Zachary M. Labe

CONTACT INFORMATION

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RESEARCH INTERESTS

large-scale climate variability · teleconnections · explainable AI · Arctic sea ice · data science methods · large ensembles · decadal prediction · extremes

EDUCATION

University of California, Irvine, Irvine, CA
   Ph.D. in Earth System Science, May 2020

University of California, Irvine, Irvine, CA
   M.Sc. in Earth System Science, Sep 2017

Cornell University, Ithaca, NY
   B.Sc. in Atmospheric Science, May 2015, *Distinction in Research*
      Minor: Dyson Business Minor for Life Sciences

ACADEMIC EMPLOYMENT

2022-Present **Postdoctoral Research Associate**
   Advisors: Drs. Thomas Delworth and Nathaniel Johnson, Princeton University AOS and NOAA GFDL

2020-2022 **Postdoctoral Researcher**
   Advisor: Dr. Elizabeth Barnes, Atmospheric Science, Colorado State University

2015-2020 **Graduate Research Assistant**
   Advisor: Dr. Gudrun Magnusdottir, Earth System Science, University of California, Irvine

Su. 2015 **Research Assistant**
   Advisor: Dr. Toby Ault, Earth and Atmospheric Science, Cornell University

2014-2015 **Undergraduate Research Assistant**
   Advisor: Dr. Toby Ault, Earth and Atmospheric Science, Cornell University

PUBLICATIONS

Refereed/Peer-Reviewed

[24] **Labe, Z.M.**, N.C. Johnson, and T.L Delworth (2024). Changes in United States summer temperatures revealed by explainable neural networks. *Earth's Future*, DOI:10.1029/2023EF003981. [Article]

[23] Timmermans, M.-L. and **Z.M. Labe** (2023). Sea surface temperature [in "Arctic Report Card 2023"], *NOAA*, DOI:10.25923/e8jc-f342. [Article]

[22] Timmermans, M.-L. and **Z.M. Labe** (2023), [The Arctic] Sea surface temperature [in "State of the Climate in 2022"]. *Bulletin of the American Meteorological Society*, DOI:10.1175/BAMS-D-23-0079.1. [Article]

[21] Eischeid, J.K., M.P. Hoerling, X.-W. Quan, A. Kumar, J. Barsugli, **Z.M. Labe**, K.E. Kunkel, C.J. Schreck III, D.R. Easterling, T. Zhang, J. Uehling, and X. Zhang (2023). Why has the summertime central U.S. warming hole not disappeared? *Journal of Climate*, DOI:10.1175/JCLI-D-22-0716.1. [Article]

[20] Witt, J.K., **Z.M. Labe**, A.C. Warden, and B.A. Clegg (2023). Visualizing Uncertainty in Hurricane Forecasts with Animated Risk Trajectories. *Weather, Climate, and Society*, DOI:10.1175/WCAS-D-21-0173.1. [Article]

[19] **Labe, Z.M.**, E.A. Barnes, and J.W. Hurrell (2023). Identifying the regional emergence of climate patterns in the ARISE-SAI-1.5 simulations. *Environmental Research Letters*, DOI:10.1088/1748-9326/acc81a. [Article]

[18] Timmermans, M.-L. and **Z.M. Labe** (2022). Sea surface temperature [in "Arctic Report Card 2022"], *NOAA*, DOI:10.25923/p493-2548. [Article]

[17] Po-Chedley, S., J.T. Fasullo, N. Siler, **Z.M. Labe**, E.A. Barnes, C.J.W. Bonfils, and B.D. Santer (2022). Internal variability and forcing influence model-satellite differences in the rate of tropical tropospheric warming. *Proceedings of the National Academy of Sciences*, DOI:10.1073/pnas.2209431119. [Article]

[16] Witt, J.K., **Z.M. Labe**, and B.A. Clegg (2022). Comparisons of perceptions of risk for visualizations using animated risk trajectories versus cones of uncertainty. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, DOI:10.1177/1071181322661308. [Article]

[15] Timmermans, M.-L. and **Z.M. Labe** (2022), [The Arctic] Sea surface temperature [in "State of the Climate in 2021"]. *Bulletin of the American Meteorological Society*, DOI:10.1175/BAMS-D-22-0082.1. [Article]

[14] **Labe, Z.M.** and E.A. Barnes (2022), Comparison of climate model large ensembles with observations in the Arctic using simple neural networks. *Earth and Space Science*, DOI:10.1029/2022EA002348. [Article]

[13] **Labe, Z.M.** and E.A. Barnes (2022), Predicting slowdowns in decadal climate warming trends with explainable neural networks. *Geophysical Research Letters*, DOI:10.1029/2022GL098173. [Article] [DOE Research Highlight]

[12] Timmermans, M.-L. and **Z.M. Labe** (2021). Sea surface temperature [in "Arctic Report Card 2021"], *NOAA*, DOI:10.25923/2y8r-0e49. [Article]

[11] Timmermans, M.-L. and **Z.M. Labe** (2021), [The Arctic] Sea surface temperature [in "State of the Climate in 2020"]. *Bulletin of the American Meteorological Society*, DOI:10.1175/BAMS-D-21-0086.1. [Article]

[10] **Labe, Z.M.** and E.A. Barnes (2021), Detecting climate signals using explainable AI with single-forcing large ensembles. *Journal of Advances in Modeling Earth Systems*, DOI:10.1029/2021MS002464. [Article]

[9] Peings, Y., **Z.M. Labe**, and G. Magnusdottir (2021), Are 100 ensemble members enough to capture the remote atmospheric response to $+2°C$ Arctic sea ice loss? *Journal of Climate*, DOI:10.1175/JCLI-D-20-0613.1. [Article] [CLIVAR]

[8] Timmermans, M.-L. and **Z.M. Labe** (2020). Sea surface temperature [in "Arctic Report Card 2020"], *NOAA*, DOI:10.25923/v0fs-m920. [Article]

[7] Timmermans, M.-L., **Z.M. Labe**, and C. Ladd (2020), [The Arctic] Sea surface temperature [in "State of the Climate in 2019"]. *Bulletin of the American Meteorological Society*, DOI:10.1175/BAMS-D-20-0086.1. [Article]

[6] **Labe, Z.M.**, Y. Peings, and G. Magnusdottir (2020), Warm Arctic, cold Siberia pattern: role of full Arctic amplification versus sea ice loss alone, *Geophysical Research Letters*, DOI:10.1029/2020GL088583. [Article]

[5] Thoman, R.L., U. Bhatt, P. Bieniek, B. Brettschneider, M. Brubaker, S. Danielson, **Z.M. Labe**, R. Lader, W. Meier, G. Sheffield, and J. Walsh (2020), The record low Bering Sea ice extent in 2018: Context, impacts and an assessment of the role of anthropogenic climate change [in "Explaining Extreme Events of 2018 from a Climate Perspective"]. *Bulletin of the American Meteorological Society*, DOI:10.1175/BAMS-D-19-0175.1 [Article]

[4] **Labe, Z.M.**, Y. Peings, and G. Magnusdottir (2019), The effect of QBO phase on the atmospheric response to projected Arctic sea ice loss in early winter, *Geophysical Research Letters*, DOI:10.1029/2019GL083095. [Article]

[3] **Labe, Z.M.**, Y. Peings, and G. Magnusdottir (2018), Contributions of ice thickness to the atmospheric response from projected Arctic sea ice loss, *Geophysical Research Letters*, DOI:10.1029/2018GL078158. [Article]

[2] **Labe, Z.M.**, G. Magnusdottir, and H.S. Stern (2018), Variability of Arctic sea ice thickness using PIOMAS and the CESM Large Ensemble, *Journal of Climate*, DOI:10.1175/JCLI-D-17-0436.1. [Article]

[1] **Labe, Z.M.**, T.R. Ault, and R. Zurita-Milla (2016), Identifying Anomalously Early Spring Onsets in the CESM Large Ensemble Project, *Climate Dynamics*, DOI:10.1007/s00382-016-3313-2. [Article]

Publications Submitted

[5] Zhang, Y., B.M. Ayyub, J.F. Fung, and **Z.M. Labe** (2024). Attributing extreme events to climate change for infrastructure adaptation: methods, benefits, and future research needs. (*accepted*)

[4] **Labe, Z.M.**, T.L. Delworth, N.C. Johnson, and W.F. Cooke (2024). Exploring a data-driven approach to identify regions of change associated with future climate scenarios. (*submitted*)

[3] Kalashnikov, D., F. Davenport, **Z. Labe**, P. Loikith, J. Abatzoglou, and D. Singh (2024). Predicting cloud-to-ground lightning in the Western United States from the large-scale environment using explainable neural networks. (*submitted*)

[2] Bushuk, M., and Coauthors (including **Z.M. Labe**) (2024). Predicting September Arctic sea ice: a multi-model seasonal skill comparison. (*submitted*)

[1] Timmermans, M.-L. and **Z.M. Labe** (2024). [The Arctic] Sea surface temperature [in "State of the Climate in 2023"]. (*submitted*)

Non-refereed/Other

[7] **Labe, Z.M.**, May 2023: Pan-Arctic Ice Ocean Modeling and Assimilation System (PIOMAS). Expert Contributor. NCAR Climate Data Guide. [Article]

[6] **Labe, Z.M.**, August 2021: Sharing data-driven stories of Arctic climate change. WMO/WWRP Year of Polar Prediction, PolarPredictNews. [Article]

[5] Peings, Y., **Z.M. Labe**, and G. Magnusdottir, August 2021: How reproducible is the response to +2°C Arctic sea-ice loss in a large ensemble of simulations? CLIVAR Research Highlight. [Article]

[4] **Labe, Z.M.**, May 2020: The effects of Arctic sea-ice thickness loss and stratospheric variability on mid-latitude cold spells. University of California, Irvine. Doctoral dissertation. [PDF]

[3] **Labe, Z.M.**, November 2019: Understanding Our Changing Arctic. Polar Bears International. Annual Magazine. [Article]

[2] **Labe, Z.M.**, August 2017: Sea Ice Thickness Data Sets: Overview & Comparison Table. Expert Contributor. NCAR Climate Data Guide. [Article]

[1] **Labe, Z.M.**, April 2015: Anomalously Early Onset of Spring in the CESM Large Ensemble. Cornell University. Undergraduate Honors Thesis. [PDF]

ORAL PRESENTATIONS

[48] **Labe, Z.M.** Reexamining future projections of Arctic climate linkages, *Atmospheric and Oceanic Sciences Student/Postdoc Seminar*, Princeton University, NJ, USA (May 2024). (*Upcoming!*)

[47] **Labe, Z.M.**, T.L. Delworth, N.C. Johnson, and W.F. Cooke. Explainable AI for distinguishing future climate change scenarios, *EGU General Assembly 2024*, Vienna, Austria (Apr 2024). [Abstract]. (*Upcoming!*)

[46] **Labe, Z.M.** Explainable AI approach for evaluating climate models in the Arctic. *Modelers' Community of Practice Webinar*, IARPC Collaborations (Mar 2024). (**Invited-Remote**) (*Upcoming!*)

[45] **Labe, Z.M.** Explainable neural networks for evaluating patterns of climate change and variability. *Sharing Science - North American Webinar*, Young Earth System Scientists (YESS) Community (Mar 2024). (**Remote**) (*Upcoming!*)

[44] **Labe, Z.M.** Applications of machine learning for climate change and variability. *Department of Environmental Sciences Seminar*, Rutgers University, New Brunswick, NJ (Feb 2024). (**Invited**)

[43] **Labe, Z.M.**, T.L. Delworth, N.C. Johnson, and W.F. Cooke. A data-driven approach to identifying key regions of change associated with future climate scenarios, *23rd Conference on Artificial Intelligence for Environmental Science*, Baltimore, MD (Jan 2024). [Abstract]

[42] **Labe, Z.M.**, N.C. Johnson, and T.L. Delworth. Distinguishing the regional emergence of United States summer temperatures between observations and climate model large ensembles, *23rd Conference on Artificial Intelligence for Environmental Science*, Baltimore, MD (Jan 2024). [Abstract]

[41] **Labe, Z.M.** Revisiting projections of Arctic climate change linkages. *College of Surveying and Geo-informatics Seminar*, Tongji University, Shanghai, China (Nov 2023). (**Invited-Remote**)

[40] **Labe, Z.M.** Using explainable machine learning to evaluate climate change projections. *Atmosphere and Ocean Climate Dynamics Seminar*, Yale University, CT (Oct 2023). (**Invited-Remote**)

[39] **Labe, Z.M.** Creative machine learning approaches for climate change detection, *Resnick Young Investigators Symposium*, Caltech, NJ, USA (Apr 2023). (**Invited**)

[38] **Labe, Z.M.** Using explainable AI to identify key regions of climate change in GFDL SPEAR large ensembles, *Lunchtime Seminar*, GFDL, Princeton, NJ, USA (Mar 2023).

[37] **Labe, Z.M.** Using explainable machine learning for evaluating patterns of climate change, *Natural Sciences Group Seminar*, Washington State University Vancouver, WA, USA (Feb 2023). (**Invited-Remote**)

[36] **Labe, Z.M.** Evaluating and communicating Arctic climate change projections, *Climate Change and Agriculture Guest Seminar*, Kansas State University, KS, USA (Feb 2023). (**Invited-Remote**)

[35] **Labe, Z.M.** Exploring explainable machine learning for detecting changes in climate, *Department of Earth, Ocean, and Atmospheric Science Colloquium*, Florida State University, FL, USA (Feb 2023). (**Invited-Remote**)

[34] **Labe, Z.M.** Forced climate signals with explainable AI and large ensembles, *Atmospheric and Oceanic Sciences Student/Postdoc Seminar*, Princeton University, NJ, USA (Feb 2023).

[33] **Labe, Z.M.** Explainable AI for identifying regional climate change patterns, *Scientific Machine Learning Community*, University of Leeds, UK (Jan 2023). (**Invited-Remote**)

[32] **Labe, Z.M.** and E.A. Barnes. Using artificial neural networks to predict temporary slowdowns in global warming trends, *22nd Conference on Artificial Intelligence for Environmental Science*, Denver, CO (Jan 2023). (Remote) [Abstract]

[31] **Labe, Z.M.**, N.C. Johnson, and T.L. Delworth. Climate drivers of the recent springtime cooling pattern in northern North America, *36th Conference on Climate Variability and Change*, Denver, CO (Jan 2023). (Remote) [Abstract]

[30] **Labe, Z.M.** Machine learning for evaluating climate model projections, *TechTalks 2.0, IEEE-Student Branch - IIT Indore*, India (Dec 2022). (**Invited-Remote**)

[29] **Labe, Z.M.** and E.A. Barnes. Using neural networks to predict temporary slowdowns in decadal climate warming trends, *27th Annual CESM Workshop*, Boulder, CO (Jun 2022). (Remote)

[28] **Labe, Z.M.** Communicating Arctic climate change through data-driven stories, *Guest lecture for "Applications in Climate & Society"*, Columbia University, New York City, NY (Feb 2022). (**Invited-Remote**)

[27] **Labe, Z.M.** Arctic climate change through the lens of data visualization, *Guest lecture for "Adaptation to Climate Change"*, North Carolina State University, Raleigh, NC (Jan 2022). (**Invited-Remote**)

[26] **Labe, Z.M.** and E.A. Barnes. Using explainable neural networks for comparing climate model projections, *27th Conference on Probability and Statistics*, Virtual Attendance (Jan 2022). (Remote) [Abstract]

[25] **Labe, Z.M.** and E.A. Barnes. Using neural networks to explore regional climate patterns in single-forcing large ensembles, *2021 American Geophysical Union Annual Meeting*, New Orleans, LA (Dec 2021). (**Invited-Remote**) [Abstract]

[24] **Labe, Z.M.** and E.A. Barnes. Evaluating global climate models using simple, explainable neural networks, *2021 American Geophysical Union Annual Meeting*, New Orleans, LA (Dec 2021) (**Invited-Remote**) [Abstract]

[23] **Labe, Z.M.** Exploring climate change signals with explainable AI. *Carbon Club*, NASA JPL, Pasadena, CA (Dec 2021). (**Invited-Remote**)

[22] **Labe, Z.M.** and E.A. Barnes. Decadal warming slowdown predictions by an artificial neural network, *2021 Young Scientist Symposium on Atmospheric Research (YSSAR)*, Colorado State University, CO (Oct 2021).

[21] **Labe, Z.M.** Assessing climate variability and change with explainable neural networks. *Lunchtime Seminar*, GFDL, Princeton University, NJ (Oct 2021). (**Invited-Remote**)

[20] **Labe, Z.M.** and E.A. Barnes. Exploring climate model large ensembles with explainable neural networks, *WCRP workshop on attribution of multi-annual to decadal changes in the climate system*, Virtual Workshop (Sep 2021). (Remote)

[19] **Labe, Z.M.** Learning new climate science by opening the machine learning black box. *Cognitive Brownbag Series*, Department of Psychology, Colorado State University, CO (Sep 2021). (**Invited**)

[18] **Labe, Z.M.** and E.A. Barnes. Climate signals in CESM1 single-forcing large ensembles revealed by explainable neural networks, *26th Annual CESM Workshop*, Boulder, CO (Jun 2021). (Remote)

[17] **Labe, Z.M.** Revealing climate change signals with explainable AI. *Spring Post-doctoral Research Symposium*, Colorado State University, CO (Mar 2021). (Remote)

[16] **Labe, Z.M.** Communicating Arctic climate change through data-driven stories. *Arctic Science Summit Week 2021*, Lisbon, Portugal (Mar 2021). (**Invited-Remote**)

[15] **Labe, Z.M.** The pan-Arctic impacts of thinning sea ice. Local Environmental Observer (LEO) Network, Anchorage, AK (Jan 2021). (**Invited-Remote**)

[14] **Labe, Z.M.** and E.A. Barnes. Disentangling Climate Forcing in Multi-Model Large Ensembles Using Neural Networks. *20th Conference on Artificial Intelligence for Environmental Science*, Virtual Conference (Jan 2021). [Abstract]

[13] **Labe, Z.M.** Why is it difficult to resolve future projections of Arctic-midlatitude linkages? *Atmospheric Dynamics Seminar*, Colorado State University, CO (Dec 2020). (Remote)

[12] **Labe, Z.M.** Trends and regional variability of observed Arctic sea ice thickness. *ACCAP's Virtual Alaska Weather Symposia webinar series*, University of Alaska, Fairbanks, AK (Oct 2020). (**Invited-Remote**)

[11] **Labe, Z.M.** Refining projections of the 'warm Arctic, cold Siberia' pattern in climate model simulations. *Atmosphere and Ocean Climate Dynamics Seminar*, Yale University, CT (Sep 2020). (**Invited-Remote**)

[10] **Labe, Z.M.** Observations and climate model projections of Arctic climate change. Geography Department, Irvine Valley College, CA (May 2020). (**Invited-Remote**)

[9] **Labe, Z.M.**, Y. Peings, and G. Magnusdottir. Detection of Signal in the Large-Scale Circulation Response to Arctic Sea-Ice Decline. *33rd Conference on Climate Variability and Change*, Boston, MA (Jan 2020). [Abstract]

[8] **Labe, Z.M.** Melting Ice: Context, Causes, and Consequences of Polar Amplification. *Kavli Frontiers of Science, National Academy of Sciences*, Jerusalem, Israel (Sep 2019). (**Invited**)

[7] **Labe, Z.M.** Projections of a future Arctic climate. Geography Department, Irvine Valley College, CA (May 2019). (**Invited**)

[6] **Labe, Z.M.**, G. Magnusdottir, and Y. Peings. Linking the Quasi-Biennial Oscillation and projected Arctic sea-ice loss to stratospheric variability in early winter. *20th Conference on Middle Atmosphere*, Phoenix, AZ (Jan 2019). [Abstract]

[5] **Labe, Z.M.**, Y. Peings, H.S. Stern, and G. Magnusdottir. Arctic sea ice thickness variability and its influence on the atmospheric response to projected sea ice loss. *Machine Learning and Physical Sciences (MAPS) Symposium*, University of California, Irvine (May 2018).

[4] **Labe, Z.M.** Disentangling Arctic climate change and variability. Geography Department, Irvine Valley College, CA (Apr 2018). (**Invited**)

[3] **Labe, Z.M.**, G. Magnusdottir, and H.S. Stern. Variability and future projections of Arctic sea ice thickness. *Understanding the Causes and Consequences of Polar Amplification Workshop*, Aspen Global Change Institute, Aspen, CO (Jun 2017).

[2] **Labe, Z.M.** Communicating the future of Arctic climate change. Natural Sciences Division, Fullerton College, CA (Nov 2016). (**Invited**)

[1] **Labe, Z.M.** Anomalously early onset of spring in the CESM Large Ensemble Project. *Earth and Atmospheric Science Undergraduate Research Symposium*, Cornell University, NY (May 2015).

POSTER PRESENTATIONS

[9] **Labe, Z.M.**, N.C. Johnson, and T.L Delworth. Identifying the drivers of the observed springtime cooling trend in northern North America with large ensemble simulations, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract] [Poster]

[8] **Labe, Z.M.**, E.A. Barnes, and J. Hurrell. Detecting the regional emergence of climate signals with machine learning in a set of stratospheric aerosol injection simulations, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract] [Poster]

[7] **Labe, Z.M.** and E.A. Barnes. Temporary slowdowns in decadal warming predictions by a neural network, *CLIVAR Climate Dynamics Panel (CDP) annual workshop: External versus internal variability on decadal and longer time scales*, Virtual Workshop (Oct 2022). [Poster]

[6] **Labe, Z.M.** and E.A. Barnes. Climate model evaluation with explainable neural networks, *3rd NOAA Workshop on Leveraging AI in Environmental Sciences*, Virtual Workshop (Sep 2021). [Poster]

[5] **Labe, Z.M.** and E.A. Barnes. Using explainable neural networks for comparing historical climate model simulations, *2nd Workshop on Knowledge Guided Machine Learning (KGML2021)*, Virtual Workshop (Aug 2021). [Poster]

[4] **Labe, Z.M.** Loss of Arctic sea ice thickness affects the large-scale atmosphere, *Arctic System Change Workshop* at NCAR, Boulder, CO (Apr 2018). [Poster]

[3] **Labe, Z.M.**, G. Magnusdottir, and H.S. Stern. Arctic Sea Ice Thickness Variability and the Large-scale Atmospheric Circulation Using Satellite Observations, PIOMAS, and the CESM Large Ensemble, *14th Conference on Polar Meteorology and Oceanography*, Seattle, WA (Jan 2017). [Abstract] [Poster]

[2] **Labe, Z.M.**, G. Magnusdottir, and H.S. Stern. Making the most of Arctic sea ice thickness observations, *Symposium on Recent Advances in Data Science*, University of California, Irvine (Oct 2016). [Poster]

[1] **Labe, Z.M.** and T.R. Ault. Anomalously Early Onset of Spring in the CESM Large Ensemble Project, *14th Annual AMS Student Conference*, Phoenix, AZ (Jan 2015). [Poster]

OTHER PRESENTATIONS

[29] Kalashnikov, D.A., F.V. Davenport, **Z.M. Labe**, P.C. Loikith, J. Abatzoglou, and D. Singh. Using deep learning to predict cloud-to-ground lightning in the western United States, *23rd Conference on Artificial Intelligence for Environmental Science*, Baltimore, MD (Jan 2024). [Abstract]

[28] Schreck, C.J., J. Barsugli, D.A. Coates, D.R. Easterling, K.E. Kunkel, **Z.M. Labe**, J.E. Uehling, R. Vose, and X. Zhang. Comparing the causes and unusualness of the Texas heatwaves in 2022 and 2023, *37th Conference on Climate Variability and Change*, Baltimore, MD (Jan 2024). [Abstract]

[27] Ashokkumar, L, **Z.M. Labe**, M.A. Shadab, O. Lauter and E.P. Schreiber. Advancing inclusion, diversity, equity, and accessibility (IDEA) in the polar sciences by USAPECS, *2023 American Geophysical Union Annual Meeting*, San Francisco, CA (Dec 2023). [Abstract]

[26] Meem, T.J., **Z.M. Labe**, W.F. Cooke, T.L. Delworth, and V. Ramaswamy. Role of anthropogenic aerosols on the South Asian summer monsoon in a high-resolution large ensemble, *2023 American Geophysical Union Annual Meeting*, San Francisco, CA (Dec 2023). [Abstract]

[25] Kalashnikov, D.A., F.V. Davenport, **Z.M. Labe**, P.C. Loikith, J. Abatzoglou, and D. Singh. Using deep learning to predict cloud-to-ground lightning in the western United States, *2023 American Geophysical Union Annual Meeting*, San Francisco, CA (Dec 2023). [Abstract]

[24] Johnson, N.C., L. Jia, **Z.M. Labe**, T.L. Delworth, F. Lu, and C.E. McHugh. Sources of seasonal extreme heat predictability diagnosed from the GFDL seamless System for Prediction and EArth System Research (SPEAR), *2023 American Geophysical Union Annual Meeting*, San Francisco, CA (Dec 2023). [Abstract]

[23] J.J. Barsugli, **Z.M. Labe**, N.C. Johnson, K.E. Kunkel, T. Zhang, D.E. Easterling, J.E. Uehling, J. Eischeid, M. Hoerling, A. Kumar, D. Coates, R. Vose, D. Arndt, C.J. Schreck, and T.L. Delworth. The Texas heat wave of 2022: La Niña, drought, and the emerging climate change signal, *36th Conference on Climate Variability and Change*, Denver, CO (Jan 2023). [Abstract]

[22] Johnson, N.C., T.L. Delworth, **Z.M. Labe**, F. Lu, and C.E. McHugh. Accurate seasonal predictions of the 2022 Texas early summer extreme heat nine months in advance, *36th Conference on Climate Variability and Change*, Denver, CO (Jan 2023). [Abstract]

[21] Ashokkumar, L., L. Weinberg, **Z.M. Labe**, E. Schreiber, A. Taitt, and M. Dryak. Progress and challenges by early career polar scientists (USAPECS) in addressing inclusivity, diversity, equity, and accessibility, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract]

[20] Po-Chedley, S., E.A. Barnes, C. Bonfils, J. Fasullo, **Z.M. Labe**, B. Santer, and N. Siler. Substantial contribution of internal variability to satellite-era tropospheric warming inferred from CMIP6 large ensembles, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract]

[19] Lehner, F., C. Deser, J. Fasullo, E. Fischer, P. Hitchcock, **Z.M. Labe**, S. Milinski, M. Röthlisberger, I. Simpson, S. Sippel, and J. Zscheischler. Emergence of multiple feedbacks in the extreme and persistent warmth over Siberia in 2020, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract]

[18] Bushuk, M., et al. (including **Z.M. Labe**). A multi-model comparison of September Arctic sea ice seasonal prediction skill, *2022 American Geophysical Union Annual Meeting*, Chicago, IL (Dec 2022). [Abstract]

[17] Witt, J.K., **Z.M. Labe**, and B. Clegg. Comparisons of Perceptions of Risk for Visualizations Using Animated Risk Trajectories Versus Cones of Uncertainty, *Human Factors and Ergonomics Society (HFES) 66th International Annual Meeting* (Oct 2022).

[16] Po-Chedley, S., E.A. Barnes, C. Bonfils, J. Fasullo, **Z.M. Labe**, B. Santer, and N. Siler. Internal Variability and Forcing Influence Model-satellite Differences in the Rate of Tropical Tropospheric Warming, *Asia Oceania Geosciences Society 19th Annual Meeting* (Aug 2022).

[15] Myint, H. and **Z.M. Labe**. Predicting September Arctic sea-ice using a hierarchy of statistical models, *21st Annual Student Conference: Polar Meteorology*, Virtual Attendance (Jan 2022). [Abstract]

[14] Witt, J.K., **Z.M. Labe**, B. Clegg, and A. Warden. An alternative to the "Cone of Uncertainty" that is flexible, intuitive, and desirable for communicating hurricane forecasts, *17th Symposium on Societal Applications: Policy, Research and Practice*, Virtual Attendance (Jan 2022). [Abstract]

[13] Lehner, F., E. Fischer, **Z.M. Labe**, S. Milinski, M. Röthlisberger, I. Simpson, S. Sippel, and J. Zscheischler. Evaluating large ensembles for persistent extreme events such as the 2020 temperature anomaly over Siberia, *2021 American Geophysical Union Annual Meeting*, Virtual Attendance (Dec 2021). [Abstract]

[12] Peings, Y., **Z.M. Labe**, and G. Magnusdottir. Arctic-midlatitude linkages: role of sea ice loss versus full Arctic amplification. *US CLIVAR PPAI Panel Webinar Series*, Virtual Talk (Apr 2021).

[11] Peings, Y., **Z.M. Labe**, and G. Magnusdottir. Influence of internal variability: how to ensure results are robust? *Polar Amplification Model Intercomparison (PAMIP) Virtual Workshop*, Virtual Conference (Mar 2021).

[10] Peings, Y., **Z.M. Labe**, and G. Magnusdottir. Arctic-midlatitude linkages: role of sea ice loss versus full Arctic Amplification. *Arctic Science Summit Week 2021*, Virtual Conference (Mar 2021).

[9] Magnusdottir, G., **Z.M. Labe**, and Y. Peings. The midlatitude response to Arctic sea-ice decline, compared to the response to the full effects of Arctic amplification. *34th Conference on Climate Variability and Change*, Virtual Conference (Jan 2021). [Abstract]

[8] Peings, Y., G. Magnusdottir, and **Z.M. Labe**. Are 100 ensemble members enough to capture the remote atmospheric response to +2°C Arctic sea ice loss? *34th Conference on Climate Variability and Change*, Virtual Conference (Jan 2021). [Abstract]

[7] Magnusdottir, G., **Z.M. Labe**, and Y. Peings. How does the atmospheric response to Arctic sea-ice decline compare to the full effect of the Arctic Amplification? *2020 American Geophysical Union Annual Meeting*, Virtual Conference (Dec 2020). [Abstract]

[6] Peings, Y., **Z.M. Labe**, and G. Magnusdottir. Are 100 ensemble members enough to capture the remote atmospheric response to +2°C Arctic sea ice loss? *2020 American Geophysical Union Annual Meeting*, Virtual Conference (Dec 2020). [Abstract]

[5] Magnusdottir, G., Y. Peings, and **Z.M. Labe**. Response to sea-ice loss under the Polar Amplification MIP protocol in extended ensembles of simulations. *2019 American Geophysical Union Annual Meeting*, San Francisco, CA (Dec 2019). [Abstract]

[4] Peings, Y., G. Magnusdottir, and **Z.M. Labe**. Impact of the QBO on the response to Arctic sea ice loss. *Polar Amplification Model Intercomparison (PAMIP) Workshop*, Devon, UK (Jun 2019).

[3] Holman, A., R. Thoman, **Z.M. Labe**, and J.E. Walsh. Not Just Chance: Ocean and Atmospheric Factors in the Record Low Bering Sea Ice Winter of 2017-2018 and effects on health and safety, *2018 American Geophysical Union Annual Meeting*, Washington, DC (Dec 2018). [Abstract]

[2] Magnusdottir, G., **Z.M. Labe**, and Y. Peings. The role of the stratosphere, including the QBO, in Arctic to mid-latitude teleconnections associated with sea-ice forcing. *2018 American Geophysical Union Annual Meeting*, Washington, DC (Dec 2018). [Abstract]

[1] Thoman, R. and **Z.M. Labe**. 2017-18 Sea Ice in Western Alaska during the 2017-18 Season: Historical Context and Possible Drivers. *Western Alaska Interdisciplinary Science Conference and Forum*, Nome, AK (Mar 2018).

AWARDS AND FELLOWSHIPS

Sep. 2023	Editors' Citation for Excellence in Refereeing - *Geophysical Research Letters*
Oct. 2022	Early Career Scientist Best Poster Award - CLIVAR CDP 2022 Workshop: External versus internal variability on decadal and longer time scales
May 2021	Editors' Citation for Excellence in Refereeing - *Geophysical Research Letters*
2020-2021	SoGES Sustainability Leadership Fellow, Colorado State University
Sep. 2019	Kavli Fellow, National Academy of Sciences
Jan. 2019	Outstanding Student Presentation Award - AMS Conference on Middle Atmosphere
Nov. 2018	Travel Award - AMS Conference on Middle Atmosphere
2016-2018	NSF NRT-DESE in Data Science and Physical Science Fellowship

Su. 2016	Data Science Initiative Fellowship, Department of Statistics, University of California, Irvine
Wi. 2016	Jenkins Family Graduate Fellowship in Earth System Science, Department of Earth System Science, University of California, Irvine
2014-2015	Fuerst Outstanding Library Student Employee Award Finalist, Cornell University

TEACHING AND OUTREACH

Mentoring Experience

| Su. 2023 | Tasmeem Jahan Meem - CIMES Research Internship Program at Princeton University |
| Su. 2021 | Hannah Myint - REU at Colorado State Univ. (Dept. of Atmos.) |

University of California, Irvine

Fa. 2019	Teaching Assistant, Terrestrial Hydrology
Sp. 2019	Teaching Assistant, Earth System Physics
Wi. 2019	Teaching Assistant, Weather Analysis
Fa. 2016	Teaching Assistant, Fundamental Processes in Earth and Environmental Studies

Cornell University

Su. 2015	Guest Lecturer, Severe Weather Phenomena
Sp. 2015	Teaching Assistant, Programming and Meteorology Software (Python)
Fa. 2014	Teaching Assistant, Basic Principles of Meteorology Lab

Related Educational Activities and Talks

Apr. 2024	*United States Association of Polar Early Career Scientists (US-APECS) IDEA Training Course*, Accessibility and disability in online spaces. (*Presenter-Remote*) (*Upcoming!*)
Mar. 2024	*GFDL Polar Climate Interest Group*, Machine learning in the cryosphere, Princeton University, Princeton, NJ. (**Presenter**) (*Upcoming!*)
Mar. 2024	*Temple University, Climate Communication Workshop: Learn How To Make Your Research Matter*, Using accessible data to communicate global climate change, Philadelphia, PA. (**Invited Keynote**) (*Upcoming!*)
Feb. 2024	*17th Annual Monmouth Junction Elementary School PTO Science Fair*, Meet a scientist event, Dayton, NJ (**Volunteer**)
Jan. 2024	*AMS AI Conference - Student Competition*, Poster Judge
Jan. 2024	*37th AMS Conference on Climate Variability and Change*, Session chair for "Frontiers in Earth System Modeling."
Jan. 2024	*ACCAP - IARC, University of Alaska Fairbanks*, Arctic Report Card: Background and Key Finding. (**Panelist-Invited-Remote**)

Dec. 2023	*NOAA Research*, 2023 Arctic Report Card Stakeholder Briefing. (**Panelist-Invited-Remote**)
Dec. 2023	*Mercer County Community College*, Career pathways and research opportunities in the Earth sciences, West Windsor Township, NJ.
Nov. 2023	*NJ State Museum Planetarium*, Visualizing climate change through data, Trenton, NJ. (**Invited**)
Oct. 2023	*Euronews*, Climate Now debate: 2023 is set to be the hottest year on record, so why aren't we taking action? (**Panelist-Invited-Remote**)
Sep. 2023	*Guest lecture for "Observing and Modeling Climate Change (EES 3506/5506)"*, Contrasting polar climate change in the past, present, and future, Temple University, PA. (**Invited-Remote**)
Sep. 2023	*Hershey Horticulture Society*, Climate change extremes by season in the United States, Hershey, PA. (**Invited**).
Aug. 2023	*Guest lecture for "Introduction to Global Climate Change (ESS 15)"*, Our changing Arctic in the past and future, University of California, Irvine, CA. (Invited-Remote)
Jun. 2023	*La Uni Climática*, Monitoring indicators of climate change through data-driven visualization. (*Presenter-Invited-Remote*)
Jun. 2023	*EUMET/Copernicus Earth Observation - Data Visualization Workshop Series*, Climate Extremes: Heatwaves, Changes in Ice, Drought, Sea Ice Anomalies. (*Presenter-Invited-Remote*)
Apr. 2023	*Mercer County Community College*, Career pathways and research opportunities in the Earth sciences, West Windsor Township, NJ.
Feb. 2023	*Rider University, Global Biogeochemistry Class Visit*, Arctic climate change through the lens of data visualization, NOAA GFDL, Princeton, NJ. (**Invited**).
Dec. 2022	*AGU Fall Meeting 2022*, Outstanding student presentation awards judge (OSPA)
Nov. 2022	*GFDL Lunchtime Seminar Series*, Using data visualization for accessible science (communication), Princeton, NJ. (**Presenter-Remote**).
Oct. 2022	*IEEEVis 2022*, #Viz4Climate - Workshop on High-Impact Techniques for Visual Climate Science Communication, Oklahoma City, OK. (**Panelist-Invited-Remote**)
Jul. 2022	*REU Professional Development Series*, Making effective and accessible figures, Colorado State University, Fort Collins, CO. (**Presenter-Invited-Remote**)
Jul. 2022	*Polar Bears International*, 'State of the Arctic 2022' - Blog Post (**Author**) [Article]
Jun. 2022	*GFDL/AOS Summer Internship Lecture Series*, Learning new climate science by thinking creatively with machine learning, Princeton University, Princeton, NJ. (**Presenter**)
Apr. 2022	*Guest lecture for "Objective Analysis in Atmospheric Sciences (ATS 655)"*, Using data visualization for effective science (communication), Colorado State University, Fort Collins, CO. (Remote)
Nov. 2021	*CASSINI Hackathon*, Climate Change in the Arctic, Nordic Startup School, Finland. (**Presenter-Invited**)
Jul. 2021	*REU Professional Development Series*, Making effective figures, Colorado State University, Fort Collins, CO. (**Presenter-Invited**)
Jul. 2021	*Polar Bears International*, 'State of the Arctic' - Blog Post (**Author**) [Article]

Jun. 2021	*US Climate Variability and Predictability*, 2021 June CLIVAR Newsgram (**Featured Graphics**) [Article]
Jun. 2021	*ABC News*, Climate summit for the ABC network (**Panelist-Invited-Remote**)
May 2021	*Guest lecture for "Objective Analysis in Atmospheric Sciences (ATS 655)"*, Using data visualization for effective science (communication), Colorado State University, Fort Collins, CO. (Remote)
Mar. 2021	*Department of Atmospheric Science*, Improving science (communication) through data visualization, Colorado State University, Fort Collins, CO. (**Presenter-Remote**)
Feb. 2021	*School of Global Environmental Sustainability - HumanNature Blog*, 'Telling stories with data' - Blog Post (**Author**) [Article]
Jan. 2021	*20th AMS Annual Student Conference*, Poster Judge (Remote)
Oct. 2020	*Cornell Chapter of the American Meteorological Society*, Professional Series: Academic Sector (**Panelist-Invited-Remote**)
Oct. 2020	*AMS Early Career Leadership Academy*, Session on Climate Change Communications (**Panelist-Invited-Remote**)
Sep. 2020	*Polar Bears International*, 'A Sign of the Future: Summer 2020 in the Arctic' - Blog Post (**Author**) [Article]
Jul. 2020	*Polar Bears International*, 'State of the Arctic in 2020' - Blog Post (**Author**) [Article]
Mar. 2020	*Climate, Literacy, Empowerment And iNquiry (CLEAN)*, The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)
Feb. 2020	*Irvine Unified School District's 39th Annual Science Fair*, Physical science project judge, Irvine, CA (**Volunteer**)
Jan. 2020	*100th American Meteorological Society Annual Meeting*: Side Panel - Using Social Media to Communicate Climate Science, Boston, MA. (**Chair**) [Abstract]
Nov. 2019	*Department of Earth System Science*, Improving scientific graphics of climate (change) data, University of California, Irvine, CA. (**Presenter**)
Oct. 2019	*Irvine Unified School District*, "Ask-A-Scientist/Engineer Night" at Creekside High School, Orange County, CA (**Volunteer**)
Sep. 2019	*Geological Society of America Annual Meeting*, Geoscience Communication in the Modern Age – "A Changing Arctic", Phoenix, AZ (**Contributed Art**)
Sep. 2019	*UC Irvine Graduate Orientation*, Session Title – Healthy Student Life – The Current Student Perspective, Irvine, CA (**Panelist-Invited**)
May 2019	*College and Career Day Experience*, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)
Apr. 2019	*Vista Verde School*, Weather and climate booth at an Earth Science Day fair, Irvine, CA (**Presenter**)
Mar. 2019	*Climate, Literacy, Empowerment And iNquiry (CLEAN)*, Weather and Climate Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)
Feb. 2019	*Orange County Regional Science Olympiad*, Climate Science-Meteorology exam writer and proctor, Irvine, CA (**Event Supervisor**)
Feb. 2019	*Climate, Literacy, Empowerment And iNquiry (CLEAN)*, The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)

Dec. 2018	*NOAA*, Arctic Report Card - Update for 2018. [Contributed Graphics]
Oct. 2018	*Brews and Brains: TED-Style Talk*, Our Changing Arctic, Fireside Tavern, Costa Mesa, CA. (**Presenter-Invited**).
Oct. 2018	*Irvine Unified School District*, "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA (**Volunteer**)
Sep. 2018	*UC Irvine Graduate Orientation*, Session Title – Student Panel – Embracing Your New Graduate Life, Irvine, CA (**Panelist-Invited**)
May 2018	*Vista Verde School*, Weather and climate booth at an Earth Day fair, Irvine, CA (**Presenter**)
Feb. 2018	*Irvine Unified School District's 37th Annual Science Fair*, Physical science project judge, Irvine, CA (**Volunteer**)
Feb. 2018	*Climate, Literacy, Empowerment And iNquiry (CLEAN)*, Weather and Climate Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)
Feb. 2018	*Orange County Regional Science Olympiad*, Climate Science-Meteorology exam writer and proctor, Irvine, CA (**Event Supervisor**)
Feb. 2018	*Climate, Literacy, Empowerment And iNquiry (CLEAN)*, The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA (**Presenter**)
Sep. 2017	*Irvine Unified School District*, "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA (**Volunteer**)
Aug. 2017	*Irvine Unified School District*, "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA (**Volunteer**)
Aug. 2017	*NASA DIRECT-STEM Program*, Assessing a changing Arctic (**Presenter-Invited**).
Apr. 2017	*Climate Data Hackathon*, Looking for clues to changes in Arctic sea ice, University of California, Irvine. (**Presenter-Invited**).
Feb. 2017	*Irvine Unified School District's 36th Annual Science Fair*, Physical science project judge, Irvine, CA (**Volunteer**)
Feb. 2017	*Orange County Regional Science Olympiad*, Severe Storms-Meteorology exam writer and proctor, Irvine, CA (**Event Supervisor**)
Wi. 2017	Seminar Course – Teaching Topics in Earth System Science (**Training**)
Oct. 2016	*Irvine Unified School District*, "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA (**Volunteer**)
Aug. 2016	*NASA DIRECT-STEM Workshop*, Data and Analysis of Arctic Climate Change in CMIP5 using Python (**Instructor**).

PROFESSIONAL ACTIVITIES & SERVICE

2023-Present	Member - Diversity, Equity, Inclusivity, and Accessibility Committee (NOAA GFDL)
2023-Present	Member - Fresh Eyes on CMIP (WCRP Working Group)
2023-Present	Associate Editor - *Journal of Climate*

2023-Present	Contributing Editor - Carbon Brief
2023-Present	NOAA GFDL Internal Reviewer
2021-Present	Guest Editor - Special Issue for *Atmospheric Science Letters*
2021-Present	Board Member - US Association of Polar Early Career Scientists
2020-Present	Conference Paper Referee - *AI4Earth NeurIPS*
2020-Present	Board of Advisors for the NCAR Climate Data Guide
2020-Present	Proposal Referee - *NSF (GEO/AGS)*, *NSF (ANS)*, *Netherlands Organisation for Scientific Research (NWO)*
2018-Present	Journal Manuscript Referee [Web of Science; >75 reviews] - *Artificial Intelligence for the Earth Systems*, *Atmosphere-Ocean*, *Atmospheric Research*, *Atmosphere*, *Bulletin of the American Meteorological Society*, *Climatic Change*, *Climate Dynamics*, *Communications Earth & Environment*, *Environmental Data Science*, *Environmental Research: Climate*, *Environmental Research Letters*, *Geophysical Research Letters*, *Geosciences*, *International Journal of Climate*, *Journal of Climate*, *Journal of Geophysical Research: Atmospheres*, *Journal of Glaciology*, *Nature Climate Change*, *Nature Communications*, *Polar Geography*, *Remote Sensing*, *Science Advances*, *Scientific Data*, *Scientific Reports*, *Weather*, *Weather and Climate Dynamics*
Jan. 2024	Assessment of the Algorithm Reviewer - EUMETSAT/OSI SAF Sea Ice Index (OSI-420)
Nov. 2023	Review Panel Member - National Aeronautics and Space Administration
Apr. 2023	Review Panel Member - National Oceanic and Atmospheric Administration
Nov. 2022	Data Requirement Review Panel Member - EUMETSAT/OSI SAF Sea Ice Index
Oct. 2022	Review Panel Member - National Science Foundation
2021-2022	Science Associate/Volunteer - Arctic Basecamp
2019-2021	Student Board Member, American Meteorological Society's Board on Societal Impacts
2017-2020	Vice President & Communications Chair, Student Chapter of the American Meteorological Society at the University of California, Irvine
2017-2020	Student Board Member, American Meteorological Society's Committee on Climate Variability and Change
2017-2018	Member, Student Communications Working Group, University of California, Irvine
2014-2015	Co-President, American Meteorological Society Student Chapter, Cornell University

Affiliations/Memberships

2023-Present	European Geosciences Union, Member
2021-Present	Interagency Arctic Research Policy Committee (IARPC), Member
2020-Present	American Association for the Advancement of Science (AAAS), Member

2016-Present	Association of Polar Early Career Scientists (APECS), Member
2015-Present	American Geophysical Union (AGU), Member
2014-Present	National Weather Association (NWA), Member
2009-Present	American Meteorological Society (AMS), Member

PROFESSIONAL TRAVEL

Field Work

May 2017	INTPART Arctic Field Summer Schools: Norway–Canada–USA collaboration, University of Tromsø, Norway (Workshops); Longyearbyen, Svalbard (R/V *Lance* - sea ice)

Workshops

Oct. 2022	IEEE VIS 2022, Oklahoma City, OK. (Virtual)
Oct. 2022	CLIVAR Climate Dynamics Panel (CDP) annual workshop: External versus internal variability on decadal and longer time scales. (Virtual)
Sep. 2022	Leveraging Earth System Science and Modeling to Inform Civil Engineering Design: ASCE-NOAA. (Virtual)
Aug. 2022	Princeton AOS's Workshop on Attribution of Extreme Events to Climate Change, Princeton, NJ
Jul. 2022	The Reproducibility Crisis in ML-based Science, Princeton University. (Virtual)
Jun. 2022	2022 CESM Workshop, National Center for Atmospheric Research (NCAR), Boulder, CO. (Virtual)
Sep. 2021	WCRP Workshop on Attribution of Multi-Annual to Decadal Changes in the Climate System. (Virtual)
Sep. 2021	3rd NOAA Workshop on Leveraging AI in Environmental Sciences. (Virtual)
Aug. 2021	2nd Workshop on Knowledge Guided Machine Learning (KGML2021). (Virtual)
Jun. 2021	2021 CESM Workshop, National Center for Atmospheric Research (NCAR), Boulder, CO. (Virtual)
May 2021	NOAA Arctic Report Card Workshop 2021. (Virtual)
Jun. 2020	Artificial Intelligence for Earth System Science (AI4ESS) Summer School, UCAR/NCAR. (Virtual)
Oct. 2019	Transdisciplinary Research on the Changing Arctic and Its Global Impacts: Enhancing Capacity for Convergence Science, Beckman Center of the NAS, Irvine, CA
Apr. 2018	Arctic System Change Workshop, Mesa Lab, National Center for Atmospheric Research (NCAR), Boulder, CO
Jun. 2017	Understanding the Causes and Consequences of Polar Amplification, Aspen Global Change Institute, Aspen, CO

TECHNICAL SKILLS

Programming:	Python, MATLAB, R, Fortran, Unix, HTML, TEX, LATEX, BIBTEX
Software/Tools:	NCL, NCO, CDO, GrADS, Git, Scikit-learn, TensorFlow/Keras
Modeling:	NCAR's Yellowstone/Cheyenne, CESM, E3SM, CMIP5/6

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News and Media

Mar. 2024	*Yorkshire Bylines*, "The Arctic: The first ice-free summer could arrive in the next decade" (**Quoted**). [Article]
Mar. 2024	*The Washington Post, Capital Weather Gang*, "The groundhog was right: Spring is here ahead of schedule" (**Quoted**). [Article]
Nov. 2023	*Carbon Brief*, "Q&A: Warming of 2°C would trigger 'catastrophic' loss of world's ice, new report says" (**Quoted**). [Article]
Oct. 2023	*NBC News*, "'Gobsmackingly bananas' September of extreme warmth alarms climate scientists" (**Quoted**). [Article]
Sep. 2023	*Carbon Brief*, "'Exceptional' Antarctic melt drives months of record-low global sea ice cover" (**Quoted**). [Article]
Sep. 2023	*Wired*, "The Mysterious 'Warming Hole' in the Middle of the US" (**Quoted**). [Article]
Aug. 2023	*Wired*, "This Brutal Summer in 10 Alarming Maps and Graphs" (**Quoted**). [Article]
Jul. 2023	*USA Today*, "The oceans are unusually hot and on track to get hotter. That's not good." (**Quoted**). [Article]
Jun. 2023	*CNET*, "The Arctic Sea Could Be 'Ice-Free' Within Decades. What That Means for Us" (**Quoted**). [Article]
Jun. 2023	*Bulletin of the Atomic Scientists*, "'Uncharted territory': Warming oceans and disappearing sea ice alarm scientists" (**Quoted**). [Article]
May 2023	*Wired*, "Antarctic Sea Ice Is at Record Lows. Is It an Alarming Shift?" (**Quoted**). [Article]
May 2023	*Carbon Brief*, "Montreal Protocol has slowed loss of Arctic sea ice, say scientists" (**Quoted**). [Article]
Mar. 2023	*Carbon Brief*, "Arctic sea ice winter peak in 2023 is fifth lowest on record" (**Quoted**). [Article]
Feb. 2023	*WFLA Tampa*, "How certain is science that humans are warming the climate?" (**Featured Graphics**). [Article]
Nov. 2022	*Princeton AOS & CIMES Newsletter*, "Zack Labe in Conversation" (**Interview**). [Article]
Nov. 2022	*Lawrence Livermore National Laboratory*, "New analysis helps reconcile differences between satellites and climate models" (**Press Release**). [Article]
Nov. 2022	*The Daily Beast*, "What Happens When Even Scientists Get Doom-Pilled?" (**Quoted**). [Article]
Sep. 2022	*Mongabay*, "2022: Another consequential year for the melting Arctic" (**Quoted**). [Article]
Sep. 2022	*Carbon Brief*, "Arctic sea ice summer minimum in 2022 is 'joint-10th lowest' on record" (**Quoted**). [Article]
Sep. 2022	*CBS News*, "Alarming year for extremes": 2021 saw record-high greenhouse gas, ocean heat and sea levels rise, new report finds" (**Quoted**). [Article]
Aug. 2022	*La Libre*, "Cette statistique montre vraiment à quel point l'Arctique a changé, c'est spectaculaire" (**Interview**). [Article]
Aug. 2022	*Financial Times*, "Climate graphic of the week: Arctic warming four times faster than rest of the planet, study says" (**Quoted**). [Article]
Jul. 2022	*Forbes*, "Yes, It's Getting Hotter - This Simple Graphics Explains" (**Quoted**). [Article]

Jul. 2022	*Politico*, "GIF of the Day - POLITICO's Power Switch" (**Quoted**). [Article]
Jul. 2022	*Val 202 - Slovene radio station*, "Točka preloma ali točka brez povratka?" (**Interview**). [Article]
Jul. 2022	*Foresight*, "Bringing Data Driven Stories to Life with Zack Labe" (**Interview**). [Article]
Mar. 2022	*Gizmodo*, "Record-Shattering Heat at Both Poles Is Freaking Scientists Out" (**Quoted**). [Article]
Mar. 2022	*Vice*, "'Never Supposed to Happen': North and South Poles See Unprecedented Heat" (**Quoted**). [Article]
Mar. 2022	*Yahoo News*, "'Not a good sign': Both of Earth's poles see temperatures 30C and 40C above normal" (**Quoted**). [Article]
Mar. 2022	*Carbon Brief*, "Arctic sea ice winter peak in 2022 is 10th lowest on record" (**Quoted**). [Article]
Jan. 2022	*Data Skeptic Podcast*, "Explainable climate science" (**Interview**). [Podcast]
Nov. 2021	*EnergieWinde*, "Zachary Labes Grafiken zum Klimawandel" (**Interview**). [Article]
Oct. 2021	*Mashable*, "Gaping hole opened up in 'Last Ice Area' of the Arctic, NASA images show" (**Quoted**). [Article]
Oct. 2021	*CNN*, "Antarctica's last 6 months were the coldest on record" (**Quoted**). [Article]
Sep. 2021	*Blasting News*, "From Carlos Nobre to Svein Tveitdal, 6 climate activists share ways to tackle climate change" (**Interview**). [Article]
Sep. 2021	*Carbon Brief*, "Arctic sea ice summer minimum in 2021 is '12th lowest' on record" (**Quoted**). [Article]
Sep. 2021	*Arctic Today*, "As it approaches its yearly minimum, Arctic sea ice extent its slightly greater than recent ultra-low years" (**Quoted**). [Article]
Sep. 2021	*BreezoMeter*, "Top 20 Leading Weather & Climate Voices to Follow in 2021" (**Listed**). [Article]
Aug. 2021	*National Geographic*, "Siberia's massive wildfires are unlocking extreme carbon pollution" (**Quoted**). [Article]
Jul. 2021	*The Washington Post, Capital Weather Gang*, "Arctic climate change may not be making winter jet stream weird after all" (**Featured Study**). [Article]
Jul. 2021	*Sky News* "A crisis of fire and ice: Deadly heatwaves and record ice melt tell a story of extreme weather that's here to stay" (**Quoted**). [Article]
Jun. 2021	*ABC News*, "It's Not Too Late: Extreme heat in the Arctic" (**Interview**). [Article]
Jun. 2021	*ABC News*, "Heat wave in Russia brings record-breaking temperatures north of Arctic Circle" (**Quoted**). [Article]
Jun. 2021	*The Independent*, "Merciless temperatures push Moscow to hottest June day in 142 years, as heatwave hits Russia" (**Quoted**). [Article]
May 2021	*Science Magazine*, "Landmark study casts doubt on controversial theory linking melting Arctic to severe winter weather" (**Featured Study**). [Article]

Apr. 2021	*Inverse*, "What will the Earth look like in 2121? 10 young leaders give their predictions" (**Interview**). [Article]
Mar. 2021	*Carbon Brief*, "Arctic sea ice winter peak in 2021 is joint-seventh lowest on record" (**Quoted**). [Article]
Mar. 2021	*Bloomberg*, "Arctic Lightning Strikes Tripled in a Decade" (**Quoted**). [Article]
Feb. 2021	*KCSU FM Radio*, "Explaining the polar vortex, U.S. COVID-19 deaths pass 500,000" (**Interview**). [Radio]
Feb. 2021	*Weather Geeks Podcast*, "Arctic Report Card 2020" (**Interview**). [Podcast]
Jan. 2021	*Blasting News*, "Zack Labe on Arctic climate change: It's important to communicate data in an accessible way" (**Interview**). [Article]
Jan. 2021	*CBS News*, "Sudden stratospheric warming could mean wild winter storms ahead" (**Quoted**). [Article]
Jan. 2021	*Inside Climate News*, "Many Scientists Now Say Global Warming Could Stop Relatively Quickly After Emissions Go to Zero" (**Quoted**). [Article]
Dec. 2020	*Australian Broadcasting Corporation*, "The vanishing Arctic" (**Quoted**). [Article]
Dec. 2020	*Cambridge Climate Lecture Series: Shaping the Future Podcast*, "Decoding NOAA's Arctic Report Card With Contributing Climate Scientist, Dr Zack Labe" (**Interview**). [Podcast]
Dec. 2020	*The Guardian*, "Greenhouse gas emissions transforming the Arctic into an entirely different climate" (**Quoted**). [Article]
Nov. 2020	*CBS News*, "Temperatures in the Arctic are astonishingly warmer than they should be" (**Quoted**). [Article]
Nov. 2020	*Cambridge Climate Lecture Series: Shaping the Future Podcast*, "Laptev Sea Not Refreezing & Other Arctic Climate Notes With Dr. Zack Labe" (**Interview**). [Podcast]
Oct. 2020	*High North News*, "Large Parts of Arctic Ocean See Delayed Refreeze With Sea Ice at Record Low" (**Quoted**). [Article]
Oct. 2020	*Vox*, "Why the record low Arctic sea ice this October is so alarming" (**Quoted**). [Article]
Oct. 2020	*The Guardian*, "Alarm as Arctic sea ice not yet freezing at latest date on record" (**Quoted**). [Article]
Sep. 2020	*National Geographic*, "The jet stream is bringing fire weather to the West and a chill to the East" (**Quoted**). [Article]
Sep. 2020	*ABC News*, "2nd-lowest Arctic sea ice increases concerns about impact of climate change on Indigenous communities" (**Interview**). [Video]
Sep. 2020	*The Washington Post, Capital Weather Gang*, "Arctic sea ice slides to second-lowest level on record, thanks to Siberian heat waves" (**Quoted**). [Article]
Sep. 2020	*Earth.com*, "Arctic sea ice reached its second lowest extent this year" (**Quoted**). [Article]
Sep. 2020	*High North News*, "Arctic Sea Ice Shrinks to Second-Lowest Extent Amid Record High Temperatures" (**Quoted**). [Article]
Sep. 2020	*Earther*, "Arctic Sea Ice Hit a Scary Milestone" (**Quoted**). [Article]
Sep. 2020	*Mashable*, "Arctic ice drops below a grim benchmark" (**Quoted**). [Article]
Sep. 2020	*Carbon Brief*, "Arctic sea ice shrinks to second-lowest summer minimum on record" (**Quoted**). [Article]

Aug. 2020	*Val 202 - Slovene radio station*, "Globalne temperature v vzponu, Arktika kmalu brez ledu" (**Interview**). [Article]
Aug. 2020	*Bloomberg*, "The First Arctic Summer Without Ice Is Coming in Just 15 Years" (**Quoted**). [Article]
Aug. 2020	*CBS News*, "In just 15 years, the Arctic Ocean may be ice-free in summer, study says" (**Quoted**). [Article]
Jul. 2020	*E&E News*, "Fires, heat and a cyclone. Arctic breaks melting record" (**Quoted**). [Article]
Jul. 2020	*CSU Engineering Source News*, "Five questions with Atmospheric Science climate scientist Zachary Labe" (**Interview**). [Article]
Jul. 2020	*TBS eFM*, "Live radio broadcast on "This Morning" show in Seoul, South Korea" (**Interview**).
Jul. 2020	*Vice*, "Siberia's Heat Wave Triggered an Arctic Sea Ice Melt Down" (**Quoted**). [Article]
Jul. 2020	*Mashable*, "Why Arctic sea ice just crashed to an extreme, record low" (**Quoted**). [Article]
Jul. 2020	*9News*, "Climate change: Siberian Arctic ice forming less, melting faster than any year since 1979" (**Quoted**). [Article]
Jul. 2020	*The Hill*, "Climate researcher details historic significance of recent warming in Siberia" (**Interview**). [Article]
Jul. 2020	*Sustainability – CSU*, "SHH! Sustainability Happy Hour with Dr. Zack Labe" (**Interview**). [Video]
Jul. 2020	*Rising – Hill.TV*, "Climate Scientist: Why You Should Worry About 100 Degree Temps In Siberia" (**Interview**). [Video]
Jul. 2020	*National Geographic*, "A heat wave thawed Siberia's tundra. Now, it's on fire" (**Quoted**). [Article]
Jul. 2020	*CBS News*, "100.4 degree Arctic temperature record confirmed as study suggests Earth is warmest in at least 12,000 years" (**Quoted**). [Article]
Jun. 2020	*The Telegraph*, "Siberia heatwave: Fears of 'irreversible' permafrost melt as Russian village sees record temperatures" (**Quoted**). [Article]
Jun. 2020	*Mashable*, "How the Arctic Circle just eclipsed 100 degrees" (**Quoted**). [Article]
Jun. 2020	*CBS News*, "2020 likely to be the warmest year on record globally" (**Quoted**). [Article]
Jun. 2020	*UCI News*, "Zack Labe cracks a cold case" (**Interview**). [Article]
May 2020	*The Washington Post, Capital Weather Gang*, "Parts of Siberia are hotter than Washington, with temperatures nearly 40 degrees above average" (**Quoted**). [Article]
May 2020	*The Washington Post, Capital Weather Gang*, "Unusual warmth pours over North Pole, potentially jump-starting melt season for Arctic ice" (**Quoted**). [Article]
Apr. 2020	*Nightingale – The Journal of the Data Visualization Society*, "Six Iconic Environmental Visualizations for Earth Day" (**Listed**). [Article]
Mar. 2020	*Mashable*, "Even after a frigid winter, Arctic sea ice is still really low" (**Quoted**). [Article]
Feb. 2020	*You've Been Warmed Podcast*, "The Power Of Visualizing Data In Climate Communication w/ Zack Labe" (**Interview**). [Podcast]
Dec. 2019	*AGU Annual Meeting*, "Department of Earth System Science, University of California, Irvine - promo" (**Interview**). [Video]
Nov. 2019	*Euronews*, "Arctic ice reached record low in October" (**Quoted**). [Article]

Sep. 2019	*Carbon Brief*, "Arctic sea ice summer minimum in 2019 is 'joint-second lowest' on record" (**Quoted**). [Article]
Sep. 2019	*Mashable*, "Arctic sea ice plunges to dismal levels" (**Quoted**). [Article]
Sep. 2019	*Euronews*, "How summer 2019 was hellish for the Arctic, the frontline of climate change and global warming" (**Quoted**). [Article]
Aug. 2019	*The Guardian*, "Alaska records warmest month ever in July with coastline barren of sea ice" (**Quoted**). [Article]
Aug. 2019	*TIME*, "Alaska's Sea Ice Has Its Lowest August Levels Ever" (**Quoted**). [Article]
Aug. 2019	*Mashable*, "Greenland's melting hits overdrive" (**Quoted**). [Article]
Jul. 2019	*Motherboard*, "Arctic Ice Is Crashing, and That's Bad News For Everyone" (**Quoted**). [Article]
Jul. 2019	*Wunderground*, "Heat Wave Heads North: Massive Week of Melting Likely in Arctic" (**Quoted**). [Article]
Jul. 2019	*The Washington Post, Capital Weather Gang*, "Europe's heat wave is about to bake the Arctic" (**Quoted**). [Article]
Jun. 2019	*The Washington Post, Capital Weather Gang*, "The Arctic Ocean and Greenland ice sheet have seen record June ice loss" (**Quoted**). [Article]
Jun. 2019	*Axios*, "Arctic melt goes into overdrive" (**Quoted**). [Article]
Jun. 2019	*Mashable*, "There's some really intense melting in the Arctic right now" (**Quoted**). [Article]
May 2019	*Earther*, "The Last of the Arctic's Old Sea Ice Is on the Verge of Vanishing" (**Quoted**). [Article]
Mar. 2019	*Carbon Brief*, "Arctic sea ice winter peak in 2019 is seventh lowest on record" (**Quoted**). [Article]
Mar. 2019	*Axios*, "Vanishing ice in the Bering Sea drops to lowest level since 1850" (**Quoted**). [Article]
Mar. 2019	*Mashable*, "The Bering Strait should be covered in ice, but it's nearly all gone" (**Quoted**). [Article]
Feb. 2019	*CBS News*, "Week of remarkable weather extremes: Is this the new normal?" (**Quoted**). [Article]
Feb. 2019	*Mashable*, "It's damn cold, but heat records in the U.S. still dominate" (**Quoted**). [Article]
Jan. 2019	*Popular Science*, "Record cold temperatures don't mean the planet isn't warming" (**Quoted**). [Article]
Oct. 2018	*Mashable*, "Things in the middle of the Arctic are getting really strange" (**Quoted**). [Article]
Oct. 2018	*KUCI Radio*, "Arctic Sea Ice and Meteorology with Zack Labe" (**Interview**). [Article]
Sep. 2018	*Euronews*, "Arctic heatwave could result in summer-like warmth for Alaska" (**Quoted**). [Article]
Sep. 2018	*Carbon Brief*, "Arctic sea ice summer minimum in 2018 is sixth lowest on record" (**Quoted**). [Article]
Aug. 2018	*Val 202 - Slovene radio station* "The Arctic is rapidly melting" (**Interview**). [Article]
Jun. 2018	*Earther*, "There's Way Too Little Ice Around Svalbard Right Now" (**Quoted**). [Article]
May 2018	*The Washington Post, Capital Weather Gang*, "'Fallen off a cliff': Scientists have never observed so little ice in the Bering Sea in spring" (**Quoted**). [Article]

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Mar. 2018	*Earther*, "Both Poles Are Having a Weird, Bad Year For Sea Ice So Far" (**Quoted**). [Article]
Mar. 2018	*United States Senate – Senator Sheldon Whitehouse (D–RI)*, "Time to wake up: Climate Progress" (**Supplied Graphic**). [Speech]
Feb. 2018	*PennLive*, "Harrisburg-area grad, scientist fuels buzz behind news that North Pole temps surged past freezing" (**Interview**). [Article]
Feb. 2018	*Mashable*, "Drastic Arctic warm event stuns scientists, as record-breaking temperatures reach the North Pole" (**Quoted**). [Article]
Feb. 2018	*The Washington Post, Capital Weather Gang*, "North Pole surges above freezing in the dead of winter, stunning scientists" (**Quoted**). [Article]
Feb. 2018	*Earther*, "Bering Sea Ice Is Disappearing When it Should Still Be Growing" (**Quoted**). [Article]
Feb. 2018	*USA Today*, "Arctic sea ice at record low January levels" (**Quoted**). [Article]
Feb. 2018	*UT Austin Geosciences*, "Social media: changing the science communication landscape" (**Interview**). [Article]
Dec. 2017	*USA Today*, "It's cold outside, but that doesn't mean climate change isn't real" (**Quoted**). [Article]
Sep. 2017	*The Sydney Morning Herald*, "Attacked from two sides: Antarctic sea ice hits another record low" (**Quoted**). [Article]
Aug. 2017	*The Verge*, "This Artist's New Landscape Studies are of Melting Glaciers" (**Quoted**). [Article]
Jul. 2017	*Climate Central*, "Here's How Much Arctic Sea Ice Has Melted Since the '80s" (**Quoted**). [Article]
Jun. 2017	*Climate Central*, "We Couldn't Monitor Larsen C Without These Satellites" (**Quoted**). [Article]
Apr. 2017	*Mashable*, "Arctic ice in retreat: NASA's airborne survey shows how global warming is transforming the Arctic" (**Quoted**). [Article]
Apr. 2017	*UCI News*, "UCI Doctoral student is helping people visualize climate change and its impact on the entire planet" (**Interview**). [Article]
Mar. 2017	*Carbon Brief*, "Sea ice falls to record lows in both the Arctic and Antarctic" (**Quoted**). [Article]
Mar. 2017	*Climate Central*, "Arctic Sea Ice Continues Its Astonishing Streak of Lows" (**Quoted**). [Article]
Feb. 2017	*The Washington Post, Capital Weather Gang*, "'Beyond the extreme': Scientists marvel at 'increasingly non-natural' Arctic warmth" (**Quoted**). [Article]
Jan. 2017	*UCI News*, "Climate change champions" (**Interview**). [Article]
Dec. 2016	*NPR*, "North Pole Temperatures Expected To Rise 50 Degrees Above Normal" (**Interview**).
Dec. 2016	*Yahoo News*, "Bizarre North Pole temperatures cap off year of record-setting warmth" (**Quoted**). [Article]
Dec. 2016	*The Washington Post, Capital Weather Gang*, "Forecast: North Pole to warm 50 degrees above normal Thursday, near melting point" (**Quoted**). [Article]
Nov. 2016	*American Geophysical Union Blogs*, "A conversation with Zack Labe" (**Interview**). [Article]

Nov. 2016	*The Washington Post*, "The North Pole is an insane 36 degrees warmer than normal as winter descends" (**Quoted**). [Article]
Oct. 2016	*The Sydney Morning Herald*, "Polar heatwaves have ice in retreat at both ends of the planet" (**Quoted**). [Article]
Oct. 2016	*The Washington Post, Capital Weather Gang*, "Arctic sea ice is at a record low and could, in spurts, disappear within our lifetimes" (**Quoted**). [Article]
Oct. 2016	*Climate Central*, "This is What It's Like To Be a Young Climate Scientist" (**Interview**). [Article]
Sep. 2016	*New York Times, Dot Earth*, "Arctic Summer Sea Ice – Going Down, Down, Down" (**Contributed**). [Article]
Sep. 2016	*Mashable*, "Sailboat nears goal of circumnavigating the Arctic as sea ice plummets" (**Quoted**). [Article]
Aug. 2016	*Cornell University*, "Early-onset spring models may indicate 'nightmare' for ag" (**Press Release**). [Article]
Jul. 2016	*The Weather Junkies Podcast*, "The Science of Modeling Climate & Weather" (**Interview**).

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