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EDUCATION

2017/09 – 2023/07 Ph.D. Institute of Oceanography, National Taiwan University, Taiwan

2004/09 – 2007/07 M.S. Institute of Oceanography, National Taiwan University, Taiwan

1998/09 – 2002/06 B.A. Earth Sciences, National Taiwan Normal University, Taiwan

EMPLOYMENT

2023/08 - present Research Fellow RCEC, Academia Sinica, Taiwan.

2016/01 - 2017/08 Associate Research Fellow RCEC, Academia Sinica, Taiwan.

2015/01 - 2015/10 Engineer Taiwan Ocean Research Institute, Taiwan.

2009/10 - 2013/07 Lab Technician Depart. of Oceanography, UH Manoa, USA.

RESEARCH INTEREST

The focus of my research is to estimate the source contributions of the bioavailable aerosol metals into the surface water of the Northwestern Pacific Ocean. The East China Sea (ECS) is located at the downwind side of mainland China, a major aerosol source to the global ocean. The ECS receives a large amount of aerosols mixed with relatively fine anthropogenic aerosols and coarse lithogenic dust. During the northeastern monsoon and the Westerly prevailing periods, generally ranging from October to early May, the mixed aerosols accompanying with other pollutants (e.g., inorganic acids) are transported to the ECS, the adjacent marginal seas, and the Northwestern and subarctic Pacific Oceans. Aerosols are a major source of biologically essential dissolved trace metals (e.g., Fe, Co, Cu, Zn, Ni) in the euphotic zone of the ocean, deciding the growth and composition of different phytoplankton groups in the marine euphotic zone and thus influencing material cycling in the ocean. However, it is highly challenging to define the bioavailable aerosol metal fraction. Recent studies have suggested to standardize several typical leaching protocols: ultrapure water leaching, ammonia acetate buffer leaching, and Berger leaching. My goal is to find the most realistic leaching protocol for the field and model studies and improve and get more accurate aerosol metals flux estimates (especially for Fe) into ocean.

REPRESENTATIVE PUBLICATIONS (*: corresponding author)

1. **Hsieh, C.-C.**, Chen-Feng You, C.-F., and Ho, T.-Y. *, The solubility and deposition flux of East Asian aerosol metals in the East China Sea: The effects of aeolian transport processes, *Marine Chemistry*, 2023, 104268, ISSN 0304-4203, DOI: 10.1016/j.marchem.2023.104268.
2. Wu, H.-Y., **Hsieh, C.-C.**, and Ho, T.-Y. *, Trace metal dissolution kinetics of East Asian size-fractionated aerosols in seawater: The effect of a model siderophore, *Marine Chemistry*, Volume 254, 2023, 104277, ISSN 0304-4203, DOI: 10.1016/j.marchem.2023.104277.
3. **Hsieh, C.-C.**, Chen, H.-Y. and Ho, T.-Y. *, The effect of aerosol size on Fe solubility and deposition flux: A case study in the East China Sea. *Marine Chemistry*, 2022, 241 DOI: 10.1016/j.marchem.2022.104106.
4. Lin, H.-T., **Hsieh, C.-C.**, Repeta, D. J., Rappé M. S.. Sampling of basement fluids via Circulation Obviation Retrofit Kits (CORKs) for dissolved gases, fluid fixation at the seafloor, and the characterization of organic carbon. *MethodsX*. 2020 Aug 15;7:101033. doi: 10.1016/j.mex.2020.101033.
5. Nigro, O. D., Jungbluth, S. P., Lin, H.-T., **Hsieh, C.-C.**, Miranda, J. A., Schvarcz, C. R., Rappé, M. S., Steward, G. F.. Viruses in the Oceanic Basement. *mBio*. 2017 Mar 7;8(2):e02129-16. doi: 10.1128/mBio.02129-16.
6. Meyer, J. L., Jaekel, U., Tully, B. J., Glazer, B. T., Wheat, C. G., Lin, H., **Hsieh, C.**, Cowen, J. P., Hulme, S. M., Girguis, P. R., & Huber, J. A. (2016). A distinct and active bacterial community in cold oxygenated fluids circulating beneath the western flank of the Mid-Atlantic ridge. *Scientific Reports*, 6(1), 1-14. DOI:10.1038/srep22541.
7. Lin, H.-T., **Hsieh, C.-C.**, Cowen, J.P., and Rappé, M.S., 2015. Data report: dissolved and particulate organic carbon in the deep sediments of IODP Site U1363 near Grizzly Bare seamount. In Fisher, A.T., Tsuji, T., Petronotis, K., and the Expedition 327 Scientists, *Proc. IODP, 327*: Tokyo (Integrated Ocean Drilling Program Management International, Inc.). doi:10.2204/iodp.proc.327.202.2015.
8. Cowen, J.P., Copson, D., Jolly, J., **Hsieh, C.-C.**, Lin, H.-T., Glazer, B.T., Wheat, G. (). Advanced Instrument System for Real-Time and Time-Series Microbial Geochemical Sampling of the Deep (Basaltic) Crustal Biosphere. , *Deep-Sea Res. I*, 61, 43-56, 43-56. DOI: 10.1016/j.dsr.2011.11.004

Conference Abstracts:

1. 2023 Taiwan Ocean Science Meeting, **Hsieh, C.-C.**, Ho, T.-Y., Fe isotopic composition of East Asian anthropogenic aerosols: preliminary study for their contribution to the NWPO. (Oral)
2. 2022 Goldschmit Conference. **Hsieh, C.-C.**, Chen, H.-Y., Huang, K.-F., Ho, T.-Y., The effect of aerosol size on Fe solubility and deposition flux: a case study in the East China Sea. (Poster)

3. 2022 Taiwan Ocean Science Meeting, **Hsieh, C.-C.**, Ho, T.-Y., The challenge of flux estimate for bioavailable aerosol Fe. (Oral)
4. 2021 International Joint Symposium (Japan). **Hsieh, C.-C.**, Ho, T.-Y. Aerosol Fe contribution in the East China Sea: anthropogenic vs lithogenic. (Oral)
5. 2021 Taiwan Ocean Science Meeting, **Hsieh, C.-C.**, Chen, H.-Y., Huang, K.-F., Ho, T.-Y., Aerosol Fe cycling in the surface water of the NWPO: Sources & Transformation. (Oral)
6. 2021 Ocean Science Meeting. **Hsieh, C.-C.**, Chen, H.-Y., Ho, T.-Y., The effect of aerosol size on Fe solubility and deposition flux: a case study in the East China Sea. (Poster)
7. 2017 Aquatic Sciences Meeting. **Hsieh, C.-C.**, Tu, W.-C., Ho, T.-Y., The impact of typhoons on aerosol metal deposition in the northern South China Sea. (Poster)
8. 2013 AGU, San Francisco, California. **Hsieh, C.-C.**, Cowen, J. P., Fisher, A. T., Lin, H.-T., Clark, J. F., Wheat, C. G. Rappe, M. S. IODP 327 tracer experiment: recovery of microspheres in basaltic crustal fluids from IODP Holes 1362B, 1362A, 1301A on the eastern flank of Juan de Fuca Ridge (Poster)
9. 2013 C-DEBI Annual Meeting. **Hsieh, C.-C.**, Lin, H.-T., Cowen, J.P., Steward, G. F., Nigro, O, D., Jungbluth, S.P., Rappe, M. Basement fluid sampling for biogeochemistry and microbiology(Poster)