

# Peter Whitman

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## Professional Experience

### U.S. Environmental Protection Agency

Raleigh, NC

*Oak Ridge Institute of Science and Education Post-Master's Research Fellow*

09/2019 – 09/2022

- Leveraged high performance and cloud computing resources to develop scientific approaches for satellite-based water quality monitoring that supported federal management decisions.
- Research efforts focused on monitoring harmful algal blooms, oil spills, and submerged aquatic vegetation, and evaluating the future water quality applications of a satellite that will be launched by NASA in 2026 called GLIMR.
- Worked independently and as an effective team member to author 10 peer-reviewed publications and multiple reports.
- Developed workflows and wrote code to download, process, classify, and analyze terabytes of satellite imagery and geospatial data.
- Worked with Level 1B – 2C multispectral imagery from PlanetScope, RapidEye, WorldView 2/3, Landsat 1-8, Sentinel 2, Sentinel 3, Envisat, and MODIS. Worked with hyperspectral imagery from DESIS, SAR imagery from Sentinel 1, and geostationary imagery from GOES-R.

### University of British Columbia

Vancouver, BC

*Graduate Research Assistant*

05/2018 – 08/2019

- Held three graduate research assistantships concurrently.
- Used maximum entropy and multiple regression models to analyze the spatial and aspatial factors associated with the deaths of environmental activists. Developed and tested a spatiotemporal bivariate cross-correlation modeling technique to quantify if two phenomena have correlated variations in space and time.
- Prepared independent variables for geospatial analysis of cardiac arrests in British Columbia. Mined and scraped data, reduced dimensionality, and performed areal interpolation to upscale, downscale, and impute data into consistent spatial aggregation units. Wrote a grant proposal and received \$4,000 in funding.
- Organized and conducted fieldwork to collect ground truthed image data and planned the acquisition of coincident digital aerial imagery. Used multiple regression modeling and bootstrap aggregation to relate second-order measures of image texture to the proportion of gravel and sediment that existed in each ground truthed image. Characterized and simulated the spectral, spatial, and radiometric differences between digital aerial imagery and digitized archived aerial photographs. Developed, validated, and compared the performance of pixel- and object-based image classification methods.

*Graduate Teaching Assistant*

09/2017 – 08/2019

- Worked with 300+ students during two semesters of Geographic Information Science, one semester of Advanced Geographic Information Science, and one semester of Introductory Remote Sensing.
- Helped design labs, graded tests and lab reports, drafted answer keys, held office hours, and led multiple lab sections each week that involved lectures and live demos using Python and ESRI ArcGIS products.
- Received the Geography Department's "Outstanding Teaching Assistant" award in 2019.

### Carthage College

Kenosha, WI

*Undergraduate Research Assistant*

01/2017 – 05/2017

- Developed a mobile application to collect data during labs and field research at Carthage College.

*Undergraduate Teaching Assistant*

09/2016 – 05/2017

- Worked with 100+ students during two semesters of Introduction to Geographic Information Science.
- Answered questions during lab sections, graded tests and lab reports, and held weekly office hours.

*Student Manager*

09/2016 – 05/2017

- Led a team of 15 undergraduate students and provided one-on-one mentorship to increase team performance.
- Conducted a geospatial analysis of alumni data to plan and optimize engagement.
- Helped increase annual alumni donations by 25% from the previous year.

**City of Edina****Edina, MN***Geographic Information Systems Intern*

06/2016 – 08/2016

- Independently planned and performed field inspections of public works assets.
- Used Python to automate hundreds of individualized updates to flood zone maps for homeowners.
- Managed terabytes of geospatial data on the department's shared database enterprise.

**Round River Conservation****Salt Lake City, UT***Student Researcher*

09/2015 – 12/2015

- Partnered with the National Forest Corporation, the Chilean Military, and Tompkins Conservation to conduct field work for multiple research projects in the Aysen Region of Chilean Patagonia.
- Synthesized geospatial data collected in the field to co-author reports that informed landscape-scale management decisions.
- Interviewed stakeholders and private landowners to inform conservation efforts.

**Minnesota Department of Natural Resources****Saint Paul, MN***Invasive Species Program Intern*

06/2015 – 09/2015

- Developed a supervised classification to identify suspected buckthorn infestations within aerial imagery of Minnesota state land. Independently organized and conducted multiday field campaigns to verify the accuracy of the classification methodology and support future treatment decisions.
- Inventoried invasive species along forest roads. Worked with foresters on ecological site classifications and stand inventory in multiple Minnesota forestry districts.

**City of Saint Paul****Saint Paul, MN***Urban Forestry Intern*

06/2014 – 08/2014

- Independently planned and performed the fieldwork required to manage 3,000+ recently planted trees and located planting sites for new trees using ESRI ArcGIS products.

**Education****University of British Columbia****Vancouver, BC***Master of Science, Geography*

08/2019

**Carthage College****Kenosha, WI***Bachelor of Arts, Geoscience, Geographic Information Science, Environmental Science*

05/2017

- Cum Laude
- Geospatial Science Department Distinguished Senior Award
- Environmental Science Department Distinguished Senior Award

**Skills**

**Methods:** frequentist and Bayesian statistics, machine learning, digital image processing, spatiotemporal statistics, object-based image analysis, image classification, photogrammetry, atmospheric correction, satellite validation, data visualization, signal processing

**Software:** ENVI/IDL, ESRI ArcGIS products, Agisoft Photoscan, QGIS, GeoDa, FUSION/LDV, Adobe Photoshop, Adobe Illustrator, Microsoft Office Suite, Google Workspace

**Programming & Computing:** Python, R, MATLAB, JavaScript, Google Earth Engine, SQL, Unix, high performance computing, parallel processing, version control

**Packages:** *Python* – GDAL/OGR, TensorFlow, OpenCV, NumPy, ArcPy, Matplotlib, netCDF4, Pandas, GeoPandas; *R* – ggplot2, raster, ncdf4, stats, caret, sp, sf, rgdal, spatstat, maxent, boot, glcm

**Scientific Instrumentation & Field Work:** field & lab spectroscopy, imaging systems, GPS, forest inventory, water sampling, land surveying, plant and wildlife surveys

**Communication:** peer-reviewed publications, technical reports, research proposals, lectures, presentations, technical demonstrations, stakeholder engagement, mentorship, team collaboration