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
- Led management of group datasets and data analysis for publications
- Trained, supervised, and mentored undergraduate researchers
- Set up and operated lab equipment and field sensor systems

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 Prep

Evaluating the performance of temporal and spatial early warning statistics of algal blooms
Target Journal: *Ecological Applications* (draft manuscript available upon request)
CD Buelo, ML Pace, SR Carpenter, EH Stanley, DA Ortiz, DT Ha

In Review

Co-occurrence of aquatic heatwaves with atmospheric heatwaves, low dissolved oxygen, and low pH events in estuarine ecosystems
Estuaries and Coasts
SJ Tassone, AF Besterman, **CD Buelo**, JA Walter, ML Pace

CONTACT INFO

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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 2021-03-18.

Accepted

Phytoplankton biomass, dissolved organic matter and temperature drive respiration in whole lake nutrient additions
Limnology and Oceanography
ML Pace, **CD Buelo**, SR Carpenter

Accepted

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

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 CO2 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 CuSO4 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 CuSO4 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[1]
- Meredith Kadjeski, Wells College, 2016[1]
- Daniel De Jesús, University of Puerto Rico at Cayey, 2016[1]
- Brandon Dobraska, University of Wisconsin, 2016[2]
- Anders Uppgaard, University of Wisconsin, 2015
- Rachel Meulman, University of Virginia, 2015-2016[3,4]
- 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)

[1] University of Notre Dame Practicum in Environmental Field Biology mentee

[2] University of Wisconsin Center for Limnology Zinn Fellow

[3] NSF Research Experiences for Undergraduates Fellow

[4] University of Virginia Distinguished Major Program Scholar

Membership

• Association for the Sciences of Limnology and Oceanography

Reviewer

• Limnology and Oceanography
• Limnology and Oceanography: Methods
• Hydrobiologia