

**Dario Del Giudice, PhD**

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 2501 Stinson Dr., Raleigh, NC 27695

**SUMMARY**

A decade of experience in environmental engineering, analyzing and predicting human impacts on aquatic ecosystems. Expert in stochastic modeling for uncertainty quantification in environmental risk assessment. Successfully completed more than a dozen research projects aiming at improving water resources management while leading international teams across Europe and US.

**EDUCATION**

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| PhD, Environmental Engineering, Institutes of Technology (ETHZ, Eawag), Switzerland.                         | 2011 – 2015 |
| Thesis: Improving output and input statistical error descriptions in urban hydrological modeling.            |             |
| MSc, Environmental Sciences and Engineering, Institute of Technology (EPFL), Switz. <i>Summa cum laude</i> . | 2009 – 2011 |
| BSc, Environmental Sciences, Università di Bologna, Italy. <i>Summa cum laude</i> .                          | 2006 – 2009 |

**PROFESSIONAL EXPERIENCE**

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|---|-------------|
| Postdoctoral Research Scholar, North Carolina State University, US.       | since 2018  |
| Postdoctoral Researcher, Carnegie Institution at Stanford University, US. | 2015 – 2018 |

**PEER-REVIEWED PUBLICATIONS**

1. **D. Del Giudice**, V. Matli, D. Obenour. Bayesian mechanistic modeling characterizes Gulf of Mexico hypoxia: 1968-2016 and future scenarios. *Ecol. Appl.* (2019), <https://doi.org/10.1002/eap.2032>.
2. A. Katin, **D. Del Giudice**, D. Obenour. Modeling biophysical controls on hypoxia in a shallow estuary using a Bayesian mechanistic approach. *Environ. Modell. Soft.* (2019), <https://doi.org/10.1016/j.envsoft.2019.07.016>.
3. S. Fang, **D. Del Giudice**, et al. A space-time geostatistical model for probabilistic estimation of harmful algal bloom biomass and areal extent. *Sci. Total Environ.* (2019), <https://doi.org/10.1016/j.scitotenv.2019.133776>.
4. D. Machac, P. Reichert, J. Rieckermann, **D. Del Giudice**, C. Albert. Accelerating Bayesian inference in hydrological modelling with a mechanistic emulator. *Environ. Modell. Soft.* (2018), doi:10.1016/j.envsoft.2018.07.016.
5. **D. Del Giudice**, M. Kalcic, R. Muenic, N. Bosch, D. Scavia et al. On the practical usefulness of least squares for assessing uncertainty in hydrologic and water quality predictions. *Environ. Modell. Soft.* (2018), doi:10.1016/j.envsoft.2018.03.009.
6. **D. Del Giudice**, Y. Zhou, E. Sinha, A. Michalak. Long-term phosphorus loading and springtime temperatures explain interannual variability of hypoxia in a large temperate lake. *Environ. Sci. Technol.* (2018), doi: 10.1021/acs.est.7b04730.
7. **D. Del Giudice**, C. Albert, J. Rieckermann, P. Reichert. Describing the catchment-averaged precipitation as a stochastic process improves parameter and input estimation. *Water Res. Res.* (2016), doi: 10.1002/2015WR017871.
8. A. Sikorska, **D. Del Giudice**, K. Banasik, J. Rieckermann. The value of streamflow data in improving TSS predictions - Bayesian multi-objective calibration. *J. Hydrol.* (2015), doi:10.1016/j.jhydrol.2015.09.051.
9. **D. Del Giudice**, R. Löwe, H. Madsen, P. Mikkelsen, J. Rieckermann. Comparison of two stochastic techniques for reliable urban runoff predictions by modeling systematic errors. *Water Res. Res.* (2015), doi: 10.1002/2014WR016678.
10. **D. Del Giudice**, V. Bares, C. Albert, P. Reichert, J. Rieckermann. Model bias and complexity - understanding the effects of structural deficits and input errors on runoff predictions. *Environ. Modell. Soft.* (2015), doi:10.1016/j.envsoft.2014.11.006.
11. D. Dürrenmatt, **D. Del Giudice**, J. Rieckermann. Dynamic time warping improves sewer flow monitoring. *Water Res.* (2013), doi: 10.1016/j.watres.2013.03.051.
12. **D. Del Giudice**, M. Honti, A. Scheidegger, C. Albert, P. Reichert, J. Rieckermann. Improving uncertainty estimation in urban hydrological modeling by statistically describing bias. *Hydrol. Earth Syst. Sci.*, (2013), doi:10.5194/hess-17-4209-2013.
13. S. Coutu, **D. Del Giudice**, L. Rossi, D. Barry. Parsimonious hydrological modeling of urban sewer and river catchments. *J. Hydrol.* (2012), doi:10.1016/j.jhydrol.2012.07.039.

14.S. Coutu, **D. Del Giudice**, L. Rossi, D. Barry. Modeling of facade leaching in urban catchments. *Water Res. Res.* (2012), doi:10.1029/2012WR012359.

## OTHER PUBLICATIONS

D. Del Giudice, A. Davies. A few words can make a big impact. *Nature* (2017), doi: 10.1038/541030e.

D. Del Giudice. Evidence-based critical thinking. *Science* (2016), doi: 10.1126/science.354.6308.46.

## TEACHING & MENTORING

Invited Lecturer for Hydrology and Urban Water Systems (NCSU), >60 students. 2018

Invited Speaker for the Academic Chats Program (Stanford U.) – help students aspiring to faculty careers. 2017

Facilitator for Science Communication Workshops (Stanford U.) – mentor grad students and postdocs to effectively present their research; ~30 students. 2016 – 2017

Advisor for: R. Fu, C. Rachely (ETHZ), P. Kornberger (U. Rapperswil), D. Eilertz (U. Freiburg) 2012 – 2018

T. Doppler (Eawag), E. Grava (U. Neuchatel), T. Rossboth (U. Vienna), S. Fang, A. Katin, Y. Han (NCSU)

TA for Environmental Systems Analysis (Eawag) – summer school on Bayesian inference, model predictions, and uncertainty quantification with R; ~30 students. 2012 – 2015

TA for graduate and undergraduate courses (ETHZ): 2012 – 2014

- Urban water management (essentials) – water supply, rainfall analysis, and dimensioning the sewer system. I assisted in the design and grading of the exams; ~100 students.

- Urban water management (advanced) – urban hydrology and hydraulics and pollutant transport computation. I assisted in the design and grading of the exams; ~20 students.

TA for graduate and undergraduate courses (EPFL): 2010 – 2011

- Water Quality Modeling – hydrogeochemical computation, contaminant degradation, and reaction kinetics. I led the exercise sessions and graded the assignments and exams; ~20 students.

- Quantitative Methods II – analysis of mathematical models for environmental engineering. I led the exercises with Matlab and graded the assignments and exams; ~40 students.

- Air Pollution Modeling – emission and dispersion forecasting. I led the exercise sessions and graded the assignments; ~30 students.

- Informatics – provided IT support for students on software and computational issues.

## HONORS & AWARDS (SELECTED)

Individual of **Extraordinary Ability**, USCIS, US. 2018

**Best Paper** Award, Urban Drainage Modeling Conference, Serbia. 1 prize awarded over > 170 papers 2012

Veolia Award for the **most innovative** project in water sciences, France. 1 prize awarded over > 50 candidates. 2011

Société de géomatique Prize for the **best grade**, Switzerland. 1 prize awarded over ~ 50 students. 2011

"Mention of excellence," École polytechnique fédérale de Lausanne, Switzerland. 2011

Environment Prize for an **excellent thesis**, Switzerland. 1 prize awarded over ~ 50 students. 2011

Grivat Scholarship for the **most meritorious** student, Switzerland. 1 grant awarded over ~ 150 students 2010

Award for **outstanding performance** during an internship, Switzerland. 2010

**Excellence Scholarship** for outstanding performance, Switzerland. ~10 grants awarded over ~1000 students 2009

European Union **Scholarship** to study at Universidad de Granada, Spain. 1 grant awarded over ~ 100 students 2008

**CONFERENCE PRESENTATIONS (SELECTED)**

- D. Del Giudice**, S. Fang, D. Scavia, D. Obenour. Bayesian mechanistic modeling elucidates controls on bloom timing and magnitude in Western Lake Erie. *Conference on Great Lakes Research*, Brockport, US. 2019
- A. Katin, **D. Del Giudice**, H. Paerl, D. Obenour. Modeling biophysical controls on hypoxia for the Neuse River Estuary using a Bayesian framework. *Coastal Modeling Conference*, Seattle, US. 2018
- Michalak, A.M., V. Balaji, **D. Del Giudice**, et al. Are extreme hydrometeorological events a prerequisite for extreme water quality impacts? *AGU Meeting (Invited)*, New Orleans, US. 2017
- D. Del Giudice** et al. Balancing the stochastic description of uncertainties as a function of hydrologic model complexity. *AGU Meeting (Invited)*, San Francisco, US. 2016
- D. Del Giudice** et al. Beyond rainfall multipliers: describing input uncertainty as an autocorrelated stochastic process improves inference in hydrology. *AGU Meeting*, San Francisco, US. 2015
- K. Villez, **D. Del Giudice**, M. Neumann, and J. Rieckermann. The statistical description of model bias. *Watermatex Symposium on Systems Analysis*, Gold Coast, Australia. 2015
- R. Löwe, **D. Del Giudice**, H. Madsen, P. Mikkelsen, and J. Rieckermann. Probabilistic modelling in urban drainage. *Conference on Urban Drainage*, Kuching, Malaysia. 2014
- D. Del Giudice**, V. Bares, C. Albert, P. Reichert, and J. Rieckermann. Selecting optimal hydrodynamic model complexity. *AGU Meeting*, San Francisco, US. 2013
- D. Del Giudice**, P. Reichert, M. Honti, A. Scheidegger, C. Albert, and J. Rieckermann. Improving prediction uncertainty estimation in urban hydrology. *EGU Conference*, Vienna, Austria. 2013
- D. Del Giudice**, S. Coutu, L. Rossi, and A. Barry. Modelling the behavior of facade biocides. *Urban Drainage Conference*, Belgrade, Serbia. 2012

**INVITED TALKS**

- Statistic and mechanistic modeling to understand and predict oxygen depletion. *U. Maryland*, US. 2018
- Impacts of climate variability on hydrology and water quality. *Temple U., Rice U. and U. Florida*, US. 2018
- Predicting the impacts of climate change on hydrological systems. *Sandia National Labs*, US. 2017
- Improving estimation and predictions in hydrology and water quality. *UC Irvine*, US. 2017
- Combining modeling and statistics to predict hydrologic and water quality dynamics. *Stanford U.*, US. 2017
- How to get reliable predictions despite model bias? *Met Office*, UK. 2014
- Impacts of input and structural errors. *U. Lausanne and Institute for Forest Research*, Switzerland. 2014
- Give me a model and I will tell you what its uncertainty is. *U. Tübingen and U. Stuttgart*, Germany. 2014
- Bayesian uncertainty analysis accounting for bias. *DTU*, Denmark and *U. Innsbruck*, Austria. 2013
- Modeling biocides leaching at basin scale. *Forschungszentrum Jülich*, Germany and *TU Wien*, Austria. 2011

**JOURNAL REVIEWER**

Water Resour. Res., Stoch. Env. Res. Risk A., Environ. Modell. Softw., Water Sci. Technol., J. Hydrol., Hydrol. Earth Syst. Sc., Computat. Geosci., Environ. Sci. Technol., Geophys. Res. Lett., Environ. Pollut.

**LANGUAGE SKILLS**

Italian (native), English (fluent), French (fluent), Spanish (fluent), German (fluent), Latin (interm.), Portuguese (interm.).