Yuchun Lin

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Education

Ph.D., Institute of Hydrological and Oceanic Sciences, National Central University, June 2019
Thesis title: "Analyses and modeling of ocean currents and waves: connection with mesoscale eddy, tropical cyclone, phytoplankton and climate variability"

M.S., Institute of Marine Environmental Science and Technology, National Taiwan Normal University, Taiwan, June 2010
Thesis title: "Effects of wave-induced mixing on the temperature structure"

B.S., Dept. of Marine Environment Informatics, National Taiwan Ocean University, Taiwan, June 2007

Research Statements

I am a postdoc working at the Cooperative Institute for Great Lakes Research (CIGLR) for ice hydrodynamic modeling from December 1st, 2019. The researches mainly focus on modeling the ice formation spots in the Great Lakes using FVCOM, the interactions between wave- ice over the Great Lakes, and the climate effects on the annual maximum ice cover of the Great Lakes.

I was one of the first ATOP (Advanced Taiwan Ocean Prediction system) group members when Prof. Lie-Yauw Oey's first came to Taiwan in 2011 and contributed to build and validate ATOP forecast output with multiple observations, such as temperature, sea surface elevation, ocean currents, tidal variation, and wave simulation as well. ATOP system is modified so that data is automatically downloaded, interpolated and forecasted. ATOP also includes a biological scheme based on NPZD model. ATOP has also been used on particle tracking for the debris in Taiwan Strait and inside eddied over the western North Pacific, the warming effects and shelf-sea fronts in Taiwan Strait and China marginal seas due to winter monsoon, and the typhoon responses to upper ocean.
My major researches include the air-sea interactions over western North Pacific, biological responses to tropical cyclones in the upper ocean, improvements of forecasting tropical cyclone simulation and surface wave variations in climate scale. Three studies have published among these research topics. The analyses of annual Rossby waves and eddies fluctuate temperature in northern South China Sea has been carried out by Empirical Orthogonal Function (EOF) and Singular Value Decomposition (SVD). We discovered and explained rainfall induced blooming in the later phase of tropical cyclone wakes in the western North Pacific using observations and biophysical model. Currently I am interesting in the responses of ocean surface wave climate to tropical cyclone and their connection to climate indices. I also develop a semi-coupled and coupled WRF-ATOP model for better understanding and accurately forecasting tropical cyclone intensity.

Research Interest/Area of Expertise

- Geophysical Fluid Dynamics
- Oceanic and atmospheric numerical modeling
- Tropical climate dynamic

Awards, Fellowships, and Grants

2019 International Workshop on Modeling the Ocean: 3rd place of Outstanding Young Scientist Awards
2018 Taiwan Ocean Science meeting: 1st place of Young Scientist Forum in Physical Oceanography
2016 Summer Program in Spain for Taiwanese PhD. Students
2016 National Central University Presidential Scholarship Award
2016 Taiwan Ocean Science meeting: Young Scientist Forum Winning in Physical Oceanography
2015 Oral of 2nd Xiamen Symposium on Marine Environmental Sciences, Best Student Oral Presentation Award
2015 Student Research Scholarship of Earth Science Department
2014 Best Student Award of Second Semester

Publications

1. **Lin, Y.-C.**, L. Oey, 2020: Global trends of sea surface gravity wave, wind and coastal wave set-up. *J. Clim.*, **32**, 769-785, https://doi.org/10.1175/JCLI-D-19-0347.1.
2. **Lin, Y.-C.**, L.-Y. Oey, and A. Orfila, 2019: Two 'faces' of ENSO-induced surface waves during the tropical cyclone season. Prog. Oceanogr. , https://doi.org/10.1016/j.pocean.2019.03.004.
3. **Lin, Y.-C.**, L.-Y. Oey, 2016: Rain-enhanced phytoplankton blooming in typhoon wakes. Sci Reports. DOI: 10.1038/srep31310.
4. **Lin, Y.-C.**, L.-Y. Oey, J. Wang and K.-K. Liu (2016) Rossby waves and eddies observed at a temperature mooring in northern South China Sea. J. Phys. Oceangr. DOI: 10.1175/JPO-D-15-0094.1.
5. Sun, J.R., L. Oey, F.-H. Xu and **Y.-C. Lin** (2017) Sea level rise, surface warming, and the weakened buffering ability of South China Sea to strong typhoons in recent decades. Sci. Reports. Doi:10.1038/s41598-017-07572-3.
6. Oey, L.-Y., M.-C. Chang, S.-M. Huang, **Y.-C. Lin** and M.-A. Lee (2015) The influence of shelf-sea fronts on winter monsoon over East China Sea. Clim. Dyn. DOI:10.1007/ s00382-014-2455-3.
7. Oey, L.-Y., M.-C. Chansg, **Y.-C. Lin**, Y.-L. Chang, S. Varlamov and Y. Miyazawa (2014) Cross flows in the Taiwan Strait in winter. J. Phys. Oceanogr. 44, 801-817.
8. Oey, L.-Y., M.-C. Chang, Y.-L. Chang, **Y.-C. Lin**, and F.-H. Xu, (2013) Decadal warming of coastal China Seas and coupling with winter monsoon and currents. Geophys. Res. Lett. 40, 23, 6288-6292. DOI:10.1002/2013GL058202.
9. Oey, L.-Y., Y.-L. Chang, **Y.-C. Lin**, M.-C. Chang, F.-H. Xu, and H.-F. Lu, (2013) ATOP-The Advanced Taiwan Ocean Prediction System based on the mpiPOM. Part 1: Model Descriptions, Analyses and Results. Terr. Atmos. Ocean. Sci., 24, 1, 137-158.

Recent conference presentations

1. **Lin, Y.-C.**, L.-Y. Oey and A. Orfila: Two 'faces' of ENSO-induced surface waves during the tropical cyclone season, International Workshop on Modeling the Ocean, Wuxi, China, 2019 (**3rd place of Outstanding Young Scientist Awards**)
2. **Lin, Y.-C.**, L.-Y. Oey and A. Orfila: Inter-annual fluctuations of global significant wave height. The 14th Asia Oceania Geosciences Society, Singapore, Singapore, 2017
3. **Lin, Y.-C.**, L.-Y. Oey: Rain-enhanced phytoplankton blooming in typhoon wakes. 8th OFES International Workshop, Nagoya, Japan, 2017
4. **Lin, Y.-C.**, L.-Y. Oey: Time-dependent asymmetry of phytoplankton bloom in the wake of tropical cyclones. The 18th Ocean Sciences Meeting, New Orleans, USA, 2016.
5. **Lin Y.-C.**, L.-Y. Oey, S.-M. Huang, Y. Yang and K.-K. Liu: Temperature at a mooring in Northern South China Sea and its connection with surface heat flux, wind and eddies. The 2nd Xiamen Symposium on Marine Environmental Science, Xiamen, 2015 (**Best Student Oral Presentation Award**)