Ysabel Wang

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Massachusetts Institute of Technology
Woods Hole Oceanographic Institution
Cambridge MA 02139

Academic Background

PhD in Physical Oceanography (2023 - present)	MIT-WHOI Joint Program in Oceanography Massachusetts Institute of Technology, Cambridge MA 02139 Woods Hole Oceanographic Institution, Falmouth MA 02543 Adviser: Dr. Magdalena Andres
Master of Science in Oceanography (2021 - 2023)	Texas A&M University, College Station, TX 77843 Adviser: Dr. Steven F. DiMarco Research: Physical mechanisms behind the formation and fate of a coastal dense surface water mass during the 2021 Texas winter storms
Bachelor of Science in Physics cum laude (degree earned in June 2018)	University of the Philippines Diliman, Quezon City, PH 1101 Adviser: Dr. Percival F. Almoro Student Member, Photonics Research Laboratory (2015-2018) Undergraduate Thesis: Highly secure optical encryption using multiple-diffuser phase retrieval and chaos phase masks

Employment Background

Graduate Research Assistant (September 2023 – present)	Woods Hole Oceanographic Institution, Falmouth MA
Graduate Assistant - Research (August 2021 – July 2023)	Texas A&M University, College Station TX
University Research Associate II (September 2018 – March 2021)	Physical Oceanography Laboratory, The Marine Science Institute, P. Velasquez Street, University of the Philippines Diliman

Publications and Technical Reports

Wang, Y. D., & Andres, M. (2024). SWOT Adopt a Crossover Field Campaign—Cape Hatteras (MAB-SWOT) Current and Pressure Sensor Equipped Inverted Echo Sounder (CPIES) Technical Report (Version 1). *Zenodo*. https://doi.org/10.5281/zenodo.12583849

Punongbayan, A. T., **Wang, Y. D.**, Villanoy, C. L., & Yñiguez, A. T. (2022). Connections and clustering of Paralytic Shellfish Toxin events among coastal embayments in an archipelago partly mediated by advection. *Harmful Algae*, 111, 102147. https://doi.org/10.1016/j.hal.2021.102147

Wang, M. Y. D., & Almoro, P. F. (2018). Highly secure optical encryption using multiple-diffuser phase retrieval and chaos phase masks. *Proceedings of the Samahang Pisika ng Pilipinas*.

Awards and Honors

Ralph Rayburn ’69 Texas Sea Grant Scholarship — 2022-2023
Awarded for academic excellence by the Department of Oceanography, Texas A&M University

Society for Underwater Technology Scholarship — 2022-2023
Awarded by the Society for Underwater Technology – US

Phi Kappa Phi Honor Society — 2018-2019

Member No. 12613100

Projects and Research Experience

SWOT Adopt-A-Crossover Field Campaign (MAB-SWOT) 2024 – present

- Process and analyze Current and Pressure Equipped Inverted Echo Sounders (CPIESs) records in the context of mesoscale and submesoscale variability in the Mid-Atlantic Bight
- Publish a publicly available dataset and technical report on CPIES records
- Participate in a research cruise to retrieve and deploy CPIES in the US East Coast (June 2024)

New England Seamounts Experiment (NESMA) 2023 – present

- Investigate the evolving mesoscale and submesoscale variability and dynamics in the Northwestern Atlantic and the effects of the New England Seamounts

Ocean Acidification on a Crossroad: Enhanced Respiration, Upwelling, Increasing Atmospheric CO2, and their interactions in the northwestern Gulf of Mexico (NOAA Ocean Acidification Program) 2021 - 2023

- Processed and analyzed recent and historical oceanographic data on the Texas-Louisiana shelf to assess the impact of the 2021 winter events on hydrography, circulation, and carbonate chemistry
- Performed hardware and software integration, preparation, deployment, and post-analysis of Texas A&M's Liquid Robotics SV3 wave glider
- Conducted field surveys in the northern Gulf of Mexico (October 2022, December 2022, March 2023)

Hazard Detection and Mitigation Tools for Opportunistic Algal Blooms in a Changing Environment 2018 - 2021

- Conducted field surveys for the deployment of sensors to assess harmful algal bloom dynamics in Puerto Princesa Bay, Palawan (January 2019) and in the Samar-Leyte region (March 2019)
- Participated in the VISSea Research Cruise (August – September 2019) to assess harmful algal bloom dynamics in the Samar and Visayan Seas with field surveys in (1) Samar-Leyte, (2) Islas de Gigantes, Iloilo, and (3) Sapi-an Bay, Capiz, Philippines
- Communicated the design and operational instructions for the SensPak, a low-cost in-situ water quality data acquisition instrument developed by the University of the Philippines for HABS monitoring

Deploying Unmanned Research Vessels to Advance Marine and Environmental Health Monitoring and Data Collection in the Philippines 2018-2019, 2021

- Conducted field surveys for sensor deployment and to assess the hydrodynamics in Bolinao, Pangasinan (December 2018)
- Participated in a research cruise to deploy sensors and assess the hydrodynamics and water quality around Boracay, Aklan
- Piloted the Marine Science Institute's Liquid Robotics SV3 v2 Wave Glider during its deployment in Tubbataha Reefs Natural Park, Palawan (October 2019 & May 2021)

Kuroshio Current Observing System of the Philippines 2019

- Assisted in setting up the high-frequency radar system to be used for surface current detection in Gonzaga, Cagayan (November 2019)

Selected Conference Presentations

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Wang, Y.D., Andres, M., Bahr, F., Gawakiewicz, G., Gangopadhyay, A., Porter, N., Jensen, G., Todd, R.E., Lin, Y.T. *Characteristics and Environmental Effects of a Warm Core Ring Crossing the New England Seamount Chain*. Ocean Sciences Meeting 2022, New Orleans, LA, United States. Poster.

Wang, Y.D., DiMarco, S.F., Kurian, J., Knap, A., Lee, L.L. III. (2022, December 12-16). *Dense Water Mass Formation and Fate in the Northwestern Gulf of Mexico during the February 2021 Winter Storm Event*. American Geophysical Union 2022 Fall Meeting, Chicago, IL, United States. Oral.

Wang, Y.D., DiMarco, S.F., Knap, A., Walpert, J., Lee, L. III, Hu, X., Chapman, P. (2022, February 24 – March 4). *Impact of the 2021 North American winter storms on coastal circulation and hydrographic properties of the northern Gulf of Mexico*. Ocean Sciences Meeting 2022, Virtual. Oral.

Datasets

Wang, Y. D., & Andres, M. (2024). MAB-SWOT CPIES Level 2 Processed Data [Data set]. Zenodo. https://doi.org/10.5281/zenodo.12584060

Outreach and Service

Joint Program Applicant Support & Knowledgebase (JP ASK) Board Member 2024 - present

Manage the logistics and advertising of the program and provide supplementary materials to both mentors and mentees. As an international student on the board, I aim to provide the perspective of an underrepresented minority in order to foster an inclusive and accessible environment among mentors and mentees.

Joint Program Applicant Support & Knowledgebase (JP ASK) Mentor 2024 - present

Advise and provide support to prospective students in their applications to the MIT-WHOI Joint Program

Joint Program – Summer Student Fellowship Mentorship Program (JP-SSF) 2024 - present

Mentored undergraduate summer student fellows on graduate school and research.

Relevant Projects

Establishing the data acquisition system of R/V Kasarinlan (2019)

- Assisted in putting the data acquisition system of the Marine Science Institute's first research vessel, R/V Kasarinlan, online, wherein real-time ADCP, GPS, and weather station data were made accessible through the ship's WiFi network

Development of Underway data collection system (2018-2019)

- Created a python script to parse and collate surface water quality data from a GPS, CTD, and fluorometer onto a Raspberry Pi 3

Manufacturing of battery packs (2019)

- Assisted in creating 12V Li-ion battery packs to power ADCPs and fluorometers during fieldwork

Professional Qualifications, Certifications, and Special Skills

- Programming languages: MATLAB (advanced), Python (proficient), R (intermediate), C (intermediate), bash (intermediate)
- Texas A&M Graduate and Professional School Graduate Mentoring Academy Fellow
- Proficient in Delft3D-Flow Hydrodynamic Modelling
- Experienced in handling, maintaining, and training researchers in using oceanographic equipment including but not limited to:

    - Acoustic Doppler current profilers (Teledyne Marine WorkHorse Sentinel ADCP 600KHz and 300KHz)
    - Ocean sensors and payloads (SBE 19plus V2, RBRconcerto^3, Sea-Bird Thermosalino-graph, Turner Designs C3 Submersible Fluorometer, Sea-Bird SeaFET, Pro-Oceanus CO2-Pro CV)
    - Weather stations (HOBO and AIO v100)
- Liquid Robotics Wave Glider software integration, hardware maintenance and integration, piloting
- Network troubleshooting and systems administration
- Electronics hardware repair and management
- Languages spoken: English (native), Filipino (native), Spanish (proficient), French (intermediate), Mandarin (intermediate)

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