M. Ny Aina Rakotoarivony

Ph.D. candidate, Department of Geography, Oklahoma State University

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My research interest focuses on using remote sensing, particularly imaging spectroscopy (also known as hyperspectral remote sensing), coupled with *in situ* observations and modeling to answer ecological questions. My current research aims to advance the capability of airborne, spaceborne, and unmanned aerial system-based imaging spectroscopy in mapping the spatial distribution of invasive plants and assessing their ecological impacts on grassland ecosystems. In my research, I integrate concepts of remote sensing, landscape ecology, plant ecology, and soil sciences to contribute to the large-scale understanding of the ecosystem.

EDUCATION

Ecole Supérieure des Sciences Agronomiques	Antananarivo, Madagascar	Forestry and Environment	Agronomy Engineering	B.S.	2016
Ecole Supérieure des Sciences Agronomiques	Antananarivo, Madagascar	Environment–Territory and Development	Agronomy Engineering	Master 2	2018
Hungarian University of Agriculture and Life Sciences (former SZIE)	Gödöllő, Hungary	Soil and Water Conservation	Environmental Engineering	M.Sc.	2020
Oklahoma State University	Stillwater, Oklahoma, US		Geography	Ph.D.	Anticipated June 2026

FUNDED GRANTS

Future Investigators in NASA Earth and Space Science and Technology (FINESST) program	Assessing the impacts of invasive plants on ecosystem characteristics using multi-scale imaging spectroscopy, Future Investigator **(FI) M. Ny Aina Rakotoarivony**, PI Hamed Gholizadeh, 01/01/2025 – 12/31/2027, $148,526.
Nebraska Chapter's J.E. Weaver Competitive Grants Program	Using drone imagery to assess the impact of invasive plants on plant and soil communities and characteristics across scales, **M. Ny Aina Rakotoarivony**, 04/17/2025 – 03/31/2026, $1,500.
Nebraska Chapter's J.E. Weaver Competitive Grants Program	Impact of invasive species on plant diversity in tallgrass prairies, **M. Ny Aina Rakotoarivony**, 04/17/2023 – 03/31/2024, $1,500.

APPOINTMENTS

Research Assistant 08/2021 – *present*
Gholizadeh Lab, Department of Geography, Oklahoma State University, Stillwater, Oklahoma

Teaching Assistant 08/2024 – 05/2025
Department of Geography, Oklahoma State University, Stillwater, Oklahoma
Courses: Remote Sensing (Fall semester) and Geospatial Applications of Unmanned Aerial Systems (Spring semester).

Graduate Student Researcher 01/2020 – 06/2020
Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary
Graduate Student Researcher 07/2017 – 02/2018
Alaotra Resilience Landscape project (AlaReLa), Antananarivo, Madagascar

PEER-REVIEWED PUBLICATIONS

Rakotoarivony, M. N. A., Hassani, K., Fuhlendorf, S. D., Bachelot, B., Hamilton, R.G., & Gholizadeh, H., (*under review*). Airborne and spaceborne imaging spectroscopy capture belowground microbial communities and physicochemical characteristics in invaded grasslands. *Remote Sensing of Environment.*

Rakotoarivony, M. N. A., Omkar, J., Adhikari, A., & Gholizadeh, H. (*under review*). Assessing the economic impacts of *Lespedeza cuneata* spread: A case study of Oklahoma. *PLOS One*.

Rakotoarivony, M. N. A., Gholizadeh, H., Hassani, K., Zhai, L., & Rossi, C. (2025). Mapping the spatial distribution of species using airborne and spaceborne imaging spectroscopy: A case study of invasive plants. *Remote Sensing of Environment*, 318, 114583. https://doi.org/10.1016/j.rse.2024.114583

Rakotoarivony, M. N. A., Gholizadeh, H., Hassani, K., McMahan, S., Struble, E., Fuhlendorf, S. D., Hamilton, R.G., & Bachelot, B. (2024). Using imaging spectroscopy to assess the impacts of invasive plants on aboveground and belowground characteristics. *GIScience and Remote Sensing*. 61(1). https://doi.org/10.1080/15481603.2024.2399388.

Gholizadeh, H., **Rakotoarivony, M. N. A.**, Hassani, K., Johnson, K. G., Hamilton, R. G., Fuhlendorf, S. D., Schneider, F. D., & Bachelot, B. (2024). Advancing our understanding of plant diversity-biological invasion relationships using imaging spectroscopy. *Remote Sensing of Environment*, 304, 114028. https://doi.org/10.1016/j.rse.2024.114028.

Rakotoarivony, M. N. A., Gholizadeh, H., Hammond, W. M., Hassani, K., Joshi, O., Hamilton, R. G., Fuhlendorf, S. D., Trowbridge, A. M., & Adams, H. D. (2023). Detecting the invasive *Lespedeza cuneata* in grasslands using commercial small satellite imagery. *International Journal of Remote Sensing*, 44(21), 6802–6824. https://doi.org/10.1080/01431161.2023.2275321.

Barros, V.D.D., Waltner, I., **Rakotoarivony, M. N. A.**, Halupka, G., Sándor, R., Kaldybayeva, D., Gelybó, G. (2022). SpatialAquaCrop, an R Package for Raster-Based Implementation of the AquaCrop Model. *Plants 11*, 2907. https://doi.org/10.3390/plants11212907.

CERTIFICATE

FAA Part 107 Remote Pilot Certificate – Federal Aviation Administration (FAA), November*, 2024.*

AWARDS, SCHOLARSHIPS, AND HONORS

2025	Norris Conference Travel Award, Department of Geography, Oklahoma State University ($1,000)
2024	Norris Conference Travel Award, Department of Geography, Oklahoma State University ($1,500)
2023	Norris Conference Travel Award, Department of Geography, Oklahoma State University ($1,000)
2023	Delores and Jerry Etter Graduate Research Scholarship, Tulsa Community Foundation ($10,000)
2022	Norris Conference Travel Award, Department of Geography, Oklahoma State University ($500)
2022	Robert F. Norris Scholarship for Outstanding First-Year Graduate Student, Department of Geography, Oklahoma State University ($2,500)
2022	Delores and Jerry Etter Graduate Research Scholarship, Tulsa Community Foundation ($10,000)
2018	Food and Agriculture Organization (FAO) Scholarship and the Ministry of Agriculture of Hungary
2010	English Access Microscholarship Program, US Embassy in Madagascar

TECHNICAL AND LANGUAGE PROFICIENCY

TECHNICAL

Programming & Data Analysis: R, Matlab, XLstat, Sphinx
Geospatial data analysis: ArcGIS, ENVI, IDRISI, PARGE, DROACOR
Other: Microsoft, AquaCrop, UgCS mission planner

LANGUAGE

English: Fluent (reading, writing, and speaking)
French: Fluent (reading, writing, and speaking)
German: Basic (reading, writing, and speaking)
Hungarian: Beginner
Malagasy: Mother tongue

PROFESSIONAL DEVELOPMENT ACTIVITIES

- Advanced Low-altitude Earth Observing System (ALEOS) with Hyperspectral and Lidar Drone Training, Stillwater, Oklahoma, August 2024.
- Graduate Teaching Assistant Conference, Empowering Effective Teaching, Institute for Teaching and Learning Excellence, Oklahoma State University, Stillwater, Oklahoma, August 2024.
- Spectral Ecology Summer School (SPEC School), March – July 2023.
- Environmental Data Science Summit, National Center for Ecological Analysis and Synthesis, February 2023.

SYNERGISTIC ACTIVITIES

- Reviewer for *GIScience & Remote Sensing, Ecological Solutions and Evidence, Science of Remote Sensing*, and *Scientific Reports* journals.
- Judge for Oklahoma Science and Engineering Fair Competitions, 2025.
- Reviewer for AGU Outstanding Student Presentation Awards (OSPA), 2023 – 2024.
- Member, *Ikala STEM-Chapter America*, 2021 – *present*: Empowering the current and next generation of Malagasy students in STEM by sharing knowledge and expertise, organizing talk series, and assisting with providing financial support for selected graduate students in Madagascar.
- Volunteer, Department of Geography, Oklahoma State University, 2023, for the *Outdoor Day at Skyline Elementary School* in Stillwater, Oklahoma: Demonstrated weather data collection techniques using a kite to elementary school students, promoting STEM engagement through hands-on learning.
- Volunteer, *Southwest American Association of Geographers* conference meeting (SWAAG), 2021: Assisted with attendee registration and provided logistical support during the conference meeting.
- Mentor, *Stipendium Hungaricum Mentorship program*, *HOOK Hungary*, 2019 – 2020: Assisted ten freshman students with their administrative and educational tasks and helped them get used to Hungarian education system.
- Member, *Ikala STEM-Chapter Europe*, 2019 – 2021.
- Volunteer, *Malagasy Youth Biodiversity Network-Global*, 2016 – 2021: Promoted biodiversity awareness and education through initiatives such as “Trees Project” implemented in public primary schools in Antananarivo, Madagascar.
- Leader, *KOLO EPP Project, Teach for Madagascar*, 2018: Directed and supervised English teaching activities of Teach for Madagascar.
- Volunteer, *Street Project, Teach for Madagascar*, 2017: Provided basic literacy instruction to underserved children (ages 4–13) with no access to formal education.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU)	2022 – *present*
Ecological Society of America (ESA)	2022 – 2023
International Association for Landscape Ecology (IALE) – North America	2024 – *present*
American Society for Photogrammetry and Remote Sensing (ASPRS)	2022 – 2023