

Debora Yumi de Oliveira

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EDUCATION

- 2019-present **PhD in Civil and Environmental Engineering**, University of California Irvine, United States
Focus area: Hydrology and Water Resources
Advisor: Dr. Jasper Alexander Vrugt
January 2019 – June 2022 (expected)
GPA: 4.0/4.0
- 2016-2018 **Master in Environmental Engineering**, Federal University of Santa Catarina (UFSC), Brazil
Specialization: Hydrology and Applied Hydraulics
Thesis title: *Bayesian inference applied to interception and rainfall-runoff modeling*
Advisor: Dr. Pedro Luiz Borges Chaffe
March 2016 – March 2018
GPA: 10/10
- 2010-2015 **Environmental and Sanitary Engineering**, Federal University of Santa Catarina (UFSC), Brazil
Thesis title: *Identification of interception model parameters using an automatic calibration algorithm*
Advisor: Dr. Pedro Luiz Borges Chaffe
March 2010 – September 2015
GPA: 9.03/10
- 2012-2013 **BRAFITEC Exchange Program**, École Nationale Supérieure de Géologie (ENSG), France
Specialization: Resources, land use and water management
January 2012 – February 2013
GPA: 15.35/20

AWARDS

- 2017 Young Researcher Prize for the best paper presented at the Brazilian Symposium on Water Resources by a lead author under 30 years of age (awarded every two years), Brazilian Water Resources Association
- 2015 Medal of honor for academic achievement as the highest overall grade (9.03/10), class of 2015.1 Environmental and Sanitary Engineering, Federal University of Santa Catarina (UFSC)

PEER-REVIEWED PUBLICATIONS

In progress

Oliveira, D.Y.; Vrugt, J.A. Diagnostic Bayes: Merging the strengths of Bayesian inference and diagnostic model evaluation. *In preparation*.

Anzolin, G.; Chaffe, P.L.B.; **Oliveira, D.Y.**; Rodrigues, R.R.; AghaKouchak, A.; Vrugt, J.A. A Framework for selecting stationary vs. nonstationary models for analysis of extreme rainfall. *In preparation*.

Oliveira, D.Y.; Vrugt, J.A. The Treatment of Uncertainty in Diagnostic Model Evaluation: 1. A Probabilistic Description of Measured Streamflow Records. *Submitted to Water Resources Research*, (under review).

Vrugt, J.A.; **Oliveira, D.Y.** Probabilistic interpretation of the Kling-Gupta Efficiency. *Submitted to Journal of Hydrology*, (under review).

Oliveira, D.Y.; Vrugt, J.A. The Treatment of Uncertainty in Diagnostic Model Evaluation: 2. A Probabilistic Description of Hydrologic Signatures. *Submitted to Water Resources Research*, (in revision).

David, P.C.; Chaffe, P.L.B.; Chagas, V.B.P.; Dal Molin, M.; **Oliveira, D.Y.**; Klein, A.H.F.; Fenicia, F. Correspondence between model structures and hydrological signatures: a large-sample case study using 508 Brazilian catchments. *Submitted to Water Resources Research*, (in revision).

Published

6. Paiva, R.C.; et al. including **Oliveira, D.Y.** (2020). Advances and challenges in the water sciences in Brazil: a community synthesis of the XXIII Brazilian Water Resources Symposium. *Brazilian Journal of Water Resources*, 25, e50. <https://doi.org/10.1590/2318-0331.252020200136>
5. Franco, A.C.L.; **Oliveira, D.Y.**; Bonumá, N.B. (2020). Comparison of single-site, multi-site and multi-variable SWAT calibration strategies. *Hydrological Sciences Journal*, 65(14), 2376-2389. <https://doi.org/10.1080/02626667.2020.1810252>
4. Bartiko, D.; **Oliveira, D.Y.**; Bonumá, N.B.; Chaffe, P.L.B. (2019). Spatial and seasonal patterns of flood change across Brazil. *Hydrological Sciences Journal*, 64(9), 1071-1079. <https://doi.org/10.1080/02626667.2019.1619081>
3. David, P.C.; **Oliveira, D.Y.**; Grison, F.; Kobiyama, M.; Chaffe, P.L.B. (2019). Systematic increase in model complexity helps to identify dominant streamflow mechanisms in two small forested basins. *Hydrological Sciences Journal*, 64(4), 455-472. <https://doi.org/10.1080/02626667.2019.1585858>
2. **Oliveira, D.Y.**; Chaffe, P.L.B.; Sá, J.H.M. (2018). Extending the applicability of the Generalized Likelihood function for zero-inflated data series. *Water Resources Research*, 54, 2494-2506. <https://doi.org/10.1002/2017WR021560>
1. Sá, J.H.M.; Chaffe, P.L.B.; **Oliveira, D.Y.** (2015). A comparative analysis of the Gash and the Rutter models for the estimation of rainfall interception by Mixed Ombrophilous Forest. *Brazilian Journal of Water Resources*, 20, 1008-1018. <https://doi.org/10.21168/rbrh.v20n4.p1008-1018> (in Portuguese)

TEACHING EXPERIENCE

2020	Teaching Assistant , CEE20 <i>Introduction to Computational Engineering Problem Solving</i> , Fall 2020, University of California Irvine, United States.
2019	Lecturer , Short course on <i>Fundamentals of Hydrological Modeling</i> (8 hours), XXIII Brazilian Symposium on Water Resources, Brazil. Participants: 30. November 24, 2019.
2017	Lecturer , Short course on <i>Bayesian Analysis applied to Hydrology</i> (6 hours), XXII Brazilian Symposium on Water Resources, Brazil. Participants: 15. November 28-30, 2017.
2016-2017	Teaching Assistant , Federal University of Santa Catarina (UFSC), Brazil. One to three lectures per semester on Hydrology and Climatology (interception, runoff generation mechanisms, introduction to hydrological modeling) and one lecture per semester on Water Resources Planning (reservoir management lab session) for undergraduates in Environmental and Sanitary Engineering.
2016	Lecturer , Short course on <i>Introduction to MATLAB</i> (8 hours) for undergraduates in Environmental and Sanitary Engineering, Federal University of Santa Catarina (UFSC), Brazil. Participants: 15. March 29-April 01, 2016.

MENTORSHIP EXPERIENCE

2019	Co-advisor , Gabriel Anzolin, <i>Estimation of rainfall intensity-duration-frequency curves in Southern Brazil using stationary and nonstationary models</i> , Bachelor thesis, Federal University of Santa Catarina, Brazil.
2017	Co-advisor , Paula Cunha David, <i>Influence of conceptual model structure on the rainfall-runoff simulation in two forested catchments</i> , Bachelor thesis, Federal University of Santa Catarina, Brazil.

PROFESSIONAL SERVICE

2021	Selection committee , Young Researcher Prize, XXIV Brazilian Symposium on Water Resources, Brazil.
2019	Co-convenor , Special session on <i>Hydrological models as hypothesis of catchment functioning</i> , XXIII Brazilian Symposium on Water Resources, Brazil.

Journal reviewer: Water Resources Research, Brazilian Journal of Water Resources, Revista de Gestão de Água da América Latina (in Portuguese)

SKILLS

Software: ArcGIS, MATLAB, familiar with R
Language: Portuguese (native), English, French

PRESENTATIONS

Oral presentations

Oliveira, D.Y.; Vrugt, J.A. (2019). Uncertainty in hydrological signatures. XXIII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Oliveira, D.Y.; Vrugt, J.A. (2019). The use of hydrological signatures for model calibration. 27th IUGG General Assembly, Montréal.

Oliveira, D.Y.; Bartiko, D.; Chaffe, P.L.B. (2018). Uncertainty in flood frequency analysis using stationary and nonstationary models in Southern Brazil. I Brazilian Symposium on Natural Disasters, Porto Alegre, Brazil. (in Portuguese)

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2017). Impact of the likelihood function on the predictive uncertainty and parameter inference of a rainfall interception model. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2016). Why size doesn't matter: The importance of stemflow measurements in the evaluation of interception models. AGU Fall Meeting, San Francisco.

Poster presentation

Oliveira, D.Y.; Chaffe, P.L.B. (2019). Embracing parameter correlation in hydrological models: explicitly accounting for it improves identifiability. EGU General Assembly, Vienna.

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2015). Identification of rainfall interception model parameters using an automatic calibration algorithm. XXI Brazilian Symposium on Water Resources, Brasília, Brazil. (in Portuguese)

CONFERENCE PUBLICATIONS

Conference papers

Oliveira, D.Y.; Vrugt, J.A. (2019). Uncertainty in hydrological signatures. In: XXIII Brazilian Symposium on Water Resources, Foz do Iguaçu, Brazil. (in Portuguese)

Anzolin, G.; **Oliveira, D.Y.**; Chaffe, P.L.B. (2019). Uncertainty in rainfall intensity-duration-frequency curves in the Itajaí River basin. In: XXIII Brazilian Symposium on Water Resources, Foz do Iguaçu, Brazil. (in Portuguese)

Arienti, P.F.; Sa, J.H.M.; **Oliveira, D.Y.**; Chaffe, P.L.B. (2019). Uncertainty analysis of two rainfall interception models applied to a Dense Ombrophilous Forest. In: XXIII Brazilian Symposium on Water Resources, Foz do Iguaçu, Brazil. (in Portuguese)

Bartiko, D.; **Oliveira, D.Y.**; Bonumá, N.B.; Chaffe, P.L.B. (2019). Uncertainty and nonstationarity in flood frequency analysis in Brazil. In: XXIII Brazilian Symposium on Water Resources, Foz do Iguaçu, Brazil. (in Portuguese)

David, P.C.; **Oliveira, D.Y.**; Chagas, V.B.P.; Chaffe, P.L.B. (2019). Investigation of the relationship between hydrological model structures and catchment characteristics. In: XXIII Simpósio Brasileiro de Recursos Hídricos, 2019, Foz do Iguaçu. XXIII Simpósio Brasileiro de Recursos Hídricos.

Sá, J.H.M.; **Oliveira, D.Y.**; Arienti, P.F.; Perez, A.B.A.; Innocente, C.; Chaffe, P.L.B. (2019). Intra-event variability of the interception process in a Dense Ombrophilous Forest. In: XXIII Brazilian Symposium on Water Resources, Foz do Iguaçu, Brazil. (in Portuguese)

Oliveira, D.Y.; Bartiko, D.; Chaffe, P.L.B. (2018). Uncertainty in flood frequency analysis using stationary and nonstationary models in Southern Brazil. In: I Brazilian Symposium on Natural Disasters, 2018, Porto Alegre. I Encontro Nacional de Desastres.

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2017). Impact of the likelihood function on the predictive uncertainty and parameter inference of a rainfall interception model. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Bartiko, D.; **Oliveira, D.Y.**; Speckhann, G.A.; Chagas, V.B.P.; Bonumá, N.B.; Chaffe, P.L.B. (2017). Seasonality of maximum discharges in Southern Brazil. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

David, P.C.; **Oliveira, D.Y.**; Chaffe, P.L.B. (2017). The influence of temporal data resolution on a conceptual hydrological model. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Innocente, C.; **Oliveira, D.Y.**; David, P.C.; Perez, A.B.A.; Chagas, V.B.P.; Chaffe, P.L.B. (2017). Investigating the representative elementary area concept in small coastal watersheds. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Sá, J.H.M.; Chaffe, P.L.B.; **Oliveira, D.Y.**; Lisboa, H.M. (2017). Spatial and temporal patterns of throughfall in a coastal Atlantic Forest plot in Southern Brazil. XXII Brazilian Symposium on Water Resources, Florianópolis, Brazil. (in Portuguese)

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2015). Identification of rainfall interception model parameters using an automatic calibration algorithm. XXI Brazilian Symposium on Water Resources, Brasília, Brazil. (in Portuguese)

Sá, J.H.M.; Chaffe, P.L.B.; **Oliveira, D.Y.**; Giglio, J. N.; Kobiyama, M.; Lisboa, H.M. (2015). Identification and characterization of rainfall interception events on a catchment covered by Mixed Ombrophilous Forest. XXI Brazilian Symposium on Water Resources, Brasília, Brazil. (in Portuguese)

Conference abstracts

Oliveira, D.Y.; Vrugt, J.A. (2019). The use of hydrological signatures for model calibration. In: 27th IUGG General Assembly, 2019, Montréal. IUGG 2019 Abstracts Book.

Oliveira, D.Y.; Chaffe, P.L.B. (2019). Embracing parameter correlation in hydrological models: explicitly accounting for it improves identifiability. In: EGU General Assembly, 2019, Vienna. Geophysical Research Abstracts, EGU2019-1456.

Sá, J.H.M.; **Oliveira, D.Y.**; Perez, A.B.A.; Innocente, C.; David, P.C.; Brighenti, T.M.; Chaffe, P.L.B. (2018). Rainfall interception by Dense Ombrophilous Forest - A study in Subtropical Brazil. In: EGU General Assembly, 2018, Vienna. Geophysical Research Abstracts, EGU2018-11244, v. 20.

Innocente, C.; Sá, J.H.M.; Perez, A.B.A.; Arienti, P.F.; **Oliveira, D.Y.**; David, P.C.; Chaffe, P.L.B. (2018). Preliminary investigation of topography and baseflow chemical characteristics in subtropical watersheds. In: EGU General Assembly, 2018, Vienna. Geophysical Research Abstracts, EGU2018-5601, v. 20.

David, P.C.; **Oliveira, D.Y.**; Chaffe, P.L.B. (2018). Increasing complexity in model structure and likelihood function helps to identify dominant streamflow mechanisms: A case study of two small forest basins in Brazil. In: EGU General Assembly, 2018, Vienna. Geophysical Research Abstracts, EGU2018-3520, v. 20.

Sá, J.H.M.; Chaffe, P.L.B.; **Oliveira, D.Y.**; Giglio, J. N.; Kobiyama, M. (2017). Throughfall patterns of a Subtropical Atlantic Forest in Brazil. In: EGU General Assembly, 2017, Vienna. Geophysical Research Abstracts, EGU2017-2343, v. 19.

Oliveira, D.Y.; Chaffe, P.L.B.; Sá, J.H.M. (2016). Why size doesn't matter: The importance of stemflow measurements in the evaluation of interception models. In: AGU Fall Meeting, 2016, San Francisco. AGU Abstract Browser, Abstract H52A-08.

COMPLEMENTARY EDUCATION

2016	Model building, inference and hypothesis testing in hydrology (36 hours) Luxembourg Institute of Science and Technology (LIST), Luxembourg
2015	TerraMA²: Computational platform for developing systems for monitoring, analysis and alert of environmental data (32 hours) Brazilian Institute of Space Research (INPE), Brazil
2015	Basic SWAT course (36 hours) Federal University of Santa Catarina (UFSC), Brazil