

# Nicholas Balasus

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## Education

- Ph.D. Student in Environmental Science and Engineering  
Harvard University, Advisor: Daniel Jacob  
September 2021 – Present
- Bachelor of Science in Chemical Engineering  
University of Maryland, Baltimore County (UMBC)  
September 2017 – May 2021

## Research

- Graduate Research Assistant  
Harvard University, Advisor: Daniel Jacob  
September 2021 – Present
- Undergraduate Research Assistant  
UMBC, Advisor: Christopher Hennigan  
September 2017 – August 2021
- Undergraduate Research Assistant  
NOAA GFDL, Advisor: Fabien Paulot  
May 2020 – August 2020

## Publications

- Oak, Y.J., D.J. Jacob, **N. Balasus**, L.H. Yang, H. Chong, J. Park, H. Lee, G.T. Lee, E.S. Ha, R.J. Park, H. Kwon, J. Kim (submitted). A bias-corrected GEMS geostationary satellite product for nitrogen dioxide using machine learning to enforce consistency with the TROPOMI satellite instrument.
- Varon, D.J., D. Jervis, S. Pandey, S.L. Gallardo, **N. Balasus**, L.H. Yang, and D.J. Jacob (submitted). Quantifying  $\text{NO}_x$  point sources with Landsat and Sentinel-2 satellite observations of  $\text{NO}_2$  plumes.
- East, J.D., D.J. Jacob, **N. Balasus**, A.A. Bloom, L. Bruhwiler, Z. Chen, J.O. Kaplan, L.J. Mickley, T.A. Mooring, E. Penn, B. Poulter, M.P. Sulprizio, J.R. Worden, R.M. Yantosca, and Z. Zhang (2024). Interpreting the seasonality of atmospheric methane. *Geophys. Res. Lett.*, <https://doi.org/10.1029/2024GL108494>.
- Chen, Z., **N. Balasus**, H. Lin, H. Nesser, and D.J. Jacob (2024). African rice cultivation linked to rising methane. *Nat. Clim. Chang.*, <https://doi.org/10.1038/s41558-023-01907-x>.
- Watine-Guiu, M., D.J. Varon, I. Irakulis-Loitxate, **N. Balasus**, and D.J. Jacob (2023). Geostationary satellite observations of extreme and transient methane emissions from oil and gas infrastructure. *Proc. Natl. Acad. Sci.*, <https://doi.org/10.1073/pnas.2310797120>.
- **Balasus, N.**, D.J. Jacob, A. Lorente, J.D. Maasackers, R.J. Parker, H. Boesch, Z. Chen, M.M. Kelp, H. Nesser, and D.J. Varon (2023). A blended TROPOMI+GOSAT satellite data product for atmospheric methane using machine learning to correct retrieval biases. *Atmos. Meas. Tech.*, <https://doi.org/10.5194/amt-16-3787-2023>.
- Battaglia Jr., M.A., **N. Balasus**, K. Ball, V. Caicedo, R. Delgado, A.G. Carlton, and C.J. Hennigan (2021). Urban aerosol chemistry at a land-water transition site during summer - Part 2: Aerosol pH and liquid water content. *Atmos. Chem. Phys.*, <https://doi.org/10.5194/acp-21-18271-2021>.

- **Balalus, N.**, M.A. Battaglia Jr., K. Ball, V. Caicedo, R. Delgado, A.G. Carlton, and C.J. Hennigan (2021). Urban aerosol chemistry at a land-water transition site during summer - Part 1: Impact of agricultural and industrial ammonia emissions. *Atmos. Chem. Phys.*, <https://doi.org/10.5194/acp-21-13051-2021>.

## Presentations

- **Balalus, N.**, D.J. Jacob, A. Lorente, J.D. Maasackers, R.J. Parker, H. Boesch, Z. Chen, M.M. Kelp, H. Nesser, and D.J. Varon (2023). A blended TROPOMI+GOSAT satellite data product for atmospheric methane using machine learning to correct retrieval biases (Oral). *AGU Fall Meeting*, San Francisco, CA.
- **Balalus, N.**, F. Paulot, S. Burrows, L.W. Horowitz, and C. Stock (2021). Representation of Marine Organic Aerosols in the GFDL Earth System Model (Poster). *American Meteorological Society Meeting*, Virtual.
- **Balalus, N.**, M.A. Battaglia Jr., K. Ball, R. Delgado, and C.J. Hennigan (2019). Characterizing the Impact of Poultry and Cattle Farms on Chesapeake Bay Aerosols in Baltimore, MD During the OWLETS-2 Campaign (Oral). *EPA International Emissions Inventory Conference*, Dallas, TX.
- **Balalus, N.**, M.A. Battaglia Jr., K. Ball, R. Delgado, and C.J. Hennigan (2019). Investigating the Acidity and Liquid Water Content of Atmospheric Particles on the Chesapeake Bay during the OWLETS-2 Campaign (Poster). *American Meteorological Society Meeting*, Phoenix, AZ.

## Teaching Experience

- Professional Writing for Scientists and Engineers  
Teaching Assistant for Fall 2023 and Spring 2024 at Harvard University
- Confronting Climate Change: A Foundation in Science, Technology and Policy  
Teaching Assistant for Fall 2022 at Harvard University
- Chemical Process Control and Safety  
Teaching Assistant for Spring 2021 at UMBC
- Chemical Process Thermodynamics  
Teaching Assistant for Fall 2020 at UMBC
- Chemical Engineering Problem Solving and Experimental Design Lab  
Teaching Assistant for Spring 2020 at UMBC
- Chemical Engineering Analysis  
Teaching Assistant for Fall 2019 at UMBC

## Awards and Honors

- DoD National Defense Science and Engineering Graduate (NDSEG) Fellowship  
September 2022 – Present
- UMBC Chemical, Biochemical, and Environmental Engineering Undergraduate Research Award  
May 2021
- NOAA Ernest F. Hollings Undergraduate Scholarship Recipient  
May 2019 – May 2021

## Service

- Reviewer for *Atmospheric Measurement Techniques*, *Remote Sensing of Environment*, *Atmospheric Environment*