

Rafael M. Almeida, Ph.D.

Curriculum Vitae

School of Earth, Environmental, and Marine Sciences
The University of Texas Rio Grande Valley, Edinburg, TX, USA

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EDUCATION

Ph.D., Ecology, Federal University of Juiz de Fora, Brazil	2017
M.S., Ecology, Federal University of Juiz de Fora, Brazil	2013
B.A., Biology, Federal University of Juiz de Fora, Brazil	2010

APPOINTMENTS

Assistant Professor. The University of Texas Rio Grande Valley, USA	2022-present
Atkinson Postdoctoral Research Fellow. Cornell University, USA	2018-2021
Postdoctoral Associate. UFJF (Brazil) / Uppsala University (Sweden)	2017

PUBLICATIONS

23. Almeida RM, Fleischmann AS, Angarita A, Brêda JPF, Cardoso DS, Collischonn W, Forsberg B, García-Villacorta R, Hamilton SK, Paiva R, Poff NL, Sethi SA, Shi Q, Gomes CP, Flecker AS. Climate change may impair electricity generation and economic viability of future Amazon hydropower. **Global Environmental Change**, in press.
22. Santos JA, Quadra GR, Almeida RM, Soranço L, Lobo H, Rocha VN, Bialezki A, Roland F, Reis Jr JL, Barros N. Sublethal effects of environmental concentrations of caffeine on a Neotropical freshwater fish. **Ecotoxicology**, in press
21. Paranaíba JR, Barros N, Almeida RM, Linkhorst A, Mendonça R, Vale R, Roland F, Sobek S. (2021). Hotspots of diffusive CO₂ and CH₄ emission from reservoirs shift through time. **Journal of Geophysical Research: Biogeosciences** 126, e2020JG006014
20. Almeida RM, Hamilton SK, Rosi EJ, Barros N, Doria C, Fleischmann AS, Flecker AS, Reisinger AJ, Roland F. (2020). Hydropeaking operations of two run-of-river mega-dams alter downstream hydrology of the largest Amazon tributary. **Frontiers in Environmental Science** 8:120
19. Kosten S, Almeida RM, Barbosa I, Mendonça R, Muzitano IS, Oliveira-Junior ES, Vroom RJE, Wang H, Barros N. (2020). Better assessments of greenhouse gas emissions from global fish ponds needed to adequately evaluate aquaculture footprint. **Science of the Total Environment** 141247
18. Paschoalini M, Almeida RM, Trujillo J, Melo-Santos G, Marmontel M, Pavanato HJ, Guerra FM, Ristau N, Zerbini AN. (2020). On the brink of isolation: Population estimates of the Araguaian river dolphin in a human-impacted region in Brazil. **PLoS ONE** 15(4): e0231224
17. Paranaíba JR, Quadra G, Josué P, Almeida RM, Mendonça R, Cardoso SJ, Silva J, Kosten S, Campos JM, Almeida J, Araujo RL, Roland F, Barros N. (2020). Sediment drying-rewetting cycles enhance greenhouse gas emissions, nutrient and trace element release, and promote water cytogenotoxicity. **PLoS ONE** 15(4): e023108
16. Amado, AM, Almeida RM, Cardoso SJ, Santos JA, Camargo AFM. (2020). Freshwater sustainability and aquatic ecology in a fast-changing world. **Acta Limnologica Brasiliensia** 32:e100
15. Junger, PC, Almeida RM, Mendonça R, Farjalla VF, Melo RCN, Roland F, Barros N. (2020). Not all viruses in nature are human enemies: a perspective on aquatic virus ecology in Brazil. **Acta Limnologica Brasiliensia** 32:e105

14. [Almeida RM](#), Shi Q, Gomes-Selman JM, Angarita H, Barros N, Forsberg BR, García-Villacorta R, Hamilton SK, Melack JM, Montoya M, Perez G, Sethi SA, Gomes CP, Flecker AS. (2019). Reducing greenhouse gas emissions of Amazon hydropower with strategic dam planning. **Nature Communications** 10:4281
13. [Almeida RM](#), Arantes Jr JD, Barros N, Boemer G, Gripp A, Hamilton SK, Huszar VLM, Junger PC, Lima M, Pacheco F, Pires D, Reisinger AJ, Rosi E, Roland F. (2019). Limnological effects of a large Amazonian run-of-river dam on the main river and drowned tributary valleys. **Scientific Reports** 9:16846
12. [Almeida RM](#), Paranaíba JR, Barbosa I, Sobek S, Kosten S, Linkhorst A, Mendonça R, Quadra G, Roland F, Barros N. (2019). Carbon dioxide emission from drawdown areas of a Brazilian reservoir is linked to surrounding land cover. **Aquatic Sciences** 81:68
11. Feitosa IB, Huszar VLM, Domingues CD, Appel E, Paranhos R, [Almeida RM](#), Branco CWC, Bastos WR, Sarmento H. (2019). Plankton community interactions in an Amazonian floodplain lake, from bacteria to zooplankton. **Hydrobiologia** 831:55
10. Quadra G, Roland F, Barros N, Malm O, Lino AS, Azevedo GM, Thomaz JR, Andrade-Vieira LF, Praça-Fontes MM, [Almeida RM](#), Mendonça RF, Cardoso SJ, Guida YS, Campos JMS. (2019). Far-reaching cytogenotoxic effects of mine waste from the Fundão dam disaster in Brazil. **Chemosphere** 215:753-757
9. [Almeida RM](#), Han BA, Reisinger AJ, Kagemann C, Rosi E. (2018). High mortality in aquatic predators of mosquito larvae caused by exposure to insect repellent. **Biology Letters** 14(10):20180526
8. Paranaíba JR, Barros N, Mendonça R, Linkhorst A, Isidorova A, Roland F, [Almeida RM](#), Sobek S. (2018). Spatially resolved measurements of CO₂ and CH₄ concentration and gas-exchange velocity highly influence carbon-emission estimates of reservoirs. **Environmental Science & Technology** 52(2):607-615
7. [Almeida RM](#), Pacheco FS, Barros N, Rosi E, Roland F. (2017). Extreme floods increase CO₂ outgassing from a large Amazonian river. **Limnology & Oceanography** 62(3):989-999
6. [Almeida RM](#), Lovejoy T, Roland F. (2016). Brazil's Amazon conservation in peril. **Science** 353(6296):228-229
5. [Almeida RM](#), Nobrega GN, Junger PC, Figueiredo AV, Andrade AS, Moura CGB, Tonetta D, Oliveira Jr ES, Araujo F, Rust F, Piñeiro-Guerra JM, Mendonça Jr JR, Medeiros LR, Pinheiro L, Miranda M, Costa MRA, Melo ML, Nobre RL, Benevides T, Roland R, de Klein J, Barros NO, Mendonça R, Becker V, Huszar VLM, Kosten S. (2016). High primary production contrasts with intense carbon emission in a eutrophic tropical reservoir. **Frontiers in Microbiology** 7:717
4. [Almeida RM](#), Roland F, Cardoso SJ, Farjalla VF, Bozelli RL, Barros NO. (2015). Viruses and bacteria in floodplain lakes along a major Amazon tributary respond to distance to the Amazon River. *Frontiers in Microbiology* 6:158
3. [Almeida RM](#), Tranvik L, Huszar VLM, Sobek S, Mendonça R, Barros N, Boemer G, Arantes Jr JD, Roland F. (2015). Phosphorus transport by the largest Amazon tributary (Madeira River, Brazil) and its sensitivity to precipitation and damming. *Inland Waters* 5(3):275-282
2. [Almeida RM](#), Barros N, Cole JJ, Tranvik L, Roland F. (2013). Emissions from Amazonian dams. **Nature Climate Change** 3(12):1005
1. [Almeida RM](#), Pinto VG, Castro MM, Divino AC, Alves ACA, Vasconcelos D, Silva MRM, Nemedé N, Lima RNS, Mello RM, Siviero TS, Martins T, Campos V, Conde BE, Brito PS, Favoreto FC, Vidal LO, Roland F. (2013). Addressing key ecological questions to support policy making in Brazil. **Brazilian Journal of Biology** 73(2):455-456

Book chapters

- Paiva R, Mello M, Cardoso S, Lobão L, Freitas A, Dias G, Mucci M, [Almeida RM](#), Roland F, Soares MC. 2010. Avaliação dos parâmetros ambientais para detecção de florações de cianobactérias no Lago dos Manacás (Campus UFJF). In: Soares JHP, Gomes MHR, Paiva LED, Ribeiro CBM. Simpósio de Engenharia Sanitária e Meio Ambiente da Zona da Mata Mineira. 1st ed. Juiz de Fora: UFJF, 2010, v. 1, p. 83-93

Publications in news and popular science outlets

- [Almeida RM](#). 2016. Hidrelétricas: novos estudos aprimoram estimativa de emissões dos reservatórios (“Hydropower: new studies improve estimates of reservoir emissions”). ((o)eco, available at <https://bit.ly/2R6BZda>)

- Almeida RM. 2016. Aedes aegypti: Liberar a pulverização de pesticidas por aeronaves é uma solução? (“Aedes aegypti: is aerial spraying of pesticides a solution?”) Nexo Jornal, available at <https://bit.ly/2A6AaTV>
- Almeida RM, Lovejoy T, Roland F. 2016. Recessão não pode justificar fim do licenciamento ambiental. (“Economic recession cannot justify abolishment of environmental licensing”) ((o)eco, available at <https://bit.ly/2T0WPZ1>
- Roland F and Almeida RM. 2016. Proposta de emenda à Constituição Federal coloca o Brasil em perigo. (“Proposed constitutional amendment puts Brazil in peril). SRZD.com, available at <https://bit.ly/2R6DWGw>
- Almeida RM, Tófoli R, El Bizri H. 2016. Crise e retrocessos na legislação ambiental (“Crisis and setbacks in environmental regulation”). Ciência Hoje 342:48-49

RESEARCH GRANTS AND SCHOLARSHIPS

- 2021-2023 Balancing environmental and nutritional tradeoffs of expanding Amazonian aquaculture. PI: Alex Flecker. Co-PI: Rafael M. Almeida. Cornell Atkinson Venture Fund. Amount: \$175,000
- 2018-2020. A computational sustainability approach to evaluate greenhouse gases and environmental effects of dams proposed for the Amazon basin. Cornell Atkinson Postdoctoral Fellowship in Sustainability. Amount: \$150,000
2017. Bentley Holden Scholarship. Cary Institute Award for Graduate Student Research. Amount: \$2,300
2016. 12-month visiting graduate student scholarship, Cary Institute of Ecosystem Studies, NY. National Council for Scientific and Technological Development (CNPq, Brazil). Amount: \$20,400
- 2013-2017. Ph.D. fellowship. Coordination for the Improvement of Higher Education Personnel (CAPES, Brazil). Amount: R\$105,600
2012. 3-month M.S. exchange scholarship, Uppsala University, Sweden. Swedish Foundation for International Cooperation in Research and Higher Education (STINT, Sweden). Amount: \$7,000
- 2011-2013. M.S. fellowship. Coordination for the Improvement of Higher Education Personnel (CAPES, Brazil). Amount: R\$28,000 (BRL)
2010. B.S. exchange scholarship, Colorado College, CO. Coordination for the Improvement of Higher Education Personnel (CAPES, Brazil) and Fund for the Improvement of Postsecondary Education (FIPSE, USA). Amount: \$6,000 plus tuition

AWARDS

- 2021 Hynes Award for New Investigators. Awarded by the Society for Freshwater Science
- 2015 José Carlos Loures Academic Excellence Award. Awarded by the Federal University of Juiz de Fora
- PhD Thesis Distinction. Awarded by the Postgraduate Program in Ecology, Federal University of Juiz de Fora

TEACHING AND MENTORING

Graduate-level teaching

- Current Topics in Ecology & Evolutionary Biology BIOEE 7670. Cornell University. 2019 and 2020 (paper discussion facilitator)
- Limnology and Biodiversity. Postgraduate Program in Environmental Sciences. State University of Mato Grosso, Brazil. 2018 (guest lecturer)
- Ecology of Aquatic Microbes. Postgraduate Program in Ecology. Federal University of Juiz de Fora, Brazil. 2018 (lecturer)

Scientific Writing and Publishing. Postgraduate Program in Ecology. Federal University of Juiz de Fora, Brazil. 2018 (lecturer)
Ecosystem Ecology. Postgraduate Program in Ecology. Federal University of Juiz de Fora, Brazil. 2016 (teaching assistant)

Undergraduate-level teaching

Excursions in Computational Sustainability AEM 2770. Cornell University. 2020 (guest lecturer)
Stream Ecology NTRES/BIOEE 4560. Cornell University. 2019 (guest lecturer)
Summer Course in Ecology. Federal University of Juiz de Fora. 2015 (lecturer)
Environmental and Sanitary Engineering. Federal University of Juiz de Fora. 2014 (guest lecturer)

Mentoring

José R. Paranaíba, Ph.D. candidate at the Postgraduate Program in Ecology, Federal University of Juiz de Fora, Brazil. 2017 – present (co-mentorship)
Maria Clara Santos, Laboratory of Aquatic Ecology undergraduate researcher, Federal University of Juiz de Fora, Brazil. 2015 – 2017 (co-mentorship)

INVITED TALKS

Society for Freshwater Science Meeting 2021. Keynote speaker. “Navigating greenhouse gas emissions and socioenvironmental tradeoffs from hydropower”. 2021.
Carnegie Institution for Science, Department of Global Ecology, Stanford, CA. “Energy in transition: Navigating greenhouse gas emissions and socioenvironmental tradeoffs from hydropower”. 2021.
Amazon Dams Network, webinar. “Downstream hydrological effects of the Madeira dams”. 2020.
Cary Institute of Ecosystem Studies, Millbrook, NY. Invited seminar speaker. Environmental effects and strategic planning of tropical hydropower development in a changing world. 2020.
Cornell University, Ithaca, NY. Biogeochemistry, Environmental Science, and Sustainability (BESS) Seminar Series. “Reducing the greenhouse gas footprint of Amazon hydropower with optimal dam planning”. 2018.
State University of Mato Grosso, Cáceres, Brazil. Special Topical Seminar. “Attenuating GHG emissions of Amazon hydropower with strategic dam planning”. 2018
Federal University of Juiz de Fora, Juiz de Fora, Brazil. Environmental Consulting Symposium. “Environmental consulting: general concepts and a day in the life of consultants”. 2017
CUNY Advanced Science Research Center, New York, NY. “Proliferation of dams in the Amazon basin: trends, environmental impacts and lessons to be learned”. 2017
Brooklyn College, New York, NY. “Proliferation of dams in the Amazon basin: trends, environmental impacts and lessons to be learned”. 2017
Radboud University, Nijmegen, Netherlands. Aquatic Sciences and Environmental Biology Department. “Extreme floods boost CO₂ outgassing from a large Amazonian river”. 2015

NON-ACADEMIC PROFESSIONAL EXPERIENCE

Environmental consultant

Ecology and Environment Inc., Brazil 2011-2018

Consultant at the Brazilian subsidiary of Ecology and Environment Inc.

Activities: Environmental planning and licensing of large infrastructure projects, including hydropower dams, wind farms, transmission lines, oil drilling, and slurry pipelines

Responsibilities: coordination of field work and field staff; data analysis; impact assessments; writing and review of environmental reports; meetings with clients and environmental agencies

SERVICE AND OUTREACH

Member of advisory committees

M.S. committee of Lígia Araújo, Postgraduate Program in Biodiversity and Nature Conservation, Federal University of Juiz de Fora, Brazil (“Biological degradation of dissolved organic matter in six tropical reservoirs”). 2020

Ph.D. committee of Juliana Gamalier de Paiva, Postgraduate Program in Ecology, Federal University of Juiz de Fora, Brazil (“Production of outer membrane vesicles by aquatic bacteria in response to UV radiation and interaction with viruses”). 2019

M.S. committee of Alyne Maciel, Postgraduate Program in Ecology, Federal University of Juiz de Fora, Brazil (“Lifecycle assessment of milk production”). 2019

Ph.D. committee of Federico Perez. Postgraduate Program in Ecology, Federal University of Juiz de Fora (“Distribution and abundance of La Plata dolphin via aerial survey”). 2018

Ph.D. committee of Mariana Frias, Postgraduate Program in Ecology, Federal University of Juiz de Fora (“Estimating populational parameters of river dolphins in South America”). 2018

Ph.D. committee of Juliana Costa, Postgraduate Program in Ecology, Federal University of Juiz de Fora (“Palynology and reproductive biology of Plagiochilaceae”). 2018

Ph.D. committee of Bárbara Vieira, Postgraduate Program in Biological Sciences, Federal University of Juiz de Fora (“Genotoxicity of personal care products”). 2018

M.S. committee of Ícaro Barbosa, Postgraduate Program in Ecology, Federal University of Juiz de Fora (“Carbon dynamics in an oligotrophic tropical reservoir”). 2018

Guest scientist

Summer Camp and Elementary School Program, Cary Institute of Ecosystem Studies

Spoke about Brazilian watersheds, water pollution and what it is like to be a scientist to students aged 7-13

Conference sessions convened

River damming: applying ecological knowledge for better planning and decisions. 2019. XVI Congresso Brasileiro de Limnologia e 2° Congresso Ibero-americano de Limnologia, Florianópolis (Brazil). Co-conveners: Alexander S. Flecker, Nathan Barros, Fábio Roland

Editorial experience

Associate Editor. Acta Limnologica Brasiliensia. 2019 – present

Journal ad-hoc reviewer

Science Advances, Environmental Science & Technology, Environmental Science & Policy, Journal of Geophysical Research, Climatic Change, Environmental Research Letters, Aquatic Sciences, Inland Waters, Lakes and Reservoirs, Perspectives in Ecology and Conservation, Brazilian Journal of Biology, Acta Limnologica Brasiliensia

Membership in professional societies

AAAS/Science, Association for the Sciences of Limnology and Oceanography (ASLO), International Society of Limnology (SIL), Associação Brasileira de Limnologia (ABLimno), Society for Freshwater Science (SFS)

SELECTED CONFERENCE PRESENTATIONS

First author only

Future Amazon hydropower under climate change. 2020. AGU Fall Meeting 2020. Virtually held

GHG emissions of Amazon hydropower in a planning context. 2019. XVI Congresso Brasileiro de Limnologia e 2° Congresso Ibero-americano de Limnologia, Florianópolis, Brazil.

Greenhouse-gas emissions of Amazon hydropower. Society for Freshwater Science Meeting 2018, Detroit, MI

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- Dams and greenhouse gases: is hydropower a green alternative in the Amazon? Congreso Aquatrop – Ecosistemas Acuáticos Tropicales en el Antropoceno, Quito, Ecuador
- Effects of a run-of-river dam on the water chemistry of the Madeira River and back-flooded tributaries within the reservoir. XVI Congresso Brasileiro de Limnologia, Rio de Janeiro, Brazil
- Extreme floods boost CO₂ outgassing from a large Amazonian river. ASLO Aquatic Sciences Meeting 2015, Granada, Spain
- Seasonality of phosphorus in the Madeira River (Brazil): implications for the Amazonian flux of phosphorus. 2012. XVI Congress of the Iberian Association of Limnology, Guimarães, Portugal
- Phosphorus in the Madeira River prior to filling the Santo Antônio reservoir. 2011. XIII Congresso Brasileiro de Limnologia, Natal, Brazil