

# Zachary M. Labe

## CONTACT INFORMATION

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🆕 [orcid.org/0000-0002-6394-7651](https://orcid.org/0000-0002-6394-7651)

## RESEARCH INTERESTS

large-scale climate variability • atmospheric teleconnections • stratospheric coupling • Arctic sea ice • data science methods • large ensembles • 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 | <b>Postdoctoral Research Associate</b><br>Advisors: Drs. Thomas Delworth and Nathaniel Johnson,<br>Princeton University AOS and NOAA GFDL |
| 2020-2022    | <b>Postdoctoral Researcher</b><br>Advisor: Dr. Elizabeth Barnes, Atmospheric Science,<br>Colorado State University                        |
| 2015-2020    | <b>Graduate Research Assistant</b><br>Advisor: Dr. Gudrun Magnusdottir, Earth System Science,<br>University of California, Irvine         |
| Su. 2015     | <b>Research Assistant</b><br>Advisor: Dr. Toby Ault, Earth and Atmospheric Science,<br>Cornell University                                 |
| 2014-2015    | <b>Undergraduate Research Assistant</b><br>Advisor: Dr. Toby Ault, Earth and Atmospheric Science,<br>Cornell University                   |

## PUBLICATIONS

### *Refereed/Peer-Reviewed*

- [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 dif-

- ferences 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-Oe49. [\[Article\]](#)
  - [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/vOfs-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**

- [6] Timmermans, M.-L. and **Z.M. Labe** (2023). [The Arctic] Sea surface temperature [in "State of the Climate in 2022"]. (*submitted*)
- [5] **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, DOI: 10.31223/X5394Z (*submitted*) [\[Preprint\]](#)
- [4] 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, and T. Zhang (2023). Why has the summertime central U.S. warming hole not disappeared? (*submitted*)
- [3] Witt, J.K., D.A. Szafr, **Z.M. Labe**, and E.A. Barnes (2023). Perceiving internal climate variability: signaling change through animation decreases performance. (*submitted*)
- [2] Witt, J.K., **Z.M. Labe**, and B.A. Clegg (2023). An Alternative to the "Cone of Uncertainty" that is Flexible, Intuitive, and Desirable for Communicating Hurricane Forecasts. (*submitted*)
- [1] Witt, J.K., **Z.M. Labe**, A.C. Warden, and B.A. Clegg (2023). Visualizing Uncertainty in Hurricane Forecasts with Animated Risk Trajectories. (*submitted*)

### **Non-refereed/Other**

- [5] **Labe, Z.M.**, August 2021: Sharing data-driven stories of Arctic climate change. WMO/WWRP Year of Polar Prediction, PolarPredictNews. [\[Article\]](#)
- [4] 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. [\[Article\]](#)
- [3] **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. [\[PDF\]](#)
- [2] **Labe, Z.M.**, November 2019: Understanding Our Changing Arctic. Polar Bears International. Annual Magazine. [\[Article\]](#)
- [1] **Labe, Z.M.**, April 2015: Anomalously Early Onset of Spring in the CESM Large Ensemble. Cornell University. Undergraduate Honors Thesis. [\[PDF\]](#)

### **ORAL PRESENTATIONS**

- [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 spring-time 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, *Tech-Talks 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 Postdoctoral 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)** [\[Recording\]](#)
  - [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). [\[Recording\]](#)
  - [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).
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- [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

## POSTER PRESENTATIONS



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

- [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

|           |   |
|-----------|---|
| 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 - <i>Geophysical Research Letters</i>  |
| 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***

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| Su. 2021 | Hannah Myint - REU at Colorado State Univ. (Dept. of Atmos.) |
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### ***University of California, Irvine***

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| 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**

|          |   |
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| 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**

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| Feb. 2023 | <i>Rider University, Global Biogeochemistry Class Visit</i> , Arctic climate change through the lens of data visualization, NOAA GFDL, Princeton, NJ. <b>(Invited)</b> .                                |
| Dec. 2022 | <i>AGU Fall Meeting 2022</i> , Outstanding student presentation awards judge (OSPA)   |
| Nov. 2022 | <i>GFDL Lunchtime Seminar Series</i> , Using data visualization for accessible science (communication), Princeton, NJ. <b>(Presenter-Remote)</b> .  |
| Oct. 2022 | <i>IEEEVis 2022, #Viz4Climate - Workshop on High-Impact Techniques for Visual Climate Science Communication</i> , Oklahoma City, OK. <b>(Panelist-Invited-Remote)</b>                                   |
| Jul. 2022 | <i>REU Professional Development Series</i> , Making effective and accessible figures, Colorado State University, Fort Collins, CO. <b>(Presenter-Invited-Remote)</b>                                    |
| Jul. 2022 | <i>Polar Bears International</i> , 'State of the Arctic 2022' - Blog Post <b>(Author)</b> <a href="#">[Article]</a>   |
| Jun. 2022 | <i>GFDL/AOS Summer Internship Lecture Series</i> , Learning new climate science by thinking creatively with machine learning, Princeton University, Princeton, NJ. <b>(Presenter)</b>                   |
| Apr. 2022 | <i>Guest lecture for "Objective Analysis in Atmospheric Sciences (ATS 655)"</i> , Using data visualization for effective science (communication), Colorado State University, Fort Collins, CO. (Remote) |
| Nov. 2021 | <i>CASSINI Hackathon</i> , Climate Change in the Arctic, Nordic Startup School, Finland. <b>(Presenter-Invited)</b>   |
| Jul. 2021 | <i>REU Professional Development Series</i> , Making effective figures, Colorado State University, Fort Collins, CO. <b>(Presenter-Invited)</b>  |
| Jul. 2021 | <i>Polar Bears International</i> , 'State of the Arctic' - Blog Post <b>(Author)</b> <a href="#">[Article]</a>  |
| Jun. 2021 | <i>US Climate Variability and Predictability</i> , 2021 June CLIVAR Newsgram <b>(Featured Graphics)</b> <a href="#">[Article]</a>   |
| Jun. 2021 | <i>ABC News</i> , Climate summit for the ABC network <b>(Panelist-Invited-Remote)</b>   |
| May 2021  | <i>Guest lecture for "Objective Analysis in Atmospheric Sciences (ATS 655)"</i> , Using data visualization for effective science (communication), Colorado State University, Fort Collins, CO. (Remote) |
| Mar. 2021 | <i>Department of Atmospheric Science</i> , Improving science (communication) through data visualization, Colorado State University, Fort Collins, CO. <b>(Presenter-Remote)</b>                         |
| Feb. 2021 | <i>School of Global Environmental Sustainability - HumanNature Blog</i> , 'Telling stories with data' - Blog Post <b>(Author)</b> <a href="#">[Article]</a>   |

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| Jan. 2021 | 20th AMS Annual Student Conference, Poster Judge (Remote)   |
| Oct. 2020 | Cornell Chapter of the American Meteorological Society, Professional Series: Academic Sector ( <b>Panelist-Invited-Remote</b> )   |
| Oct. 2020 | AMS Early Career Leadership Academy, Session on Climate Change Communications ( <b>Panelist-Invited-Remote</b> )  |
| Sep. 2020 | Polar Bears International, 'A Sign of the Future: Summer 2020 in the Arctic' - Blog Post ( <b>Author</b> ) <a href="#">[Article]</a>  |
| Jul. 2020 | Polar Bears International, 'State of the Arctic in 2020' - Blog Post ( <b>Author</b> ) <a href="#">[Article]</a>  |
| Mar. 2020 | Climate, Literacy, Empowerment And iNquiry (CLEAN), The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )              |
| Feb. 2020 | Irvine Unified School District's 39 <sup>th</sup> Annual Science Fair, Physical science project judge, Irvine, CA ( <b>Volunteer</b> )  |
| Jan. 2020 | 100th American Meteorological Society Annual Meeting: Side Panel - Using Social Media to Communicate Climate Science, Boston, MA. ( <b>Chair</b> ) <a href="#">[Abstract]</a> |
| Nov. 2019 | Department of Earth System Science, Improving scientific graphics of climate (change) data, University of California, Irvine, CA. ( <b>Presenter</b> )                        |
| Oct. 2019 | Irvine Unified School District, "Ask-A-Scientist/Engineer Night" at Creekside High School, Orange County, CA ( <b>Volunteer</b> )   |
| Sep. 2019 | Geological Society of America Annual Meeting, Geoscience Communication in the Modern Age – "A Changing Arctic", Phoenix, AZ ( <b>Contributed Art</b> )                        |
| Sep. 2019 | UC Irvine Graduate Orientation, Session Title – Healthy Student Life – The Current Student Perspective, Irvine, CA ( <b>Panelist-Invited</b> )                                |
| May 2019  | College and Career Day Experience, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )  |
| Apr. 2019 | Vista Verde School, Weather and climate booth at an Earth Science Day fair, Irvine, CA ( <b>Presenter</b> )   |
| Mar. 2019 | Climate, Literacy, Empowerment And iNquiry (CLEAN), Weather and Climate Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )         |
| Feb. 2019 | Orange County Regional Science Olympiad, Climate Science-Meteorology exam writer and proctor, Irvine, CA ( <b>Event Supervisor</b> )  |
| Feb. 2019 | Climate, Literacy, Empowerment And iNquiry (CLEAN), The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )              |
| Dec. 2018 | NOAA, Arctic Report Card - Update for 2018. <a href="#">[Contributed Graphics]</a>  |
| Oct. 2018 | Brews and Brains: TED-Style Talk, Our Changing Arctic, Fireside Tavern, Costa Mesa, CA. ( <b>Presenter-Invited</b> ). <a href="#">[Recording]</a>                             |
| Oct. 2018 | Irvine Unified School District, "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA ( <b>Volunteer</b> )                                  |
| Sep. 2018 | UC Irvine Graduate Orientation, Session Title – Student Panel – Embracing Your New Graduate Life, Irvine, CA ( <b>Panelist-Invited</b> )                                      |
| May 2018  | Vista Verde School, Weather and climate booth at an Earth Day fair, Irvine, CA ( <b>Presenter</b> )   |
| Feb. 2018 | Irvine Unified School District's 37 <sup>th</sup> Annual Science Fair, Physical science project judge, Irvine, CA ( <b>Volunteer</b> )  |

Zachary Labe

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| Feb. 2018 | <i>Climate, Literacy, Empowerment And iNquiry (CLEAN)</i> , Weather and Climate Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )        |
| Feb. 2018 | <i>Orange County Regional Science Olympiad</i> , Climate Science-Meteorology exam writer and proctor, Irvine, CA ( <b>Event Supervisor</b> )   |
| Feb. 2018 | <i>Climate, Literacy, Empowerment And iNquiry (CLEAN)</i> , The Cryosphere Outreach event, MacArthur Fundamental Intermediate School, Santa Ana, CA ( <b>Presenter</b> )             |
| Sep. 2017 | <i>Irvine Unified School District</i> , "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA ( <b>Volunteer</b> )                                 |
| Aug. 2017 | <i>Irvine Unified School District</i> , "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA ( <b>Volunteer</b> )                                 |
| Aug. 2017 | <i>NASA DIRECT-STEM Program</i> , Assessing a changing Arctic ( <b>Presenter-Invited</b> ).  |
| Apr. 2017 | <i>Climate Data Hackathon</i> , Looking for clues to changes in Arctic sea ice, University of California, Irvine. ( <b>Presenter-Invited</b> ).<br><a href="#">[Syllabus/GitHub]</a> |
| Feb. 2017 | <i>Irvine Unified School District's 36<sup>th</sup> Annual Science Fair</i> , Physical science project judge, Irvine, CA ( <b>Volunteer</b> )  |
| Feb. 2017 | <i>Orange County Regional Science Olympiad</i> , Severe Storms-Meteorology exam writer and proctor, Irvine, CA ( <b>Event Supervisor</b> )   |
| Wi. 2017  | Seminar Course – Teaching Topics in Earth System Science ( <b>Training</b> )   |
| Oct. 2016 | <i>Irvine Unified School District</i> , "Ask-A-Scientist/Engineer Night" at Rancho San Joaquin Middle School, Orange County, CA ( <b>Volunteer</b> )                                 |
| Aug. 2016 | <i>NASA DIRECT-STEM Workshop</i> , Data and Analysis of Arctic Climate Change in CMIP5 using Python ( <b>Instructor</b> ). <a href="#">[Syllabus/GitHub]</a>                         |

## PROFESSIONAL ACTIVITIES & SERVICE

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| 2023-Present | NOAA GFDL Internal Reviewer  |
| 2021-Present | Guest Editor - Special Issue for <i>Atmospheric Science Letters</i>  |
| 2021-Present | Board Member - US Association of Polar Early Career Scientists   |
| 2020-Present | Conference Paper Referee - <i>AI4Earth NeurIPS</i>   |
| 2020-Present | Board of Advisors for the NCAR/UCAR Climate Data Guide   |
| 2020-Present | Proposal Referee - <i>NSF (GEO/AGS)</i> , <i>NSF (ANS)</i> , <i>Netherlands Organisation for Scientific Research (NWO)</i> |

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| 2018-Present | Journal Manuscript Referee [ <a href="#">Web of Science</a> ] - <i>Artificial Intelligence for the Earth Systems, Atmosphere-Ocean, Atmospheric Research, Atmosphere, Climatic Change, Climate Dynamics, Environmental Data Science, 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 and Climate Dynamics</i> |
| 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  |
| Aug. 2017    | Expert Contributor to the UCAR Climate Data Guide: "Sea Ice Thickness Data Sets: Overview & Comparison Table" [ <a href="#">Website</a> ]   |
| 2014-2015    | Co-President, American Meteorological Society Student Chapter, Cornell University   |

### ***Affiliations/Memberships***

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| 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***

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

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| 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)                                  |

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| 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, T<sub>E</sub>X, L<sup>A</sup>T<sub>E</sub>X, B<sub>I</sub>B<sub>T</sub>E<sub>X</sub>  
 Software/Tools: NCL, NCO, CDO, GrADS, Git, Scikit-learn, TensorFlow/Keras  
 Modeling: NCAR's Yellowstone/Cheyenne, CESM, E3SM, CMIP5/6

Visit my [GitHub](#) !

## NEWS AND MEDIA

|           |  |
|-----------|--|
| Feb. 2023 | <i>WFLA Tampa</i> , "How certain is science that humans are warming the climate?" ( <b>Featured Graphics</b> ). <a href="#">[Article]</a>  |
| Nov. 2022 | <i>Princeton AOS &amp; CIMES Newsletter</i> , "Zack Labe in Conversation" ( <b>Interview</b> ). <a href="#">[Article]</a>  |
| Nov. 2022 | <i>Lawrence Livermore National Laboratory</i> , "New analysis helps reconcile differences between satellites and climate models" ( <b>Press Release</b> ). <a href="#">[Article]</a> |
| Nov. 2022 | <i>The Daily Beast</i> , "What Happens When Even Scientists Get Doom-Pilled?" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2022 | <i>Mongabay</i> , "2022: Another consequential year for the melting Arctic" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2022 | <i>Carbon Brief</i> , "Arctic sea ice summer minimum in 2022 is 'joint-10th lowest' on record" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Sep. 2022 | <i>CBS News</i> , "Alarming year for extremes": 2021 saw record-high greenhouse gas, ocean heat and sea levels rise, new report finds" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |



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| Aug. 2022 | <i>La Libre</i> , "Cette statistique montre vraiment à quel point l'Arctique a changé, c'est spectaculaire" ( <b>Interview</b> ). <a href="#">[Article]</a>                                 |
| Aug. 2022 | <i>Financial Times</i> , "Climate graphic of the week: Arctic warming four times faster than rest of the planet, study says" ( <b>Quoted</b> ). <a href="#">[Article]</a>                   |
| Jul. 2022 | <i>Forbes</i> , "Yes, It's Getting Hotter - This Simple Graphics Explains" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2022 | <i>Politico</i> , "GIF of the Day - POLITICO's Power Switch" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2022 | <i>Val 202 - Slovene radio station</i> , "Točka preloma ali točka brez povratka?" ( <b>Interview</b> ). <a href="#">[Article]</a>   |
| Jul. 2022 | <i>Foresight</i> , "Bringing Data Driven Stories to Life with Zack Labe" ( <b>Interview</b> ). <a href="#">[Article]</a>  |
| Mar. 2022 | <i>Gizmodo</i> , "Record-Shattering Heat at Both Poles Is Freaking Scientists Out" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Mar. 2022 | <i>Vice</i> , "'Never Supposed to Happen': North and South Poles See Unprecedented Heat" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Mar. 2022 | <i>Yahoo News</i> , "Not a good sign': Both of Earth's poles see temperatures 30C and 40C above normal" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Mar. 2022 | <i>Carbon Brief</i> , "Arctic sea ice winter peak in 2022 is 10th lowest on record" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Jan. 2022 | <i>Data Skeptic Podcast</i> , "Explainable climate science" ( <b>Interview</b> ). <a href="#">[Podcast]</a>   |
| Nov. 2021 | <i>EnergieWinde</i> , "Zachary Labes Grafiken zum Klimawandel" ( <b>Interview</b> ). <a href="#">[Article]</a>  |
| Oct. 2021 | <i>Mashable</i> , "Gaping hole opened up in 'Last Ice Area' of the Arctic, NASA images show" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Oct. 2021 | <i>CNN</i> , "Antarctica's last 6 months were the coldest on record" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2021 | <i>Blasting News</i> , "From Carlos Nobre to Svein Tveitdal, 6 climate activists share ways to tackle climate change" ( <b>Interview</b> ). <a href="#">[Article]</a>                       |
| Sep. 2021 | <i>Carbon Brief</i> , "Arctic sea ice summer minimum in 2021 is '12th lowest' on record" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2021 | <i>Arctic Today</i> , "As it approaches its yearly minimum, Arctic sea ice extent its slightly greater than recent ultra-low years" ( <b>Quoted</b> ). <a href="#">[Article]</a>            |
| Sep. 2021 | <i>BreezoMeter</i> , "Top 20 Leading Weather & Climate Voices to Follow in 2021" ( <b>Listed</b> ). <a href="#">[Article]</a>   |
| Aug. 2021 | <i>National Geographic</i> , "Siberia's massive wildfires are unlocking extreme carbon pollution" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Jul. 2021 | <i>The Washington Post</i> , <i>Capital Weather Gang</i> , "Arctic climate change may not be making winter jet stream weird after all" ( <b>Featured Study</b> ). <a href="#">[Article]</a> |
| Jul. 2021 | <i>Sky News</i> , "A crisis of fire and ice: Deadly heatwaves and record ice melt tell a story of extreme weather that's here to stay" ( <b>Quoted</b> ). <a href="#">[Article]</a>         |
| Jun. 2021 | <i>ABC News</i> , "It's Not Too Late: Extreme heat in the Arctic" ( <b>Interview</b> ). <a href="#">[Article]</a>   |
| Jun. 2021 | <i>ABC News</i> , "Heat wave in Russia brings record-breaking temperatures north of Arctic Circle" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |

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| Jun. 2021 | <i>The Independent</i> , "Merciless temperatures push Moscow to hottest June day in 142 years, as heatwave hits Russia" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| May 2021  | <i>Science Magazine</i> , "Landmark study casts doubt on controversial theory linking melting Arctic to severe winter weather" <b>(Featured Study)</b> . <a href="#">[Article]</a>                          |
| Apr. 2021 | <i>Inverse</i> , "What will the Earth look like in 2121? 10 young leaders give their predictions" <b>(Interview)</b> . <a href="#">[Article]</a>  |
| Mar. 2021 | <i>Carbon Brief</i> , "Arctic sea ice winter peak in 2021 is joint-seventh lowest on record" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Mar. 2021 | <i>Bloomberg</i> , "Arctic Lightning Strikes Tripled in a Decade" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| Feb. 2021 | <i>KCSU FM Radio</i> , "Explaining the polar vortex, U.S. COVID-19 deaths pass 500,000" <b>(Interview)</b> . <a href="#">[Radio]</a>  |
| Feb. 2021 | <i>Weather Geeks Podcast</i> , "Arctic Report Card 2020" <b>(Interview)</b> . <a href="#">[Podcast]</a>   |
| Jan. 2021 | <i>Blasting News</i> , "Zack Labe on Arctic climate change: It's important to communicate data in an accessible way" <b>(Interview)</b> . <a href="#">[Article]</a>   |
| Jan. 2021 | <i>CBS News</i> , "Sudden stratospheric warming could mean wild winter storms ahead" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Jan. 2021 | <i>Inside Climate News</i> , "Many Scientists Now Say Global Warming Could Stop Relatively Quickly After Emissions Go to Zero" <b>(Quoted)</b> . <a href="#">[Article]</a>                                  |
| Dec. 2020 | <i>Australian Broadcasting Corporation</i> , "The vanishing Arctic" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| Dec. 2020 | <i>Cambridge Climate Lecture Series: Shaping the Future Podcast</i> , "Decoding NOAA's Arctic Report Card With Contributing Climate Scientist, Dr Zack Labe" <b>(Interview)</b> . <a href="#">[Podcast]</a> |
| Dec. 2020 | <i>The Guardian</i> , "Greenhouse gas emissions transforming the Arctic into an entirely different climate" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| Nov. 2020 | <i>CBS News</i> , "Temperatures in the Arctic are astonishingly warmer than they should be" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| Nov. 2020 | <i>Cambridge Climate Lecture Series: Shaping the Future Podcast</i> , "Laptev Sea Not Refreezing & Other Arctic Climate Notes With Dr. Zack Labe" <b>(Interview)</b> . <a href="#">[Podcast]</a>            |
| Oct. 2020 | <i>High North News</i> , "Large Parts of Arctic Ocean See Delayed Refreeze With Sea Ice at Record Low" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Oct. 2020 | <i>Vox</i> , "Why the record low Arctic sea ice this October is so alarming" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Oct. 2020 | <i>The Guardian</i> , "Alarm as Arctic sea ice not yet freezing at latest date on record" <b>(Quoted)</b> . <a href="#">[Article]</a>   |
| Sep. 2020 | <i>National Geographic</i> , "The jet stream is bringing fire weather to the West and a chill to the East" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Sep. 2020 | <i>ABC News</i> , "2nd-lowest Arctic sea ice increases concerns about impact of climate change on Indigenous communities" <b>(Interview)</b> . <a href="#">[Video]</a>                                      |
| Sep. 2020 | <i>The Washington Post</i> , <i>Capital Weather Gang</i> , "Arctic sea ice slides to second-lowest level on record, thanks to Siberian heat waves" <b>(Quoted)</b> . <a href="#">[Article]</a>              |
| Sep. 2020 | <i>Earth.com</i> , "Arctic sea ice reached its second lowest extent this year" <b>(Quoted)</b> . <a href="#">[Article]</a>  |
| Sep. 2020 | <i>High North News</i> , "Arctic Sea Ice Shrinks to Second-Lowest Extent Amid Record High Temperatures" <b>(Quoted)</b> . <a href="#">[Article]</a>   |

Zachary Labe


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| Sep. 2020 | <i>Earthar</i> , "Arctic Sea Ice Hit a Scary Milestone" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2020 | <i>Mashable</i> , "Arctic ice drops below a grim benchmark" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Sep. 2020 | <i>Carbon Brief</i> , "Arctic sea ice shrinks to second-lowest summer minimum on record" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Aug. 2020 | <i>Val 202 - Slovene radio station</i> , "Globalne temperature v vzponu, Arktika kmalu brez ledu" ( <b>Interview</b> ). <a href="#">[Article]</a>  |
| Aug. 2020 | <i>Bloomberg</i> , "The First Arctic Summer Without Ice Is Coming in Just 15 Years" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Aug. 2020 | <i>CBS News</i> , "In just 15 years, the Arctic Ocean may be ice-free in summer, study says" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Jul. 2020 | <i>E&amp;E News</i> , "Fires, heat and a cyclone. Arctic breaks melting record" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2020 | <i>CSU Engineering Source News</i> , "Five questions with Atmospheric Science climate scientist Zachary Labe" ( <b>Interview</b> ). <a href="#">[Article]</a>                                    |
| Jul. 2020 | <i>TBS eFM</i> , "Live radio broadcast on "This Morning" show in Seoul, South Korea" ( <b>Interview</b> ). <a href="#">[Recording]</a>   |
| Jul. 2020 | <i>Vice</i> , "Siberia's Heat Wave Triggered an Arctic Sea Ice Melt Down" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2020 | <i>Mashable</i> , "Why Arctic sea ice just crashed to an extreme, record low" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2020 | <i>9News</i> , "Climate change: Siberian Arctic ice forming less, melting faster than any year since 1979" ( <b>Quoted</b> ). <a href="#">[Article]</a>  |
| Jul. 2020 | <i>The Hill</i> , "Climate researcher details historic significance of recent warming in Siberia" ( <b>Interview</b> ). <a href="#">[Article]</a>  |
| Jul. 2020 | <i>Sustainability – CSU</i> , "SHH! Sustainability Happy Hour with Dr. Zack Labe" ( <b>Interview</b> ). <a href="#">[Video]</a>  |
| Jul. 2020 | <i>Rising – Hill.TV</i> , "Climate Scientist: Why You Should Worry About 100 Degree Temps In Siberia" ( <b>Interview</b> ). <a href="#">[Video]</a>  |
| Jul. 2020 | <i>National Geographic</i> , "A heat wave thawed Siberia's tundra. Now, it's on fire" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jul. 2020 | <i>CBS News</i> , "100.4 degree Arctic temperature record confirmed as study suggests Earth is warmest in at least 12,000 years" ( <b>Quoted</b> ). <a href="#">[Article]</a>                    |
| Jun. 2020 | <i>The Telegraph</i> , "Siberia heatwave: Fears of 'irreversible' permafrost melt as Russian village sees record temperatures" ( <b>Quoted</b> ). <a href="#">[Article]</a>                      |
| Jun. 2020 | <i>Mashable</i> , "How the Arctic Circle just eclipsed 100 degrees" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
| Jun. 2020 | <i>CBS News</i> , "2020 likely to be the warmest year on record globally" ( <b>Quoted</b> ). <a href="#">[Article]</a>   |
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## PERSONAL INTERESTS

Vegetable gardening, travel, cooking, hiking, fishing, lighthouses, trains, winter synoptic storms, long-range and seasonal weather forecasting