FÁBIO F. PEREIRA

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Education

Lund University — Lund, Sweden
Doctor of Philosophy in Engineering — *Feb 2010 – Dec 2013*
Division of Water Resources Engineering — *Advisor: Prof. Cintia Bertacchi Uvo*

Federal University of Rio Grande do Sul — Porto Alegre, Brazil
M.Sc. in Environmental Engineering — *Feb 2008 – Jan 2010*
Institute of Hydraulic Research — *Advisor: Prof. Walter Collischonn*

Federal University of Alagoas — Maceió, Brazil
B.E. Civil Engineering — *Feb 2003 – Jan 2008*

Research Experience

Lund University — Lund, Sweden
Visiting Researcher — *Apr 2024*

- Investigated the potential of the newly enhanced plant hydraulic architecture within LPJ-GUESS, a result of a research project led by Dr. Thomas Pugh, to address the challenges posed by edge effects of water stress within plant communities nestled in the Atlantic forest.

Umeå University — Umeå, Sweden
Visiting Researcher — *Oct 2022 – Nov 2022*

- Made contributions to a research project led by Dr. Daniel Metcalfe by conducting numerical experiments to assess the impact of herbivory severity using the Swedish National Infrastructure for Computing (SNIC).

Lund University — Lund, Sweden
Visiting Researcher — *Oct 2019 – Nov 2019*

- Adapted a biosphere model, the Ecosystem Demography (ED), in a research project led by Dr. Daniel Metcalfe.
- Introduced a new term of leaf consumption to represent insect herbivory, so that we could explore the effects of insect herbivory on the nutrient cycling in forests.

Harvard Kennedy School — Cambridge, USA
Giorgio Ruffolo Postdoctoral Fellow in Sustainability Science — *Jun 2014 – Aug 2016*

- Modified a biosphere model, the Ecosystem Demography (ED). I implemented a river routing scheme to route the overland flow along the river network.
- Organised workshops to communicate the outcomes of our research with Brazilian policy makers at Brasilia, the federal capital of Brazil.

Federal University of Alagoas | UFAL — Maceió, Brazil
Undergraduate Research Assistant — *Aug 2004 – Jan 2008*

- Conducted field work: collected data on width and depth at specific cross-sections as well as current-meter measurements.
- Created MATLAB scripts to calculate streamflow and to analyse the velocity profile using the collected data as input.

Work Experience

HydroScience — Porto Alegre, Brazil
Consultant — *Apr 2009 – Jun 2011*

- Conducted water quality modeling for Guaíba Lake, Brazil.
- Evaluated the impact of heated water discharge from industrial processes on downstream biological communities in the Tocantins River, Brazil.
- Presented the final report to local and regional stakeholders.

HydroCom Porto Alegre, Brazil
Consultant *Oct 2010 – Nov 2010*

- Performed water quality modeling for artificial canals at Guaíba Lake, Brazil.
- Presented the final report to local and regional stakeholders.

Cohidro Maceió, Brazil
Hydrology engineer intern *Sep 2005 – Dec 2005*

- Conducted extensive field visits to villages in the semi-arid region of the state of Alagoas to identify and map sources of drinking water for communities with more than 15 families.
- Utilized geographical information systems (GIS) to accurately document and assess the available water sources.

Awards & scholarships

Federal University of Alagoas (UFAL): Professorship in Hydrology in 2016.

Federal University of Santa Catarina (UFSC): Professorship in Hydrology in 2015.

Harvard Kennedy School (HKS): Postdoctoral fellowship award in the Sustainability Science Program in 2014.

French Research Institute for Exploitation of the Sea (Ifremer): Postdoctoral fellowship award in the Marine Strategy Framework Directive in 2014.

The Crafoord Foundation: Awarded a grant to complete Ph.D. studies at Lund University in 2011.

Erasmus Mundus: Awarded a 12-month scholarship extension to continue Ph.D. studies at Lund University in 2010.

Erasmus Mundus: Awarded a 10-month scholarship to commence Ph.D. studies at Lund University in 2010.

Federal University of Alagoas (UFAL): Ranked 1st and received a stipend for my role as a teaching assistant for the course of Sanitation in 2006 and 2007.

Federal University of Alagoas (UFAL): Ranked 1st and received a stipend for my role as a teaching assistant for the course of Hydraulics in 2005.

Projects and grants

Understanding the edge effects of water stress in plant communities. 2023 – current

- PI: Dr. Fábio F. Pereira. Approx. 40,000.00 BRL.
  Funding source: CNPq / CONFAP / FAPEAL.

Work Package 4 of the ERC-funded project ECOHERB 2020 – current

- Project title: Driver and impacts of invertebrate herbivores across forest ecosystems globally. Acronym: ECOHERB. PI: Dr. Daniel Metcalfe.
  The grant for my ativities within work package 4 was 90,500.00 SEK.
  Funding source: European Research Council (ERC).

Brazilian Rainwater Symposium 2022

- PI: Dr. Fábio F. Pereira. Approx. 10,000.00 BRL.
  Grant received to support the organization of the Simpósio Brasileiro de Água da Chuvas (Brazilian Rainwater Symposium) in Maceió, Brazil.
  Funding source: Fundação de Amparo à Pesquisa do Estado de Alagoas (FAPEAL).

Challenges and difficulties of measuring and predicting forest C 2019 – 2022

- PI: Dr. Fábio F. Pereira. Approx. 33,600.00 BRL.
  Funding source: Fundação de Amparo à Pesquisa do Estado de Alagoas (FAPEAL).

Closing the water budget in the São Francisco Basin: Precipitation 2018 – 2022

- PI: Dr. Fábio F. Pereira. Approx. 14,400.00 BRL.
  Funding source: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

The interplay of a changing climate, hydrology and land use 2016

- PI: Prof. Paul Moorcroft.
  Approx. 15,000.00 USD.
  Funding source: Harvard Kennedy School's (HKS) Sustainability Science Program.

Understanding the Hydrology of Lagoa da Conceição 2015 – 2016

- PI: Dr. Fábio F. Pereira. Approx. 4,800.00 BRL.
  Funding source: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

Publications

de Melo Silva, A.C., **Pereira, F.F.** (2023) Evaluation of the severity of droughts between the years 1961 to 2019 in the São Francisco River Basin based on Standardized Precipitation Index values. Revista de Geociências do Nordeste, https://doi.org/10.21680/2447-3359.2023v9n2ID32622, v. 9, n. 2., p. 56-68

Damasceno, J.H.B., de Oliveira, E.V.S.V., **Pereira, F.F.**, Duan, Z. (2023) Assessment of precipitation deficit in the São Francisco River basin from 1998 to 2018. Revista Brasileira de Meteorologia, https://doi.org/10.1590/0102-77863810017, v. 38, e38230017

Pereira, F.F., Uvo, C. B. (2020) Simulating Weather Events with a Linked Atmosphere-Hydrology Model. Revista Brasileira de Meteorologia, https://doi.org/10.1590/0102-77863540077, v. 35, n. 4, p. 703-715.

Farinosi, F., Arias, M., Lee, E., Longo, M., **Pereira, F.F.**, Livino, A., Moorcroft, P. (2019) Future climate and land use change impacts on river flows in the Tapajós Basin in the Brazilian Amazon, Earth's Future, doi:10.1029/2019EF001198, v. 7, p. 993-1017.

Arias, M., Lee, E., Farinosi, F., **Pereira, F.F.**, Moorcroft, P. (2018) Decoupling the effects of deforestation and climate variability in the Tapajós river basin in the Brazilian Amazon, Hydrological Processes, v.32, issue 11, p.1648-1663, doi:10.1002/hyp.11517.

Pereira, F.F., Farinosi, F., Arias, M., Lee, E., Moorcroft, P., Briscoe, J. (2017) A hydrological routing scheme for the Ecosystem Demography model (ED2+R) tested in the Tapajós River basin in the Brazilian Amazon, Hydrology and Earth System Sciences, v.21, p.4629-4648.

Pereira, F.F., Fragoso Jr, Uvo, C.B., Collishonn, W., Motta Marques, D.M.L. (2013) Assessment of numerical schemes for solving advection-diffusion equation on unstructured grids : case study of river Guaíba, Brazil", Nonlinear Processes in Geophysics, v. 20, p. 1113-1125.

Pereira, F.F., Moraes, M.A.E., Uvo, C.B. (2013) Implementation of a two-way coupled atmospheric-hydrological system for environmental modeling at regional scale, Hydrology Research, v. 45, p. 504-514.

Pereira, F.F., Tursunov, M., Uvo, C.B. (2013) Towards the response of surface runoff to sugarcane expansion in the Rio Grande Basin, Brazil, Hydrology and Earth System Sciences Discussions, v. 10, p. 5563-5603.

Pereira, F.F., Fragoso Jr, Collishonn, W., Motta Marques, D.M.L. (2013) An unstructured grid and depth-integrated hydrodynamic and scalar transport model (in Portuguese), Brazilian Journal of Water Resources, v. 18, p. 7-18.

Borglin, C., Borglin, S., **Pereira, F.F.**, Tursunov, M., Uvo, C.B. (2013) Effects of sugarcane expansion on runoff and evapotranspiration in the Rio Grande basin, Brazil, Vatten : Journal of Water Management and Research, v. 69, p. 141-148.

Pereira, F.F., Fragoso Jr, C.R., Uvo, C.B., Motta Marques, D.M.L. (2013) Pairing multivariate data analysis and ecological modeling in the lake Engelsholm, Denmark, Vatten : Journal of Water Management and Research, v. 69, p. 15-19.

Teaching Experience

Federal University of Alagoas | UFAL 2016 – current

Tenured professor

- Courses taught : Hydrology, Hydropower Structures, Multivariable Calculus, Fluid Mechanics and Curricular Extension Activities.

Federal University of Santa Catarina | UFSC 2015 – 2016

Tenured professor

- Courses taught : Hydrology, Pipeline Systems, Hydrological modeling.

Lund University 2012 – 2013

Teaching assistant

- My role was to support the main instructor, Prof. Magnus Larsson and Prof. Cinta Bertacchi Uvo, and assist students in their learning and understanding for the courses in Hydromechanics, Hydrology & Aquatic Ecology and Environmental Hydraulics.

Federal University of Alagoas | UFAL 2005 – 2006

Teaching assistant

- My role was to support the main instructor, Prof. Celso Piatti and Prof. Roberaldo Carvalho, and assist students in their learning and understanding for the courses in Sanitation and Pipeline Systems / Hydraulics.

Selected supervision

Evaluation of drought severity between the years 1961 to 2019 in the SFRB. *2021 – 2023*
Master's thesis by Ana Carine de Melo Silva at UFAL. Role: Supervisor.

Evaluation of changes in land use and land cover in the Taquari-Antas basin. *2016 – 2019*
Master's thesis by Jardel Cocconi at UFSC. Role: Supervisor.

Actual ET in the Iguaçu River basin using the METRIC model. *2012 – 2016*
PhD thesis by Patrícia Kazue Uda at UFSC. Role: Co-supervisor.

Effects of sugarcane expansion on ET and surface runoff in the Rio Grande basin. *2015 – 2016*
Master's thesis by Sara Borglin and Claes Blorglin at Lund University. Role: Supervisor.

Offline coupling of a Brazilian RCM and a 2D hydrodynamic model. *2012 – 2013*
Master's thesis by Robert Willander at Lund University. Role: Supervisor.

Presentations

Invited presentations:

Integrated assessment of Land Use and Hydrology for Sustainable Development of the Amazon under a Changing Climate, Congreso Científico Internacional de Ambiente Espacial, Cambio Climático Y Salud Humana. Managua, Nicaragua. June 2017.

Conferences:

Estimativa da produção de energia eólica utilizando dois modelos de probabilidades estatísticas: Weibull e Rayleigh, XXII Congresso Brasileiro de Meteorologia. Bauru, Brazil. 2022.

Análise da estimativa de precipitação mensal do produto 3B43 da missão espacial TRMM na bacia do rio São Francisco, III Simpósio da Bacia Hidrográfica do Rio São Francisco. ISBN : 978-65-5941-064-4. Minas Gerais, Brazil. 2020.

Análise da estimativa de precipitação mensal do produto PERSIANN-CDR na bacia do rio São Francisco, III Simpósio da Bacia Hidrográfica do Rio São Francisco. ISBN : 978-65-5941-064-4. Minas Gerais, Brazil. 2020.

Análise de estacionariedade de séries mensais de precipitação na bacia do rio São Francisco, III Simpósio da Bacia Hidrográfica do Rio São Francisco. ISBN : 978-65-5941-064-4. Minas Gerais, Brazil. 2020.

Geração de energia elétrica utilizando duas turbinas eólicas de pequeno porte : Eixo horizontal e eixo vertical, XI Workshop Brasileiro de Micrometeorologia. São José dos Campos, Brazil. 2019.

Avaliação do balanço hídrico no solo pelo modelo TOPMODEL aplicado a bacia hidrográfica do rio João Gualberto, XXII Simpósio Brasileiro de Recursos Hídricos. Florianópolis, Brazil. 2017.

Resposta hidrodinâmica bidimensional da lagoa do Peri quando induzida a cenários de vento, utilizando MIKE21, II Congresso Ibero Americano de Gestão Integrada de Áreas Litorais. Florianópolis, Brazil. 2016.

Is deforestation driving Southeastern Amazonia's hydrological transition?. American Geophysical Union Fall Meeting, 2015.

Assessment of a rapid sugarcane expansion upon the water balance of the Rio Grande basin, Brazil, IAHS - IAPSO - IASPEI Joint Assembly. Gothenburg, Sweden. 2013.

Implementation of a two-way coupled atmospheric-hydrological system for environmental modeling at regional scale, XXVII Nordic Hydrology Conference. Oulu, Finland. 2012.

Two way coupling of a conceptual hydrological model to a regional atmospheric model, 3rd International Multidisciplinary Conference on Hydrology and Ecology : Ecosystems, Groundwater and Surface Water Pressures and Options. Vienna, Austria. 2011.

Estratégia de adaptação automática de malhas triangulares em malhas mistas, XIX Simpósio Brasileiro de Recursos Hídricos. Maceió, Brazil. 2011.

Development of a two-dimensional unstructured hydrodynamic model for subtropical aquatic ecosystems, Workshop on Lake Ecosystem Modelling. Silkeborg, Denmark. 2010.

Identificação de padrões e similariedade nos dados climáticos, hidrológicos e de qualidade da água do lago Engelsholm (Dinamarca), XII Congresso Brasileiro de Limnologia. Gramado, Brazil. 2009.

Metodologias para a estimativa da disponibilidade hídrica em pequenas bacias hidrográficas sem dados. Estudo de caso: Bacia do rio Niquim-AL, II Simpósio de Recursos Hídricos do Sul-Sudeste. Rio de Janeiro, Brazil. 2008.

Análise estatística da velocidade média de um rio, 8° Congreso Iberoamericano de Ingeniería Mecánica. Cusco, Peru. 2007.

Perfil de velocidade de um rio: Uma análise estatística, XXX Congresso Nacional de Matemática Aplicada e Computacional. Florianópolis, Brazil. 2007.

Correlação entre as velocidades médias na seção de medição de um rio, I Congresso de Engenharia, Ciência e Tecnologia. Maceió, Brazil. 2007.

Águas superficiais da grande Maceió: Quantidade e qualidade, III Congresso Acadêmico da UFAL. Maceió, Brazil. 2006.

Estudo de parâmetros físicos das águas de alguns rios localizados na grande Maceió, VIII Simpósio de Recursos Hídricos do Nordeste. Gravatá, Brazil. 2006.

Águas superficiais da grande Maceió: Quantidade e qualidade, II Congresso Acadêmico da UFAL. Maceió, Brazil. 2006.

Monitoramento de alguns rios da grande Maceió/AL: Resultados preliminares, XVI Simpósio Brasileiro de Recursos Hídricos. João Pessoa, Brazil. 2005.

Organizations

12º Brazilian Symposium on Rainwater Harvesting in Maceió, Brazil. *Aug 2022*
Role: Member of the organizing committee.

Workshop on the Sustainable Development of the Amazon in Brasília, Brazil. *Jun 2015*
Role: Member of the organizing committee.

Workshop on the Sustainable Development of the Amazon in Brasília, Brazil. *Jun 2014*
Role: Member of the organizing committee.

Joint Assembly of IAHS, IAPSO and IASPEI in Gothenburg, Sweden. *Jul 2013*
Role: Assembly support assistant.

Skills

Programming: Fortran, Python, Shell.

Technical softwares: MATLAB, R, QGIS, GRASS, ArcGIS, Idrisi.

Publishing: LaTeX, LibreOffice, Microsoft Office.

Operating systems: Linux, Microsoft Windows.

Languages: Portuguese (Native), English (Fluent), Spanish (Elementary).