Curriculum Vitae

Austin Patrick Hope

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[A] Education

B.A.	2012	Washington University in St. Louis:	Mathematics
M.S.	2016	University of Maryland – College Park:	Atmospheric and Oceanic Science
Ph.D.	2020	University of Maryland – College Park:	Atmospheric and Oceanic Science

[B] Positions

2021–2022   Postdoctoral Associate, Stony Brook University
2012–2020   Research Assistant, University of Maryland – College Park

[C] Awards

Helmut Landsberg Scholarship Award, 2020
Leah Thornton Lozano Graduate Fellowship, 2019
Ann Wylie Green Fund Scholarship Award, 2017
Dean's Fellowship, 2012-14
AOSC Merit Award, 2012-13

[D] Publications

1. (*in preparation*) **Hope, A. P.**, Lopez-Coto, I., Hajny, K. D., Kaeser, R., Stirm, B., & Shepson, P. B. (*2024*). Exploring CO_2 tracer mixing from PBL scheme choice (*working title*).

2. (*in revisions*) **Hope, A. P.**, Lopez-Coto, I., Hajny, K. D., Tomlin, J. M., Kaeser, R., Stirm, B., Karion, A., & Shepson, P. B. (*2023*). Analyzing "grey zone" turbulent kinetic energy predictions in the boundary layer from three WRF PBL schemes over New York City and comparison to aircraft measurements. *Journal of Applied Meteorology and Climate*.

3. McBride, L. A., **Hope, A. P.**, Canty, T. P., Bennett, B. F., Tribett, W. R., & Salawitch, R. J. (2021). Comparison of CMIP6 historical climate simulations and future projected warming to an empirical model of global climate. *Earth System Dynamics*, *12*(2), 545-579.

4. Nicholls, Z., Meinshausen, M., Lewis, J., Corradi, M. R., Dorheim, K., Gasser, T., Gieseke, R., **Hope, A.P.**, Leach, N.J., McBride, L.A., Quilcaille, Y. ... & Woodard, D. L. (2021). Reduced complexity Model Intercomparison Project Phase 2: Synthesizing Earth system knowledge for probabilistic climate projections. *Earth's Future*, *9*(6), e2020EF001900.

5. **Dissertation**: "Quantification of the Past and Future Anthropogenic Effect on Climate Change Using the Empirical Model of Global Climate, an Energy Balance Multiple Linear Regression Model", 306pg, successfully defended 10/05/2020

6. Nicholls, Z. R., Meinshausen, M., Lewis, J., Gieseke, R., Dommenget, D., Dorheim, K., C.S., Fuglestvedt, J.S., Gasser, T., Golüke, U., Goodwin, P., Hartin, C., **Hope, A.P.**, ... & Xie, Z. (2020). Reduced Complexity Model Intercomparison Project Phase 1: introduction and evaluation of global-mean temperature response. *Geoscientific Model Development*, *13*(11), 5175-5190.

7. **Hope, A. P.**, Canty, T. P., Salawitch, R. J., Tribett, W. R., & Bennett, B. F. (2017). Forecasting global warming. In *Paris climate agreement: Beacon of hope* (pp. 51-113). Springer, Cham.

8. Salawitch, R. J., Bennett, B. F., **Hope, A. P.**, Tribett, W. R., & Canty, T. P. (2017). Earth's climate system. In *Paris climate agreement: beacon of hope* (pp. 1-50). Springer, Cham.
9. Tribett, W. R., Salawitch, R. J., **Hope, A. P.**, Canty, T. P., & Bennett, B. F. (2017). Paris INDCs. In *Paris climate agreement: Beacon of hope* (pp. 115-146). Springer, Cham.
10. Bennett, B. F., **Hope, A. P.**, Salawitch, R. J., Tribett, W. R., & Canty, T. P. (2017). Implementation. In *Paris climate agreement: Beacon of hope* (pp. 147-181). Springer, Cham.

[E] Conference & Symposium Presentations
AGU Fall Meeting 2022, December 12-16, 2022
    McCormick Place Convention Center, Chicago IL, USA
    Poster: "Analyzing grey zone TKE from WRF PBL schemes over NYC with aircraft data comparison"
AGU Fall Meeting 2021, December 13-17, 2021
    Ernest N. Morial Convention Center, New Orleans LA, USA
    Poster: "Analyzing Turbulent Kinetic Energy predictions at the "grey zone" from three WRF-PBL Schemes, with comparison to Aircraft measurements over New York City"
2021 National 4-H Ag Innovators Experience, February 5-6, 2021
    Maryland 4-H Center, University of Maryland extension, College Park MD, USA
    Oral (virtual): "The Intersection Between Agriculture and Climate Change: An Introduction"
Cornerstone Event: Improve Human, Animal, and Environmental Health, November 9-12, 2020
    University of Maryland (College of Agriculture & Natural Resources), College Park MD, USA
    Oral (virtual): "Environmental and Human Health in a Warming World"
Earth Systems Modeling Graduate Student Symposium, April 11, 2019
    George Mason University (Center for Ocean-Land-Atmosphere Studies), Fairfax VA, USA
    Oral: "Considerations of Uncertainties, Feedbacks, and Nonlinearities in the Empirical Model of Global Climate, a Multiple Linear Regression Energy Balance Model"
98th AMS Annual Meeting, January 7-11, 2018
    Austin Convention Center, Austin TX, USA
    Poster: "Quantification of Global Warming: A Critical Evaluation of CMIP5 GCMs"
97th AMS Annual Meeting, January 22-26, 2017
    Washington State Convention Center, Seattle WA, USA
    Oral: "Implementation Targets for the Paris Climate Agreement"
    Oral: "Paris INDCs: Will They Achieve the Goals of the Paris Climate Agreement?"
96th AMS Annual Meeting, January 10-14, 2016
    Ernest N. Morial Convention Center, New Orleans LA, USA
    Poster: "The Human Influence on Global Warming"
95th AMS Annual Meeting, January 4-8, 2015
    Phoenix Convention Center, Phoenix AZ, USA
    Poster: "Quantification of the Anthropogenic Contribution to Global Warming"
AGU Fall Meeting 2014, December 15-19, 2014
    Moscone Center, San Francisco CA, USA
    Poster: "Empirical Determination of the Human Influence on Climate Change"

[F] Professional Associations
American Geophysical Union
American Association for the Advancement of Science
American Meteorological Society

[G] Research skills
Proficient on IDL, R, & Matlab; Linux environments; high performance computing systems; Weather models (WRF & WRF-Chem); Microsoft Word, Excel, & PowerPoint; and Adobe Illustrator
Familiar with Fortran 77, Fortran 90, Igor, C++, LaTeX, HTML, CSS, & PHP; Adobe Photoshop, GIMP (GNU Image Manipulation Program), and Inkscape
Field experience (10 flights) taking aircraft-based atmospheric measurements of greenhouse gases and meteorological quantities, including use of various instruments (Picarro, LGR)

[H] Research Experience Summary
Turbulence and mixing in WRF   *2021-present*   *Paul B. Shepson group, Stony Brook University*
- Ran WRF to examine the differences in TKE between PBL schemes
- Ran WRF-Chem to examine how differently the PBL schemes mix a CO_2 tracer
- Participated in research flights, monitoring various GHG measurement instruments

Climate modeling   *2012-2020*   *Ross J. Salawitch group, University of Maryland*
- Maintained & developed our group's in-house simple energy-balance climate model
- Created a new ocean heat & aerosol forcing components for our model
- Examined global warming trends & compared to CMIP5 results

Paleoclimate reconstruction   *2011-2012*   *David Fike group, Washington University in St. Louis*
- Analyzed the carbon & oxygen isotopic signatures of flat-pebble conglomerate samples to infer past temperature and sea levels

Metallic glasses   *2009-2010*   *Kenneth Kelton group, Washington University in STL*
- Mixed metallic glass spheres & analyzed their X-ray diffraction patterns based on electrostatic levitation experiments

Earthquake resilience   *2007-2008*   *Shirley Dyke group, WUSTL (done in high school)*
- Analyzed the resonance patterns of model buildings on a shake table & programmed sensors to take accelerometer data