Hannah Friedrich, M.S.

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EDUCATION

M.S., Geography, Oregon State University

Thesis: Breaking Ground: Automating the Detection of Refugee Settlement Establishment and Growth through Landsat Time Series Analysis with a Case Study in Northern Uganda

B.S., Geography (Honors) and Geographic Information Systems/Cartography, University of Wisconsin-Madison August 2012 - December 2015

Thesis: Ecological and social resilience to climate variability: The case of pastoralism and bourgou floodplain vegetation (*Echinochloa stagnina*) of the Inland Niger Delta in Central Mali

RECENT AWARDS

2019 - Gordon Matzke Fund Student Travel Award

2019 - Awarded student travel grant to attend and present at the AAG Annual Meeting.

2018 - Arthur Parenzin Fellowship Award

2016 - University of Wisconsin-Madison Senior Honors Thesis Research Grant

2016 - State of the Map US Student Travel Award

2016 - Awarded student travel grant to attend the OpenStreetMap State of the Map US conference in Seattle, WA.

2015 - Barbara Petchenik Undergraduate Award in Cartographic Design

Awarded grant of $3,000 to support research efforts for undergraduate senior honors thesis.

Awarded for best undergraduate map in Department of Geography at the University of Wisconsin - Madison.

Awarded for research potential in finalizing Master's degree in Geography Program at Oregon State University.

RESEARCH & EMPLOYMENT HISTORY

January 2018 – present. Graduate/Faculty Research Assistant, Oregon State University, Corvallis, Oregon. Contribute to NASA-funded Missing Millions project led by Jamon Van Den Hoek by conducting satellite image time series analysis in order to create a dataset of global informal refugee and internally displaced people (IDP) settlements.

February 2017 - July 2017. Mapping Technician, Cruise Automation, San Francisco, CA. Edit and maintain vehicle route maps for self-driving car research and development, produce GIS analysis to support decision making in prioritizing potential vehicle test routes, and train incoming map technicians on map edit processes.

September 2016 - November 2016. Earth Science Contractor, Science Systems and Applications Inc., NASA DEVELOP Fall 2016 Program, Ames Research Center, Mountain View, CA. Research remote sensing methods to detect tidal marsh vegetation productivity, conduct imagery analysis with in situ data and present results to NASA Earth Science researchers and collaborators.

February 2016 - August 2016. GIS Technician, Fehr & Peers, Oakland, CA. Create web maps for crowd-sourced input on transportation improvements, provide GIS analysis to support a variety of technical transportation engineering projects, create graphics and presentation material for multimodal analyses.

October 2014 - December 2015. Remote Sensing Technician, The Land Cover Change and Urban Environment Lab, Madison, Wisconsin. Assist with remote sensing tasks primarily classifying urban expansion in SE Asia using Landsat

and MODIS imagery. Lead training data collection to analyze and assess accuracy of classified urban change maps.

September 2014 - December 2015. Undergraduate Research Assistant, Geography Department, University of Wisconsin – Madison, Wisconsin. Analyze daily hydrologic records to determine imagery needed for analysis. Conduct three decade-long change analysis of hydrologic and vegetative land cover. Analyze patterns of change using spatial statistical methods.

June - August 2015. NSF REU Intern, Desert Research Institute, Reno, Nevada. Collect, reclassify and spatially analyze GIS datasets pertaining to potential groundwater recharge locations. Contribute to NSF supported "Water, Sustainability, and Climate" project as a funded research undergraduate.

PROFESSIONAL MEMBERSHIPS AND CERTIFICATES

American Society for Photogrammetry and Remote Sensing (ASPRS), Student Member
Society for Conservation GIS (SCGIS), Student Member
American Association of Geographers (AAG), Student Member
American Geophysical Union (AGU), Student Member

PUBLICATIONS

Friedrich, H. & Van Den Hoek, J. (in review). Breaking Ground: Automating the Detection of Refugee Settlement Establishment and Growth through Landsat Time Series Analysis with a Case Study in Northern Uganda. Computers, Environment and Urban Systems

CONFERENCES & WORKSHOP PARTICIPATION

University of Wisconsin - Madison Senior Honors Thesis Symposium 2016, Madison, WI, Student Presenter Society for Conservation GIS Annual Meeting 2016, Monterey, CA, Student Presenter
GIS in the Rockies Annual Meeting 2016, Denver, CO, Student Presenter
National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD, 2018
Pursuit Participant SatSummit 2019, Washington, D.C., Presenter
American Association of Geographers (AAG) 2018 Annual Meeting, Washington, D.C., Presenter Humanitarian OpenStreetMap Team (HOT) Summit 2019, Heidelberg, Germany, Presenter
State of the Map 2019, Heidelberg, Germany, Presenter

TEACHING EXPERIENCE

Graduate Teaching Assistant, Oregon State University
eGEOG 560: GIScience I: Introduction to Geographic Information Science (Fall 2017)
eGEOG 561: GIScience II: Analysis and Applications (Winter 2018)
eGEOG 203: People-Environment Geography (Winter 2018)
GEOG 481/581: Remote Sensing II: Digital Image Processing (Winter 2019)

TECHNICAL SKILLS

Digital Image Processing and Analysis: Google Earth Engine, geopandas, rasterio, sci-kit learn (intermediate)
Software: ESRI ArcGIS, QGIS, ENVI, Adobe Creative Suite, SYSTAT
Scripting Languages: R (advanced), Python, JavaScript (intermediate)
Web Design: HTML, CSS