

# Jacob Charles Abramowitz

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## EDUCATION

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### The University of Alabama in Huntsville

May 2022

*Master of Science in Earth System Science (GPA: 4.0)*

*Graduate Research Assistant, SERVIR West Africa*

Thesis: Differentiating Oil Palm Plantations from Natural Forest to Improve Land Cover Mapping in Ghana

### Binghamton University, State University of New York

May 2020

*Bachelor of Arts in Computer Applications in Geography (GPA: 3.87), Minor in Economics*

*Cumulative GPA: 3.85, Dean's List: All Semesters*

*Honor Societies: Phi Beta Kappa, Gamma Theta Upsilon Geography Honor Society, University Scholars Program*

## RESEARCH EXPERIENCE

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### SERVIR

### NASA SERVIR Science Coordination Office

*Regional Science Associate*

*May 2022 – Present*

- Provide science support to SERVIR West Africa (Niger, Ghana, Senegal, Burkina Faso, Nigeria, Mali) for remote sensing and geospatial projects across thematic areas, with a focus on Land Cover and Land Use
- Build the capacity of SERVIR West Africa and larger West African geospatial community through in-person and remote trainings
- Coordinate and support activities of SERVIR West Africa consortium members and Applied Sciences Team projects in the region, using knowledge of the region to make connections between projects
- Engage in long-term planning and evaluation of activities and goals of SERVIR West Africa
- Communicate work of SERVIR West Africa through scientific conferences, journal publications, and articles for general audiences
- Engage with external partners to amplify impact of work in the region

*Graduate Research Assistant*

*Aug 2020 – May 2022*

- Supported the West Africa hub (Niger, Ghana, Senegal, Burkina Faso) in remote sensing and geospatial projects, including developing a method for ephemeral water body monitoring in Senegal using Planet imagery
- Presented research to partners in West Africa to increase capacity within the region. Presentations included results, in-depth discussions on methodology, code / software walkthroughs, and extensive question and answer sessions
- Thesis research on remote sensing of oil palm in Ghana culminated in submission of research paper to journal *Remote Sensing Applications: Society and Environment* (currently under review)

### NASA Climate Change Research Initiative (CCRI)

### NASA Goddard Institute for Space Studies

*Research Intern*

*Jun 2019 - Aug 2019*

- Member of interdisciplinary research team working alongside NASA scientist Dr. Christian Braneon on the CCRI Earth Observation for Resiliency Project. Our research focused on modeling urban heat and evaluating green infrastructure's heat mitigation capabilities using satellite remote sensing data.
- Research culminated in a poster session at the Goddard Space Flight Center, multiple presentations to NASA scientists, and the publication of a research paper in *Sustainable Cities and Society* (McConnell et al., 2021)

## **NSF REU: Interdisciplinary Research Experience in Hyperspectral Imaging**

**University of Northern Iowa**

*Research Intern*

*May 2018 - Jul 2018*

- Studied principles of hyperspectral remote sensing, with a focus on the applications of hyperspectral remote sensing to agricultural and vegetation applications, and gained ENVI proficiency for hyperspectral data processing
- Conducted research on the effect of wind turbine presence on corn and soybean production using airborne hyperspectral imagery under the guidance of Drs. Andrey Petrov and Mark Sherrard
- Presented research poster at American Association of Geographers Annual Meeting in April 2019

## **Geophysics and Remote Sensing Laboratory**

**Binghamton University**

*Research Assistant*

*Jan 2018 – May 2020*

- Continued previous field and lab work related to the thermal remote sensing of PFM-1 plastic landmines
- Worked with research team led by Drs. Timothy S. de Smet and Alex Nikulin throughout publication process as a coauthor on two papers (Nikulin et al., 2018; de Smet et al., 2018), focusing mainly on data collection and quantitative analysis of results using GIS software

## **Freshman Research Immersion Program: Geospatial Remote Sensing**

**Binghamton University**

*Research Assistant*

*Aug 2016 - Dec 2017*

- Conducted literature review of scientific studies on the remote sensing of landmines, specifically PFM-1 plastic landmines, within a research group and presented findings in a public poster presentation
- Conducted field research on the effectiveness of drone integrated thermal imaging for the detection of surface-laid PFM-1 plastic landmines, culminating in a public poster presentation and the writing of a scientific research paper

## **PEER REVIEWED ARTICLES**

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**Abramowitz, J.**, Cherrington, E., Griffin, R., Muench, R., Mensah, F. (2023). Differentiating oil palm plantations from natural forest to improve land cover mapping in Ghana. *Remote Sensing Applications: Society and Environment* (under review).

McConnell, K., Braneon, C.V., Glenn, E., Stamler, N., Mallen, E., Johnson, D.P., Pandya, R., **Abramowitz, J.**, Fernandez, G., Rosenzweig, C. (2021). A quasi-experimental approach for evaluating the heat mitigation effects of green roofs in Chicago, Illinois. *Sustainable Cities and Society*, 76.

“Detection and identification of remnant PFM-1 ‘butterfly mines’ with a UAV-based thermal-imaging protocol.” Nikulin, A., de Smet, T.S., Baur, J., Frazer, W.D., **Abramowitz, J.C.** (2018). *Remote Sensing*, 10, 1672.

“Drones and ‘butterflies’: A low-cost UAV system for rapid detection and identification of unconventional minefields.” de Smet, T.S., Frazer, W., Baur, J., **Abramowitz, J.**, Finan, D., Denara, S., Aglietti, N., Campos, G. (2018). *Journal of Conventional Weapons Destruction*, 22.3. (**Most downloaded article within issue 22.3**).

## **CONFERENCE PROCEEDINGS AND PRESENTATIONS**

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“Applications of Earth Observations for Addressing Environmental and Development Challenges in Africa” American Geophysical Union (AGU) Fall Meeting 2022. Oral/Poster/Online Poster **session convener**; OSPA judge.

“Mapping Deforestation and Forest Degradation in Southern Ghana Using Different Time-Series Algorithms.” **Jacob Abramowitz**, Emil Cherrington, Rebekke Muench, Africa Flores-Anderson, Foster Mensah, Stephanie Spera, Yunuen Reygadas. American Geophysical Union (AGU) Fall Meeting 2022. **Oral Presentation**.

“Differentiating Oil Palm from Natural Forest to Improve Land Cover Mapping in Ghana.” **Jacob Abramowitz**, Robert Griffin, Emil Cherrington, Rebekke Muench. UAH 2022 Graduate Poster Session. Selected as **1<sup>st</sup> place** poster across all UAH colleges and departments. **Poster**.

“Differentiating Oil Palm and Cocoa Plantations from Natural Forest in Ghana to Improve Land Cover Mapping.” **Jacob Abramowitz**, Robert Griffin, Emil Cherrington, Rebekke Muench. American Geophysical Union (AGU) Fall Meeting, December 2021. **Oral Presentation**.

“Mapping Tree Crop Plantations in Ghana: Differentiating Oil Palm from Natural Forest.” **Jacob Abramowitz**. NASA Applied Sciences Program Earth Science Applications Week, August 2021. **Online Flash Talk, invited**.

“Analyzing the Impact of Wind Turbines on Crop Condition in Story County, Iowa Using Airborne Hyperspectral Imagery.” **Jacob Abramowitz**, Andrey Petrov, Mark Sherrard. American Association of Geographers (AAG) Annual Meeting, April 2019. **Poster**.

“Analyzing the Impact of Wind Turbines on Crop Condition in Story County, Iowa Using Airborne Hyperspectral Imagery.” **Jacob Abramowitz**, Andrey Petrov, Mark Sherrard. Binghamton University GIS Day, February 2019. Selected as 3<sup>rd</sup> place undergraduate poster and **winner of “People’s Choice Award”** poster competition. **Poster**.

## **TECHNICAL SKILLS**

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- Software: ArcGIS, Google Earth Engine, ENVI
- Programming languages: JavaScript (Google Earth Engine), Python

## **CONTACTS**

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- Dr. Timothy de Smet, Research Assistant Professor and Director of Geophysics and Remote Sensing Laboratory, Binghamton University, State University of New York, *tdesmet@binghamton.edu*, (607) 777-2863
- Dr. Christian Braneon, Remote Sensing Specialist, NASA Goddard Institute for Space Studies, *christian.v.braneon@nasa.gov*, (212) 678-5561
- Dr. Andrey Petrov, Professor and Academic Director of GeoTREE Center, The University of Northern Iowa, *andrey.petrov@uni.edu*, (319) 273-6245