Viet M. Bui

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STATEMENTS

Motivation

My interests stem from understanding the interactions between land-sea interfaces and the human policies and adaptations that shape them. I am particularly drawn to studying delta regions, where these dynamics are hotspots for sediment deposition, nutrient exchange, and ecological productivity. With an academic background in engineering physics and computer science, I use mathematical and computational tools to model to tell the stories of the past and predict future changes. My goal is to develop insights that aid sustainable development for my childhood communities in the Mekong Delta and other coastal regions around the world impacted by our changing climate. My research uses numerical modeling extending from my experience working on Dr. Jorge Trueba's enthalpy methods for delta fan and sea-level processes. Primarily, I program in Python with tools such as VSCode and Spyder IDEs. Although my foundational training was in Java OOP, I am actively learning new programming languages, program structures, and methods to enhance my research in geophysics. I am also constantly seeking ways to improve model performance to better capture the complexities of earth surface processes. As a sidequest, I am currently leveling up in Rust, which helps me power through long iterative loops like a speedrunner. Beyond deltas, I aim to explore how melting polar ice caps influences variable rise in sea level across geographic regions and how these differences impact coastal resilience. I am particularly interested in how scalable and good research coding practicies.

Diversity

During my gap semester at the University of Minnesota on a research internship,I worked alongside a diverse group of researchers who broadened my perspective. This vibrant and collaborative environment, unlike my undergraduate experience, showed how inclusive teams would enrich scientific inquiry. Inspired by the emerging openness in geosciences, these experiences encourage me to approach my research on deltaic and sea-level systems with inclusive perspectives, ensuring that the work benefits a diverse range of communities. I have personally worked to advance diversity and inclusion through educational initiatives, serving as an undergraduate tutor and organizing an Earth Hour event that engaged students from diverse backgrounds and inspired many to consider environmental majors. Moving forward, I am committed to integrating research, and community outreach; strengthening diversity and equity in the geosciences.

EDUCATION

University of Florida	Gainesville, FL
PhD in Hydrology	*Anticipated Dec '29*
MS in Hydrology	*Anticipated Dec '27*

- Advisor: Dr. Jorge Lorenzo-Trueba

Augustana College	Rock Island, IL
BA in Computer Science & Engineering Physics, Minor in Math | GPA: 3.78	*May '24*

PROGRAMMING LANGUAGES

Proficient in: Python, Java, SQL, JavaScript, C++, Git, PHP
Familiar with: Rust, C, R, MATLAB

SOFTWARES

Proficient in: Visual Studio Code, Spyder, Jupyter Notebook, Eclipse, Inventor3D, Adobe Creative Suite, MySQL Workbench
Familiar with: QGIS, ArcGIS, RStudio, Figma

EXPERIENCE

University of Minnesota, Earth Surfaces Processes Research Lab	Sep – Dec '24
Researcher | Advisor: Dr. Andy Wickert	*Minneapolis, MN*

- Designed and conducted wide-spectrum solar radiation sensor experiments atop the St. Anthony Laboratory, analyzing hardware performance and data quality in collaboration with a multidisciplinary research team.
- Participated in field along Minnesota's lake Superior north shore to assist in data point collection, supporting a postdoctoral researcher's geomorphology research.

Montclair State University, Coastal Dynamic Lab	Jun – Dec '24
Student Researcher | Advisor: Dr. Jorge Lorenzo-Trueba	*Remote*

- Experimented with model parameters to constrain transitions between land and oceanic sediment domains, enhancing the accuracy of delta response simulations to sea-level changes and sediment supply variations.
- Adapted MATLAB-based modeling workflows to Python, improving computational performance and visualization quality, including the use of Plotly to generate interactive graphics for AGU 2024 Conference presentations (link).
- Utilized computer vision techniques to analyze and extracted quantitative data from flume experiments.