Lucas Johnson

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Education

State University College of Environmental Science and Forestry **Syracuse, New York**
Doctor of Philosophy in Environmental Science *Aug 2019 - May 2024 (exp)*
- Dissertation: *Mapping forest aboveground biomass stocks and changes to facilitate natural climate solutions in New York State*

Tufts University **Boston, Massachusetts**
Bachelor of Science in Computer Science *Aug 2013 - May 2017*

Publications

In Review

2023: Mahoney, M.J., **Johnson, L.K.,** Silge, J., Frick, H., Kuhn, M., and Beier, C. M. Assessing the performance of spatial cross-validation approaches for models of spatially structured data. In review at Environmental Modelling & Software. https://doi.org/10.48550/arXiv.2303.07334.

Peer-Reviewed Journal Articles

2023: **Johnson, L. K.,** Mahoney, M.J., Desrochers, M. L., and Beier, C. M. 2023. Mapping historical forest biomass for stock-change assessments at parcel to landscape scales. Forest Ecology and Management, 546, 121348. https://doi.org/10.1016/j.foreco.2023.121348.

2022: Desrochers, M. L., Tripp, W., Logan, S., Bevilacqua, E., **Johnson, L.K.,** and Beier, C. M. 2022. Ground-Truthing Forest Change Detection Algorithms in Working Forests of the US Northeast. Journal of Forestry, 120(5), 575–587. https://doi.org/10.1093/jofore/fvab075.

2022: **Johnson, L. K.,** Mahoney, M. J., Bevilacqua, E., Stehman, S. V., Domke, G. M., and Beier, C. M. 2022. Fine-resolution landscape-scale biomass mapping using a spatiotemporal patchwork of LiDAR coverages. The International Journal of Applied Earth Observation and Geoinformation, 114, 103059. https://doi.org/10.1016/j.jag.2022.103059.

2022: Mahoney, M. J., **Johnson, L. K.,** Guinan, A. Z., and Beier, C. M. 2022. Classification and mapping of low-statured 'shrubland' cover types in post-agricultural landscapes of the US Northeast. The International Journal of Remote Sensing, 43(19-24), 7117-7138. https://doi.org/10.1080/01431161.2022.2155086.

2022: Mahoney, M. J., **Johnson, L. K.,** Bevilacqua, E., and Beier, C. M. 2022. Ground noise filtering produces inferior models of forest aboveground biomass. GIScience and Remote Sensing, 59(1), 1266-1280. https://doi.org/10.1080/15481603.2022.2103069.

Peer-Reviewed Book Chapters

2023: Mahoney, M. J., **Johnson, L. K.,** and Beier, C. M. 2023. AI for Shrubland Identification and Mapping. In Sun Z, Cristea N, Rivas P (eds.), Artificial Intelligence in Earth Science, 295-316. Elsevier. ISBN 978-0-323-91737-7. `https://doi.org/10.1016/B978-0-323-91737-7.00010-4`.

Conference Activity

Invited Talks

2022: **Johnson, L.K.,** Mahoney, M.J., and Beier, C.M.. Historical Time Series Biomass Modeling: To Train on Plots or Pixels? FIA Science Stakeholder Meeting (Virtual).

Contributed Talks

2023: Mahoney, M. J., **Johnson, L. K.,** and Beier, C. M. Consistent Workflows for Assessing Model Performance: Tools and Applications to Natural Climate Solutions. American Geophysical Union Fall Meeting, San Francisco, CA.

2023: Beier, C.M., **Johnson, L.K.,** Mahoney, M.J., Desrochers, M.L, and Domke, G.M. An integrated carbon monitoring framework for stock-change GHG inventory at parcel to landscape scales: approach, outputs and applications. American Geophysical Union Fall Meeting, San Francisco, CA.

2022: **Johnson, L.K.,** Mahoney, M.J., and Beier, C.M. A Map-based Stock Change Approach for Fine-scale Biomass and Carbon Accounting in NYS. Forest Ecosystem Monitoring Cooperateive Conference, Burlington, VT.

2022: **Johnson, L.K.,** Mahoney, M.J., and Beier, C.M. Historical Time Series Biomass Modeling: To Train on Plots or Pixels? American Geophysical Union Fall Meeting (Virtual).

2022: Mahoney, M.J., **Johnson, L.K.,** and Beier, C.M. Detecting regenerating forestland at a landscape level. Ecological Society of America and Canadian Society for Ecology and Evolution Joint Annual Meeting, Montreal, Quebec, Canada.

2022: **Johnson, L.K.,** Mahoney, M.J., Bevilacqua, E., and Beier, C.M. Filtering ground noise from LiDAR returns produces inferior models of forest aboveground biomass North American Forest Ecology Workshop, Sault Ste Marie, Ontario (Virtual).

2021: **Johnson, L.K.,** Mahoney, M.J., Bevilacqua, E., and Beier, C.M. Broad-scale forest biomass mapping: generating contiguous high-resolution predictions using a spatio-temporal patchwork of LiDAR coverages across a mixed-use landscape. American Geophysical Union Fall Meeting (Virtual).

2021: **Johnson, L.K.,** Mahoney, M.J., and Beier, C.M. Greening Up Before Growing Up: Challenges in Modeling Forest Biomass Recovery Post-Harvest Using Satellite Imagery. Society of American Foresters National Convention (Virtual).

Poster Presentations

2023: **Johnson, L.K.,** Mahoney M.J., Domke, G.M., and Beier, C.M. Bridging the Gap Between Pixels and Minimum Estimation Units: Small-Area Uncertainty Estimation with Forest Aboveground Biomass Maps. American Geophysical Union Fall Meeting, San Francisco, CA.

Experience

2019 - Present: **Climate and Applied Forest Research Institute (SUNY ESF)**
Research Assistant. Developed cloud computing infrastructure, geospatial databases, and data sharing software. Contributed writing, code, and statistical/spatial analysis to technical reports.

2017 - 2019: **Lightkeeper, LLC**
Data Engineer. Developed internal data management tools and software in python.

Service to the Profession

2023: **Reviewer:** Journal of Applied Earth Observation and Geoinformation.

2023: **Reviewer:** Forest Ecology and Management.

2023: **Reviewer:** PNAS Nexus.

2023: **Workshop Assistant:** Foundations of Scientific Computing at SUNY ESF.

2022: **Workshop Assistant:** Foundations of Scientific Computing at SUNY ESF.

Community Service

July 2020 - July 2021: **Code for Burlington - Courtbot Project** Technical Lead (Volunteer). A free service providing text message notifications for court appearances.

Affiliations

2021 - Present: **American Geophysical Union**. Member.

2021 - Present: **NYS GIS Association**. Member.

Skills

Programming: R, Python, SQL, git, and Linux shell languages.

GIS: QGIS, ArcGIS, GDAL, Google Earth Engine, and the R spatial ecosystem.