RAFAEL DE CARVALHO BUENO

PhD in Natural Science at University of Kaiserslautern-Landau and in Environmental Engineering from the Federal University of Paraná My research interests are in physical limnology, dynamic of stratified flows, and the development of new technologies.

CONTACT

Nationality: Brazil

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Lattes: Rafael de Carvalho Bueno

SKILLS

Scientific competences

Internal waves
Physical limnology
Gravity currents
Numerical modelling
Software development
Sensor development

Programming skills

Python
C++
Arduino
Matlab
Fortran

general skills

LaTeX
Microsoft Office Skills
Microcontroller

Languages

Portuguese
English
Spanish

ABOUT ME

I hold a PhD in natural science from the University of Kaiserslautern-Landau in Germany and in Environmental Engineering from the Federal University of Paraná in Brazil. Currently, I am actively engaged in research as a member of the Research Group of Environmental Monitoring, Modeling, and Management of Reservoirs, Estuaries, and Catchments (REMARE). My area of expertise lies in the field of physical limnology and dynamic of stratified flows, with a specific focus on the study of internal waves and their significant impact.

EDUCATION

2023
University of Kaiserslautern-Landau, Germany
Natural and Environmental Sciences
Ph.D., Natural Science

2023
Federal University of Paraná, Brazil
GPA 3.9/4.0 (98%)
Ph.D., Environmental Engineering

2019
Federal University of Paraná, Brazil
GPA 3.8/4.0 (96%)
MEng., Environmental Engineering

2016
Federal University of Paraná, Brazil
Institute of Technology Tralee, Ireland
BEng., Environmental Engineering

COMPLEMENTARY COURSES

2020
Heidelberg University, Germany
Helmholtz Centre for Env. Research
Physical Limnology Course

2019
University of Freiburg, Germany
University computing centre
Research Data Management

EXPERIENCE

01/2017 - 06/2023
Federal University of Paraná, Brazil
Teaching assistant
Teaching assistant in the Environmental Engineering Department and the Graduate Program of Environmental Engineering (PPGEA) at UFPR for the following courses: Fluid Mechanics, Applied Mathematics to Environmental Engineering (undergraduate level) and Hydrodynamics of Environmental Aquatic System (Graduate level).

02/2020 - 10/2020
University of Koblenz-Landau, Germany
Guest scientist
Visiting PhD student in the physical limnology research group at the University of Koblenz-Landau under the orientation of professor Dr. Andreas Lorke. Research focus on environmental fluid mechanics, physical limnology, numerical modelling and sensor development.

02/2015 - 12/2016
Federal University of Paraná
Internationalization Scholarship
Assistance in translating scientific articles and institutional material, aiming to enhance the visibility and internationalization of the scientific output of the Federal University of Paraná.

02/2012 - 12/2014
LACTEC institutes
Intern
Desenvolvimento de projetos e estudos hidrológicos, geoprocessamento, de-senvolvimento de modelos numéricos relacionados aos fenômenos ambientais(hidrológicos e topográficos).

02/2011 - 12/2012
Department of Computer Science (UFPR)
Program of Initiation to Teaching
Support for the following courses: programming language (C++).

COURSES TAUGHT

2021
GRACE, Technical Courses, Germany
Teacher
Hydrodynamic modelling with Delft3D

2021
FLUXNET-ECN Spring Workshop 2021
Teacher
Python Course

2020
KIT (Karlsruhe), Germany
Professor's Assistant
Hydrodynamic modelling

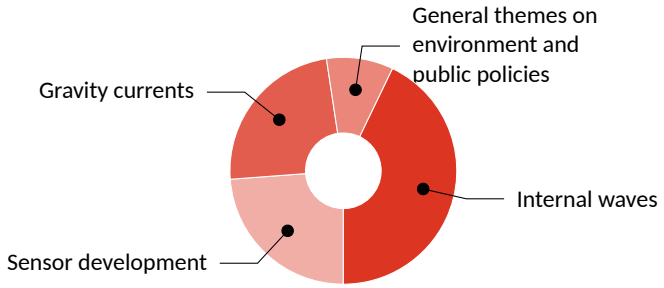
2019
Federal University of Paraná, Brazil
Professor's Assistant
Hydrodynamics of aquatic ecosystems

2019
Federal University of Paraná, Brazil
Professor's Assistant
Applied Mathematics I

2018 - 2019
Federal University of Paraná, Brazil
Professor's Assistant
Environmental Fluid Mechanics I

2018 - 2019
Federal University of Paraná, Brazil
Professor's Assistant
Environmental Fluid Mechanics II

RESEARCH INTERESTS



ONGOING SCIENTIFIC PROJECTS

Sensors development for environmental monitoring

This project is a group of studies focused on the development of low-cost sensors to control continuously the environmental conditions, which is a key parameter to establish circumstances in which human activities carry the risk of harmful effects on the natural environment.

Dynamic of lakes and reservoirs

This project is a group of studies investigating the hydrodynamic of lakes and reservoirs, including the effect of internal waves and gravity current on the biogeochemical fluxes, sediment resuspension, and greenhouse gases emissions in lakes and reservoirs.

REFERENCES

Dr.-Ing. Tobias Bleninger
Env. Engineering Department (UFPR)
Tel: +55(41) 98497 5685
Email: tobias.bleninger@gmail.com
PhD Advisor

Dr. Michael Mannich
Env. Engineering Department (UFPR)
Tel: +55(41) 3361 3030
Email: mmannich@gmail.com
Collaborating researcher

Dr. Andreas Lorke
Head of Env. Physics Group (RPTU)
Tel: +49 06341 28031317
Email: lorke@uni-landau.de
PhD Advisor

PEER-REVIEWED JOURNAL ARTICLES

Physical mechanisms of internal seiche attenuation for non-ideal stratification and basin topography

de Carvalho Bueno, R.; R., Bleninger, T.; Bertram, B.; Lorke, A.

2023 Environ. Fluid Mech. DOI

Internal wave analyzer for thermally stratified lakes

de Carvalho Bueno, R.; R., Bleninger, T.; Lorke, A.

2021 Environ. Model. Softw. DOI

An empirical parametrization of internal seiche amplitude including secondary effects

de Carvalho Bueno, R.; Bleninger, T.; Yao, H.; Rusak, J.

2021 Environ. Fluid Mech. DOI

Wind-induced internal seiches in Vossoroca reservoir, PR, Brazil

de Carvalho Bueno, R.; Bleninger, T.

2018 Revista Brasileira de Recursos Hídricos, Scielo Brasil DOI

CONFERENCE PRESENTATIONS AND TALKS

Influência de painéis fotovoltaicos na dinâmica de ondas internas em lagos e reservatórios

de Quadros, K. L.; Ferreira, E. M.; Scapulatempo Fernandes, C. V.; Bleninger, T.; de Carvalho Bueno, R.

2023 XXV Simpósio Brasileiro de Recursos Hídricos, Aracaju (Brazil)

Interwave Analyzer - Investigating the hydrodynamic of lakes from temperature data

de Carvalho Bueno, R.; Riha, M.; Bleninger, T.; Lorke, A.

2023 XXV Simpósio Brasileiro de Recursos Hídricos, Aracaju (Brazil)

Diferença entre métodos de cálculo global e modelagem 3D de evaporação de lagos e reservatórios

Santos, B. L.; Ferreira, E. M.; de Carvalho Bueno, R.; Goulart, C. B.; Scapulatempo Fernandes, C. V.; Bleninger, T.

2023 XXV Simpósio Brasileiro de Recursos Hídricos, Aracaju (Brazil)

Avaliação do protocolo de calibração de turbímetros de baixo-custo para detecção de algas em corpos d'água

Dunajski, M. L.; Tulio, A.; Luz, L. H.; de Carvalho Bueno, R.; Bleninger, T.

2023 XXV Simpósio Brasileiro de Recursos Hídricos, Aracaju (Brazil)

An IoT based low-cost turbidity probe and the influence of color light emitter and microcontroler resolution

de Carvalho Bueno, R.; Morales, F.; Diniz, A.; Bleninger, T.

2022 XXX Congreso Latinoamericano de Hidraulica, Foz do Iguaçu (Brazil)

Dynamic: Automatic dye tracing software applied to gravity currents

Silva, N. S.; de Carvalho Bueno, R.; Diniz, A.; Bleninger, T.

2021 XXIV Simpósio Brasileiro de Recursos Hídricos, Belo Horizonte (Brazil)

Dinâmica de lagos em período de estratificação térmica: Ocorrência de Seichas Internas

de Carvalho Bueno, R.; Bleninger, T.

2020 XIII Simpósio Brasileirade Recursos Hídricos, Foz do Iguaçu (Brazil)

Desenvolvimento de um sensor de turbidez da água de baixo custo utilizando um Arduino

de Carvalho Bueno, R.; Diniz, A.; Ribeiro, C.; Bleninger, T.

2020 XIII Simpósio Brasileirade Recursos Hídricos, Foz do Iguaçu (Brazil)

Experimental analysis of gravity currents on smooth and rough bottom and in an unstratified and stratified ambient

de Carvalho Bueno, R.; Hoeltgebaum, L.; Colombo, G.; Mannich, M.; Bleninger, T.

2019 AHR World Congress, Panama City (Panama)

Avaliação e detecção de ondas internas em lagos

de Carvalho Bueno, R.; Bleninger, T.

2018 I Encontro de Pesquisa e Desenvolvimento Tecnológico da UFPR

Análise experimental da formação de ondas internas gravitacionais a partir de correntes de gravidade

de Carvalho Bueno, R.; Hoeltgebaum, L.; Colombo, G.; Mannich, M.; Bleninger, T.

2018 II Encontro Sul Brasileiro de Engenharia Ambiental e Sanitária, Foz doIguaçu-PR (Brazil)

Análise experimental da estratificação causada por correntes de gravidade sobre fundo liso e rugoso.

Hoeltgebaum, L.; Colombo, G.; de Carvalho Bueno, R.; Bleninger, T.; Mannich, M.

2018 II Encontro Sul Brasileiro de Engenharia Ambiental e Sanitária, Foz doIguaçu-PR (Brazil)

Gravity currents produced by lock-exchange and intrusion.

de Carvalho Bueno, R.; Marcon, L.; Wosiacki, L.; Romero, M.; Bleninger, T.; Mannich, M.

2017 XXII Simpósio Brasileira deRecursos Hídricos, Florianópolis-SC (Brazil)

Avaliação experimental da dispersão da pluma de um jato denso.

Romero, M.; Marcon, L.; de Carvalho Bueno, R.; Wosiacki, L.; Mannich, M.; Bleninger, T.

2017 XXII Simpósio Brasileira deRecursos Hídricos, Florianópolis-SC (Brazil)

Verificação da ocorrência de ondas internas no reservatóriodo Vossoroca.

de Carvalho Bueno, R.; Bleninger, T.

2017 XXII Simpósio Brasileira deRecursos Hídricos, Florianópolis-SC (Brazil)