renatabcorr@hotmail.com
+31 (0) 63338 0931 / +55 (41) 99601 3393
Van Embdenstraat 1062 Delft, The Netherlands
renatabcorr LinkedIn
Nationality: Brazilian with valid work permit (TWV niet vereist)

Renata Correia

Environmental Engineer

A motivated Environmental Engineer and Researcher with record backed by publications, technical reports and oral presentations. An active team player with leadership and organisational skills, able to balance multiple priorities and work independently. A skilled professional with training in hydraulic modelling, especially those related to fluvial, coastal and port areas. Highly experienced in projects with the higher education industry and environmental agencies. I am a curious person and passionate about learning.

PROFESSIONAL EXPERIENCE

2014-2018 **Research Engineer**
Transportation and Infrastructure Institute of Technology (ITTI)/ Federal University of Parana (UFPR) (Curitiba, BRA)

From Graduate intern to Research Engineer, I worked as a team player and as a leader in various projects with applied research for the higher education industry, as the Brazilian Department of Transports and Infrastructure (DNIT), the Brazilian Waterborne Transports Agency (ANTAQ) and the Brazilian Institute of Environment and Natural Resources (IBAMA). I was in charge of hydrodynamic models, studies of fluvial infrastructure, cargo trading, dredging projects, research proposals and environmental impact assessments for inland waterways and ports areas .

Achievements/Tasks:
- Developed hydrodynamic models for hydraulic and hydrodynamic studies in fluvial and coastal areas in Brazil;
- Performed an Environment Impact Assessment for Paraguay River Waterway (Brazil) maintenance and operation;
- Coordinated an Environmental Impact Assessment for a fluvial port;
- Developed a mathematical and econometric forecast method for cargo trading (cooperation with ANTAQ);
- Executed Basic and Executive Navigation Signs and Dredging Engineering Projects;
- Hydrological studies in fluvial systems (sediment surveys, ADCP measurements and stage series analysis);
- Elaboration of technical and field reports, publications and oral presentations;
- Supervision of Undergraduate Internships, academic advisory and participation in the Evaluation Board of a BSc thesis (Dam breach);

(Please check here the technical reports of my activities – in Portuguese)

03/2013-10/2013 **Undergraduate intern**
LACTEC Research and Development Institute (Curitiba, BRA)

As an Undergraduate intern, I worked in a project where Deltares and CEMIG had partnership for the development of a Flooding Alert System in the Rio Grande watershed (Brazil). My responsibilities involved the SOBEK Suite model setup, data assembly for boundary and initial conditions of the model, as well as technical reports revision and state-of-art researches.

Achievements/Tasks
- Environmental data analysis in a GIS environment;
- Stage series analysis of Rio Grande watershed for a flooding forecast;
- SOBEK suite model setup for a flooding system alert in Rio Grande watershed (CEMIG);
- Technical reports revision, and state-of-art research within monitoring small power plant projects.

2012-2013 **Visiting Student and Researcher**
The University of Sheffield (Sheffield, UK)

Exchange period during the undergraduate studies. Sponsored by the Brazilian government, I spent one semester as a student and researcher, had courses and research activities related to my BSc thesis.

Achievements/Tasks
Studies in turbulence processes involved in an incompressible flow over a backwards-facing step with quantitative analysis. Application of Matlab tools for data analysis.

2011-2012 **Undergraduate Intern**
Brazilian Council for Scientific and Technological Dev.t (CNPq) and Federal University of Parana (UFPR) (Curitiba, BRA)

Undergraduate research project related to the sedimentation sludge processes in Sewage Treatment Plants (STP) for storage tank designs. Sponsored by CNPq and within the Brazilian Program of Research in Sanitation (PROSAB).

FORMAL EDUCATION

2014-2016 **MSc in Water Resources and Environmental Engineering-**
Federal University of Parana (UFPR), Curitiba, BRA
Thesis title: **"Topo-bathymetric data for hydrodynamic modelling with GIS support- a case study of Paraguay River Waterway."** Advisor: Dr Tobias Bleninger

2010–2013 **BSc in Environmental Engineering**
Federal University of Parana (UFPR), Curitiba, BRA
Thesis title: **"Scale analysis of environmental data for mixing and transport processes in outfalls systems- a case study of Cartagena submarine outfall."** Advisor: Dr Tobias Bleninger

PROFESSIONAL TRAINING

Sediment Transport Modelling- held by U.S. Army Corps of Engineers (USACE)/Brasília, BRA	2018 (40h)
Hydrodynamics of Environmental Systems (Delft 3D)- held by Federal University of Parana (UFPR)/Curitiba, BRA	2017 (45h)
Fluvial Geomorphology- held by U.S. Army Corps of Engineers (USACE)/Brasília, BRA	2017 (40h)
Hydrodynamic Modelling (1D/2D)- held by U.S. Army Corps of Engineers (USACE)/Brasília, BRA	2016-2017 (80h)
Flow measurements with Acoustic Doppler Current Profiler (ADCP)- held by Federal University of Parana (UFPR)/Curitiba, BRA	2016 (45h)
Python Introduction- held by Brazillian Research Institute LACTEC/Curitiba, BRA	2015 (40h)
SOBEK Suite- held by Deltares partnership with Brazilian Research Institute LACTEC/Curitiba, BRA	2014 (40h)

SKILLS AND ACHIEVEMENTS

Languages

Portuguese	(Native)
English	(Advanced)
Spanish	(Intermediate)
German	(Elementary)

Technical skills

CFD:	DELFT 3D; SOBEK Suite ;HEC-RAS (1D-2D-Sediment-DamBreach);
CAD/GIS:	ArcGIS; QGIS; HEC-GeoRAS, AutoCAD;
Programming:	Matlab; Python; LaTeX.

Fellowships/ Awards

- (2014) Graduate Research Fellowship from Brazilian Council for Scientific and Technological Development (CNPq) during the Master School;
- (2012) International Undergraduate Research Fellowship at The University of Sheffield (UK). Sponsor: Brazilian Council for Scientific and Technological Development (CNPq) and Science Without Borders Programme

Voluntary work

(2010) Member of the Junior enterprise company of Environmental Engineering, with the development of a Solid Waste Management (SWM) Project for a Cafe.

Soft skills

- Communication: Public speaking; Writing reports and proposals; Honest;
- Critical thinking: Adaptable; Critical thinking and observer; Curious; Problem solving; Passion for learning; Innovative; Enthusiastic.
- Leadership: Decision-making; Mentoring; Troubleshooting; Organized;
- Work Ethic: Teamwork; Respectful; Independent; Competitive.

PUBLICATIONS *(Information available on ResearchGate)*

1 Correia, R. Guarneri, H. Bleninger, T. **Improved bathymetry interpolation for hydraulic model development for the strongly meandering Paraguay River Waterway**. To be *submitted in the Brazilian Journal of Water Resources.* (December 2018).

2 Waydzik, F.A.; Guarneri, H.; Correia, R.; Ratton, P.; Tomas, G. P. **Analysis of the area of influence for cargo transportation and logistics corridors applied to the case study of the Paraguay-Parana Waterway.** 27º National Congress of Waterway Transportation, Naval and Offshore Construction (2018).

3 Ratton, E.; Neto, D. N.; Waydzik, F.; Correia, R**. Methodology for environmental impact assessment of dredging services- case study of Paraguay River Waterway**. Brazilian Journal of Management and Sustainability (2018).

4 Waydzik, F.; Zibetti, R. A.; Neto, D. N.; Correia, R. **Regulatory practices, competitive advantages and supply chain between the countries of Paraguay-Parana Waterway agreement of fluvial transport**. Anuario Hidrovías del Mercosur (2017).

5 Guarneri, H.; Ratton, P.; Correia, R.; Bleninger, T. **Preliminary characterisation of the radius of curvature in channel navigation regarding inland waterways planning**. 26º National Congress of Waterway Transportation, Naval and Offshore Construction (2016).

6 Ratton, P.; Tomas, G. P.; Correia, R.; Guarneri, H. **Determination of critical stretches for navigation in large rivers. Case study of Paraguay River Waterway**. 26º National Congress of Waterway Transportation, Naval and Offshore Construction (2016).

7 Correia, R.; Ratton, P.; Guarneri, H.; Ratton, E.; Queiroz, E. **Evaluation of Paraguay-Parana Waterway fluvial infrastructure**. 26º National Congress of Waterway Transportation, Naval and Offshore Construction (2016).

8 Muhlenhoff, A.; Correia, R.; Jimenez, P.S.J; Guarneri, H.; Gomes, J.; Fernandes, C.V.S. **Evaluation of different objective functions during automatic calibration of Sacramento hydrologic model**. XXI Brazilian Symposium on Water Resources (SBRH) (2015).

9 Frigo, A.; Guarneri, H.; Tomas, G.; Golyjeswski, O.; Waydzik, F.; Hoepker, R.; Bleninger, T.; Ratton, E.; Correia, R.; Ratton, P.; Barsotti, H.; Godoy, P. **Analysis of the navigability condition of Paraguay River Waterway**. XXI Brazilian Symposium on Water Resources (SBRH) (2015).

10 Correia, R.; Guarneri, H.; Bleninger, T. Tomas, G. P.; Ratton, P.; Ratton, E. **Hydrodynamic modelling for navigability assessment in a Brazilian stretch of Paraguay River**. 9 º SOBENA – Inland Navigation Development Seminar (2015).

11 Guarneri, H.; Correia, R.; Ratton, P.; Nadal, C. A.; Mouro, R.C.; Bleninger, T.; Ratton, E. **Digital elevation model determination for large rivers. Case study: brazilian stretch of Paraguay-Parana Waterway**. 9 º SOBENA – Inland Navigation Development Seminar (2015).

12 Correia R, Bleninger T, Guarneri H, Tomas G.P., Moro R.C., Waydzik F.A., Ratton P., Barsotti H.G., Ratton E., Bittencourt M. L., Gobbi M. F. and Godoy P. D**etermination of Paraguay River drought levels using hydrodynamic modelling integrated with a GIS.** XXI Brazilian Symposium of Hydraulic Resources. Brasilia, 2015.

INTERESTS

1 Delta planning and infrastructure; Hydraulic Engineering; Climate adaptation; Sediment Transport; Morphodynamics; Waterway designs and management; Ports, logistics and sustainability;

2 Mathematical modelling; Environmental surveying; Statistics and probability; Programming.

REFERENCES

Dr-Ing. Tobias Bleninger (Curitiba, BRA)
tobias.bleninger@gmail.com +55 (41) 3361 3212

Dr Eduardo Ratton (Curitiba, BRA)
ratton.eduardo@gmail.com +55 (41) 3226 6658

GRADUATION THESIS

Topo-bathymetric data for hydrodynamic modelling with GIS support – a case study of Paraguay River Waterway

Summary: Studies with hydrodynamic models are important allies in obtaining detailed information on hydraulic and hydrological parameters of a river system. The mathematical representation and simulation complement field data and provide reliable information to assist in the evaluation of navigability conditions in inland waterways, especially during extreme events, such as flooding and droughts.

In this context, the primary focus of this research is the development and application of hydrodynamic modelling with Geographic Information System (GIS) support to complement the scarce field data, identify the longitudinal variations of the flow regime, also to check the drought conditions and its relation to the navigability in a Paraguay River reach. The study area covered a stretch of 126 kilometres between the city of Ladário/MS and the district of Porto Esperança/MS, Brazil.

The research covered the development and evaluation of a Digital Elevation Model (DEM) through statistical analysis and interpolation techniques of topo-bathymetric data. In a GIS environment, information from field surveys such as thalweg, margins and cross sections provided the cartographic base to the hydrodynamic model. Boundary conditions and control points from surveys were used for calibration and verification (discharge, water level, cross-sectional area and velocity). The simulation is connected to the Reference Level (RL) in the Paraguay River, representing the low water level event.

The primary results included the representation of the riverbed surface of the study area, where from a statistical and geometric analysis, the Weighted Distance Inverse (IDW) interpolator presented the best results. The hydrodynamic model was able to reproduce and complement survey data, to identify the critical stretches for navigation and with the GIS support, estimate the dredging volumes to guarantee safety navigation. By regarding the simulated velocities, the hydrodynamic model could provide hydraulics variables to sediment transport and dunes movements. Further investigations on morphodynamics and 2D/3D numerical models can use this work database. Likewise, is a powerful device to increase the visibility of the inland waterways in the Brazilian transport matrix.

Keywords: Hydrodynamic model; bathymetric interpolation; Digital Elevation Model; Geographic Information Systems; Inland navigation; droughts.