Zachary M. Labe

CONTACT **INFORMATION**

404 ATS Main Department of Atmospheric Science

Colorado State University

Fort Collins, Colorado 80521 USA

☎ 717.xxx.xxxx

https://sites.uci.edu/zlabe/

y ⊚ZLabe

orcid.org/0000-0002-6394-7651

RESEARCH **INTERESTS**

large-scale climate variability • atmospheric teleconnections • stratospheric coupling • Arctic sea ice • data science methods • large ensembles

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**

2020-Present

Postdoctoral Researcher

Evaluating timing of emergence and compound climate events

using machine learning methods (neural networks)

Advisor: Dr. Elizabeth Barnes, Atmospheric Science,

Colorado State University

2015-2020 Graduate Research Assistant

Assessing influences of Arctic amplification and sea ice variability on the stratosphere and extreme weather in the midlatitudes through global climate model experiments and historical observations

Advisor: Dr. Gudrun Magnusdottir, Earth System Science,

University of California, Irvine

Su. 2015 Research Assistant

Evaluated the magnitude, frequency, and dynamics of spring onset in the CESM Large Ensemble Project (LENS)

Advisor: Dr. Toby Ault, Earth and Atmospheric Science,

Cornell University

2014-2015 **Undergraduate Research Assistant**

Implemented the Extended Spring Indices model forced by atmospheric reanalysis to understand early spring onset in the historical record

Advisor: Dr. Toby Ault, Earth and Atmospheric Science,

Cornell University

PUBLICATIONS

Refereed/Peer-Reviewed

- [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:10.10 07/s00382-016-3313-2. [Article]

Publications Submitted/in Preparation

- [4] Witt, J.K., **Z.M. Labe**, and B.A. Clegg (2022). An Alternative to the "Cone of Uncertainty" that is Flexible, Intuitive, and Desirable for Communicating Hurricane Forecasts. (*submitted*)
- [3] Timmermans, M.-L. and **Z.M. Labe** (2022). [The Arctic] Sea surface temperature [in "State of the Climate in 2021"]. (submitted)
- [2] **Labe, Z.M.** and E.A. Barnes (2022), Predicting slowdowns in decadal climate warming trends with explainable neural networks. (*submitted*) [Preprint]
- [1] Witt, J.K., **Z.M. Labe**, A.C. Warden, and B.A. Clegg (2022). 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 $+2^{\circ}$ 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

- [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*, Virtual Attendance (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*, Virtual Attendance (Dec 2021) (**Invited-Remote**) [Abstract]
- [23] **Labe, Z.M.** Exploring climate change signals with explainable Al. *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 Al. *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) [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).

POSTER PRESENTATIONS

- [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

- [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).

FELLOWSHIPS AND AWARDS

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,
2014 2015	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. 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 Envi- ronmental 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 Educat	tional Activities
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-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-Remote)
Oct. 2020	AMS Early Career Leadership Academy, Session on Climate Change Communications (Panelist-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 39 th 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
May 2019	Life – The Current Student Perspective, Irvine, CA (Panelist) College and Career Day Experience, MacArthur Fundamental In-
,	termediate School, Santa Ana, CA (Presenter)
Apr. 2019	<i>Vista Verde School</i> , 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 Super-visor)
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. (Invited Presenter). [Recording]
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)
May 2018	Vista Verde School, Weather and climate booth at an Earth Day fair, Irvine, CA (Presenter)
Feb. 2018	Irvine Unified School District's 37 th 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 Super-visor)
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 (Invited Presenter).
Apr. 2017	Climate Data Hackathon, Looking for clues to changes in Arctic sea ice, University of California, Irvine. (Invited Presenter). [Syllabus/GitHub]
Feb. 2017	Irvine Unified School District's 36 th 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 Super-visor)

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). [Syllabus/GitHub]

PROFESSIONAL ACTIVITIES & SERVICE

2021-Present	Guest Editor - Special Issue for Atmospheric Science Letters
2021-Present	Board Member - US Association of Polar Early Career Scientists
2021-Present	Science Associate - Arctic Basecamp
2020-Present	Conference Paper Referee - AI4Earth NeurIPS
2020-Present	Board of Advisors for the NCAR/UCAR Climate Data Guide
2020-Present	Proposal Referee - NSF (GEO/AGS), NSF (ANS), Netherlands Organisation for Scientific Research (NWO)
2018-Present	Journal Manuscript Referee [Publons] - Atmosphere-Ocean, Atmosphere, Climatic Change, Climate Dynamics, 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, Scientific Reports, Weather and Climate Dynamics
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" [Website]
2014-2015	President, American Meteorological Society Student Chapter, Cornell University

Affiliations/Memberships

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	Field Work	
TRAVEL	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)
	Workshops	
	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, Mesa Lab, 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	Programming:	Python, MATLAB, R., Fortran, Unix, HTML, TFX, LATFX, BIBTFX
SKILLS		: NCL, NCO, CDO, GrADS, Git, Scikit-learn, TensorFlow/Keras
	Modeling:	NCAR's Yellowstone/Cheyenne, CESM, E3SM, CMIP5/6
		Visit my GitHub ♥!
NEWS AND MEDIA	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]

(Quoted). [Article]

clel

Oct. 2021

Oct. 2021

Sep. 2021

Mashable, "Gaping hole opened up in 'Last Ice Area' of the Arctic, NASA images show" (**Quoted**). [Article]

CNN, "Antarctica's last 6 months were the coldest on record"

Blasting News, "From Carlos Nobre to Svein Tveitdal, 6 climate

activists share ways to tackle climate change" (Interview). [Arti-

Sep. 2021	Carbon Brief, "Arctic sea ice summer minimum in 2021 is '12th
000. 2022	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	<i>Inverse</i> , "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	<i>Mashable</i> , "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	<i>E&E News</i> , "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). [Recording]
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	<i>9News</i> , "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"
Sep. 2018	(Interview). [Article] 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]
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
Aug. 2017	sea ice hits another record low" (Quoted). [Article] The Verge, "This Artist's New Landscape Studies are of Melting Classicate" (Quoted). [Article]
Jul. 2017	Glaciers" (Quoted). [Article] 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). [Recording]
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). [Recording]

Visit my Twitter (>44,300 followers) ♥!

PERSONAL INTERESTS

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