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EDUCATION

2005/06 – 2015/07	Ph.D.	Depart. of Atmospheric Science, National Central Uni., Taiwan
2003/09 – 2005/06	M.S.	Institute of Hydrological Sciences, National Central Uni., Taiwan
1999/09 – 2003/06	B.A.	Depart. of Atmospheric Science, Chinese Culture Uni., Taiwan

EMPLOYMENT

2022/08 – present	Postdoctoral Researcher	RCEC, Academia Sinica, Taiwan
2019/08 – 2022/07	Project Assistant Professor	Depart. of Atmospheric Science, Chinese Culture Uni, Taiwan
2015/09 - 2019/08	Postdoctoral Researcher	Grad. Inst. of Hydrological & Oceanic Sciences., National Central Uni., Taiwan

RESEARCH INTEREST

My research interests focused on understanding the Climate Change dynamical processes, such as the long time scale variation of tropical cyclone tracks & intensification, the large scale change of atmosphere circulation patterns (e.g. Indian & Asian monsoon), SST, Chl-a, & Ocean current anomaly from interannual to multidecadal events (e.g. ENSO, PDO and IOD). I used atmosphere, ocean & biochemical numerical models for simulation and I analyzed different kinds of observational data (e.g. station, mooring, satellite image and reanalysis data), covering the Indo-Pacific Ocean and Asian regions. All these study issues are very important for global environments especially extreme weather & water resources, because they affect the distribution and intensity change of precipitation over Asia region and the human activity and well-being.

RESEARCH HIGHLIGHTS

1. **Tropical Cyclones & Ocean Warm Eddy Interaction:**
   Identifying the conditions under which a tropical cyclone (TC) undergoes rapid intensification (RI) remains to date a tremendous challenge in atmospheric science. Previous studies have shown that a TC passing over a warm ocean feature (WOF; e.g., warm eddy) can intensify (and

conversely the storm may weaken when it passes over a cold eddy). In this study, we propose to systematically examine and quantify the effects of each of the above-mentioned processes on TC-intensification, under different TC translation speeds and with different sizes of the ocean eddy. The results show that the WOF increases surface enthalpy flux and moisture convergence in the storm's core, resulting in stronger updrafts and intensity. However, the intensification rate is, in general, insufficiently rapid. Consequently, the number of RIs is not statistically significantly different between simulations with and without the WOF. Reference: Oey & Huang, 2021.

2. **Tropical Deforestation & Climate Change:**
   In the equatorial Malay Archipelago (Indonesia and Malaysia), tropical rainforest is lost on large scales to cash-crop plantation (oil palm, rubber and acacia, including fallow lands) and urban expansion. We found that deforestation into cash crops & urbanization change land surface properties and fluxes, and produce strong island warming compared to ocean SST. Despite the expansive land-cover change over a climatically sensitive region of the tropics, the resulting impact on the Asian summer monsoon has not been studied. We use a large ensemble of Atmospheric model experiments with observed and idealized land-cover-change specifications, and show that the deforestation warms the Malay Archipelago, caused by an increase in soil warming due to decreased evapotranspirative cooling. Reference: Huang & Oey, 2019.

REPRESENTATIVE PUBLICATIONS (*: corresponding author)

1. Oey*, L., **S.M., Huang***, 2021: Can a Warm Ocean Feature Cause a Typhoon to Intensify Rapidly? *Atmosphere*, 12, 797.
2. Lee, C. A., Huang, W. R. *, Chang, Y. H., & **Huang, S. M.**, 2021: Impact of multiple-scale circulation interactions on the spring diurnal precipitation over Luzon. *Scientific reports*, 11(1), 1-12.
3. **Huang, S.-M.**, and L.-Y. Oey*, 2019: Malay Archipelago forest loss to cash crops and urban expansion contributes to weaken the Asian summer monsoon: an atmospheric modeling study, *J. Climate.*
4. **Huang, S.-M.**, and L.-Y. Oey*, 2018: Land-falling typhoons are controlled by the meridional oscillation of the Kuroshio Extension, *Climate Dyn.*, 50(320), 1-13. https://doi.org/10.1007/s00382-018-4295-z.
5. Chang, Y.-L.*, Y. Miyazawa, Leo Oey, T. Kodaira, and **S.-M. Huang**, 2017: The formation processes of phytoplankton growth and decline in mesoscale eddies in the western North Pacific Ocean, *J. Geophys. Res. Oceans*, 122, 4444–4455.

6. Liang, A. (T.-Y.), L. Oey*, **S.-M. Huang**, and S. Chou, 2017: Long-term trends of typhoon-induced rainfall over Taiwan: In situ evidence of poleward shift of typhoons in western North Pacific in recent decades, *J. Geophys. Res. Atmos*.
7. **Huang, S.-M.**, and L.-Y. Oey*, 2015: Right-side cooling and phytoplankton bloom in the wake of a tropical cyclone. *J. Geophys. Res.: Ocean.* 120, 5735-5748, doi:10.1002/2015JC010896.
8. Sun, J.-R., L.-Y. Oey*, R. Chang, F.-H. Xu, and **S.-M. Huang**, 2015: Ocean response to typhoon Nuri (2008) in western Pacific and South China Sea, *Ocean Dyn*, 65, 735-749, doi:10.1007/s10236-015-0823-0.
9. 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*. 45, 2047-2068, doi:10.1007/s00382-014-2455-3.
10. Liu, K.-K.*, L.-W. Wang, M. Dai, C.-M. Tseng, Y. Yang, C.-H. Sui, L.-Y. Oey, K.-Y. Tseng, and **S.-M. Huang**, 2013: Inter-annual variation of chlorophyll in the northern South China Sea observed at the SEATS Station and its asymmetric responses to climate oscillation, *Biogeosci*. 10, 7449-7462, doi:10.5194/bg-10-7449-2013.

Others (Invited Talks，Keynote speech et al.)

Invited Talks

- 2020, Invited speaker, Malay Archipelago Forest Loss to Cash Crops and Urban Expansion Contributes to Weaken the Asian Summer Monsoon: An Atmospheric Modeling Study? Depart. of Earth Sciences, National Taiwan Normal Uni, Taiwan