The Qiu Lab at Duke University is recruiting one fully funded Ph.D. student to begin in Fall 2027 (application deadline: December 1, 2026). Our research aims to understand and predict changes in biodiversity and ecosystem functioning across spatial and temporal scales. The student will develop an independent research direction within or across the themes below, with opportunities to contribute to ongoing projects supported by NASA, NSF, and private foundations. Learn more about our ongoing research projects and future research directions at www.tongqiulab.com.

Research Directions

1. Ecological remote sensing for forest and savanna ecosystems. Characterize and understand the spatial and temporal variation in the structure, functioning, and dynamics of forests and savannas. Integrate emerging remote sensing technologies, including imaging spectroscopy, LiDAR, and satellite-based time series, to investigate ecosystem responses to environmental change.

2. Biodiversity and ecosystem functioning. Investigate how interactions between plants and wildlife shape ecosystem processes, including carbon and nutrient cycling. Combine remote sensing, field inventories, wildlife monitoring, and statistical models to understand how fire, grazing, and the reintroduction of large herbivores (e.g., rhinos and elephants) influence biodiversity and its contributions to ecosystem functioning.

3. AI for Ecology. Develop and apply advanced AI methods, including deep learning and foundation models, to uncover ecological patterns and improve ecological predictions using large-scale Earth observation data and long-term ecological monitoring datasets.

Preferred Candidate Expertise

Backgrounds in ecology, environmental science, remote sensing, geography, statistics, computer science, or related fields are welcome. Preferred qualifications include:

- Experience with LiDAR, hyperspectral data, statistical ecology, or machine/deep learning.
- Experience with R and/or Python and quantitative/statistical analysis
- Research initiative, intellectual curiosity, willingness to learn, and a collaborative mindset.

Lab Resources

Remote Sensing Equipment: RIEGL VZ-400i Terrestrial Laser Scanner; NaturaSpec UV–Vis–NIR–SWIR field spectroradiometers; HySpex airborne hyperspectral imaging system.
Computing: individual research workstations and access to high-performance computing clusters and GPU resources.

How to Apply

Formal applications: Apply to Duke's Ph.D. in Environment or University Program in Ecology (UPE), depending on your research interests. Ecology emphasizes biodiversity and

ecological processes; Environment also accommodates environmental remote sensing and interdisciplinary work. For Fall 2027 admission, the Ecology deadline is December 1, 2026, and the Environment deadline is December 3, 2026.

Initial inquiry: Email tong.qiu@duke.edu with subject "application for PhD 2027 – [Your Name]". Please provide:

- Your current CV and undergraduate/graduate transcripts (as applicable).
- An approximately one-page statement describing previous research, questions you hope to pursue, and why the Qiu Lab is a good fit.
- A research paper or writing sample, if available.
- Names and contact information for three potential references.

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