Ysabel Wang

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Building 54
Massachusetts Institute of Technology
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 Assistant - Research
(August 2021 – July 2023)

Texas A&M University, College Station, USA

University Research Associate II
(September 2018 – March 2021)

Physical Oceanography Laboratory, The Marine Science Institute, P. Velasquez Street, University of the Philippines Diliman

Publications

2022 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

2018 **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 — Awarded for Academic Year 2022-2023 for academic excellence by the Department of Oceanography, College of Geosciences, Texas A&M University

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

Phi Kappa Phi Honor Society — Member, 2018-2019, No. 12613100

Research and Fieldwork Experience

2021 - 2023

Project: ***Ocean Acidification on a Crossroad: Enhanced Respiration, Upwelling, Increasing Atmospheric CO2, and their interactions in the northwestern Gulf of Mexico*** **(NOAA Ocean Acidification Program)**
Funding: National Oceanic and Atmospheric Administration
Principal Investigator: Dr. Xinping Hu (Texas A&M University-Corpus Christi)
Duties: (1) Process and analyze 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
(2) Hardware and software integration, preparation, deployment, and post-analysis of Texas A&M's Liquid Robotics SV3 wave glider
(3) Conduct field surveys in the northern Gulf of Mexico (October 2022, December 2022, March 2023)

2018 - 2021

Project: ***Hazard Detection and Mitigation Tools for Opportunistic Algal Blooms in a Changing Environment***
Funding: Department of Science and Technology, Philippines
Principal Investigator: Dr. Aletta T. Yñiguez (Marine Science Institute, University of the Philippines Diliman)
Duties: (1) 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)
(2) 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
(3) 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

2018-2019, 2021

Project: ***Deploying Unmanned Research Vessels to Advance Marine and Environmental Health Monitoring and Data Collection in the Philippines***
Funding: Philippine-California Advanced Research Institutes Project of the Commission on Higher Education
Principal Investigator: Dr. Caroline Jaraula (Marine Science Institute, University of the Philippines Diliman)
Duties: (1) Conducted field surveys for sensor deployment and to assess the hydrodynamics in Bolinao, Pangasinan (December 2018)
(2) Participated in a research cruise to deploy sensors and assess the hydrodynamics and water quality around Boracay, Aklan
(3) 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)

2019

Project: ***Kuroshio Current Observing System of the Philippines***
Funding: Department of Science and Technology - Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development
Principal Investigator: Dr. Cesar L. Villanoy (Marine Science Institute, University of the Philippines Diliman)
Duties: Assisted in setting up high-frequency radars to be used for surface current detection in Gonzaga, Cagayan (November 2019)

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Conferences Attended

American Geophysical Union 2022 Fall Meeting (December 12-16, 2022)
- Oral presentation of research entitled *Dense Water Mass Formation and Fate in the Northwestern Gulf of Mexico during the February 2021 Winter Storm Event*

Ocean Sciences Meeting 2022 (Virtual, February 24 – March 4, 2022)
- Oral presentation of research entitled *Impact of the 2021 North American winter storms on coastal circulation and hydrographic properties of the northern Gulf of Mexico*

11th EASTHAB Symposium and 4th PHILHAB Conference (December 11-13, 2019)
- Microtel Inn & Suites, Puerto Princesa City, Palawan, Philippines
- Member of secretariat
- Poster presentation of research entitled *Numerical modelling of the circulation of Puerto Princesa Bay*

Philippine Association of Marine Science 15th National Symposium (July 4-6, 2019)
- Aklan State University, Banga, Aklan, Philippines
- Oral presentation of research entitled *Numerical modeling of the general circulation of Carigara Bay*

36th Samahang Pisika ng Pilipinas (June 6-10, 2018)
- Citystate Asturias Hotel, Puerto Princesa, Palawan, Philippines
- Oral presentation of paper entitled *Highly secure optical encryption using multiple-diffuser phase retrieval and chaos phase masks*

Relevant Projects

Setting up 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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