




# CAL DUNHAM BUELO

Aquatic ecosystems, algal blooms, data science

## EDUCATION

- Present | 2016  
● **University of Virginia, Dept. of Environmental Sciences**  
Ph.D. Candidate  Charlottesville, VA  
  
Advisor: Dr. Michael Pace
- 2014 | 2010  
● **University of Wisconsin**  
B.S. in Biology, Mathematics  Madison, WI

## EMPLOYMENT

- 2016 | 2014  
● **Research Technician, Pace Lab**  
University of Virginia, Dept. of Environmental Sciences  Charlottesville, VA
  - Planned and carried out field experiments as part of a multi-institutional research group
  - Trained, supervised, and mentored undergraduate researchers
  - Set up and operated lab equipment and field sensor systems
  - Led management of group databases and data analysis for publications
- 2014 | 2011  
● **Undergraduate Researcher, Cascade Research Group**  
University of Wisconsin, Center for Limnology  Land O' Lakes, WI and Madison, WI
  - Completed field and lab analysis of lake limnological properties and fish populations
  - Entered data and managed project fish database
  - Conducted own research for REU and directed study coursework

## PUBLICATIONS

- In Review  
● **Phytoplankton biomass, dissolved organic matter and temperature drive respiration in whole lake nutrient additions**  
*Limnology and Oceanography*  
ML Pace, **CD Buelo**, SR Carpenter.
- In Press  
● **No evidence of widespread algal bloom intensification in hundreds of lakes**  
*Frontiers in Ecology and the Environment*  
GM Wilkinson, JA Walter, **CD Buelo**, ML Pace

## CONTACT INFO

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- 🌐 [calbuelo.com](http://calbuelo.com)
- 🐙 [github.com/cbuelo](https://github.com/cbuelo)

## TECHNICAL SKILLS

R (base, tidyverse, Shiny, package development)

Python, SQL, Git, Linux, Bash

Installation and maintenance of automated water quality sensor systems

*This resume was made with the R package [pagedown](#).*

*Last updated on 2020-12-04.*

- 2020 ● **Air-water gas exchange in lakes and reservoirs measured from a moving platform by underwater eddy covariance**  
*Limnology and Oceanography: Methods*  
P Berg, ML Pace, CD Buelo
- 2018 ● **A synthesis of modern organic carbon accumulation rates in coastal and aquatic inland systems**  
*Scientific Reports*  
GM Wilkinson, A Besterman, CD Buelo, J Gephart, ML Pace
- **Filial cannibalism by largemouth bass (*Micropterus salmoides*): a three-decade natural history record from a small northern temperate lake**  
*Journal of Freshwater Ecology*  
CJ Dassow, A Collier, JYS Hodgson, CD Buelo, JR Hodgson
- **A modeling analysis of spatial statistical indicators of thresholds for algal blooms**  
*Limnology & Oceanography Letters*  
CD Buelo, SR Carpenter, ML Pace
- **Early warning signals precede cyanobacterial blooms in multiple whole-lake experiments**  
*Ecological Monographs*  
GM Wilkinson, SR Carpenter, JJ Cole, ML Pace, RD Batt, CD Buelo, JT Kurtzweil
- 2017 ● **Reversal of a cyanobacteria bloom in response to early warnings**  
*Proceedings of the National Academy of Sciences USA*  
ML Pace, RD Batt, CD Buelo, SR Carpenter, JJ Cole, JT Kurtzweil, GM Wilkinson
- 2016 ● **Exogenously produced CO<sub>2</sub> more than doubles the flux of greenhouse gases from three north temperate lakes**  
*Geophysical Research Letters*  
GM Wilkinson, CD Buelo, JJ Cole, ML Pace

## SELECTED PRESENTATIONS

- 2020 ● **Forecasting Algal Blooms**  
CD Buelo, N Nazemi. *UVA School of Data Science Presidential Fellowship Presentation*
- 2019 ● **Algal blooms and ecosystem metabolism in a managed drinking water reservoir**  
CD Buelo, ML Pace. *UVA Global Water Initiative Graduate Water Symposium Presentation*
- **Time vs. space: comparing statistical indicators of algal blooms**  
CD Buelo, ML Pace, SR Carpenter. *ASLO Aquatic Sciences Meeting*

- 2018 ● **Lake experiments to test early warnings of resilience loss**  
CD Buelo, ML Pace. *UW Trout Lake Station Weekly Seminar*
- **Spatial indicators of algal blooms using remote sensing**  
CD Buelo. *Virginia Space Grant Consortium Research Conference*
- **Algal blooms and ecosystem metabolism in a drinking water reservoir**  
CD Buelo, ML Pace. *EnviroDay: UVA Envi. Sci. Graduate Student Symposium*
- 2017 ● **Storms, algal blooms, and CuSO<sub>4</sub> treatment in a drinking water reservoir**  
CD Buelo, CS Hanley, GM Wilkinson, ML Pace. *Virginia Water Monitoring Council Conference (invited speaker & panelist)*
- **Spatial resilience indicators of algal blooms**  
CD Buelo, ML Pace, SR Carpenter. *ASLO Aquatic Sciences Meeting*
- 2015 ● **Storms, algal blooms, and CuSO<sub>4</sub> treatment in a drinking water reservoir**  
CD Buelo, CS Hanley, ML Pace, GM Wilkinson. *Water Resources Conference of the Virginias*
- **Data analysis and visualization with R**  
CD Buelo. *Environmental Electronics Undergrad Course (Guest Lecture)*
- 2014 ● **Trophic cascades, early warnings of regime shifts, and terrestrial subsidies in lakes**  
CD Buelo, JT Kurtzweil. *University of Notre Dame Environmental Research Center Summer Seminar Series*
- 2012 ● **Effects of a food web shift on largemouth bass diet and juvenile growth**  
CD Buelo. *UW-Madison Biology 152 Mentored Research Poster Session (poster presentation)*
- **Changes in fish growth during a trophic cascade**  
CD Buelo. *UW Trout Lake Station Undergraduate Research Seminar*



## HONORS, AWARDS, GRANTS

- 2019 ● **UVA Presidential Fellowship in Data Science**  
\$41,000
- **UVA Dept. of Environmental Sciences Moore Graduate Research Award**  
\$5,000
- 2018 ● **UVA Environmental Resilience Institute Rapid Response Grant**  
\$14,000. PI: Michael Pace, Co-PIs: Alice Besterman and **Cal Buelo**
- **NASA Virginia Space Grant Consortium Graduate Fellowship Renewal**  
\$6,000
- 2017 ● **UVA Dept. of Environmental Sciences Exploratory Research Award**  
\$1,250

- **NASA Virginia Space Grant Consortium Graduate Fellowship**  
\$6,000
- 2016 ● **National Science Foundation Graduate Research Fellowship**  
\$138,000
- 2013 ● **UW College of Agriculture and Life Sciences Irving W. Gerhardt Scholarship**
- 2012 ● **National Science Foundation Research Experience for Undergraduates Award**

## PROFESSIONAL ACTIVITIES

### ● **Mentorship**

- Kayla Wernsing, Iowa State University, 2019
- Sara McCormack, University of Denver, 2019
- Carson Lambert, University of Virginia, 2019
- Dat Ha, University of Virginia, 2018-2019
- Anne Marie Saunders, University of Virginia, 2018
- Jon Stetler, Paul Smith's College, 2016-2017<sup>1</sup>
- Meredith Kadjiski, Wells College, 2016<sup>1</sup>
- Daniel De Jesús, University of Puerto Rico at Cayey, 2016<sup>1</sup>
- Brandon Dobraska, University of Wisconsin, 2016<sup>2</sup>
- Anders Uppgaard, University of Wisconsin, 2015
- Rachel Meulman, University of Virginia, 2015-2016<sup>3,4</sup>
- Colin Dassow, St. Norbert College, 2014-2015
- Devon Brown, University of Virginia, 2014
- Charlie Hanley, University of Virginia, 2014

### ● **Volunteer**

- UW Trout Lake Open House (2013 - 2016, 2018)
- NSF GRFP Applicant Review Panel, UVA Office of Graduate & Postdoc. Affairs (2017)

### ● **Membership**

- Association for the Sciences of Limnology and Oceanography

### ● **Reviewer**

- Limnology and Oceanography
- Limnology and Oceanography: Methods
- Hydrobiologia

<sup>1</sup> University of Notre Dame Practicum in Environmental Field Biology mentee

<sup>2</sup> University of Wisconsin Center for Limnology Zinn Fellow

<sup>3</sup> NSF Research Experiences for Undergraduates Fellow

<sup>4</sup> University of Virginia Distinguished Major Program Scholar