

Curriculum Vitae

Name: Xuneng Tong

Present Appointment: Research Fellow

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Academic Qualifications

- PhD (2023), National University of Singapore, Civil and Environmental Engineering
Thesis: Modelling the transport and fate of emerging contaminants in Singapore coastal and fresh waters
- BEng (2019), Hohai University, Environmental Science
Thesis: Vegetated flow and pollutant transport within the Y-shaped confluence
- Dual-BBA (2019), Hohai University, Business Administration
Thesis: Evaluation in P2P project using Fuzzy comprehensive evaluation method

Working Experience

- Research Fellow (Mar 2023- now), NUS Environmental Research Institute, National University of Singapore
- Co-founder (Jan 2023-now), AquaShield Solutions Pte Ltd, A Spin-off from NUS Enterprise

Professional Profile

I am currently a postdoctoral research fellow at National University of Singapore. I have received awards and honors through my education, such as National Scholarship, NUS Research Scholarship and Chinese Government Award for Outstanding Students Abroad, etc. As a leading author, I hold over 10 peer-reviewed publications on Water Research, Journal of Hazardous Materials, Journal of Environmental Management etc, and 1 book chapter. My research mainly focuses on developing hydrodynamic-ecological models with in-depth scientific and practical understanding. I have involved in several R&D projects to develop integrated modelling framework to understand the physical-biological-chemical processes in natural aquatic environment. The developed models simulate the transport and fate of complex contaminants (i.e., antibiotics, antibiotic resistance, fecal bacteria, harmful algal bloom, pharmaceuticals and personal care products, endocrine disrupting chemicals, and plastics, etc.) in the aquatic environment which have been successfully applied in local reservoirs and coastal waters.

Book

Oceans and Human Health (2nd Edition), responsible for "Modelling the fate and transport of pathogens and microbial indicators in coastal environments", published by the ELSEVIER Publisher on 23 June 2023.

Peer reviewed journal publications (Total: 11; First/Corresponding Author: 8; ESI Highly Cited Paper: 1)

1. Liu, X., **Tong, X.* (Corresponding Author and Co-first Author)**, Wu, L., Xue H., & Liu, R. (2023). An integrated modelling framework for multiple pollution source identification in surface water. **Journal of Environmental Management**, 347, 119126.
2. Liu, X., **Tong, X.* (Corresponding Author and Co-first Author)**, Yang, T., Mohapatra, S., Hua, Z., Zhang, Y., ... & Xue, H. (2023). Insights into effects of discharge ratio on flow characteristics and pollutant transport in a Y-shaped open channel confluence with emergent rigid vegetation. **Journal of Environmental Management**, 332, 117421.

3. **Tong, X.**, Liu, X., Yang, T., Mohapatra, S., Hua, Z., Zhang, Y., ... & Xue, H. (2022). An experimental study of the hydrodynamics and contaminant transport in a Y-shaped confluence with flexible submerged vegetation. **Hydrological Processes**, e14661.
4. **Tong, X.**, You, L., Zhang, J., He, Y., & Gin, K. Y. H. (2022). Advancing prediction of emerging contaminants in a tropical reservoir with general water quality indicators based on a hybrid process and data-driven approach. **Journal of Hazardous Materials**, 430, 128492.
5. **Tong, X.**, Mohapatra, S., Zhang, J., Tran, N. H., You, L., He, Y., & Gin, K. Y. H. (2022). Source, fate, transport and modelling of selected emerging contaminants in the aquatic environment: Current status and future perspectives. **Water Research**, 118418. **(ESI Highly Cited Paper)**.
6. **Tong, X.**, You, L., Zhang, J., Chen, H., Nguyen, V. T., He, Y., & Gin, K. Y. H. (2021). A comprehensive modelling approach to understanding the fate, transport and potential risks of emerging contaminants in a tropical reservoir. **Water Research**, 200, 117298.
7. **Tong, X.**, Jong, M. C., Zhang, J., You, L., & Gin, K. Y. H. (2021). Modelling the spatial and seasonal distribution, fate and transport of floating plastics in tropical coastal waters. **Journal of Hazardous Materials**, 414, 125502.
8. **Tong, X.**, Liu, X., Yang, T., Hua, Z., Wang, Z., Liu, J., & Li, R. (2019). Hydraulic features of flow through local non-submerged rigid vegetation in the Y-shaped confluence channel. **Water**, 11(1), 146.
9. You, L., **Tong, X.**, Te, S. H., Tran, N. H., bte Sukarji, N. H., He, Y., & Gin, K. Y. H. (2022). Multi- class secondary metabolites in cyanobacterial blooms from a tropical water body: Distribution patterns and real-time prediction. **Water Research**, 212, 118129.
10. Jong, M. C., **Tong, X.**, Li, J., Xu, Z., Chng, S. H. Q., He, Y., & Gin, K. Y. H. (2022). Microplastics in equatorial coasts: Pollution hotspots and spatiotemporal variations associated with tropical monsoons. **Journal of Hazardous Materials**, 424, 127626.
11. Zhang, Y., Liu, X., Yu, L., Hua, Z., Zhao, L., Xue, H., & **Tong, X.** (2022). Perfluoroalkyl acids in representative edible aquatic species from the lower Yangtze River: Occurrence, distribution, sources, and health risk. **Journal of Environmental Management**, 317, 115390.

Upcoming Publications

1. **Tong, X.**, Goh, S., Mohapatra, S., Zhang, J., You, L., He, Y., & Gin, K. Y. H. Predicting antibiotic resistance and assessing the risk burden from antibiotics: A holistic modelling framework in a tropical reservoir. **Environmental Science & Technology, (Under Review)**.
2. **Tong, X.**, You, L., Zhang, J., He, Y., & Gin, K. Y. H. Response of marine microplastics to global warming: ice-trapped microplastic release from polar regions. **Proceedings of the National Academy of Sciences of the United States of America, (Under Review)**.
3. **Tong, X.**, Goh, S., Mohapatra, S., Zhang, J., You, L., He, Y., & Gin, K. Y. H. An integrated antibiotic resistance exposure assessment in Singapore coastal waters using a hydrodynamic-microbial-water quality model. **(In Preparation)**.

Conference

1. **Tong, X.**, Zhang, J., You, L., and Gin, K. Y.-H.: Modelling the fate, transport and risk of Bisphenol A and N, N-diethyltoluamide in a tropical reservoir, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-10526, <https://doi.org/10.5194/egusphere-egu21-10526>, 2021. **(Oral Presentation)**.
2. **Tong, X.**, Goh, S., Zhang, J., He, Y., & Gin, K. Y. H. Modelling the transport and fate of selected antibiotics, bacteria indicator and their correlation with antibiotic resistance in a Singapore tropical reservoir. 22-27 Sep 2022, EDAR, Sweden. **(Poster)**.
3. **Tong, X.**, He, Y., & Gin, K. Y. H. Source, fate, transport and modelling of selected emerging contaminants in the aquatic environment: Current status and future perspectives. 31 Oct 2022, E2S2 Workshop, Singapore. **(Oral Presentation)**.
4. **Tong, X.**, Goh, S., Ng, C., Zhang, J., and Gin, K. Y.-H. Identification and risk assessment of human-specific microbial source tracking markers using an integrated modelling framework. 4-9 June, 2023, 21st Symposium on Health-related Water Microbiology, IWA, Darwin, Australia. **(Oral Presentation)**.

Invited Seminars & Presentations

1. Sep. 2023- Invited speaker, “Source, fate, transport and modelling of emerging contaminants in the aquatic environment”. Shanghai Jiao Tong University, Shanghai, China.
2. Oct. 2023- Invited speaker, “Empower digital water quality management using integrated monitoring and modelling platform”. Hohai University, Nanjing, China.

Patents

1. **Tong X.**, Liu X., A Stepped Ecological Revetment Structure, 201810281567.9. (China).
2. **Tong X.**, Liu X., Liu J, Hua Z, & Wang P. An ADV Automatic Sampling Device, 201820752345.6 (China).
3. Liu X., Li L., Hua Z., Yang T., **Tong X.**, Simulation Experiment Device and Test Method for Pollutant Transport Mixing in Y Shaped Confluence Channel, 201810287680. 8. (China).
4. **Tong, X.**, You, L., Zhang, J, & Gin, K. Y.-H. An integrated monitoring and modelling platform for emerging contaminants in aquatic environments, 10202301632R. (Singapore).

Projects

2022- (Singapore)
Surveillance and Modelling of Antimicrobial Resistance Risk in Aquaculture Farms
Client: Singapore Food Agency

2021- (Singapore)
Surveillance on antimicrobial residues and other PPCPs in the Singapore waterways and related seawater
Client: National Environmental Agency

2019-2022 (Singapore and China)
E2S2-CREATE project: Detection, Assessment & Modelling of Emerging Contaminants in the Urban Environment
Client: National Research Foundation (<http://www.nus.edu.sg/neri/E2S2.html>)

2017-2018 (China)
Effects of Vegetation on Flow and Pollutant mixing Characteristics in a Y-shaped Convergence Channel
Client: National Training Program of Innovation and Entrepreneurship for Undergraduates

2018-2019 (China)
Risk Assessment and the Controlling Technique of Heavy Metal in Heavily Contaminated Drainage Network in West Bank of Wangyu River
Client: National Training Program of Innovation and Entrepreneurship for Undergraduates

Journal Reviewer

Environment International, Ecological Modelling, Journal of Hazardous Materials, Water Research.

Professional Affiliations

2021-now European Geosciences Union (EGU)
2023-now International Water Association (IWA)

Awards and Honors

2023 Chinese Government Award for Outstanding Students Abroad
2021 The 1st Prize in China-ASEAN Dam Science Contest
2019 Outstanding Thesis Award of Hohai University
2019-2023 NUS PhD Research Scholarship
2018-2019 China National Scholarship
2015-2019 Merit Student Scholarship
2016-2019 Innovation and Technology Scholarship
2016-2019 Excellent Academic Performance Scholarship
2017-2018 Outstanding Project Award (NTPIEU)
2016 National Champion, HAVI—Enactus Logistics Network Optimization Competition

Language

Chinese (mother language), English (fluent)

Computer programming

(General) Python, MATLAB, Fortran 77/90/95, C, C++
(Parallel Computing) MPI, OpenMP
(Statistics) R
(OS) Linux
(Document) LaTeX

Software Packages

Delft 3D, SOBEK, ArcGIS, GMT, MS Office, AutoCAD, STATA, SPSS

Teaching

2021-2022 Principles & Practice in Environmental Monitoring
2022-2023 Environmental Engineering Principles and Practice
2022-2023 Chemistry for an Environmentally Sustainable Future

Supervision of Thesis

Undergraduate

1. Chng Hui Qing, Shannae (2020), "Microplastics in Singapore Coastal Waters".
2. Tan Keng Xuan Donovan (2020), "Modelling and monitoring of indicator bacteria in waterways and coastal waters of Singapore".
3. Koh Qian Ning, Megan (2021), "Occurrence and fate of antibiotics in Singapore coastal waters".
4. Chung Zhi Wei (2021), "Investigation on the role of marine plastics as an emerging vector and source for harmful chemical pollutants".
5. Ku Wai Yee Jason (2022), "Occurrence and fate of emerging contaminants in Singapore coastal waters".
6. Evelyn Quek (2022), "Modelling emerging contaminants in Singapore coastal water using Delft3D model".
7. Felix Gaffu Tandadjaja (2023), "Modelling microplastics in Singapore coastal water".
8. Kimberley Mae Tan (2023), "A process-based model for predicting water quality in aquaculture farm".

Master

1. Zhang Yifan (2022), "Modelling the fecal bacteria in Singapore coastal waters".
2. Hu Shuanggang (2023). "A hydrodynamic-eutrophication model of Chao Lake, China"
3. Xiang Zhixin (2023). "Modelling the transport and fate of antimicrobial resistance in Singapore coastal water".