Curriculum Vitae - Dylan J. Roy-Leo

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EDUCATION

University of Massachusetts Amherst, Amherst, MA　　　　　　　　　　　　　Expected May 2026
Dept. Of Earth, Geographic, and Climate Sciences, Masters of Science in Geography

- **Current GPA**: 3.8
- Co-advised by Qian Yu and Brian Yellen (Massachusetts state geologist)
- Working toward a Thesis and journal publication on coastal erosion and sediment transport
- Member of the **Sedimentology and Coastal Dynamics Lab** headed by Jon Woodruff
- **Relevant courses:**
  - *Time Series Analysis* taught by William Clement, Fall 2024
  - *Ocean Dynamics* taught by Rob DeCanto, Fall 2024
  - *Computational Methods in Environmental Engineering* taught by Kostas Andreadis, Spring 2025
  - *Coastal Processes* taught by Jon Woodruff, Spring 2025
  - *Quantitative Methods in the Geosciences* taught by William Clement, Fall 2025
  - *Biostatistics* taught by Jing Qian, Spring 2025

University of Massachusetts Amherst, Amherst, MA　　　　　　　　　　　　　　　　May 2024
Collage of Natural Sciences, Bachelors of Science in Environmental Science

- **Senior independent study:**
  - Spent the 2024 Spring semester conducting independent research on the ability to predict bluff erosion based on coastline retreat metrics, presented work at the Five College Geology Undergraduate Research Symposium
- **Relevant courses:**
  - *Python for ArcGIS* taught by Alexander Stepanov
  - *Remote Sensing and Image Interpretation* taught by Qian Yu
  - *GIS and Spatial Analysis* taught by Qian Yu

EXPERIENCE

NECASC Research Fellow, **University of Massachusetts Amherst**, Amherst, MA　　　Sept. 2024 – Present
Two-year research fellow position with the North East Climate Adaption Science Center

- Met weekly with fellows to discuss research and scientific best practices
- Part of the Science Communication working group
- Attended the Spring 2025 fellows intensive

RESEARCH

Roy, D.J., B. Yellen, Q. Yu. *A LiDAR-Based Method for Quantifying Fine-Grain Coastal Erosion and Its Spatial Correlation with Shoreline Armoring and Marsh Systems*. (Manuscript in preparation).

- Using soil properties data and various coastal LiDAR datasets, we created a methodology to quantify the volume and mass of fine-grain erosion from coastal bluffs.
- We analyzed the spatial distribution of fine-grain erosion in relation to coastal armoring features and marsh complexes.
- Various codebases were created to assist in the automatic delineation of coastal bluffs.

TEACHING

Graduate Teaching Assistant, **University of Massachusetts Amherst**, Amherst, MA　　Sept. 2024 – Present
Managed undergraduate and graduate sections, graded through Canvas LMS, regularly held office hours, and assisted the professor during lab sections for the following classes:

- **GIS and Spatial Analysis** taught by Qian Yu, Spring 2025 & Spring 2026
- **Remote Sensing and Image Processing** taught by Qian Yu, Fall 2024 & Fall 2025
  - Independently designed and held multiple midterm review sessions

Undergraduate Teaching Assistant, **University of Massachusetts Amherst,** Amherst, MA　　Sept. 2023 – May 2024

- **Computer Mapping** taught by Ayodele O'Uhuru, Spring 2024
  - Paid undergraduate grading position
- **Intro to GIS** taught by Forrest Bowlick, Fall 2023
  - Assisted the professor and the graduate TA during lab sections

PRESENTATIONS & PUBLIC SPEAKING

1. (Poster) D.J. Roy, B. Yellen, Q. Yu. *Coastal and Estuarine Research Federation (CERF) Conference*. Fall 2025. Richmond, VA.

2. (Poster) The contribution of bluff erosion to coastal sediment budgets. D.J. Roy, B. Yellen, Q. Yu. *New England Estuarine*

Research Society (NEERS) Conference. Spring 2025. Provincetown, MA.

3. (Webinar) The Importance of Sediment to Northeast Salt Marshes and Threats Posed by Regional Decline in Coastal Sediment Supply. D.J. Roy, W. Teng, J. Woodruff, B. Yellen, Q. Yu. *NE CASC Spring Webinar Series*. Spring 2025.

PROGRAMMING

Programming: Proficient Python programmer for geospatial and non-geospatial applications. Familiar packages include the Google Earth Engine API for Python (remote sensing), XArray (organized arrays), Dask (parallelization), SciPy (optimization and Fourier methods), NumPy (vectorized computation), PyCWT (wavelet spectral analysis), and PySINDy (Sparse Identification of Non-Linear Dynamics). Proficient in Poetry for Python dependency management.

OTHER SKILLS

GIS & Remote Sensing: Proficient at using GIS to manage and manipulate data, create maps and visualizations, and assist other forms of data analysis.

Mathematics and numerical modelling: Proficient in Calculus, singular and multivariate, up to and including Fourier methods. Self-taught student in linear algebra and ODEs and PDEs. Passion for fluid dynamics including Finite-Time Lyapanov Exponents, Langrangian Coherent Structures, and Dynamic Mode Decomposition of flow fields. Created a Jupyter Notebook allowing for the parameterization and exploration of the classical "Lid-Driven Cavity Flow" simulation from CFD.