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

- Chen, Z., H. Lin, **N. Balasus**, A. Hardy, J.D. East, Y. Zhang, B.R.K. Runkle, S.E. Hancock, C.A. Taylor, X. Du, B.O. Sander, and D.J. Jacob (submitted). Global Rice Paddy Inventory (GRPI): a high-resolution inventory of methane emissions from rice agriculture based on Landsat satellite inundation data.
- Estrada, L.A., D.J. Varon, M. Sulprizio, H. Nesser, Z. Chen, **N. Balasus**, S.E. Hancock, M. He, J.D. East, T.A. Mooring, A.O. Alonso, J.D. Maasakkers, I. Aben, S. Baray, K.W. Bowman, J.R. Worden, F.J. Cardoso-Saldaña, E. Reidy, and D.J. Jacob (submitted). Integrated Methane Inversion (IMI) 2.0: an improved research and stakeholder tool for monitoring total methane emissions with high resolution worldwide using TROPOMI satellite observations.
- **Balasus, N.**, D.J. Jacob, G. Maxemin, C. Jenks, H. Nesser, J.D. Maasakkers, D.H. Cusworth, T.R. Scarpelli, D.J. Varon, and X. Wang (submitted). Satellite monitoring of annual US landfill methane emissions and trends.
- Hancock, S.H., D.J. Jacob, Z. Chen, H. Nesser, A. Davitt, D.J. Varon, M.P. Sulprizio, **N. Balasus**, L.A. Estrada, J.D. East, E. Penn, C.A. Randles, J. Worden, I. Aben, R.J. Parker, and J.D. Maasakkers (submitted). Satellite quantification of methane emissions from South American countries: A high-resolution inversion of TROPOMI and GOSAT observations.
- 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, and J. Kim (2024). A bias-corrected GEMS geostationary satellite product for nitrogen dioxide using machine learning to enforce consistency with the TROPOMI satellite instrument. *Atmos. Meas. Tech.*, https://doi.org/10.5194/amt-17-5147-2024.
- Varon, D.J., D. Jervis, S. Pandey, S.L. Gallardo, **N. Balasus**, L.H. Yang, and D.J. Jacob (2024). Quantifying NO_x point sources with Landsat and Sentinel-2 satellite observations of NO_2 plumes. *Proc. Natl. Acad. Sci.*, https://doi.org/10.1073/pnas.2317077121.

- 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. Maasakkers, 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.
- **Balasus, 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

- **Balasus, N.**, D.J. Jacob, G. Maxemin, C. Jenks, H. Nesser, J.D. Maasakkers, D.H. Cusworth, T.R. Scarpelli, D.J. Varon, and X. Wang (2024). Satellite monitoring of annual US landfill methane emissions and trends (Oral). *AGU Annual Meeting*, Washington, DC.
- **Balasus, N.**, D.J. Jacob, A. Lorente, J.D. Maasakkers, 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.
- **Balasus, 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.
- **Balasus, 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.
- **Balasus, 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, Spring 2024, and Fall 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*, and *Geophysical Research Letters*