

Research Interests

Thermal remote sensing. Geospatial modeling. Plant ecophysiology.

Education

Environmental and Forest Sciences Ph.D.

In Progress

University of Washington, Seattle

Advised by L. Monika Moskal; supported by NSF Graduate Research Fellowship, project title “A wildfire early warning system from meteorology and satellite land surface temperature”.

Environmental Science & Computational Biology B.S. (4.0 / 4.0 GPA)

Aug 2018 – May 2022

Rensselaer Polytechnic Institute

Astrobiology Minor; Geoinformatics Concentration

Class of 1902 Research Prize for best undergraduate thesis: “The distribution of depth, volume, and basin shape for lakes in the conterminous United States”.

Publications

Peer-Reviewed

1. **Ganz, K.**, Glines, M., Rose, K.C. (in press). The distribution of depth, volume, and basin shape for lakes in the conterminous United States. *Limnology and Oceanography*.

Data Packages & Software

1. **Ganz, K.**, M. Glines, and K. Rose. 2023. Modeled maximum and mean lake depths for the contiguous United States. Environmental Data Initiative.
<https://doi.org/10.6073/pasta/d68d5a218d1ec0351f8c3721d41e5e9c>.
2. **Ganz, K.** 2021. SCUTR: Balancing Multiclass Datasets for Classification Tasks. R package version 0.2.0,
<https://CRAN.R-project.org/package=scutr>.

Research Experience

Oak Ridge National Laboratory (Oak Ridge, TN)

Jun – Aug 2021, 2022

Remote Sensing of Water Stress in Boreal Forests (Advisor: Jeffrey Warren)

- Assessed plant productivity and water stress in the SPRUCE experiment, an artificially warmed peat bog enclosure under elevated CO₂ in northern Minnesota.
- Developed Python scripts to align drone images taken at different altitudes and orientations.
- Compared spectral indices for monitoring plant health. Determined that green chromatic coordinate best identified divergent responses to warming between larch and spruce trees.
- Presented results at lab-wide poster session. Developed a short form talk for the public which was selected as 1st place in the Department of Energy Ignite Off competition.

Rensselaer Polytechnic Institute (Troy, NY)

Aug 2021 – May 2022

Predicting Lake Morphology from Topography (Advisor: Kevin Rose)

- Developed a predictive model of maximum lake depth for ~500k unsurveyed lakes in the United States.
- Programmed Google Earth Engine scripts to calculate topographic predictors of lake depth, including slope, terrain roughness, curvature, and kernel-based metrics.
- Analyzed results in R notebooks and regularly presented results at lab meetings.
- Code repository is available at github.com/s-kganzt/lakes. See Publications for additional details.

Rensselaer Polytechnic Institute (Troy, NY)

Feb 2021 – May 2021

Spectral Analysis of Sunlight in a New York Greenhouse (Advisor: John Erickson)

- Performed data analysis on a database of >250k solar spectral collected from a greenhouse in upstate New York. Established circadian and circannual trends in photosynthetically-active radiation.
- Wrote Google Earth Engine scripts to link atmospheric ozone, water vapor, etc. with spectral characteristics.
- Compiled results in R notebooks and weekly lab presentations.

Professional Experience

Environmental Science Associates (Seattle, WA)

May 2020 – Jan 2021

Geospatial Analysis Intern

- Programmed predictive models of vegetation type and wetland presence in the Skagit river basin of Washington State. Compiled results to support recertification of the Ross Lake dam.
- Produced time-series maps of phosphate mine settlement ponds in the Alafia estuary in Florida. Demonstrated that wastewater has accumulated close to municipal water supplies.
- Delivered a company-wide presentation on applications of data science to environmental management.

Snohomish County Public Works (Everett, WA)

May 2019 – Aug 2019

Environmental Services Intern

- Performed field wetland delineation using soil coring, transect vegetation surveys, and GIS analysis.
- Developed a pilot hydrologic model of wetland probability to streamline field delineation. Delivered presentation to the public on project results.
- Designed a replanting plan for a damaged wetland near Lake Cavanaugh, Washington. Plan was implemented followed end of internship period.

Teaching

Lead Instructor

Course	Quarters Taught
Communicating Science to the Public Effectively	Winter 2024

Teaching Assistant

Course	Quarters Taught
Data Analysis in Environmental Studies	Summer 2023, Winter 2024
Introduction to Geographic Information Systems	Spring 2023

Awards

Grand Prize Winner. AGU Michael M. Freilich Data Visualization Contest. December 2023.

NSF Graduate Research Fellow. National Science Foundation. 2022 – 2025.

1st Place Presentation. Department of Energy Ignite Off Competition. August 2022.

Class of 1902 Research Prize. Rensselaer Polytechnic Institute. May 2022.

Kenneth J. Osborn Scholar. American Society of Photogrammetry and Remote Sensing. March 2021.

References

Name	Title	Relationship	Contact
Monika Moskal	Professor Environmental and Forest Sciences University of Washington	Ph.D. Advisor	Immoskal@uw.edu
Kevin Rose	Kolleck Professor in Freshwater Ecology Biological Sciences Rensselaer Polytechnic Institute	Undergraduate Advisor	rosek4@rpi.edu
Jeffrey Warren	Plant Ecophysiological Environmental Sciences Division Oak Ridge National Laboratory	Research Advisor	warrenjm@ornl.gov