

Chuanlong Zhou

Ph.D. of Environmental Science, Enthusiast of Data Science

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Education

2019 – present	M.S. of Computer Science, Georgia Tech (OMSCS, expected in 2021)
2014 – 2018	Ph.D. of Civil and Environmental Engineering, Clarkson University
2011 – 2014	M.S. of Agricultural Engineering, Tongji University
2007 – 2011	B.S. of Water Supply and Sewage Engineering, Fuzhou University

Research Experiences

2019 – 2020	Environmental Data Analysis and Visualization
Jinan University (postdoc)	<ul style="list-style-type: none">- Air pollutant source identification and emission control policy evaluation in the Pearl River Delta Region, China.- GLFMSP data visualization website development, prototype can be found here.- TraPSA web application development, prototype can be found here.- Other environmental data visualizations, COVID-19, California wildfire.
2014 – 2018	Great Lakes Fish Monitoring and Surveillance Program (GLFMSP, USEPA program)
Clarkson University (PhD)	<ul style="list-style-type: none">- Great Lake fish sampling field work.- Contaminant concentration analysis and bioaccumulation model development.- Contaminant temporal trends analysis and source analysis.- Human consumption risk assessment.
	Ambient Ammonia (NH₃) Monitoring and Source Identification (NYSERDA program)
	<ul style="list-style-type: none">- Field NH₃ measurements and concentration pattern analysis.- NH₃ source identification, and its roles in formation PM_{2.5}.
	Trajectory-based Potential Source Apportionment Project (TraPSA)
	<ul style="list-style-type: none">- Trajectory ensemble receptor model development based on HYSPLIT4.- Model application on source identification for multiple atmospheric pollutants, e.g., Hg, PM, black carbon, O₃, and NH₃.- TraPSA software development, website can be found here.
2011 – 2014	Nano scale zero-valent Iron (n-ZVI) for waste water treatment
Tongji University (master)	<ul style="list-style-type: none">- Nano particle preparation and characterization (using XPS, XRD, TEM and SEM).- Mechanism analysis of n-ZVI reacting with heavy metal ions in waste water.- Bench scale reactor design for improving removal efficiency.

Research Interests

I'm interested in environmental modeling and data analysis especially on the topics of persistent chemicals, air pollutants, health effect, and climate change. I'm continuously seeking research or teaching opportunities that can connect environmental science with data science, such as machine learning, data visualization, and web technology.

Grants

China Postdoctoral Science Foundation Grant, 2019 (equivalent to 12,000 USD)

Teaching Experiences

Chemo Dynamic (CE 584, fall 2017 and fall 2018, Clarkson University)

Conferences Attended

International Association for Great Lakes Research (IAGLR), 2018 (poster)

International Conference on Mercury as a Global Pollutant (ICMGP), 2017 (presentation and poster)

International Association for Great Lakes Research (IAGLR), 2017 (presentation)

International Association for Great Lakes Research (IAGLR), 2016 (poster)

Dioxin, 2016 (poster)

Coding Skills

Python:

Data analysis/visualization: Numpy, Pandas, Matplotlib, Seaborn...

Machine learning: Scikit-learn, OpenCV, Pytorch, Tensorflow

Application development: PyQt5, Flask, PySQLite, PyMongo

Web scarp: BeautifulSoup, Selenium

JavaScript:

Famework: Vue.js

Visulazization: D3.js, Plotly.js

MATLAB, R: at advanced working levels.

C#, UnityEngine, Java, Hadoop, Spark: at basic knowledge levels.

Publications

Total: **14**, first author: **4**, second author: **4**, third author: **4**, others: **2**

1. Shanavas, A. K.; **Zhou, C.**; Menon, R.; Hopke, P. K., PM10 source identification using the trajectory based potential source apportionment (TraPSA) toolkit at Kochi, India. Atmospheric Pollution Research 2020.
2. Parvizian, B. A.; **Zhou, C.**; Fernando, S.; Crimmins, B. S.; Hopke, P. K.; Holsen, T. M. J. E. S.; Technology, Concentrations and Long-Term Temporal Trends of Hexabromocyclododecanes (HBCDD) in Lake Trout and Walleye from the Great Lakes. 2020, 54, (10), 6134-6141.
3. Chen, K.; Chen, H.; **Zhou, C.**; Huang, Y.; Qi, X.; Shen, R.; Liu, F.; Zuo, M.; Zou, X.; Wang, J. J. W. R., Comparative analysis of surface water quality prediction performance and identification of key water parameters using different machine learning models based on big data. 2020, 171, 115454.
4. **Zhou, C.**; Pagano, J.; McGoldrick, D. J.; Chen, D.; Crimmins, B. S.; Hopke, P. K.; Milligan, M. S.; Murphy, E. W.; Holsen, T. M., Legacy Polybrominated Diphenyl Ethers (PBDEs) Trends in Top Predator Fish of the Laurentian Great Lakes (GL) from 1979 to 2016: Will Concentrations Continue to Decrease? Environ Sci Technol 2019, 53, (12), 6650-6659.
5. **Zhou, C.**; Zhou, H.; Holsen, T. M.; Hopke, P. K.; Edgerton, E. S.; Schwab, J. J., Ambient Ammonia Concentrations Across New York State. Journal of Geophysical Research: Atmospheres 2019.

6. Zhou, H.; Hopke, P. K.; **Zhou, C.**; Holsen, T. M., Ambient mercury source identification at a New York State urban site: Rochester, NY. *Science of the Total Environment* 2019, 650, 1327-1337.
7. Wu, Y.; Tan, H.; **Zhou, C.**; Crimmins, B. S.; Holsen, T. M.; Pagano, J. J.; Chen, D. J. E. s.; technology, Spatial and Temporal Trends (2004–2016) of Selected Alternative Flame Retardants in Fish of the Laurentian Great Lakes. 2019, 53, (4), 1786-1796.
8. Singh, S.; Tiwari, S.; Hopke, P. K.; **Zhou, C.**; Turner, J. R.; Panicker, A. S.; Singh, P. K., Ambient black carbon particulate matter in the coal region of Dhanbad, India. *Sci Total Environ* 2018, 615, 955-963.
9. Wu, Y.; Tan, H.; **Zhou, C.**; Crimmins, B. S.; Holsen, T. M.; Chen, D., Bioaccumulation and Spatiotemporal Trends of Polyhalogenated Carbazoles in Great Lakes Fish from 2004 to 2016. *Environmental science & technology* 2018.
10. **Zhou, C.**; Pagano, J.; Crimmins, B. A.; Hopke, P. K.; Milligan, M. S.; Murphy, E. W.; Holsen, T. M., Polychlorinated biphenyls and organochlorine pesticides concentration patterns and trends in top predator fish of Laurentian Great Lakes from 1999 to 2014. *Journal of Great Lakes Research* 2018.
11. Zhou, H.; **Zhou, C.**; Hopke, P. K.; Holsen, T. M., Mercury wet deposition and speciated mercury air concentrations at rural and urban sites across New York state: Temporal patterns, sources and scavenging coefficients. *Sci Total Environ* 2018, 637-638, 943-953.
12. Zhou, H.; **Zhou, C.**; Lynam, M. M.; Dvonch, J. T.; Barres, J. A.; Hopke, P. K.; Cohen, M.; Holsen, T. M., Atmospheric Mercury Temporal Trends in the Northeastern United States from 1992 to 2014: Are Measured Concentrations Responding to Decreasing Regional Emissions? *Environmental Science & Technology Letters* 2017, 4, (3), 91-97.
13. **Zhou, C.**; Cohen, M. D.; Crimmins, B. A.; Zhou, H.; Johnson, T. A.; Hopke, P. K.; Holsen, T. M., Mercury temporal trends in top predator fish of the Laurentian Great Lakes from 2004 to 2015: are concentrations still decreasing? *Environmental science & technology* 2017, 51, (13), 7386-7394.
14. Zhang, Y.; Chen, W.; Dai, C.; **Zhou, C.**; Zhou, X., Structural evolution of nanoscale zero-valent iron (nZVI) in anoxic Co^{2+} solution: interactional performance and mechanism. *Scientific reports* 2015, 5.