# BIANCA CHAMPENOIS

MIT Graduate Student

[biancach.github.io](biancach.github.io) ⬦ [LinkedIn](LinkedIn) ⬦ [Google Scholar](Google Scholar)

## EDUCATION

**PhD, Mechanical Engineering and Computation**, MIT                    2022 - 2025
Major: Computational Science and Engineering, Minor: Geophysical Fluid Dynamics

**Master of Science, Mechanical Engineering**, MIT 4.9/5.0                    2020 - 2022
Thesis: Reconstructing 3D ocean temperature fields from real-time satellite and buoy surface measurements

**Bachelor of Science, Mechanical Engineering**, UC Berkeley 3.9/4.0                    2016 - 2020

## PUBLICATIONS

(Submitted) **B. Champenois** and T. P. Sapsis. Likelihood-Weighted Active Selection of Training Data for Improved Extreme Weather Event Prediction.

(Submitted) **B. Champenois**, C. Bastidas, B. LaBash, and T. P. Sapsis. Data-Driven Modeling of 4D Ocean and Coastal Acidification from Surface Measurements.

**B. Champenois** and T. P. Sapsis. Machine Learning Framework for the Real-Time Reconstruction of Regional 4D Ocean Temperature Fields from Historical Reanalysis Data and Real-Time Satellite and Buoy Surface Measurements. [Physica D: Nonlinear Phenomena](Physica D: Nonlinear Phenomena), December 2023.

S. Guth, **B. Champenois**, T. P. Sapsis, Application of Gaussian Process Multi-Fidelity Optimal Sampling to Ship Structural Modeling. [34th Symposium on Naval Hydrodynamics](34th Symposium on Naval Hydrodynamics), June 2022.

## AWARDS

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| Computational Science and Engineering Community Retreat Best Poster Prize | 2024 |
| 2nd Place in the MechE De Florez Competition in the Category of Graduate Science | 2024 |
| 2nd Place in the SIAM UQ Power of Diversity Poster Competition | 2024 |
| SIAM UQ Travel Award | 2024 |
| MIT MechE Graduate Travel Grant | 2023 |
| MIT Graduate Student Council Conference Grant | 2023 |
| Clement F. Burnap Award for Outstanding Master of Science in a Marine Field | 2023 |
| Meredith Kamm Award for Excellence in a Woman Graduate Student | 2023 |
| 3rd Place in the MechE De Florez Competition in the Category of Graduate Science | 2023 |
| MIT EnergyHack 2nd Place (1st place in the McKinsey & Co challenge) | 2022 |
| Mechanical Engineering Research Exhibition Poster Competition: Runner Up | 2021 |
| MIT MechE Harrington Fellowship | 2020 |
| National Science Foundation Graduate Research Fellowship (NSF-GRFP) | 2020 |

## MEDIA AND REPORTS

Radio Canada [Moteur de Recherche](Moteur de Recherche) *Les modèles météorologiques sont-ils désuets?* July 2024.

[MIT News](MIT News) *The MIT Bike Lab: A place for community, hands-on learning.* May 2024.

[SIAM News](SIAM News) *MIT SIAM Student Chapter Hackathon Utilizes Open-access Energy Data* April 2024.

[Spectrum Magazine](Spectrum Magazine) *Bianca Champenois Helps Model the Future for Coastal Industries.* Spring 2023.

Global Energy Monitor [*Scraping By 2023: Global Coal Miners and the Urgency of Just Transition.*](Scraping By 2023)
Contributions: Development of machine learning model to estimate coal mine workforce size.

## CONFERENCES

**B. Champenois**, T. P. Sapsis, Data-Driven Modeling of Indicators for Ocean Acidification in the US Northeast Coast with Physics-Enhanced Machine Learning. ENOC, 2024.

**B. Champenois**, T. P. Sapsis, Finding the Most Valuable Data Points for Predicting Extreme Event Statistics with Likelihood-Weighted Active Learning. ENOC, 2024.

**B. Champenois**, T. P. Sapsis, Overcoming Fear of Missing Out (FOMO): Active Selection of Training Data to Predict Extreme Event Statistics in Climate Datasets. SIAM UQ, 2024.

**B. Champenois**, A. Charalampopoulos, T. P. Sapsis, Quantifying the Value of Data in Scientific Machine Learning Models with Output-Weighted Active Learning. AGU, Fall 2023.

**B. Champenois**, T. P. Sapsis, A Multi-Fidelity Framework for Ocean Temperature Reconstruction Based on Model-Inferred Dynamics and Real Time Satellite and Buoy Measurements. AGU, Fall 2021.

K.T. Huynh, E. Variano, **B. Champenois**, M. Grehm, Correlating Gas Exchange Across the Air-Water Interface to Water-Side Velocity Statistics. AGU, Fall 2020.

## WORK, SERVICE, LEADERSHIP

**MIT School of Engineering Communication Lab - Fellow**                    June 2023 - Present
- Coached more than 75 students in one-on-one sessions focused on science communication.
- Created content on poster design for the online CommKit resource.
- Hosted technical communication workshops on writing fellowship applications.
- Completed a 20 hour training on effective coaching and communication strategies.

**MIT MechE - 2.122 Stochastic Systems Teaching Assistant**          January 2022 - May 2022
- Wrote and graded problem sets and exams, and held weekly office hours and review sessions for a class of 38 undergraduate, graduate, and Navy/Coast Guard students.

**MIT Division of Student Life - Graduate Resident Advisor**          September 2021 - Present
- Supported 45 undergraduate students as a live-in resident advisor at Next House.
- Set community expectations during semesterly floor meetings, organized weekly social activities, managed crises, and provided mental health support.

**MIT MechE ENGAGE - Peer Mentor**                              September 2022 - Present
- Served as a mentor for incoming women and underrepresented first year graduate students.
- Facilitated weekly group discussions between 1 faculty, 4 first year students, and 2 peer mentors on career and research planning, health and wellness, advisor relationships, and perseverance.
- Organized semesterly workshops on resources for all first years. Offered ad hoc one-on-one meetings for individualized mentorship.

**The Bike Lab - President and Founder**                            June 2022 - Present
- Founded and led a student-run bike repair cooperative at MIT, raising funds, purchasing tools and parts, and recruiting and managing a team of 10 volunteers.
- Coordinated operations, set hours, and led bike repair tutorials, teaching over 200 individuals.

## SKILLS

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| **Programming** | Python, MATLAB, Java, High Performance Computing, Git |
| **Software Libraries** | NumPy, Pandas, scipy, TensorFlow, PyTorch, Keras, scikit-learn |
| **Design Software** | Adobe (Illustrator, Photoshop), AutoCAD, SolidWorks, Fusion, KiCad |
| **Design Tools** | 3D Printing, Laser Cutter, Machine Shop Trained |
| **Language** | English (native), French (native), Spanish (proficient) |