Paula Wessling da Silva

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Environmental Engineer graduated from the Universidade Tecnológica Federal do Paraná (UTFPR, 2015) with sandwich interchange at North Carolina State University (NCSU, 2012-2013). Master's degree in Water Resources and Environmental Engineering from the Universidade Federal do Paraná (UFPR, 2018). Working in consulting projects focused on Environment and Water Resources themes with participation on multidisciplinary teams and experience in technical reports' elaboration.

Main areas of expertise: hydrological and geospatial data consistency and statistical analysis with the use of programming languages and GIS software environments.

Research interests: hydrological modeling; remote sensing; stochastic processes; climate variability and climate change; extreme events such as floods, droughts and landslides; water resources management, policy and economical aspects.

Languages: Portuguese (native); English (fluent); Spoken Spanish (Intermediary); German (Learning the A1 level)**.**

EDUCATION

2016 – 2018
M.Sc. in Water Resources and Environmental Engineering, UFPR, Brazil
Master's scholarship: Coordination for the Improvement of Higher Education Personnel (CAPES, Brazil).

2009 - 2014[(1)] | 2012 - 2013[(2)]
B.Sc. in Environmental Engineering, UTFPR, Brazil (1) Coef.: 0.84/1.00
Exchange Program, B.Sc. in Civil and Environmental Eng., NCSU, USA (2) GPA: 3.08/4.00
Interchange Scholarchip: Science Without Borders CAPES, Brazil
Concentration: Water Resources and Geospatial Modeling

RESEARCH EXPERIENCE

2016 - 2018 Master's Research, Graduate Program in Water Resources and Environmental Eng., UFPR, Brazil
Concentration area: Stochastic Hydrology and Energy Studies | Main tools: R, Matlab, Fortran and LateX
Title: Climatic variability in hydrological series: identification, sources and contribution to extreme events.
Advisor: Drª. Alice Marlene Grimm. | Evaluators: Dr. Eloy Kavinsky, Dr. Daniel Detzel e Drª. Ingrid Illich Muller.
Complementary activity: Teaching internship in Dynamic Meteorology.

2013 - 2014 Research assistant, NCSU, USA | Course competition work, UTFPR, Brazil
Objective: the implementation of a Matlab code for the mathematical model of anaerobic digestion N01 (ADM1).
Advisor: Dr. Joel Ducoste (NCSU). Evaluators (UTFPR): Ms. Bruno de O. Freitas, Dr. Ricardo N. Costanzi, Dr. Ajadir Fazolo.

2011 - 2013 Research assistant, UTFPR, Brazil
Research objective: to evaluate the availability of forested area with the use of NDVI Landsat satellite image classification in different periods, and its relationship with changes in the patterns of flowrate and precipitation in the watershed of Alonzo's River, Paraná, Brazil. Main tools: ENVI and ArcGIS. Advisor: Dr. Edivando Vitor do Couto (UTFPR).

PROFESSIONAL EXPERIENCE CREA PR-148574/D[1]

August 2019 – December 2020 Environmental and Water Resources Analyst
January 2021 – December 2022 Environmental and Water Resources Engineer
RHA Engineering and Consulting, Brazil

- Monthly evaluation of rainfall, atmospheric pressure, humidity, radiation, wind speed and direction, river flow rate measurements and levels, and sediments data monitoring programs of Jirau's Hydro Power Plant (HPP) in Madeira's River, as required by its operation's phase license.
- Proposal of updates for environmental plans's licensing of the operational phase of Jirau's HPP.
- Annual reports for the results of Jirau's HPP's Environmental Programs attending the Brazilian Institute of Environment and Renewable Natural Resources (licensing requirement).
- Annual reports of fluviometric data monitoring in attendance of water resources use grant and the joint resolution of the National Water and Electricity Regulatory Agencies of Brazil nº03/2010. Clients: HPP Jirau and the HPP's under China Three Gorges concession in Brazil.

[1] Professional registration at the Engineering and Agronomy Regional Council of Paraná State, Brazil.

- HPP Jirau's reservoir and powerhouses' approach channels sedimentation monitoring studies for the enhancement of useful life (EDM's comparison in time – ArcGIS).
- Hydrological studies for small HPP: determining monthly naturalized flow rate estimates.
- Hydrological studies of maximum and minimum flow rate estimates for hydraulic dimensioning of dam's structural elements. Statistical modeling in Minitab and hydrological semi-distributed model in HecHMS. Client: Development Company of the São Francisco em Parnaíba's Valleys – CODEVASF.
- Assistantship for the automatic creation (R|Latex|VBA excel) of economic profile sheets by geographic region in the studies of (i) economic complexity, (ii) strategic action plan for the São Francisco's River Basin and the influence area of the São Francisco Integration Project (PISF), and (iii) strategic action plan for the Parnaíba's River Basin. Client: ONU | PNUD | Contrat BRA/17/019 – Northeast Regional Development – Brazil | RFP JOF Nº: 2295/2020 Event Id 0000007424
- Collaboration in the development of the Working Plan, Methodological Technical Notes, and the characterization of Climate and Hydrologic Monitoring Gauges for the Diagnostic Document of the Rio de Janeiro State Water Safety Plan (PESHI-ERJ), and the update of its State Water Resources Plan (PERHI-ERJ), clients: SEAS and INEA.
- Study of exploitable mean flow rate, water availability and surface water budget for the diagnostic and prognostic scenarios of the Goiana's river Water Resources Plan (APAC-PE).
- Management of the Project of Review of Naturalized Streamflow Upstream of the Reservoirs of the Energy and Electrical Interconnected National System. Client: National Operator of the Electrical Sector (ONS, Brazil).

August 2018 – December 2019 **Water Resources Engineer**
RHA Engineering and Consulting/Water and Soil Studies and Projects – Consortium, Brazil

Contract n◦010/2015 from the National Water Agency of Brazil (ANA). Flow rate measurements and levels' data consistency project to update Brazil's national database of operating gauges. Developing flow-rating curves and water levels data consistency at daily and monthly timescales. Main tools: Excel and its VBA, Hidro (developed by ANA) and SIADH (developed by ANA).

February 2015 – December 2015 **Engineering Analyst**
February 2014 – October 2014 **Engineering Internship**
Saneare Environmental and Engineering Consulting, Brazil

- Assistantship in water supply networks' hydraulic simulations in WaterCAD (Bentley); detailing drawing of parts, networks and installations in AutoCAD; hydraulic dimensioning; report writing. Client: Paraná Sanitation Company (SANEPAR).
- Development of surface water availability studies and flood level studies based on frequency analysis; amog other studies such as flour mixing and dilution for groundwater withdrawal.

PUBLICATIONS [C] – Conference papers | [P] – Posters' Presentations | [M] - Monography

[P] Wessling, P., Grimm, A. (2017) Identificação da variabilidade climática em séries temporais hidrológicas: uma revisão de métodos. XXII Simpósio Brazileiro de Recursos Hídricos. Florianópolis, SC, Brazil.

[C] Wessling, P., Grimm, A. (2017) Determinação de modos de variabilidade climática em series temporais de chuva e vazão. XXII Simpósio Brazileiro de Recursos Hídricos. Florianópolis, SC, Brazil.

[C] Avila, L., Mine, M., Wessling, P. (2017) Spatial analysis of rainfall-flow-rate in High Ivaí's River Watershed from copula's models. XXVI Argentinian National Congress of Water, CONAGUA. Córdova, Argentina.

[C] Wessling, P., Couto, E. V., Santos, L. J. C. (2013) Bacia hidrográfica do rio Alonzo: identificação de mudanças nos padrões de vazão e precipitação. XXVIII Congreso Centroamericano de Ingenieria Sanitaria Y Ambiental. Tegulcigalpa, Honduras.

[M] Wessling, P., Ducoste, J. (2014) Aplicação do modelo de digestão anaeróbia N1 (ADM1). Trabalho de conclusão do curso (Graduação em Engenharia Ambiental) – Universidade Tecnológica Federal do Paraná, Londrina. Disponível em: <http://repositorio.roca.utfpr.edu.br/jspui/bitstream/1/5208/1/LD_COEAM_2014_2_17.pdf>.

[M] Wessling, P., Grimm, A. (2018) Variabilidade climática em séries hidrológicas: identificação, origens e contribuição a eventos extremos. Dissertação de Mestrado (Programa de Pós-Graduação em Engenharia de Recursos Hídricos e Ambiental) – Universidade Federal do Paraná, Curitiba. Disponível em: <https://acervodigital.ufpr.br/handle/1884/59995>.

SKILLS (most frequent use)

Softwares: ArcGIS, QGIS, MS Office. | **Programming:** R, Python, Visual Basics (Excel), LateX, Matlab, Fortran.

ACADEMIC REFEREES (Graduate Program of Water Resources and Environmental Engineering, PPGERHA, UFPR)

Alice Grimm grimm@fisica.ufpr.br |Daniel Detzel detzel@ufpr.br |Cristovão Fernandes cvs.fernandes@gmail.com