Guo, Z., **Yang, D**., Chen, J., Cui, X., 2018. A new index for mapping the 'blue steel tile' roof dominated industrial zone from Landsat imagery. Remote Sens Lett 9, 578–586. https://doi.org/10.1080/2150704x.2018.1452057
31. **Yang, D**., Chen, J., Zhou, Y., Chen, Xiang, Chen, Xuehong, Cao, X., 2017. Mapping plastic greenhouse with medium spatial resolution satellite data: Development of a new spectral index. Isprs J Photogramm 128, 47–60. https://doi.org/10.1016/j.isprsjprs.2017.03.002
32. **Yang, D**., Chen, X., Chen, J., Cao, X., 2017. Multiscale Integration Approach for Land Cover Classification Based on Minimal Entropy of Posterior Probability. Ieee J Sel Top Appl 10, 1105–1116. https://doi.org/10.1109/jstars.2016.2615073
33. **Yang, D**., Sun, S., Chen, J., Liu, X., 2016. Analysis for the spatial and temporal patterns of plasticulture in Shandong province, China with remotely sensed data. 2016 Fifth Int Conf Agro-geoinformatics Agro-geoinformatics 1–4. https://doi.org/10.1109/agro-geoinformatics.2016.7577663
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SHARED DATA PRODUCTS

1. **Yang D**, Serbin S. 2024. Maps of plant functional type (PFT), PFT fractional cover, and uncertainty derived from imaging spectroscopy data, 2019, Teller, Kougarok, and Council, Seward Peninsula. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2441506
2. **Yang D**, Hantson, W. Serbin S. 2024. Maps of land surface phenology derived from PlanetScope data, 2018-2022, Teller, Kougarok, and Council, Seward Peninsula. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2441497

3. **Yang D**; Serbin S (2024): Topography and Functional Traits Control the Distribution of Key Shrub Plant Functional Types in Low-Arctic Tundra: Supporting Data. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2335763 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2335763 on 2024-08-17
4. Serbin S ; Yang D ; Anderson J ; McMahon A (2024): UAS remote sensing (AltaX platform): Red-green-blue (RGB) imagery, thermal infrared (TIR) imagery, and canopy reflectance (Level 0 data), Seward Peninsula, Alaska, 2022. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2382720 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2382720 on 2024-08-17
5. Serbin S ; Yang D ; Anderson J ; McMahon A (2024): UAS remote sensing (AltaX platform): Red-green-blue (RGB) imagery, thermal infrared (TIR) imagery, and canopy reflectance (Level 0 data), Seward Peninsula, Alaska, 2023. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2382719 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2382719 on 2024-08-17
6. **Yang D**; Hanston W; Davidson K; Serbin S (2024): Canopy reflectance spectra and photographs (raw data), Seward Peninsula, Alaska, 2022. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2395958 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2395958 on 2024-08-17
7. Serbin S., **Yang D**., Anderson J., McMahon A. (2024): UAS remote sensing (Autel EVO II platform): Red-green-blue (RGB) imagery and derived products (Level 0-2 data), Seward Peninsula, Alaska, 2023. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2333032 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2333032 on 2024-06-29
8. Serbin S., **Yang D**., Anderson J., McMahon A. (2024): UAS remote sensing (Autel EVO II platform): Red-green-blue (RGB) imagery and derived products (Level 0-2 data), Seward Peninsula, Alaska, 2022. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2333031 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2333031 on 2024-06-29
9. Ely K., **Yang D**., Anderson J., Serbin S P., Rogers A (2024): Plant physiology, shrub size, thaw depth and soil water content, Seward Peninsula, Alaska, 2023. Next-Generation Ecosystem Experiments (NGEE) Arctic, ESS-DIVE repository. Dataset. doi:10.15485/2341585 accessed via https://data.ess-dive.lbl.gov/datasets/doi:10.15485/2341585 on 2024-06-29
10. **Yang D,** Meng, R., McMahon, A., Ely, K., Serbin, S.P. (2024). UAS remote sensing (Osprey platform): Red-green-blue (RGB) imagery, thermal infrared (TIR) imagery, and canopy reflectance, Seward Peninsula, Alaska, 2019. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/2368860.
11. **Yang D,** Meng, R., McMahon, A., Ely, K., Serbin, S.P. (2024). UAS remote sensing (Osprey platform): Red-green-blue (RGB) imagery, thermal infrared (TIR) imagery, and canopy reflectance, Seward Peninsula, Alaska, 2018. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/2368858.
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13. Logan T Berner, Kathleen M Orndahl, Melissa Rose, Mikkel Tamstorf, Marie F Arndal, Heather D Alexander, **Dedi Yang**, Seeta Sistla, Elyn R Humphreys, Michael M Loranty, Sarah M Ludwig, Johanna Nyman, Sari Juutinen, Mika Aurela, Konsta Happonen, Juha Mikola, Michelle C Mack, Mathew R Vankoughnett, Colleen M Iversen, Verity G Salmon, Jitendra Kumar, Paul Grogan, Ryan K Danby,

Neal A Scott, Grace Pold, Johan Olofsson, Matthias B Siewert, Lucas Deschamps, Esther Lévesque, Vincent Maire, Amélie Morneault, Gilles Gauthier, Charles Gignac, Stéphane Boudreau, Anna Gaspard, Alexander Kholodov, M Syndonia Bret-Harte, Heather E Greaves, Donald Walker, Henni Ylänne, Fiona M Gregory, Anders Michelsen, Timo Kumpula, Miguel Villoslada, Miska Luoto, Tarmo Virtanen, Bruce C Forbes, Natalie Baillargeon, Norbert Hölzel, Howard Epstein, Ramona J Heim, Andrew Bunn, Robert M Holmes, Jacqueline K Y Hung, Susan M Natali, Anna-Maria Virkkala, & Scott J Goetz. (2024). The Arctic Plant Aboveground Biomass Synthesis Dataset, Pan-Arctic, 1998-2022. Arctic Data Center. doi:10.18739/A2QJ78081.

14. **Yang, D.**, Serbin, S.P. (2023). UAS remote sensing (3DR SOLO platform): multispectral reflectance, canopy height model, normalized difference vegetation index, Seward Peninsula, Alaska, 2021. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/2205338.
15. **Yang, D.**, Davidson, K.J., Anderson, J., Hanston W., Serbin, S.P. (2023). UAS remote sensing (3DR SOLO platform): multispectral reflectance and normalized difference vegetation index, Seward Peninsula, Alaska, 2022. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/2205336.
16. **Yang, D.**, McMahon, A., Anderson, J., Hanston, W., Ely, K., Serbin, S.P. (2023). Digital camera imagery for vegetation phenology, Seward Peninsula, Alaska, 2021-2022. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1992840.
17. **Yang, D.,** McMahon, A., Anderson, J., Hanston, W., Ely, K., Serbin, S.P. (2024). Digital camera imagery for vegetation phenology, Seward Peninsula, Alaska, 2022-2023. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/2370353.
18. **Yang, D.,** Hantson, W., Hayes, D.J., Serbin, S.P. (2023). UAS remote sensing (DJI Phantom 4 RTK platform): RGB orthomosaic, digital surface and canopy height models, plant functional type map, Seward Peninsula, Alaska, 2019. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1906348.
19. **Yang, D.**, Serbin, S.P. (2023). Integrating Very-High-Resolution UAS Data and Airborne Imaging Spectroscopy to Map the Fractional Composition of Arctic Plant Functional Types in Western Alaska: Supporting Data. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1906278.
20. **Yang, D.**, Ken Davidson., Yanlan Liu., Hantson, W., Serbin, S.P (2023). Leaf area index (LAI), Teller site, Seward Peninsula, Alaska, 2022. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA.
21. Hantson, W., **Yang, D.**, Hayes, D.J., Serbin, S.P. (2023). Thaw depth, soil moisture, and vegetation height, Teller and Kougarok sites, Seward Peninsula, Alaska, 2022. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA.
22. Serbin, S.P., **Yang, D.** (2022). Maps of Arctic vegetation leaf nitrogen concentration, albedo and plant functional type (PFT) derived from imaging spectroscopy data, Council watershed, Seward Peninsula, Alaska, 2019. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. https://doi.org/10.5440/1838174.
23. Serbin, S.P., **Yang, D.**, McMahon, A. (2021). Landscape-scale Characterization of Arctic Tundra Vegetation Composition, Structure, and Function with a Multi-sensor Unoccupied Aerial System: Supporting Data. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. https://doi.org/10.5440/1778212

24. Serbin, S.P., **Yang, D.**, McMahon, A. (2020) A multi-Sensor Unoccupied Aerial System improves characterization of vegetation composition and canopy properties in the arctic tundra: supporting data. Next generation Ecosystem Experiments - Arctic data collection, Oak ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. https://doi.org/10.5440/1647365.
25. Serbin, S.P., Meng, R., McMahon, A., Hanston, W., Hayes, D.J., **Yang, D.**, Ely, K., Rogers, A. (2021). Full Spectrum (350 - 2500 nm) Leaf and Canopy Spectral Reflectance, Seward Peninsula, Alaska, 2017. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1783190.
26. Serbin, S.P., Ran Meng., McMahon, A., **Yang, D.**, Ely, K., Rogers, A. (2021). Leaf Nitrogen, Leaf Mass Area, Leaf Water Content, Seward Peninsula, Alaska, 2017. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1783188.
27. Serbin, S.P., **Yang, D.**, Ely, K. 2021. Full spectrum (350-2500 nm) canopy spectral reflectance, Seward Peninsula, Alaska, (2018). Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1783191.
28. Serbin, S.P., Rogers, A., **Yang, D.**, Davidson, K.J., Ely, K. (2021). Leaf structural and chemical traits, and vegetation temperature and height, Seward Peninsula, Alaska, 2019. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1783192.
29. Serbin, S.P., **Yang, D.**, Ely, K. (2021). Full spectrum (350-2500 nm) leaf and canopy spectral reflectance, Seward Peninsula, Alaska, 2019. Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1783193.
30. Serbin, S.P., **Yang, D.**, Ely, K. 2020. Leaf Nitrogen and Carbon Content, and Leaf Mass Per Area, Kougarok Road, Seward Peninsula, Alaska, (2018). Next Generation Ecosystem Experiments Arctic Data Collection, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tennessee, USA. Dataset accessed on [INSERT_DATE] at https://doi.org/10.5440/1631419.

PRESENTATIONS

Invited Talks

Yang. D (2024) Disturbance-driven Ecosystem Transition and Impacts at High Latitudes, Early Career Development Program, Oak Ridge National Laboratory.

Yang. D (2024) Connecting Field, Unoccupied Aerial Systems, and Airborne Data for Arctic Research: The Good, the Bad, the Ugly. ORNL DAAC User Group Member Workshop

Yang, D (2024) Understanding the Complexity of Arctic Ecosystem Change: Improve Arctic Ecology and Process Modeling with Multi-scale Remote Sensing. NGEE Arctic Seminar Series.

Yang, D (2023). Understanding the Complexity of Arctic Ecosystem Change: Improve Arctic Ecology and Process Modeling with Multi-scale Remote Sensing. Environmental and Climate Science Department Seminar, BNL.

Yang, D (2022). Integrating field observations and multiscale remote sensing to understand arctic tall shrub distribution. Environmental System Science Program – Principal Investigator (ESS-PI) Meeting.

Yang, D (2022). From Site to Biome: Vegetation Distribution, Traits and Environmental Filtering in the Arctic. Dr. Mow Lin Award Ceremony at BNL.

Yang, D (2021). Integrating Very-High-Resolution UAS and Hyperspectral Airborne Data to Estimate the Fractional Cover of Arctic Plant Functional Types in Western Alaska. NASA's Surface Biology and Geology (SBG) Community Workshop.

Yang, D (2020). Remote Sensing of Plant Biodiversity and Traits in the Arctic Tundra. Department of Energy's Remote Sensing -Trait project Meeting.

Yang, D (2019). From plot to pixel: scaling up vegetation spectral and biophysical properties in western Alaska. The American Geophysical Union (AGU) Fall Meeting

Conference Oral Presentations

Yang, D (2024). Harnessing the Power of UASs for Mapping Plant Aboveground Biomass across the Arctic. NGEE Arctic Allhands Meeting, Anchorage, Alaska.

Yang, D (2023). From Pixel to Ecosystem: Understanding Shrubification and Vegetation Dynamics in Arctic Tundra across Scales. Defense Public Talk, Stony Brook University.

Yang, D (2022). Monitoring Arctic Plant Phenology across Scales: The good, The bad, and The Ugly. Department of Energy (DOE)'s Next Generation Ecosystem Experiment project AllHands Meeting. Rising Leaders.

Yang, D (2022). A Multi-Sensor Unoccupied Aerial System Improves Characterization of Vegetation Composition, Structure, and Function in the Arctic Tundra. Environmental System Science Program – Principal Investigator (ESS-PI) Meeting.

Yang, D (2022). Integrating field observations and multiscale remote sensing to understand arctic tall shrub distribution. Department of Energy (DOE)'s Next Generation Ecosystem Experiment project AllHands Meeting.

Yang, D (2021). Integrating field observations and multiscale remote sensing to understand arctic tall shrub distribution. The American Geophysical Union (AGU) Fall Meeting.

Yang, D (2021). Multi-scale remote sensing of plant biodiversity and functional traits in the Arctic tundra. Department of Energy (DOE)'s Next Generation Ecosystem Experiment project AllHands Meeting. Rising Leaders.

Yang, D (2016). Analysis for the spatial and temporal patterns of plastic-covered agriculture in handong province, China with remotely sensed data. The 5th International Conference on Agro-Geoinformatics.

Yang, D (2015). A Multi-scale integration approach for land cover classification based on minimal entropy of posterior probability. International Society for Photogrammetry and Remote Sensing (ISPRS) Workshop on Mobility and Land Cover Change Mapping.

Yang, D (2015). An integrated pixel-based and object-based method for land cover mapping. The 23th International Conference on Geoinformatics (CPGIS). (Best oral presentation).

Conference Poster Presentations

Yang, D (2024). Fine-scale Landscape Characteristics, Vegetation Composition, and Snow Timing Control Phenological Heterogeneity across Arctic Tundra Landscapes. Arctic-Boreal Vulnerability Experiment (ABoVE) Science Team Meeting.

Yang, D (2023). Characterizing Fine-scale Landscape Controls on Patterns of Arctic Plant Phenology using High-resolution Remote Sensing. Environmental System Science Program – Principal Investigator (ESS-PI) Meeting.

Yang, D (2023). Tall shrub species distribution in the Arctic: patterns, drivers, and limits. Arctic-Boreal Vulnerability Experiment (ABoVE) Science Team Meeting.

Yang, D (2020). Using imaging spectroscopy to predict fractional cover of twelve Arctic plant functional types in western Alaska. Arctic-Boreal Vulnerability Experiment (ABoVE) Science Team Meeting.

Yang, D (2021). High throughput UAS remote sensing improves characterization and scaling-up of vegetation property and diversity in Arctic tundra systems. Department of Energy (DOE)'s Next Generation Ecosystem Experiment project AllHands Meeting.

Yang, D (2019). Characterizing plant canopy properties in the Arctic biome with a novel multi-senor unmanned aerial system. The 21st William T. Pecora Memorial Remote Sensing Symposium (Pecora 21) and the 38th International Symposium on Remote Sensing of Environment (ISRSE-38) Conference. (Best poster presentation)

Yang, D (2018). Experimental warming in the Arctic can alter vegetation phenology. Brookhaven National Lab Early Career Researcher Symposium.

PROJECTS INVOLVED

- Disturbance-driven ecosystem transition and impacts at high latitudes (**PI**) Since 2024
- DOE's Next-Generation Ecosystem Experiment in the Arctic (NGEE-Arctic; **Task Lead**) Since 2018
- Future Investigators in NASA Earth and Space Science and Technology (FINESST) Award to Daryl Yang (**FI**) Since 2022
- Understanding the patterns and mechanisms of Alder shrub expansion in Arctic tundra using dendrochronology and very-high-resolution UAS remote sensing (Co-I) Since 2023
- NASA's Arctic Boreal Vulnerability Experiment (ABoVE). Since 2018
- Defense Advanced Research Projects Agency Project Awarded to BNL 2018 – 2019
- DOE's Next-Generation Ecosystem Experiment – Tropics (NGEE-Tropics). 2018 – 2019
- The Global Land Surface Satellite (GLASS) Products Project. 2014 – 2017

FELLOWSHIPS AND AWARDS

Department of Energy's NGEE-Arctic project Early Career Excellence Award 2022
Future Investigator in NASA Earth and Space Science and Technology ($98,800). 2022
BNL S&P fund ($1500) 2022
BNL Dr. Mow Shiah Lin Scholarship ($2000) 2021
John Dunn Award, Stony Brook University ($500) 2021
1st place for PECORA 21/ISRSE 38 Conference, USGS & NASA ($150) 2019
Professional Development Fund, Stony Brook University ($270) 2019
Recruitment Fellowship, Stony Brook University ($2000) 2017
"Zhou Ting Ru" Academic Excellence Award, Beijing Normal University ($1800) 2017
First Academic Scholarship Beijing Normal University ($2000) 2014–2017
Excellent Graduation Thesis, Central South University 2014
National Undergraduate Scholarship, Ministry of Education of China ($1500) 2010–2014

COLLABORATORS AND CO-EDITORS

Iversen, C (ORNL); Serbin, S (NASA Goddard); Miller, C (NASA JPL); Hayes, D (UM), Wu, J (HKU), Feldman A (NASA Goddard), Liu, Y (OSU); Frost, J (ABR); Townsend P (UW-Madison); Breen, A (UAF); Wang, J (HKU), Salmon (ORNL); Hantson, W (UM), Nelson, P (UM), Morrison, B (UC Merced), Rogers, A (BNL), Lara, M (UIUC), Members of the DOE NGEE-Arctic (www.ngee-arctic.ornl.gov), Members of the NASA ABoVE project (https://above.nasa.gov/)

SCIENCE SERVICE, COORDINATION & COMMUNICATION

Guest Editor for Environmental Research Ecology, Focus on Remote Sensing Scaling for Advancing Arctic Ecology Research.
Reviewer for Global Change Biology, Remote Sensing of Environment, New Phytologist, Global Ecology and Biogeography, Earth's Future, Agricultural and Forest Meteorology, ISPRS Journal of Photogrammetry and Remote sensing, International Journal of Applied Earth Observation and Geoinformation, Polar Research, Geoscience and Remote Sensing, Environmental Research Letters.
Co-lead of the Terrestrial Ecosystem Community of Practice for Interagency Arctic Research Policy Committee (IARPC) Since 2023
User Group Advisor of ORNL Distributed Active Archive Center (DAAC) Since 2024
Author of BAMS's State of the Climate Report – Tundra Greenness 2022 - 2023
Author of NOAA's Arctic Report Card – Tundra Greenness 2021 - 2022
Member of NASA's Arctic Boreal Ecosystem Vulnerability Experiment (ABoVE) Since 2022
Member of NASA ABoVE's Spectra Imaging Working Group Since 2019
Member of NASA ABoVE's Disturbance Working Group Since 2022

Member of The American Geophysical Union	Since 2016
Member of The Ecology Society of America	Since 2017
Member of Research Data Alliance	Since 2022
Committee Member for NGEE-Arctic “Ecosystem Type” workshop	2020
Mentor for DOE’s Science Undergraduate Laboratory Internship program	2019, 2022

DOE’s Science Highlight: Drone Flights Give Scientists Better Data on Vegetation in the Arctic Tundra