Curriculum Vitae - Nguyễn Trường An, PhD

Environmental Scientist | Water Quality Modeler | Biogeochemistry Researcher

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SUMMARY

Postdoctoral researcher specializing in water quality modeling and biogeochemical processes in rivers and estuaries. Expert in developing reactive transport models to understand nutrient dynamics, eutrophication, and greenhouse gas emissions in tropical aquatic systems. Extensive international research experience across France and Vietnam.

Key Expertise: Biogeochemical Modeling • Water Quality Assessment • Greenhouse Gas Emissions • Eutrophication Management • Tropical Estuaries • Data Analysis & Scientific Programming

METRIC	VALUE
Publications	19 peer-reviewed journal articles + 11 international conference presentations
Research Areas	Modelling, Water Quality, Greenhouse gases, Climate Change
Experience	7+ years developing environmental models, 6+ years teaching at Grenoble INP
Languages	Vietnamese (native), English (advanced), French (proficient)
Programming	Python, C/C++, R, QGIS, ArcGIS, Delft3D, Telemac, HEC-RAS

EDUCATION

PhD in Environmental Science 11/2018–12/2021
University of Grenoble Alpes (UGA), France
Thesis: Biogeochemical modeling in a tropical estuary and eutrophication management

Master's in Hydraulics 09/2017–08/2018
Grenoble Institute of Technology (Grenoble INP), France
Thesis: Modeling nutrient dynamics in the Saigon River Estuary, Vietnam

Bachelor's in Environmental Management 09/2011–02/2016
Ho Chi Minh City University of Technology (HCMUT), Vietnam
Thesis: Antibiotic pollution in the Saigon River, Vietnam

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher (26 months) 05/2024–06/2026
Institut Géosciences Environnement (IGE), Institut de recherche pour le développement (IRD)
Project: TROPECOS - Tropical Estuaries Greenhouse Gases

- Leading research on past, present, and future greenhouse gas emissions in tropical estuaries
- Developing predictive models for climate change impacts on estuarine biogeochemistry
- Managing international collaborations between French and Vietnamese institutions
- Planning to publish 4 peer-reviewed articles as first author

Research Highlight: Reconstructed 30-year Water quality evolution using Sentinel-2 water quality products, JAXA land-use time series (1990-2020), and C-GEM predictive modeling—quantifying urbanization impacts on Mekong Delta carbon dynamics from past to future

Postdoctoral Researcher (22 months) 05/2022–02/2024
INRAE, l'Institut national de recherche pour l'agriculture, l'alimentation et l'environnement
Project: Evolution of carbonate system in the Loire River using high-resolution datasets

- Analyzed multidecadal trends in CO_2 evasion and aquatic metabolism
- Training modelling and large dataset processing for EDF staff
- Published 2 peer-reviewed articles (1 article as first author)

> **Research Highlight:** Automated data pipeline to collect nationwide French data; processed 280,000+ hourly measurements; applied CO2SYS for carbonate system calculations and StreamMetabolizer Bayesian inverse modeling of aquatic metabolism—revealing 32-year regime shift and 10-fold CO_2 emission variability

Doctoral Contract (37 months) 11/2018–12/2021
Institute of Environmental Geosciences (IGE), France
Project: Water quality and biogeochemical modeling for tropical estuaries

- Developed 1D reactive transport model (C-GEM) for nutrient dynamics and greenhouse gas emissions
- Conducted extensive field campaigns for water quality monitoring
- Published 8 peer-reviewed articles during doctoral period (3 articles as first author)

> **Research Highlight:** Pioneered the application and calibration of the C-GEM reactive transport model for tropical conditions; creating a predictive tool to assess eutrophication risks and greenhouse gas emissions in a complex, urbanized tropical estuary

Master Internship (6 months) 08/2017–07/2018
Institute of Environmental Geosciences (IGE), France
Project: Nutrient dynamics model implementation for the Saigon River

- Implemented computational model using C programming language

Principal Investigator (6 months) 12/2016–08/2017
Young Investigator Project, HCMUT, Vietnam
Project: Pilot-scale constructed wetland design and wastewater analysis

- Led independent research project as undergraduate researcher
- Designed and operated pilot-scale treatment system
- Published 2 peer-reviewed articles as first author

Lab Technician (18 months) 12/2015–06/2017
Asian Center for Water Research (CARE-RESCIF), Vietnam

- Operated analytical instruments: ICP-OES analyzer, TOC-V
- Conducted water sampling campaigns and sample preparation
- Maintained laboratory quality control standards

Bachelor Internship (6 months) 06/2015–12/2015
HCMUT Environmental Research Laboratory, Vietnam
Project: Development of passive sampling methods for antibiotic analysis in rivers

- Developed and validated sampling methodologies
- Analyzed antibiotics in environmental water samples
- Published one peer-reviewed as first author and, one as co-author on methodology

TEACHING EXPERIENCE

> **Teaching record:** 6+ years of experience teaching environmental engineering students, covering theoretical foundations and practical applications of water quality management.

Teaching Assistant 2019–2025
Grenoble Institute of Technology (Grenoble INP)

Water Quality and Treatment:

- **River Water Quality Modeling** - Practical sessions for Seine water quality modelling
- **Water Sampling and Laboratory** - Practical sessions for River water quality assessment
- **Student Mentoring** - Supervised 3 Master's students (2 Grenoble INP, 1 HCMUT)

Areas of Teaching Interest:

- Environmental Modeling and Simulation
- Water Quality Management and Treatment
- Biogeochemical Processes in Aquatic Systems
- Data Analysis and Statistical Methods for Environmental Sciences
- GIS Applications in Environmental Research

TECHNICAL COMPETENCES

Programming & Modeling:

- **Languages:** Python (advanced), C/C++ (proficient), R (proficient)
- **Model Development**: C-GEM (C/Python), QUAL-NET (C++), Python-based instructional models.
- **Hydrodynamic Software::** Proficient in Telemac, Delft3D, HEC-RAS
- **Applications:** Water quality modeling, reactive transport models, statistical analysis

Data Analysis & Visualization:

- Large-scale dataset processing and time series analysis
- Statistical modeling and uncertainty quantification
- Publication-quality figure generation

Geospatial Analysis:

- **Software:** QGIS (advanced), ArcGIS (proficient)
- **Applications:** Spatial analysis, watershed delineation, remote sensing data processing

Laboratory & Field Skills:

- Water quality sampling and monitoring
- Analytical chemistry (ICP-OES, TOC-V, spectrophotometry)
- Field equipment operation and maintenance

Languages:

- **Vietnamese:** Native speaker
- **English:** Proficient (B2 level) - Academic and technical communication
- **French:** Basic professional proficiency (B1 level)

PUBLICATIONS

> **Publication Record:** 19 peer-reviewed journal articles (8 articles as first author) + 11 conference presentations

Journal Articles (Peer-Reviewed)

First Author Publications:

1. **Nguyen, A. T.**, Abril, G., Diamond, J. S., Lamouroux, R., Martinet, C., & Moatar, F (2025). Multidecadal trends in CO_2 evasion and aquatic metabolism in a large temperate river. *Biogeosciences* , 22(18), pp.4923-4951. 10.5194/bg-22-4923-2025
2. **Nguyen, A. T.**, Dao, T. S., Strady, E., Nguyen, T. T. N., Aimé, J., Gratiot, N., & Némery, J. (2022). Phytoplankton characterization in a tropical tidal river impacted by a megacity: The case of the Saigon River (Southern Vietnam). *Environmental Science and Pollution Research*, 29(3), 4076–4092. 10.1007/s11356-021-15850-x
3. **Nguyen, A. T.**, Némery, J., Gratiot, N., Dao, T. S., Le, T. T. M., Baduel, C., & Garnier, J. (2022). Does eutrophication enhance greenhouse gas emissions in urbanized tropical estuaries? *Environmental Pollution*, 303(September 2021). 10.1016/j.envpol.2022.119105

4. **Nguyen, A. T.**, Némery, J., Gratiot, N., Garnier, J., Dao, T. S., Thieu, V., & Laruelle, G. G. (2021). Biogeochemical functioning of an urbanized tropical estuary: Implementing the generic C-GEM (reactive transport) model. *Science of the Total Environment*, 784, 147261. 10.1016/j.scitotenv.2021.147261
5. **Nguyen, A. T.**, Némery, J., Gratiot, N., Dao, T. S., Thieu, V., Garnier, J., & Laruelle, G. (2020). Evaluating the response of water quality to pollutant loading in the Saigon River system (Vietnam): modelling scenarios by C-GEM, an estuarine biogeochemical model. In Water, Megacities and Global Change conference December 2020. PDF.
6. **Nguyen, T. A.** (2018). Antibiotics And Pesticides In Water And Sediments From Intensive Shrimp Farms In Southern Vietnam. *Vietnam Journal of Science and Technology*, 54, 146. 10.15625/2525-2518/54/4B/12035
7. **Nguyen, A. T.**, Le, T. M. T., Tran, V. Q., Truong, V. N., Nguyen, L. T., Nguyen, P. H. T., & Nguyen, T. H. T. (2017). Effect of oxygen states in horizontal subsurface flow constructed wetlands on the removal of organic matter, nutrients, some metals and octylphenol. *VNUHCM Journal of Science and Technology Development*, 20(K9), Article K9. 10.32508/stdj.v20iK9.1676
8. **Nguyen, T. A.**, Tam, L. T. M., Viet, T. Q., Viet, T. N., Luan, N. T., Minh, N. V., Trang, N. T. H., & Tuc, D. Q. (2017). Recommendation of optimal design and operation parameters for constructed wetland for sludge treatment based on the effect of hydraulic retention time, sludge loading rate and vegetation. *VNUHCM Journal of Science and Technology Development*, 20(K8), Article K8. 10.32508/stdj.v20iK8.1669

Contributing Author Publications:

1. Le, T. M. T., **Nguyen, T. A.**, Nguyen, T. T., Nguyen, T. T., Nguyen, P. D., Némery, J., & Baduel, C. (2025). Assessing Spatial Trends and Land Use Impacts on Surface Water Quality: A Case Study of the Saigon and Vam Co Rivers in Southern Vietnam. *Case Studies in Chemical and Environmental Engineering*, 101225. 10.1016/j.cscee.2025.101225
2. Thi-Minh-Tam Le, Trung-Tin Nguyen, **Truong-An Nguyen**, Thi-Huyen-Trang Nguyen, Phuoc-Dan Nguyen (2025). Water Quality Assessment of Urban Canals in Ho Chi Minh City, Vietnam: Effectiveness of Renovation Efforts in Minimizing Pollution. *Journal of Water Management Modeling*. 10.14796/JWMM.S545
3. Diamond, J. S., **Nguyen, T.A.**, Abril, G., Bertuzzo, E., Chanudet, V., Lamouroux, R., & Moatar, F. (2025). Inorganic carbon dynamics and their relation to autotrophic community regime shift over three decades in a large, alkaline river. *Limnology and Oceanography*. 10.1002/lno.70016
4. Caracciolo, R., Escher, B. I., Lai, F. Y., **Nguyen, T. A.**, Le, T. M. T., Schlichting, R., Tröger, R., Némery, J., Wiberg, K., Nguyen, P. D., & Baduel, C. (2023). Impact of a megacity on the water quality of a tropical estuary assessed by a combination of chemical analysis and in-vitro bioassays. *Science of The Total Environment*, 877(February), 162525. 10.1016/j.scitotenv.2023.162525
5. Garnier, J., Billen, G., G Laruelle, G., Le Gendre, R., Némery, J., **Nguyen, T.A.**, Romero, E., Thieu, V., & Wei, X. (2023). Coastal marine system and estuary functioning is driven by the upstream river basin. In *Reference Module in Earth Systems and Environmental Sciences* (p. B9780323907989000093). Elsevier. 10.1016/B978-0-323-90798-9.00009-3
6. Camenen, B., Gratiot, N., Cohard, J. A., Gard, F., Tran, V. Q., **Nguyen, A. T.**, Dramais, G., van Emmerik, T., & Némery, J. (2021). Monitoring discharge in a tidal river using water level observations: Application to the Saigon River, Vietnam. *Science of the Total Environment*, 761, 143195. 10.1016/j.scitotenv.2020.143195
7. Nguyen, T. T. N., Némery, J., Gratiot, N., Garnier, J., Strady, E., Nguyen, D. P., Tran, V. Q., **Nguyen, A. T.**, Cao, S. T., & Huynh, T. P. T. (2020). Nutrient budgets in the Saigon–Dongnai River basin: Past to future inputs from the developing Ho Chi Minh megacity (Vietnam). *River Research and Applications*, 36(6), 974–990. 10.1002/rra.3552
8. Noncent, D., Strady, E., Némery, J., Thanh-Nho, N., Denis, H., Mourier, B., Babut, M., **Nguyen, T. A.**, Nguyen, T. N. T., Marchand, C., Desmet, M., Tran, A. T., Aimé, J., Gratiot, N., Dinh, Q. T., & Nguyen, P. D. (2020). Sedimentological and geochemical data in bed sediments from a tropical river-estuary system impacted by a developing megacity, Ho Chi Minh City—Vietnam. *Data in Brief*, 31, 105938. 10.1016/j.dib.2020.105938
9. Nguyen, T. T. N., Némery, J., Gratiot, N., Garnier, J., Strady, E., Tran, V. Q., **Nguyen, A. T.**, Nguyen, T. N. T., Golliet, C., & Aimé, J. (2019). Phosphorus adsorption/desorption processes in the tropical Saigon River estuary (Southern Vietnam) impacted by a megacity. *Estuarine, Coastal and Shelf Science*, 227(August), 106321. 10.1016/j.ecss.2019.106321
10. Nguyen, T. T. N., Némery, J., Gratiot, N., Strady, E., Tran, V. Q., **Nguyen, A. T.**, Aimé, J., & Peyne, A. (2019). Nutrient dynamics and eutrophication assessment in the tropical river system of Saigon – Dongnai (southern Vietnam). *Science of the Total Environment*, 653, 370–383. 10.1016/j.scitotenv.2018.10.319

11. Dinh, Q. T., **Nguyen, T. A.**, Moreau-Guigon, E., Alliot, F., Teil, M. J., Blanchard, M., & Chevreuil, M. (2017). Trace-Level Determination of Oxolinic Acid and Flumequine in Soil, River Bed Sediment, and River Water Using Microwave-Assisted Extraction and High-Performance Liquid Chromatography with Fluorimetric Detection. *Soil and Sediment Contamination*, 26(3), 247–258. 10.1080/15320383.2017.1276154

Selected International Presentations

1. **T.A. Nguyen**, et al., (2025). Greenhouse Gas Emissions and Drivers in Tropical Estuaries: Insights from the Mekong Delta and Saigon River (Vietnam). *International Conference I.S.Rivers*, 30 June to 4 July 2025, Lyon, France. Oral presentation
2. **T.A. Nguyen**, et al., (2024). Past, Present, and Future Greenhouse Gases in Tropical Estuaries. *FairCarboN*, 25 to 27 Nov 2024, Sète, France. Oral Presentation
3. **T.A. Nguyen**, et al., (2022). Spatial and temporal variation of greenhouse gas emissions in an urbanized tropical estuary (the Saigon River, Vietnam). *ECSA 59*, September 5-8, 2022, Kursaal, San Sebastian, Spain. Poster
4. **T.A. Nguyen**, et al., (2022). Eutrophication management scenarios in the Saigon River by using C-GEM, an estuarine biogeochemical model. *ECSA 59*, September 5-8, 2022, Kursaal, San Sebastian, Spain. Poster
5. **T.A. Nguyen**, et al., (2022). Impact of anthropogenic inputs on greenhouse gas emissions in the tropical Saigon River Estuary. *International Symposium on Water Sustainability & Green Technologies*, November 25-26, 2022, Ho Chi Minh City, Vietnam. Poster
6. **T.A. Nguyen**, et al., (2022). Modeling the seasonal nutrients dynamics and phytoplankton development in Saigon River Estuary, Vietnam. *International Symposium on Ecohydraulics*, July 4-8, 2022, Lyon, France. Poster
7. **T.A. Nguyen**, et al., (2020). Modelling scenarios by C-GEM, an estuarine biogeochemical model. *International Conference on Water, Megacities and Global Change*, December 1-4, 2020, Paris (Web-Seminar), Vietnam. Oral presentation
8. **T.A. Nguyen**, et al., (2020). Evaluating estuarine responses to modification of nutrient loads from megacity by a generic reactive-transport model. *International Symposium on Ecohydraulics*, December 23-24, 2019, Lyon, France. Oral presentation
9. **T.A. Nguyen**, et al., (2019). Self-purification capacity of a tropical estuary using a generic reactive-transport estuarine model. *Green Technologies for Sustainable Water*, December 1-5, 2019, Ho Chi Minh City, Vietnam. Poster
10. **T.A. Nguyen**, et al., (2019). Modelling nutrient dynamics in a tropical estuary under human pressure: case study of the Saigon tidal River (Southern Vietnam). *International Conference on Water Resources and Coastal Engineering*, April 25, 2019, Da Nang City, Vietnam. Oral
11. **T.A. Nguyen**., et al., (2016). Analysis of antibiotic and pesticide residues in shrimp farm waters using passive sampling. *SETAC Asia/Pacific Conference*, September 16-19, 2016, Singapore. Oral presentation

PROFESSIONAL REFERENCES

Julien Némery, PhD
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