

**Ann Mariam Thomas**  
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Northwestern University  
Dept. of Earth and Planetary Sciences  
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**RESEARCH INTERESTS**

Seismic event detection, signal processing, data science applications in geophysics, science education and outreach

**EDUCATION**

**Northwestern University** Mar 2021 - Present  
*PhD Program in Earth and Planetary Sciences*  
Advisor: Prof. Suzan van der Lee  
Committee members: Prof. Elvira Mulyukova, Prof. Daniel E. Horton

**Colby College** Aug 2017- May 2020  
*Bachelor of Arts in Physics, Summa Cum Laude*  
Minor in Environmental Studies

**RESEARCH EXPERIENCE**

**Northwestern University, Dept. of Earth & Planetary Sciences** Mar 2021 - Present  
- Advised by Prof. Suzan van der Lee (Primary PhD Advisor)  
- Implement (via python) and compare the performance of different seismic event detection methods (i.e., STA/LTA ratio method, template matching, PSD-misfit detector) to identify small earthquakes and other unique signals in the noisy, urban Chicago area.

**Northwestern University, Dept. of Civil & Environmental Engineering** Sep 2020 - Mar 2021  
- Advised by Prof. Alessandro Rotta Loria  
- Installed about 50 temperature sensors in underground parking garages, streets, and basements in the city of Chicago to monitor its subsurface conditions. Conducted a literature review on current methods and numerical modelling techniques to study Subsurface Urban Heat Islands.

**Colby College, Dept. of Physics and Astronomy** Sep 2018 - May 2019  
- Advised by Dr. Elizabeth McGrath  
- Performed data analysis using IDL on data from CANDELS, an astronomical survey of the distance universe. Compared the structural data of cataloged quiescent disk galaxies with that of star-forming galaxies to better understand the quenching process.

**Colby College, Environmental Studies Program** Sep 2017 - May 2018  
- Advised by Dr. Philip Nyhus  
- Digitized natural and manmade objects using GIS in Botswana's Makgadikgadi-Nxai Pan region. Our research team collaborated with Round River Conservation Studies to discuss a potential removal of animal fences in the region.

## PUBLICATIONS

A. Rotta Loria, A. Thota, **A. Thomas**, N. Friedle, J. Lautenberg, & E. Song (2022) Subsurface heat island across the Chicago Loop district: Analysis of localized drivers. *Urban Climate* 44, 101211 (2022). <https://doi.org/10.1016/j.uclim.2022.101211>

## CONFERENCE ABSTRACTS

**A. Thomas**, H. Zhang, & S. van der Lee (2021). Seismic event detection in suburban Chicago using a single broadband seismic station. American Geophysical Union Fall Meeting.

M. Flanagan, V. Tang, O. Ranadive, **A.M. Thomas**, & S. van der Lee (2021). Earthquake Detective: Citizen Scientists Use Eyes and Ears to Classify Small Seismic Events. American Geophysical Union Fall Meeting.

## TEACHING & WORK EXPERIENCE

**Northwestern University, Dept. of Earth and Planetary Sciences** Summer 202  
*Teaching Assistant & Mentor for NU-Geopaths program*

- Developed the curriculum and schedule of the NU-Geopaths summer internship program. Led warm up sessions and group meetings to expose the mentees to different aspects of geoscience, including climate science, hydrology, plate tectonics, and environmental justice.

**Colby College, Information Technology Services** Oct 2017 – Mar 2020  
*IT Support Technician*

- Provide technical assistance for software issues related to classroom computers, projection systems, and printers on campus.

**Colby College, Dept. of Physics and Astronomy** Sep 2018 - Dec 2019  
*Teaching Assistant*

- Evaluated student assignments for the courses Foundation of Mechanics, Foundations of Electromagnetism and Optics, and Modern Physics I.

## SERVICE

**Expanding Your Horizons (EYH) Chicago** Mar 2021 - Present  
*2022 Fundraising Co-Chair (Sep 21-Present) & Day-of Volunteer*

- Organize individual and corporate fundraisers to raise funds for EYH Chicago: a workshop-based symposium for middle-school girls to engage with STEM leaders. Attend Executive Board meetings to discuss other aspects of programming (i.e. workshop leader recruitment, keynote speakers, etc.)

**GeoEquity, Northwestern University** Apr 2021 – May 2021  
*Member, Outreach and Fundraising Community*

- Attend meetings to create a new community library and develop a quarterly newsletter for community engagement opportunities

**EvanSTEM**

Apr 2021 – May 2021

*Mentor, Climate Action Project*

- Mentored a 6<sup>th</sup> grade student through weekly, one-hour sessions, on their app-based project on air pollution

**Colby Storytellers and the Alzheimers Association, Maine Chapter**

Oct 2019 – Nov 2019

*Volunteer Scribe*

- Met with and recorded the life stories of a woman with early stages of Alzheimer's disease and created a short book to be shared with her and her loved ones.

**Greenbelt Volunteer Fire Department, Waterville Fire Department**

Summer 2018, Fall 2019

*Volunteer*

- Helped with administrative duties and community outreach activities for the fire departments

**Space Club, Colby College**

Sep 2018 - Mar 2020

*Treasurer and Planning Board member*

-Planned and arranged funding for community-based events in the Collins Observatory.

**Women in Physics, Colby College**

Jan 2018 - Mar 2020

*Co-President (Sep 2018- May 2019) and member*

- Planned the all-campus STEMinist dinner, club social events, and travel details for the Conference for Undergraduate Women in Physics.

**AWARDS & HONORS**

Inductee to Phi Beta Kappa (2020)

American Association of Physics Teachers Outstanding Learning Assistant (2019)

William A. Rogers Prize in Physics and Astronomy, Colby College (2019)

Presidential Scholar, Colby College (2017)

**TECHNICAL SKILLS**

Proficient in Python, MATLAB, Interactive Data Language (IDL), and LaTeX.

Beginner-level experience with Geographic Information Systems (GIS), Vectorworks, and the finite element software OPTUM G2.

Trained as an Emergency Medical Technician (EMT).

Fluent in English and Malayalam (speaking only).