Connor J. Mack

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SUMMARY

PhD candidate combining climate science and policy expertise with advanced data science and Python skills to build data-driven solutions to our most pressing energy and environmental challenges. Specializing in climate technology assessment, geospatial deep learning, and building AI-enabled tools to inform decision-making at the intersection of climate policy and technology innovation.

EDUCATION

Scripps Institution of Oceanography | UC San Diego **August 2023 - Present**
PhD Candidate, Applied Ocean Science

- Relevant Coursework: Applied Mathematics, Satellite Remote Sensing, Marine GIS, Policy Making Processes, Energy Systems & Innovation, Environmental Economics, The Policy and Politics of Climate Change (TA)

Scripps Institution of Oceanography | UC San Diego **August 2021 – June 2022**
MAS, Climate Science & Policy

Haas School of Business | UC Berkeley **August 2017 – June 2021**
Bachelor of Science in Business, Minor in Data Science | Division 1 Varsity Athlete

SKILLS & PROJECTS

Languages & Tools: Python (PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Jupyter, Xarray), Large Language Models (LLMs), Self-supervised Learning (SSL), RAG Pipelines, APIs, Git/GitHub, Claude Code, Gemini CLI, AWS, Computer Vision, SQL, MATLAB

Skills: Writing, Remote Sensing & EO, Policy Analysis, GPU Acceleration, Science Communication, Techno-Economic Analysis (TEA), Life-Cycle Assessment (LCA), Climate & Ocean Modeling, Integrated Assessment Modeling (IAMs)

Selected Projects:
LLM-driven Narrative Analysis Tool: narrative tracking in customizable information environments using LLMs (URL)
Scientific RAG Pipeline: a RAG pipeline for synthesizing scientific literature in a searchable vector database (URL)
AI Workflow Integration Tool: a MacOS app to streamline LLM and AI integration with GitHub workflows (URL)

EXPERIENCE

Graduate Student Researcher | Applied Ocean Science PhD

- Engineered AI-enabled data pipelines for automated feature extraction from terabyte-scale geospatial datasets, enabling scalable environmental risk assessment, decision support, and resilience planning
- Developed decision frameworks for climate technology assessment under deep uncertainty, integrating policy intervention scenarios with geophysical and techno-economic constraints to inform regulatory and investment strategies

Data Analyst
Center for Coastal Studies | Scripps Institution of Oceanography

- Built data collection and processing pipelines, applied novel machine learning methods to remote sensing data and coastal hazard surveys, directly supporting environmental risk assessment, resilience planning, and decision making

RESEARCH INTERESTS

Foundation models for Earth observation | Decision-making under deep uncertainty | Remote sensing & satellite imagery | LLM-enabled research | Climate modeling & AI emulation | Physics-informed ML | Vision Transformers

SELECTED PUBLICATIONS

Mack, C.J., Hanna, R., Faggiani-Dias, D., & Victor, D.G. "The Scalability and Carbon Removal Potential of Ocean Alkalinity Enhancement." *Nature Communications* (Under Review). Pre-print: doi.org/10.21203/rs.3.rs-7956805/v1

Mack, C.J., Maclay, M., Krier-Mariani, R., & Young, A.P. "Integrating Machine Learning and 3D Change Detection for Scalable Coastal Risk Assessment" *Computers & Geosciences* (Under Review).

Mack, C.J. "Opinion: Smart Regulations Needed for Promising Marine Carbon Removal." *San Diego Union-Tribune*, August 26, 2024. (URL)