

Rebecca E. Morss

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EDUCATION

- Feb 1999 Ph.D., Atmospheric Science, Massachusetts Institute of Technology, Cambridge, MA
Jun 1993 B.A. with General and Departmental Honors, Chemistry, The University of Chicago,
Chicago, IL

PROFESSIONAL EXPERIENCE

- 2015–present Senior Scientist and Deputy Director, Mesoscale and Microscale Meteorology
(MMM) Laboratory, National Center for Atmospheric Research (NCAR),
Boulder, CO
May–Oct 2019 Interim Director, MMM Laboratory, and Interim Associate Director, NCAR
2009–2015 Scientist III, NCAR
2005–2009 Scientist II, NCAR
2002–2005 Scientist I, NCAR
2008–present Faculty Affiliate, Department of Environmental Studies, University of Colorado at
Boulder
2000–2001 Post-doctoral Fellow, Advanced Study Program, NCAR
2000 Visiting Post-doctoral Associate, Joint Institute for the Study of Atmospheres and
Oceans, University of Washington, Seattle, WA
1999 Post-doctoral Associate, Program in Atmospheres, Oceans, and Climate,
Massachusetts Institute of Technology, Cambridge, MA
1995–1998 Graduate Research Assistant, MIT
1994 Research Intern, Science, Space, and Technology Committee, U.S. House of
Representatives, Washington, DC

COMMUNITY SERVICE, LEADERSHIP, and EDUCATION ACTIVITIES

Service and Leadership – External

- 2021 National Academies’ Planning Committee for Communities, Climate Change, and
Health Equity – A Workshop Series
2018–present Steering Committee for NCAR-NEON-university collaborative program on Predicting
Life in the Earth System – Linking the Geosciences and Ecology
2016–present VORTEX-SE Science Steering Committee (Co-chair, 2016–2019)
2014–2018 American Meteorological Society Planning Commission
2014–2017 American Meteorological Society Nominating Committee (Chair, 2016–2017)
2015–2017 U.S. Interim Community Weather Research Planning Committee
2015–2016 NOAA ESRL Global Systems Division Laboratory Review Panel
2014–2016 American Meteorological Society Committee on Effective Communication of
Weather and Climate Information

2013–2015	Consultant on development of UK Met Office plan to improve communication of weather forecasts and warnings
2012–2015	Coordinator of Weather-Society Community Discussion Board, based at NCAR
2013–2014	World Weather Research Program Task Team for High Impact Weather Project
2013–2014	NOAA-NWS Service Assessment Team for Flooding in Colorado from Sept 11-17, 2013
2011–2014	U.S. THORPEX Science Steering Committee
2011–2013	National Academies Keck Futures Initiative Steering Committee on Ecosystem Services
2009–2012	American Meteorological Society Council (elected by a vote of the members)
2009–2011	NOAA Science Advisory Board Environmental Information Services Working Group
2009–2010	National Research Council Committee on Progress and Priorities of U.S. Weather Research and Research-to-Operations Activities
2007–2010	American Meteorological Society Ad Hoc Committee on Uncertainty in Forecasting
2006–2008	American Meteorological Society Annual Partnership Topic Committee on Feasibility of Multi-Partner, Multifunctional Mesoscale Observing Networks
2005–2009	American Meteorological Society Board on Enterprise Communication
2005–2006	National Research Council Committee on Estimating and Communicating Uncertainty in Weather and Climate Forecasts
2003–2006	Representative on Societal and Economic Impacts/Applications, North American THORPEX Committee
2003–2005	NOAA THORPEX Science and Implementation Team
2002–2005	THORPEX International Science Steering Committee
2002–2005	Co-chair of International Societal and Economic Applications Subprogram, THORPEX: A Global Atmospheric Research Programme
2000–2007	Contributing author for International THORPEX Science Plan, International THORPEX Implementation Plan, North American THORPEX Science Plan, U.S. THORPEX Science Plan, NOAA THORPEX Plan

Service and Leadership – Internal NCAR/UCAR

2020–present	NCAR Early Career Faculty Innovator Program Core Science Team
2019–present	Lead of NCAR Reinvestment Project on Convergent Science
2019–present	Lead of NCAR Data Assimilation Program cross-laboratory group on high-resolution data assimilation
2013–present	Lead of NCAR Weather Risks and Decisions in Society program
2019–2022	NCAR MMM Laboratory Diversity, Equity and Inclusion committee
2020–2021	NCAR 2021 Mid-Term Review (Site Visit Team) Steering Committee
2021	NCAR High Altitude Observatory Project Scientist III Review Panel
2019–2020	Co-chair of NCAR Strategic Plan Steering Committee, member of NCAR Strategic Plan Editorial Team, and co-author of NCAR 2020-2024 Strategic Plan
2020	NCAR MMM Laboratory Director Search Committee
2020	NCAR Computational Information Systems Laboratory Project Scientist III Review Panel
2018	UCAR Engagement Specialist Hiring Committee
2018	NCAR Climate and Global Dynamics Laboratory Project Scientist III Review Panel
2018	Chair of NCAR MMM Laboratory Project Scientist III Review Panel
2013–2018	NCAR MMM Laboratory Visitor Committee
2017	NCAR Reinvestment Working Group on Connections to the Social Science / Human Dimensions Communities
2015–2017	NCAR MMM Laboratory Scientist I Search Committee
2015	UNEION (UCAR NCAR Equity and Inclusion) Training, Cohort 1

2014 NCAR High Altitude Observatory Project Scientist III Review Panel
2011–2013 Lead of Weather Communication and Warning project, NCAR Integrated Science Program
2013 NCAR Research Applications Laboratory Project Scientist III Review Panel
2009 NCAR Integrated Science Program Director Search Committee
2008–2009 NCAR Workforce Management Plan Subcommittee on Professional Development / Work Environment
2008–2009 Coordinator of NCAR Institute for the Study of Society and Environment (ISSE) seminar series on risk communication and uncertainty in decision making
2008 Chair of NCAR ISSE Outstanding Accomplishment Award nomination committee
2008 NCAR ISSE Strategic Plan Committee
2008 NCAR Earth System Modeling Working Group on scientific research topics
2006–2007 Co-organizer, NCAR MMM Dynamics Happy Hour
2006–2007 NCAR ISSE Scientist II/III Search Committee
2005–2007 NCAR / Inter-American Institute Program Steering Committee
2003–2007 UCAR library book selection committee
2005 NCAR Scientist / Research Engineer I Search Committee
2004–2005 NCAR ISSE Scientific Steering Committee
2004 NCAR Atmospheric Technology Division External Advisory Committee
2003–2005 NCAR Initiative on Weather and Climate Impact Assessment Science Internal Advisory Board
2003–2004 Coordinated development of ISSE Charter, for input to NCAR reorganization
2003–2004 Initiated and co-developed UCAR Outstanding Accomplishment Mentoring Award
2002–2004 Co-developed NCAR/NOAA/USWRP Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information
2001–2003 UCAR Distinguished Achievement and Outstanding Accomplishments Awards Jury

Workshop / Conference / Symposium Organization

2021 Organizing Committee for National Academies Environmental Health Matters Initiative workshop “Communities, Climate Change, and Health Equity – A New Vision”
2019, 2021 Organizing Committee for NCAR/NEON workshops on “Predicting Life in the Earth System – Linking the Geosciences and Ecology” (Apr 2019, Sep 2021, Nov 2021)
2018–2019 Organizing Committee for NCAR Advanced Study Program Summer Colloquium on “Quantifying and communicating uncertainty in high-impact weather prediction”
2015 Co-chair of Organizing Committee for VORTEX-SE Workshop
2012 Organizing Committee for US THORPEX workshop “From Forecast Science to Societal Impacts”
2011 Organizing Committee for National Academies Keck Futures Initiative Conference on Ecosystem Services
2005–2011 Contributor to Weather and Society * Integrated Studies Workshops
2009 Organizing Committee for National Research Council summer study workshop “Progress and Priorities of U.S. Weather Research and Research-to-Operations Activities”
2007–2008 Co-organizer of Symposium on Linkages among Societal Benefits, Prediction Systems, and Process Studies for 1–14-day Weather Forecasts, 2008 American Meteorological Society annual meeting
2006 Co-convener for fall 2006 American Geophysical Union meeting sessions “Creating Usable Science in the 21st Century: Strategies for More Effectively Connecting Science to Societal Needs”

- 2006 Co-organizer of Workshop on North American THORPEX Societal and Economic Research and Applications
- 2006 Co-chair of UCAR/NCAR Junior Faculty Forum “Future Scientific Directions: The Science of Communicating Uncertainty in Weather and Climate”
- 2005–2006 Co-organizer of Disaster Simulation and Mitigation session / Organizing Committee Member, National Academies of Engineering First Indo-U.S. Frontiers of Engineering Symposium
- 2005–2006 Organizer of Academic session, Symposium on the Public/Private Sector Partnership, 2006 American Meteorological Society annual meeting
- 2005–2006 Organizing Committee for NCAR/Inter-American Institute Colloquium “Policy Planning and Decision Making Involving Climate Change and Variability”
- 2005 Organizing Committee for THORPEX Workshop on a Pacific Predictability Campaign

Education, Outreach, and Teaching

- 2003–present Interviews for multiple media outlets (television, radio, print, Internet) on communication and use of weather forecasts and extreme weather events
- 2021–2022 Co-developer and Co-instructor for “Introduction to Professional Meteorology” class, Jackson State University (with Dereka Carroll)
- 2019–2022 PhD Dissertation Committee for Austin Harris (Atmospheric Science Program, University of Wisconsin at Milwaukee)
- 2016–2020 PhD Dissertation Committee for Michelle Saunders (Department of Geography and Geosciences, University of South Florida)
- May 2020 NCAR Explorer public Q&A on “Hurricane forecasts: Communicating risks to communities”
- Jan 2020 Presentation and demonstration at NSF Natural Disaster Resiliency Event at U.S. House of Representatives (Washington, DC)
- Fall 2018 Co-developer and Co-instructor for “Creating Usable Science: Theory and Practice” class, University of Colorado Boulder (with Olga Wilhelmi and Lisa Dilling)
- Jul 2018 NCAR Explorer public lectures on “Hurricane forecasts: Communicating risks to communities”
- May 2018 Presentation on “Hurricane risk communication and decision making” at UCAR Journalism Summit
- Nov 2017 Presentation on “Advancing Weather Prediction to Address Critical Societal Needs” at UCAR Congressional Briefing: From Research to Industry: How Earth System Science Enables Private Sector Innovation (Washington, DC)
- 2017–2018 Masters Thesis Committee for Jacob DeFlicht (Department of Sociology, Oklahoma State University)
- 2014–2016 First Opponent, Evaluation Committee for the PhD thesis of Anders Sivle (Department of Physics and Technology, University of Bergen, Norway)
- 2014–2016 PhD Dissertation Committee for Jennifer Henderson (Department of Science and Technology in Society, Virginia Tech University)
- 2013–2015 PhD Dissertation Committee for Julie Demuth (Department of Journalism and Technical Communication, Colorado State University)
- Sep 2011 Developer and Presenter of Exhibit on “Experimental Prediction of Hazardous Weather” at Showcase of NSF-funded Hazards Research at National Science Foundation and U.S. Senate (Washington, DC)
- 2005–2011 Invited Lecturer for Weather and Society * Integrated Studies Workshops in Boulder, CO and Norman, OK
- Sep 2008 Guest Lecturer on Communicating Uncertainty for “Global Climate Change” class, Colorado College

2007–2009	Scientific advisor for UCAR Education & Outreach development of NCAR Mesa Laboratory exhibit on scientific uncertainty
Jan-May 2006	Co-developer and Guest Instructor for “Direct Studies for Undergraduate Research: Uncertainties and Societal Impacts of Hurricane Rita's Forecast” class, Texas A&M University (with Fuqing Zhang)
Jan 2002	Speaker and panel member at First American Meteorological Society Student Conference
Oct 2001	Guest Lecturer on Numerical Weather Prediction and Predictability, “The Earth Climate System,” University of Colorado at Boulder
Jul 2001	Moderator for U.S. Congressional Briefing: “Hurricanes: The Danger, The Impacts, The Outlook” (Washington, DC)
1992–1993	Teaching Assistant, University of Chicago Department of Mathematics

Supervisory and Mentoring

2019–present	Supervisor, Robert Prestley (NCAR Associate Scientist II)
2017–present	Supervisor, Juanzhen (Jenny) Sun (NCAR Senior Scientist)
2017–present	Supervisor, Kathryn Fossell (NCAR Associate Scientist III)
2011–present	Supervisor, Heather Lazrus (NCAR Post-Graduate Scientist / Project Scientist I/II/III)
2006–present	Supervisor, Julie Demuth (NCAR Associate Scientist II/III / Project Scientist I/II/III)
2020–present	Mentor, Austin Harris (NCAR Visitor, graduate student / post-doctoral researcher at University of Wisconsin Milwaukee)
2018–present	Mentor, Dereka Carroll (NCAR Visitor, Jackson State University / NIST)
2019–2021	Mentor, Joshua Alland (NCAR Advanced Study Program Postdoctoral Fellow)
2019–2020	Supervisor, Jamie Vickery (NCAR Postdoctoral Fellow)
2018–2020	Science Advisor, Jennifer Henderson (CIRES Research Scientist I)
2020	Science Co-Mentor, Christopher Williams (UCAR SOARS protégé)
2017–2018	Mentor, Kevin Ash (NCAR Advanced Study Program Postdoctoral Fellow)
2018	Science Co-Mentor, Cindi-Ann Findley (UCAR SOARS protégé)
2017	Science Co-Mentor, Colette Brown (UCAR SOARS protégé)
2017	Mentor, Jacob DeFlicht (NCAR Graduate Visitor Program, graduate student at Oklahoma State University)
2014–2015	Mentor, Jennifer Henderson (NCAR Graduate Visitor Program, graduate student at Virginia Tech University)
2014	Mentor, Zita Toth (NCAR Intern, undergraduate student at Colorado College)
2004–2006	Supervisor, Asim Zia (NCAR Post-Graduate Scientist)
2004–2006	Supervisor, Liam Cavanaugh (NCAR Student Assistant)
2005	Science Co-Mentor, Braxton Edwards (UCAR SOARS protégé)
2004	Science Co-Mentor, Clarence Mann (UCAR SOARS protégé)
2003	Supervisor, Maxine Cram Vasil (NCAR Student Assistant)
2002	Co-supervisor, Joel Murray (NCAR Student Assistant)

Editorial Boards and Professional Reviews

ongoing	Article and proposal reviews for multiple U.S. and international journals and organizations
2007–2016	Editorial Board (Subject Matter Expert on Societal and Economic Impacts), <i>Bulletin of the American Meteorological Society</i>
2007–2011	Associate Editor, <i>Journal of Hydrology</i>

FUNDED RESEARCH GRANTS

- 2021–2024 “Collaborative Research: An Agent-Based Investigation of Hurricane Evacuation Dynamics: Key Factors, Connections, and Emergent Behaviors.” Co-PI (PI: P. Roebber, Univ. of Wisconsin Milwaukee); funded by NSF Humans, Disasters, and the Built Environment. [\$71,000 to NCAR; additional funding to Univ. of Wisconsin Milwaukee]
- 2022–2023 “Project IMPACT: Increasing Minority Participation in Atmospheric Science Through Curriculum Training: Year 2 Practicum.” Co-PI with Dereka Carroll-Smith; funded by NCAR Education & Outreach Diversity, Equity and Inclusion program. [\$16,000]
- 2021–2023 “Dynamic Communication of Weather Risk: A User-Centered Design Approach.” Co-PI (PI: S. Majumdar, Univ. of Miami; Co-PIs: K. Broad, A. Cairo, S. Evans, B. Millet); funded by NOAA Weather Program Office. [\$102,000 to NCAR; additional funding to Univ. of Miami]
- 2021–2022 “Triangulating NCAR’s Tropical Social and Behavioral Work to Support NOAA/NWS Improvements.” PI (Co-PI: J. Demuth); funded by NOAA Weather Program Office. [\$191,000]
- 2021–2022 “Project IMPACT: Increasing Minority Participation in Atmospheric science through Curriculum Training.” Co-PI with Dereka Carroll-Smith; funded by NCAR Education & Outreach Diversity, Equity and Inclusion program. [\$16,000]
- 2020–2022 “Examining the Public’s Changing Risk Assessments and Responses to Tropical Cyclone Forecasts Using a Longitudinal Survey Methodology.” Co-PI (PI: J. Demuth, NCAR); funded by NOAA Broad Agency Announcement. [\$240,000 to NCAR]
- 2020–2022 “Public Interpretation and Use of Evolving Probabilistic Tornado Forecasts in the Southeastern United States.” Co-PI (PI: S. Savelli, Univ. of Washington; co-PIs: J. Demuth, S. Joslyn); funded by NOAA VORTEX-SE. [\$146,000 to NCAR; additional funding to Univ. of Washington]
- 2019–2022 “Integrating Sense of Place into Geovisualization of Hurricane Storm Surge.” Co-I (PI: O. Wilhelmi, NCAR; co-PIs: B. Chamberlain, J. Demuth, J. Gambill, H. Lazrus); funded by NSF Geography and Spatial Sciences. [\$399,000, including subawards to Utah State Univ. and Univ. of Georgia]
- 2019–2022 “Wait, That Forecast Changed? Assessing How Publics Consume and Process Changing Tropical Cyclone Forecasts Over Time.” PI (Co-PIs: J. Demuth, H. Lazrus, L. Palen, G. Wong-Parodi); funded by NOAA Hurricane Supplemental Program Office. [\$336,000 to NCAR; additional funding to Univ. of Colorado Boulder and Stanford Univ.]
- 2019–2022 “Minding the Gap: Modernizing the TC Product Suite by Evaluating NWS Partner Information Needs.” PI (Co-PIs: H. Lazrus, J. Demuth, A. Bostrom); funded by NOAA Hurricane Supplemental Program Office. [\$383,000 to NCAR; additional funding to Univ. of Washington]
- 2018–2022 “Improving Convection-Permitting Ensemble Based Uncertainty Communication for Decision Support using the Weather Archive and Visualization Environment (WAVE).” Co-PI (PI: J. Demuth, NCAR; Co-PIs: G. Romine, M. Petty, J. Stewart, J. Henderson, M. Wandishin, D. Nietfeld); funded by NOAA JTTI.

- [\$258,000 to NCAR; additional funding to CIRES / Univ. of Colorado Boulder and CIRA / Colorado State Univ.]
- 2017–2021 “CRISP Type 1: Protecting Coastal Infrastructure in a Changing Climate by Integrating Optimization Modeling and Stakeholder Observations.” Co-PI (PI: K. Mandli, Columbia Univ.; Co-PIs: D. Bienstock, G. Deodatis, H. Lazrus); funded by NSF Advanced Cyberinfrastructure. [\$130,000 to NCAR, as subaward to Columbia Univ.]
- 2013–2021 “Hazards SEES Type 2: Hazard Prediction & Communication Dynamics in the Modern Information Environment.” PI (Co-PIs: K. Anderson, C. M. Barton, C. Davis, H. Lazrus, L. Palen, C. Snyder, O. Wilhelmi); funded by NSF Atmospheric and Geospace Sciences + NOAA supplement. [\$3,168,000, including subawards to Univ. of Colorado Boulder and Arizona State Univ.]
- 2017–2020 “Understanding and Enhancing Public Interpretation and Use of Probabilistic Tornado Warnings in the Southeastern United States.” Co-PI (PI: S. Savelli, Univ. of Washington; Co-PIs: J. Demuth, S. Joslyn); funded by NOAA VORTEX-SE. [\$108,000 to NCAR; additional funding to Univ. of Washington]
- 2014–2020 “Collaborative Research: EaSM3 Integration of Decision-Making with Predictive Capacity for Decadal Climate Impacts.” Co-PI (PI: J. Done, NCAR; Co-PIs: C. Bruyere, J. Czajkowski, J. Hoeting, E. Michel-Kerjan; D. Pai Mazumder, E. Towler); funded by NSF Atmospheric and Geospace Sciences. [\$1,185,000 to NCAR, including subaward to CH2M Hill; additional funding to Colorado State Univ. and Univ. of Pennsylvania]
- 2017–2019 “Improved Presentation and Use of Probabilistic Forecast Products.” PI (Co-PIs: H. Lazrus, J. Demuth); funded by NOAA ESRL Global Systems Division. [\$140,000 to NCAR; additional funding to NOAA GSD]
- 2016–2019 “Improving Risk Communication and Reducing Vulnerabilities for Dynamic Tornado Threats in the Southeastern U.S.” Co-PI (PI: J. Demuth, NCAR; Co-PIs: K. Anderson, J. Henderson, H. Lazrus, L. Palen); funded by NOAA VORTEX-SE. [\$150,000 to NCAR]
- 2015–2018 “Western Water Assessment: Building Climate Resilience by Design.” Co-I (PI: L. Dilling, Univ. of Colorado); funded by NOAA Climate Program Office. [\$25,000 to NCAR, as subaward to Univ. of Colorado Boulder]
- 2015–2018 “Refinement and Evaluation of Automated High-Resolution Ensemble-Based Hazard Detection Guidance Tools for Transition to NWS Operations.” Co-I (PI: S. Benjamin, NOAA); funded by NOAA USWRP. [\$750,000 to NCAR; additional funding to NOAA ESRL/GSD, NCEP/EMC, and NWS/WPC]
- 2015–2016 “Support for Effective Communication of SPC Day 1 Outlook with Increased Temporal and Spatial Resolution.” Co-PI (PI: M. Lorie, Abt Associates); funded by NOAA. [\$6000 to NCAR, as subaward to Abt Associates]
- 2011–2014 “Water Decisions for Sustainability of the Arbuckle-Simpson Aquifer.” Co-PI (PI: H. Lazrus, NCAR; Co-PIs: R. McPherson, J. Pendley, K. Monroe); funded by NOAA Climate Program Office. [\$300,000 to NCAR, including subaward to Univ. of Oklahoma]
- 2013–2014 “Rising Voices of Indigenous Peoples in Weather and Climate Research and Policy.” Co-PI (PI: H. Lazrus, NCAR; Co-PIs: R. Gough, G. Holland, W. Mahoney, S. Haupt, R. Pandya); funded by NCAR Diversity Funds. [\$60,000]

- 2008–2012 “DRU – Collaborative Research: Warning Decisions in Extreme Weather Events: An Integrated Multi-Method Approach.” Co-PI (PI: J. Lazo, NCAR; Co-PIs: A. Bostrom, K. Tierney); funded by NSF Human and Social Dynamics. [\$331,000 to NCAR; additional funding to Univ. of Colorado Boulder and Univ. of Washington]
- 2008–2011 “Collaborative Research: Examining the Hurricane Warning System: Content, Channels, and Comprehension.” PI (Co-PIs: H. D. O’Hair, B. Morrow, J. Demuth, J. Lazo, M. Jensen, C. Miller); funded by NOAA, NSF Infrastructure Management and Extreme Events, and NSF Decision, Risk, and Management Sciences. [\$250,000 to NCAR; additional funding to Univ. of Oklahoma]
- 2004–2011 “Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information.” Co-PI (with W. Mahoney, B. Foote, R. Harriss, and others); funded by U.S. Weather Research Program / NOAA. [\$400,000+ to NCAR annually]
- 2005–2006 “Towards a Focused NCAR-THORPEX Program.” Co-I (PI: D. Parsons, NCAR); funded by NCAR Opportunity Fund. [\$75,000]
- 2003–2005 “Superstorm 1993: A Case-Scenario Approach for Integrating Meteorological and Societal Research.” Co-PI (with M. Glantz, J. Tribbia); funded by NCAR Opportunity Fund and NSF. [\$150,000]
- 2001–2003 “Development of Diagnostic Approaches for Verifying Quantitative Precipitation Forecasts.” Co-I (PI: B. Brown, NCAR); funded by U.S. Weather Research Program.

HONORS and AWARDS

- 2018 Elected as a Fellow of the American Meteorological Society
- 2015 U.S. THORPEX Executive Committee Certificate of Recognition for “National and international leadership and research on the socio-economic applications of weather forecasts”
- 2014 World Meteorological Organization Commission for Atmospheric Science Certificate of Appreciation for “Outstanding contributions to WMO THORPEX Programme for 2005-2014”
- 2013 NCAR Research Applications Laboratory Outstanding Publication Award, Nominated for UCAR Outstanding Publication Award (for Demuth et al. 2012)
- 2008 Nominated for UCAR Outstanding Publication Award (for Morss et al. 2005)
- 2006, 2007 Nominated for UCAR Education and Outreach Outstanding Accomplishment Award (for Weather and Society * Integrated Studies program)
- 2005–2006 Selected participant, NCAR/UCAR Leadership Academy
- 2001 Selected participant, American Meteorological Society Summer Policy Colloquium
- 2000–2001 NCAR Advanced Study Program Post-doctoral Fellowship
- 1994–1997 MIT Program in Atmospheres, Oceans, and Climate Charney Prize
- 1994–1995 MIT Clare Boothe Luce Fellowship
- 1992–1993 University of Chicago Student Marshal
- Jun 1992 inducted to Phi Beta Kappa
- 1991–1993 Goldwater Scholarship for Excellence in Science and Mathematics Education
- 1989–1993 University of Chicago / Argonne National Laboratory scholarship

PUBLICATIONS

PhD Dissertation

“Adaptive observations: Idealized sampling strategies for improving numerical weather prediction.”
Massachusetts Institute of Technology, Feb 1999. Advisor: Kerry Emanuel.

Refereed Articles

Harris, A. R., and R. E. Morss, and P. J. Roebber: What improves evacuations? Exploring the hurricane-forecast-evacuation system dynamics using an agent-based framework. Submitted to *Natural Hazards Review*.

Bukvic, A., K. Mandli, D. Finn, A. Merdjanoff, T. Mayo, G. Wong-Parodi, C. Davis, O. Wilhelmi, R. Morss, R. Haacker, C. O’Lenick, D. Lombardozzi, and J. Alland: Advancing interdisciplinary and convergent science for communities: Lessons learned through the NCAR Early-Career Faculty Innovator Program. Submitted to *Bulletin of the American Meteorological Society*.

Saunders, M. E., K. D. Ash, J. M. Collins, and R. E. Morss: Construal of situational risk and outcomes – Exploring the use of radar displays. Submitted to *Weather, Climate, and Society*.

Bergin, S., J. Alland, R. Morss, and M. Barton: CHIME ABM: An agent-based model of information flow and decision making during hurricane threats. Submitted to *Journal of Open Research Software*.

Qin, C., S. Joslyn, S. Savelli, J. Demuth, R. Morss, and K. Ash: The impact of probabilistic tornado warnings on risk perceptions and responses. Submitted to *Journal of Experimental Psychology: Applied*.

Lazrus, H., T. Hanson, and R. E. Morss: “Let’s weather this hurricane together”: Cultivating capacity with social media to alleviate vulnerability. Submitted to *Weather and Climate Extremes*.

Morss, R. E., J. Vickery, H. Lazrus, J. L. Demuth, and A. Bostrom: Improving tropical cyclone forecast communication by understanding NWS partners’ decision timelines and forecast information needs. *Weather, Climate, and Society*, in press. <https://doi.org/10.1175/WCAS-D-21-0170.1>

Demuth, J. L., J. Vickery, H. Lazrus, J. Henderson, R. E. Morss, and K. D. Ash: Rethinking warning compliance and complacency by examining how people manage risk and vulnerability during real-world tornado threats. *Bulletin of the American Meteorological Society*, in press. <https://doi.org/10.1175/BAMS-D-21-0072.1>

Bukvic, A., K. Mandli, C. Davis, R. Morss, C. O’Lenick, O. Wilhelmi, R. Haacker, G. Wong-Parodi, D. Finn, A. Merdjanoff, and T. Mayo, 2022: Moving from interdisciplinary to convergent research across geoscience and social sciences: Challenges and strategies. *Environmental Research Letters*, **17**, 061002. <https://doi.org/10.1088/1748-9326/ac7409>

Harris, A. R., P. J. Roebber, and R. E. Morss, 2022: An agent-based modeling framework for examining the dynamics of the hurricane-forecast-evacuation system. *International Journal of Disaster Risk Reduction*, **67**, 102669. <https://doi.org/10.1016/j.ijdrr.2021.102669>

Done, J., R. E. Morss, H. Lazrus, E. Towler, M. R. Tye, M. Ge, T. Das, A. Munévar, J. Hewitt, J. A. Hoeting, and C. Schafer, 2021: Towards usable predictive climate information at decadal timescales. *One Earth*, **4**, 1297–1309. <https://doi.org/10.1016/j.oneear.2021.08.013>

Henderson, J., L. Dilling, R. Morss, O. Wilhelmi, and U. Rick, 2021: “We got in the pilot program to learn from it:” Unintended consequences and social learning in drought contexts along the Arkansas River in Colorado. *Weather, Climate, and Society*, **13**, 729–741. <https://doi.org/10.1175/WCAS-D-20-0120.1>

- Cuite, C. L., R. E. Morss, J. L. Demuth, and W. K. Hallman, 2021: The effects of storm type on perceived severity and protective actions. *Bulletin of the American Meteorological Society*, **102**, E1306–E1316. <https://doi.org/10.1175/BAMS-D-19-0043.1>
- Miura, Y., H. Qureshi, C. Ryoo, P. C. Dinenis, J. Li, G. Deodatis, K. T. Mandli, D. Bienstock, H. Lazrus, and R. Morss, 2021: A methodological framework for determining an optimal coastal protection strategy against storm surges and sea level rise. *Natural Hazards*, **107**, 1821–1843. <https://doi.org/10.1007/s11069-021-04661-5>
- Morss, R. E., H. Lazrus, and J. L. Demuth, 2021: The “inter” within interdisciplinary research: Strategies for building integration across fields. *Risk Analysis*, **41**, 1152–1161. <https://doi.org/10.1111/risa.13246> (accepted and published online in 2018)
- Morss, R. E., H. Lazrus, A. Bostrom, and J. L. Demuth, 2020: The influence of cultural worldviews on people’s responses to hurricane risks and threat information. *Journal of Risk Research*, **23**, 1620–1649. <https://doi.org/10.1080/13669877.2020.1750456>
- Broomell, S., G. Wong-Parodi, R. E. Morss, and J. Demuth, 2020: Do we know our own tornado season? A psychological investigation of perceived tornado likelihood in the Southeast U.S. *Weather, Climate, and Society*, **12**, 771–788. <https://doi.org/10.1175/WCAS-D-20-0030.1>
- Demuth, J. L., R. E. Morss, I. Jankov, T. I. Alcott, C. R. Alexander, D. Nietfeld, T. L. Jensen, D. R. Novak, and S. G. Benjamin, 2020: Recommendations for developing useful and usable convection-allowing model ensemble guidance for NWS forecasters. *Weather and Forecasting*, **35**, 1381–1406. <https://doi.org/10.1175/WAF-D-19-0108.1>
- Kowaleski, A., R. E. Morss, D. Ahijevych, and K. Fossell, 2020: Using a WRF-ADCIRC ensemble and track clustering to investigate storm surge predictability associated with Hurricane Irma. *Weather and Forecasting*, **35**, 1289–1315. <https://doi.org/10.1175/WAF-D-19-0169.1>
- Lazrus, H., O. Wilhelmi, R. Morss, J. Henderson, and A. Dietrich, 2020: Information as intervention: How hurricane risk communication interacted with vulnerability and capacities in Hurricane Sandy. *International Journal of Mass Emergencies and Disasters*, **38**, 89–120. <http://ijmed.org/articles/783/>
- Watts, J., R. E. Morss, C. M. Barton, and J. L. Demuth, 2019: Conceptualizing and implementing an agent-based model of information flow and decision making during hurricane threats. *Environmental Modeling and Software*, **122**, 104524. <https://doi.org/10.1016/j.envsoft.2019.104524>
- Anderson, J., G. Casas Saez, K. M. Anderson, L. Palen, and R. Morss, 2019: Incorporating context and location into social media analysis: A scalable, cloud-based approach for more powerful data science. *Proceedings of the 52nd Annual Hawaii International Conference on Systems Sciences*, Maui, HI. <https://doi.org/10.24251/HICSS.2019.275>
- Stowe, K., M. Palmer, J. Anderson, L. Palen, K. M. Anderson, M. Kogan, R. Morss, J. Demuth, and H. Lazrus, 2018: Developing and evaluating annotation procedures for Twitter data during hazard events. *Proceedings of the Joint Workshop on Linguistic Annotation, Multiword Expressions and Constructions*, Santa Fe, NM. <https://aclanthology.org/W18-4915>
- Bostrom, A., R. E. Morss, J. K. Lazo, J. L. Demuth, and H. Lazrus, 2018: Eyeing the storm: How residents of coastal Florida see hurricane forecasts and warnings. *International Journal of Disaster Risk Reduction*, **30A**, 105–119. <https://doi.org/10.1016/j.ijdrr.2018.02.027>
- Morss, R. E., C. L. Cuite, J. L. Demuth, W. K. Hallman, and R. L. Shwom, 2018: Is storm surge scary? The influence of hazard, impact, and fear-based messages and individual differences on responses to hurricane risks. *International Journal of Disaster Risk Reduction*, **30A**, 44–58.

- <https://doi.org/10.1016/j.ijdrr.2018.01.023>
- Demuth, J. L., R. E. Morss, L. Palen, K. M. Anderson, J. Anderson, M. Kogan, K. Stowe, M. Bica, H. Lazrus, O. Wilhelmi, and J. Henderson, 2018: “Sometimes da #beachlife ain't always da wave”: Understanding people’s evolving hurricane risk communication, risk assessments, and responses using Twitter narratives. *Weather, Climate, and Society*, **10**, 537–560. <https://doi.org/10.1175/WCAS-D-17-0126.1>
- Dilling, L., R. Morss, and O. Wilhelmi, 2017: Learning to expect surprise: Hurricanes Harvey, Irma, Maria, and beyond. *Journal of Extreme Events*, **4**, 1771001 (8 pp). <https://doi.org/10.1142/S2345737617710014>
- Morss, R. E., J. L. Demuth, H. Lazrus, L. Palen, C. M. Barton, C. A. Davis, C. Snyder, O. V. Wilhelmi, K. M. Anderson, D. A. Ahijevych, J. Anderson, M. Bica, K. R. Fossell, J. Henderson, M. Kogan, K. Stowe, and J. Watts, 2017: Hazardous weather prediction and communication in the modern information environment. *Bulletin of the American Meteorological Society*, **98**, 2653–2674. <https://doi.org/10.1175/BAMS-D-16-0058.1>
- Fossell, K. R., D. Ahijevych, R. E. Morss, C. Snyder, and C. Davis, 2017: The practical predictability of storm tide from tropical cyclones in the Gulf of Mexico. *Monthly Weather Review*, **145**, 5103–5121. <https://doi.org/10.1175/MWR-D-17-0051.1>
- Cuite, C. L., R. L. Shwom, W. K. Hallman, R. E. Morss, and J. L. Demuth, 2017: Improving coastal storm evacuation messages. *Weather, Climate, and Society*, **9**, 155–170. <https://doi.org/10.1175/WCAS-D-16-0076.1>
- Demuth, J. L., R. E. Morss, J. K. Lazo, and C. Trumbo, 2016: The effects of past hurricane experiences on evacuation intentions through risk perception and efficacy beliefs: A mediation analysis. *Weather, Climate, and Society*, **8**, 327–344. <https://doi.org/10.1175/WCAS-D-15-0074.1>
- Anderson, J., M. Kogan, M. Bica, L. Palen, K. Anderson, K. Stowe, R. Morss, J. Demuth, H. Lazrus, O. Wilhelmi, and J. Henderson, 2016: Far far away in Far Rockaway: Responses to risks and impacts during Hurricane Sandy through first-person social media narratives. *Proceedings of the 13th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2016)*, Rio de Janeiro, Brazil. http://idl.iscram.org/files/jenningsanderson/2016/1388_JenningsAnderson_etal2016.pdf
- Morss, R. E., K. J. Mulder, J. K. Lazo, and J. L. Demuth, 2016: How do people perceive, understand, and anticipate responding to flash flood risks and warnings? Results from a public survey in Boulder, Colorado, USA. *Journal of Hydrology*, **541**, 649–664. <https://doi.org/10.1016/j.jhydrol.2015.11.047>
- Bostrom, A., R. E. Morss, J. K. Lazo, J. L. Demuth, H. Lazrus, and R. Hudson, 2016: A mental models study of hurricane forecast and warning production, communication, and decision making. *Weather, Climate, and Society*, **8**, 111–129. <https://doi.org/10.1175/WCAS-D-15-0033.1>
- Morss, R. E., J. L. Demuth, J. K. Lazo, K. Dickinson, H. Lazrus, and B. H. Morrow, 2016: Understanding public hurricane evacuation decisions and responses to forecast and warning messages. *Weather and Forecasting*, **31**, 395–417. <https://doi.org/10.1175/WAF-D-15-0066.1>
- Lazrus, H., R. E. Morss, J. L. Demuth, A. Bostrom, and J. K. Lazo, 2016: “Know what to do if you encounter a flash flood”: Mental models analysis for improving flash flood risk communication and public decision making. *Risk Analysis*, **36**, 411–427. <https://doi.org/10.1111/risa.12480>
- Morss, R. E., J. L. Demuth, A. Bostrom, J. K. Lazo, and H. Lazrus, 2015: Flash flood risks and warning decisions in Boulder, Colorado: A mental models study of forecasters, public officials, and media broadcasters. *Risk Analysis*, **35**, 2009–2028. <https://doi.org/10.1111/risa.12403>

- Lazo, J. K., A. Bostrom, R. E. Morss, J. L. Demuth, and H. Lazrus, 2015: Factors affecting hurricane evacuation intentions. *Risk Analysis*, **35**, 1837–1857. <https://doi.org/10.1111/risa.12407>
- Peachey, J. A., D. M. Schultz, R. Morss, P. J. Roebber, and R. Wood, 2013: How forecasts expressing uncertainty are perceived by UK students. *Weather*, **68**, 176–181. <https://doi.org/10.1002/wea.2094>
- Demuth, J. L., R. E. Morss, J. K. Lazo, and D. C. Hilderbrand, 2013: Improving communication effectiveness of weather risk information on the NWS point-and-click webpage. *Weather and Forecasting*, **28**, 711–726. <https://doi.org/10.1175/WAF-D-12-00118.1>
- Wilhelmi, O. V., and R. E. Morss, 2013: Integrated analysis of societal vulnerability in an extreme precipitation event: a Fort Collins case study. *Environmental Science and Policy*, **26**, 49–62. <https://doi.org/10.1016/j.envsci.2012.07.005>
- Demuth, J. L., R. E. Morss, B. Hearn Morrow, and J. K. Lazo, 2012: Creation and communication of hurricane risk information. *Bulletin of the American Meteorological Society*, **93**, 1133–1145. <https://doi.org/10.1175/BAMS-D-11-00150.1>
- Stewart, A. E., J. K. Lazo, R. E. Morss, and J. L. Demuth, 2012: The relationship of weather salience with the perceptions and uses of weather information in a nationwide sample of the United States. *Weather, Climate, and Society*, **4**, 172–189. <https://doi.org/10.1175/WCAS-D-11-00033.1>
- Lazrus, H., B. H. Morrow, R. E. Morss, and J. K. Lazo, 2012: Vulnerability beyond stereotypes: Context and agency in hurricane risk communication. *Weather, Climate, and Society*, **4**, 103–109. <https://doi.org/10.1175/WCAS-D-12-00015.1>
- Morss, R. E., O. V. Wilhelmi, G. A. Meehl, and L. Dilling, 2011: Improving societal outcomes of extreme weather in a changing climate: An integrated perspective. *Annual Review of Environment and Resources*, **36**, 1–25. <https://doi.org/10.1146/annurev-environ-060809-100145>
- Demuth, J. L., J. K. Lazo, and R. E. Morss, 2011: Exploring variations in people’s sources, uses, and perceptions of weather forecasts. *Weather, Climate, and Society*, **3**, 177–192. <https://doi.org/10.1175/2011WCAS1061.1>
- Brunet, G., M. Shapiro, B. Hoskins, M. Moncrieff, R. Dole, G. N. Kiladis, B. Kirtman, A. Lorenc, B. Mills, R. Morss, S. Polavarapu, D. Rogers, J. Schaake, and J. Shukla, 2010: Collaboration of the weather and climate communities to advance sub-seasonal to seasonal prediction. *Bulletin of the American Meteorological Society*, **91**, 1397–1406. <https://doi.org/10.1175/2010BAMS3013.1>
- Morss, R. E., and M. H. Hayden, 2010: Storm surge and “certain death”: Interviews with Texas coastal residents following Hurricane Ike. *Weather, Climate, and Society*, **2**, 174–189. <https://doi.org/10.1175/2010WCAS1041.1>
- Morss, R. E., J. K. Lazo, and J. L. Demuth, 2010: Examining the use of weather forecasts in decision scenarios: Results from a U.S. survey with implications for uncertainty communication. *Meteorological Applications*, **17**, 149–162. <https://doi.org/10.1002/met.196>
- Morss, R. E., 2010: Interactions among flood predictions, decisions, and outcomes: A synthesis of three cases. *Natural Hazards Review*, **11**, 83–96. [https://doi.org/10.1061/\(ASCE\)NH.1527-6996.0000011](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000011)
- Morss, R. E., C. Snyder, and R. Rotunno, 2009: Spectra and predictability in a quasigeostrophic model. *Journal of the Atmospheric Sciences*, **66**, 3115–3130. <https://doi.org/10.1175/2009JAS3057.1>
- Lazo, J. K., R. E. Morss, and J. L. Demuth, 2009: 300 billion served: Sources, perceptions, uses, and values of weather forecasts. *Bulletin of the American Meteorological Society*, **90**, 785–798. <https://doi.org/10.1175/2008BAMS2604.1>
- Morss, R. E., J. L. Demuth, and J. K. Lazo, 2008: Communicating uncertainty in weather forecasts: A

- survey of the U.S. public. *Weather and Forecasting*, **23**, 974–991.
<https://doi.org/10.1175/2008WAF2007088.1>
- Morss, R. E., and F. Zhang, 2008: Linking meteorological education to reality: A prototype undergraduate research study of public response to Hurricane Rita forecasts. *Bulletin of the American Meteorological Society*, **89**, 497–504. <https://doi.org/10.1175/BAMS-89-4-497>
- Morss, R. E., J. K. Lazo, B. G. Brown, H. E. Brooks, P. T. Ganderton, and B. N. Mills, 2008: Societal and economic research and applications for weather forecasts: Priorities for the North American THORPEX program. *Bulletin of the American Meteorological Society*, **89**, 335–346.
<https://doi.org/10.1175/BAMS-89-3-335>
- Zhang, F., R. E. Morss, J. A. Sippel, T. K. Beckman, N. C. Clements, N. L. Hampshire, J. N. Harvey, J. M. Hernandez, Z. C. Morgan, R. M. Mosier, S. Wang, and S. D. Winkley, 2007: An in-person survey investigating public perceptions of and response to Hurricane Rita forecasts along the Texas Coast. *Weather and Forecasting*, **22**, 1177–1190. <https://doi.org/10.1175/2007WAF2006118.1>
- Morss, R. E., and E. Wahl, 2007: An ethical analysis of prediction and decision making: The case of the Red River flood of 1997. *Environmental Hazards*, **7**, 342–352.
<https://doi.org/10.1016/j.envhaz.2007.09.004>
- Demuth, J. L., E. Grunfest, R. E. Morss, S. Drobot, and J. K. Lazo, 2007: Weather and Society * Integrated Studies (WAS*IS): Building a community for integrating meteorology and social science. *Bulletin of the American Meteorological Society*, **88**, 1729–1737.
<https://doi.org/10.1175/BAMS-88-11-1729>
- Morss, R. E., and F. M. Ralph, 2007: Use of information by National Weather Service forecasters and emergency managers during CALJET and PACJET-2001. *Weather and Forecasting*, **22**, 539–555.
<https://doi.org/10.1175/WAF1001.1>
- Hacker, J., J. Hansen, J. Berner, Y. Chen, G. Eshel, G. Hakim, S. Lazarus, S. Majumdar, R. Morss, A. Poje, V. Sheremet, Y. Tang, and C. Webb, 2005: Future scientific directions: Predictability. *Bulletin of the American Meteorological Society*, **86**, 1733–1737.
- Downton, M. W., R. E. Morss, O. V. Wilhelmi, E. C. Grunfest, and M. L. Higgins, 2005: Interactions between scientific uncertainty and flood management decisions: Two case studies in Colorado. *Global Environmental Change Part B: Environmental Hazards*, **6**, 134–146.
<https://doi.org/10.1016/j.hazards.2006.05.003>
- Morss, R. E., O. V. Wilhelmi, M. W. Downton, and E. Grunfest, 2005: Flood risk, uncertainty, and scientific information for decision-making: Lessons from an interdisciplinary project. *Bulletin of the American Meteorological Society*, **86**, 1593–1601. <https://doi.org/10.1175/BAMS-86-11-1593>
- Morss, R. E., and W. H. Hooke, 2005: The outlook for U.S. meteorological research in a commercializing world: Fair early, but clouds moving in? *Bulletin of the American Meteorological Society*, **86**, 921–936. <https://doi.org/10.1175/BAMS-86-7-921>
- Morss, R. E., K. A. Miller, and M. S. Vasil, 2005: A systematic economic approach to evaluating public investment in observations for weather forecasting. *Monthly Weather Review*, **133**, 374–388.
<https://doi.org/10.1175/MWR-2857.1>
- Morss, R. E., 2005: Problem definition in atmospheric science public policy: The example of observing system design for weather prediction. *Bulletin of the American Meteorological Society*, **86**, 181–191. <https://doi.org/10.1175/BAMS-86-2-181>
- Morss, R. E., and D. S. Battisti, 2004: Designing efficient observing networks for ENSO prediction. *Journal of Climate*, **17**, 3074–3089. [https://doi.org/10.1175/1520-0442\(2004\)017<3074:DEONFE>2.0.CO;2](https://doi.org/10.1175/1520-0442(2004)017<3074:DEONFE>2.0.CO;2)

- Morss, R. E., and D. S. Battisti, 2004: Evaluating observing requirements for ENSO prediction: Experiments with an intermediate coupled model. *Journal of Climate*, **17**, 3057–3073. [https://doi.org/10.1175/1520-0442\(2004\)017<3057:EORFEP>2.0.CO;2](https://doi.org/10.1175/1520-0442(2004)017<3057:EORFEP>2.0.CO;2)
- Kim, H. M., M. C. Morgan, and R. E. Morss, 2004: Evolution of analysis error and adjoint-based sensitivities: Implications for adaptive observations. *Journal of the Atmospheric Sciences*, **61**, 795–812. [https://doi.org/10.1175/1520-0469\(2004\)061<0795:EOAEAA>2.0.CO;2](https://doi.org/10.1175/1520-0469(2004)061<0795:EOAEAA>2.0.CO;2)
- Corazza, M., E. Kalnay, D. J. Patil, S.-C. Yang, R. Morss, M. Cai, I. Szunyogh, B. R. Hunt, and J. A. Yorke, 2003: Use of the breeding technique to estimate the structure of the analysis “errors of the day”. *Nonlinear Processes in Geophysics*, **10**, 233–243. [https://doi.org/10.1175/1520-0469\(2004\)061<0795:EOAEAA>2.0.CO;2](https://doi.org/10.1175/1520-0469(2004)061<0795:EOAEAA>2.0.CO;2)
- Pielke, Jr., R. A., et al. (including R. Morss), 2003: The USWRP workshop on the weather research needs of the private sector. *Bulletin of the American Meteorological Society*, **84**, ES53–ES67.
- Morss, R. E., and K. A. Emanuel, 2002: Influence of added observations on analysis and forecast errors: Results from idealized systems. *Quarterly Journal of the Royal Meteorological Society*, **128**, 285–321. <https://doi.org/10.1256/00359000260498897>
- Hamill, T. M., C. Snyder, and R. E. Morss, 2002: Analysis-error statistics of a quasi-geostrophic model using 3-dimensional variational assimilation. *Monthly Weather Review*, **130**, 2777–2790. [https://doi.org/10.1175/1520-0493\(2002\)130<2777:AESOAQ>2.0.CO;2](https://doi.org/10.1175/1520-0493(2002)130<2777:AESOAQ>2.0.CO;2)
- Morss, R. E., K. A. Emanuel, and C. Snyder, 2001: Idealized adaptive observation strategies for improving numerical weather prediction. *Journal of the Atmospheric Sciences*, **58**, 210–232. [https://doi.org/10.1175/1520-0469\(2001\)058<0210:IAOSFI>2.0.CO;2](https://doi.org/10.1175/1520-0469(2001)058<0210:IAOSFI>2.0.CO;2)
- Szunyogh, I., Z. Toth, R. E. Morss, S. Majumdar, B. Etherton, and C. H. Bishop, 2000: The effect of targeted dropsonde observations during the 1999 Winter Storm Reconnaissance Program. *Monthly Weather Review*, **128**, 3520–3537. [https://doi.org/10.1175/1520-0493\(2000\)128<3520:TEOTDO>2.0.CO;2](https://doi.org/10.1175/1520-0493(2000)128<3520:TEOTDO>2.0.CO;2)
- Hamill, T. M., C. Snyder, and R. E. Morss, 2000: A comparison of probabilistic forecasts from bred, singular-vector, and perturbed observation ensembles. *Monthly Weather Review*, **128**, 1835–1851. [https://doi.org/10.1175/1520-0493\(2000\)128<1835:ACOPFF>2.0.CO;2](https://doi.org/10.1175/1520-0493(2000)128<1835:ACOPFF>2.0.CO;2)
- Langland, R. H., Z. Toth, R. Gelaro, I. Szunyogh, M. A. Shapiro, S. Majumdar, R. E. Morss, G. D. Rohaly, C. Velden, N. Bond, and C. Bishop, 1999: The North Pacific Experiment (NORPEX-98): Targeted observations for improved North American weather forecasts. *Bulletin of the American Meteorological Society*, **80**, 1363–1384. [https://doi.org/10.1175/1520-0477\(1999\)080<1363:TNPENT>2.0.CO;2](https://doi.org/10.1175/1520-0477(1999)080<1363:TNPENT>2.0.CO;2)
- Szunyogh, I., Z. Toth, K. A. Emanuel, C. Bishop, J. Woolen, T. Marchok, R. E. Morss, and C. Snyder, 1999: Ensemble-based targeting experiments during FASTEX: The effect of dropsonde data from the Lear jet. *Quarterly Journal of the Royal Meteorological Society*, **125**, 3189–3217. <https://doi.org/10.1002/qj.49712556105>
- Kash, P. W., G. C. G. Waschewsky, R. E. Morss, L. J. Butler, and M. M. Francl, 1994: Competing C-Br and C-C bond fission following $^1[\pi(\text{O}), \pi^*(\text{C}=\text{O})]$ excitation in bromoacetone: Conformation dependence of nonadiabaticity at a conical intersection. *Journal of Chemical Physics*, **100**, 3463–3475. <https://doi.org/10.1063/1.466389>

Refereed Reports

- Morss, R. E., H. Lazrus, J. L. Demuth, and J. Henderson, 2022: *Improving probabilistic weather forecasts for decision making: A multi-method study of the use of forecast information in snow and*

- ice management at a major U.S. airport*. NCAR Technical Note NCAR/TN-573+STR, 43 pp.
- Morss, R. E., O. V. Wilhelmi, J. L. Demuth, and H. Lazrus, 2022: *Advancing interdisciplinary, actionable, and convergent research in the atmospheric and related sciences: Findings and recommendations from a project at the National Center for Atmospheric Research*. NCAR Technical Note NCAR/TN-572+STR, 47 pp.
- National Academies of Sciences, Engineering, and Medicine (N. M. Campbell, R. E. Morss, M. K. Lindell, and M. Gutmann), 2021: *Emergency Evacuation and Sheltering During the COVID-19 Pandemic*. The National Academies Press, 33 pp. <https://doi.org/10.17226/26084>
- National Research Council Committee on Progress and Priorities of U.S. Weather Research and Research-to-Operations Activities (including R. E. Morss), 2010: *When Weather Matters: Science and Service to Meet Critical Societal Needs*. The National Academies Press, 208 pp. <https://doi.org/10.17226/12888>
- National Research Council Committee on Estimating and Communicating Uncertainty in Weather and Climate Forecasts (including R. E. Morss), 2006: *Completing the Forecast: Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts*. The National Academies Press, 124 pp. <https://doi.org/10.17226/11699>

Non-refereed Reports and Other Documents

- VORTEX-SE Scientific Steering Committee (including R. E. Morss), 2020: *VORTEX-SE Science Assessment*. Report to NOAA, 65 pp.
- Cuite, C., R. E. Morss, and J. Demuth: Hurricanes are deadly far from the sea. How do we make the risks seem real? Perspective, *Washington Post*, 12 Sept 2018.
- Morss, R. E., J. M. Done, H. Lazrus, E. Towler, and M. R. Tye, 2018: Assessing and communicating uncertainty in decadal climate predictions: Connecting predictive capacity to stakeholder needs. *Variations*, summer 2018.
- Morss, R. E., C. L. Cuite, and J. L. Demuth, 2018: Motivating hurricane evacuation: Do scary messages help? *Bulletin of the American Meteorological Society*, **99**, 1319–1321.
- VORTEX-SE Scientific Steering Committee (K. Laws, R. Morss, Y. Richardson, Co-chairs; E. Rasmussen, Project Manager), 2018: *VORTEX-SE Science Plan*. NOAA National Severe Storms Laboratory, 68 pp.
- Cuite, C., and R. E. Morss: What to tell people to get them to evacuate before a hurricane hits. Perspective, *Washington Post* Outlook section, 8 Sept 2017 (front page in Sunday print version).
- Morss, R. E., 2017: Managing dynamic flood risks in an urbanizing world. *UGEC (Urbanization and Global Environmental Change) Viewpoints* blog. <https://ugecviewpoints.wordpress.com/2017/02/21/managing-dynamic-flood-risks-in-an-urbanizing-world/>
- Jones, S., B. Golding, and the HIWeather Task Team (including R. E. Morss), 2014: *HIWeather Implementation Plan: A research activity on High Impact Weather within the World Weather Research Programme*. WMO Report, 87 pp.
- Demuth, J., J. K. Lazo, and R. E. Morss, 2012: *Assessing and improving the NWS point-and-click webpage forecast information*. NCAR Technical Note NCAR/TN-493+STR, 373 pp.
- Morss, R. E., and O. V. Wilhelmi, 2011: Extreme weather and society: An integrated perspective. *Weather and Society Watch*, **5** (3), 4–5.
- Morss, R. E., and M. Hayden, 2010: Storm surge and “certain death”: Coastal Texans respond to

- Hurricane Ike. *Bulletin of the American Meteorological Society*, **91**, 1621–1622.
- Morss, R. E., 2007: Severe Weather. *Heads Up! Early Warning Systems for Climate, Water, and Weather*, M. H. Glantz, Ed., 69–74.
- Glantz, M. H., L. M. Cavanaugh, R. E. Morss, E. Grunfest, and J. Tribbia, 2006: Will recent “super” storms lead to seasons of superstorms? *Bulletin of the American Meteorological Society*, **87**, 1173–1174.
- Morss, R. E., 2005: Science fiction, science fact, and society: Meteorology in recent popular film and fiction. *Bulletin of the American Meteorological Society*, **86**, 691–694.
- Shapiro, M. A., A. J. Thorpe, and the THORPEX International Science Steering Committee (including R. E. Morss), 2004: *THORPEX International Science Plan*. WMO Technical Document 1248, 57 pp.
- Morss, R. E., 2002: Review of “Living on the Edge of the Gulf: The West Florida and Alabama Coast” by D. M. Bush, W. J. Neal, O. H. Pilkey, et al.. *Bulletin of the American Meteorological Society*, **83**, 1505–1507.

Non-refereed Conference Publications

- Morss, R. E., J. K. Lazo, and J. Demuth: Understanding the use of forecast uncertainty information in decision making: Results from a survey. Preprints, *Fourth AMS Symposium on Policy and Socioeconomic Research*, Jan 2009, Phoenix, AZ.
- Brown, B. G., R. E. Morss, J. K. Lazo, H. E. Brooks, P. T. Ganderton, and B. N. Mills: Defining societal and economic research and applications (SERA) priorities related to developments in numerical weather prediction and THORPEX. Preprints, *18th AMS Conference on Numerical Weather Prediction*, Jun 2007, Park City, UT.
- Demuth, J., R. E. Morss, J. K. Lazo, and A. E. Stewart: Assessing how the U.S. public understands and uses weather forecast uncertainty information. Preprints, *16th AMS Conference on Applied Climatology*, Jan 2007, San Antonio, TX.
- Mills, B., R. Morss, J. Lazo, H. Brooks, B. Brown, and P. Ganderton: A societal and economic research and applications agenda for the North American THORPEX programme. Proceedings, *Second THORPEX International Science Symposium*, Dec 2006, Landshut, Germany.
- Mills, B., and R. Morss: What is a high impact weather forecast? Proceedings, *First THORPEX International Science Symposium*, Dec 2004, Montreal, Canada.
- Morss, R. E., and K. A. Miller: Evaluating the optimal level and mix of public investment in observations for weather prediction: An economic approach. Proceedings, *First THORPEX International Science Symposium*, Dec 2004, Montreal, Canada.
- Zia, A., R. Morss, and J. Lazo: Societal value of improved Quantitative Precipitation Forecasts: A synthesis. Proceedings, *First THORPEX International Science Symposium*, Dec 2004, Montreal, Canada.
- Davis, C., B. G. Brown, R. Bullock, M. Chapman, K. Manning, R. Morss, and A. Takacs: Verification techniques appropriate for cloud-resolving NWP models. Preprints, *20th AMS Conference on Weather Analysis and Forecasting / 16th Conference on Numerical Weather Prediction*, Jan 2004, Seattle, WA.
- Bullock, R., B. G. Brown, C. A. Davis, M. Chapman, K. W. Manning, and R. Morss: An object-oriented approach to the verification of Quantitative Precipitation Forecasts: Part I-Methodology. Preprints, *17th AMS Conference on Probability and Statistics in the Atmospheric Sciences*, Jan 2004, Seattle,

WA.

Chapman, M., R. Bullock, B. G. Brown, C. A. Davis, K. W. Manning, R. Morss, and A. Takacs: An object oriented approach to the verification of Quantitative Precipitation Forecasts: Part II- Examples. Preprints, *17th AMS Conference on Probability and Statistics in the Atmospheric Sciences*, Jan 2004, Seattle, WA.

Morss, R. E.: Assessing the needs of users of warm season quantitative precipitation forecasts in Colorado. Preprints, *AMS Symposium on the Impacts of Water Variability: Benefits and Challenges*, Feb 2003, Long Beach, CA.

Downton, M. W., H. Cullen, R. Morss, O. Wilhelmi, and B. Rajagopalan: Problems of climate variability and uncertainty in flood hazard planning for the Colorado Front Range. Preprints, *AMS Symposium on the Impacts of Water Variability: Benefits and Challenges*, Feb 2003, Long Beach, CA.

Toth, Z., I. Szunyogh, C. Bishop, S. Majumdar, R. Morss, J. Moskaitis, D. Reynolds, D. Weinbrenner, D. Michaud, N. Surgi, M. Ralph, J. Parrish, J. Talbot, J. Pavone, and S. Lord: Adaptive observations at NCEP: Past, present, and future. Preprints, *AMS Symposium on Observations, Data Assimilation, and Probabilistic Prediction*, Jan 2002, Orlando, FL.

Morss, R. E., and D. S. Battisti: Observing networks for ENSO prediction: Experiments with a simplified model. Preprints, *5th AMS Symposium on Integrated Observing Systems*, Jan 2001, Albuquerque, NM.

Kim, H. M., M. C. Morgan, and R. E. Morss: Estimation of uncertainties in atmospheric data assimilation using singular vectors. Preprints, *14th AMS Conference on Numerical Weather Prediction*, Jan 2001, Albuquerque, NM.

Toth, Z., I. Szunyogh, C. Bishop, S. Majumdar, R. Morss, and S. Lord: The use of targeted observations in operational numerical weather forecasting. Preprints, *5th AMS Symposium on Integrated Observing Systems*, Jan 2001, Albuquerque, NM.

Toth, Z., I. Szunyogh, S. Majumdar, R. Morss, B. Etherton, C. Bishop, S. Lord, M. Ralph, O. Persson, and Z.-X. Pu: Targeted observations at NCEP: Toward an operational implementation. Preprints, *4th AMS Symposium on Integrated Observing Systems*, Jan 2000, Long Beach, CA.

Toth, Z., I. Szunyogh, S. Majumdar, R. Morss, B. Etherton, C. Bishop, and S. Lord: The 1999 Winter Storm Reconnaissance program. Preprints, *13th AMS Conference on Numerical Weather Prediction*, Sep 1999, Denver, CO.

Szunyogh, I., Z. Toth, S. Majumdar, R. Morss, C. Bishop, and S. Lord: Ensemble-based targeted observations during NORPEX. Preprints, *3rd AMS Symposium on Integrated Observing Systems*, Jan 1999, Dallas, TX.

Morss, R. E., K. A. Emanuel, and C. Snyder: Adaptive observations in a quasi-geostrophic model. Preprints, *12th AMS Conference on Numerical Weather Prediction*, Jan 1998, Phoenix, AZ.

Toth, Z., I. Szunyogh, K. Emanuel, C. Snyder, J. Woollen, W. Wu, T. Marchok, R. Morss and C. Bishop: Ensemble-based targeted observations during FASTEX. Preprints, *12th AMS Conference on Numerical Weather Prediction*, Jan 1998, Phoenix, AZ.

Emanuel, K. A., E. N. Lorenz, and R. E. Morss: Adaptive observations. Preprints, *11th AMS Conference on Numerical Weather Prediction*, Aug 1996, Norfolk, VA.

INVITED MAJOR PRESENTATIONS

Jan 2020 NSF Natural Disaster Resiliency Event on Capitol Hill, Washington, DC

Jan 2019 American Meteorological Society Symposium on Tropical Cyclones and Extreme Monsoon Precipitation: Prediction, Impacts, and Communication, Phoenix, AZ

Jan 2019 Core Science Keynote at American Meteorological Society Symposium on Societal Applications: Policy, Research and Practice, Phoenix, AZ

Jun 2018 University of South Florida Weather, Climate, and Society Research Experiences for Undergraduates program / West Central Florida Chapter of the American Meteorological Society

Mar 2018 University of Oklahoma, Norman, OK

Nov 2017 University of Reading, Reading, UK

Sep 2017 Message Impossible? Communicating Weather Information in the Digital Age (Royal Meteorological Society National Meeting), London, UK

Oct 2016 National Academy of Sciences Committee on Advancing Social and Behavioral Science Research and Application Within the Weather Enterprise, Boulder, CO

Apr 2016 Rutgers University, New Brunswick, NJ

Mar 2016 Columbia University Initiative on Extreme Weather and Climate, New York, NY

Jun 2015 Using ECMWF's Forecasts 2015: Quantifying and Communicating Uncertainty, Reading, UK

Mar 2015 National Research Council Committee on Developing a U.S. Research Agenda to Advance Subseasonal to Seasonal Forecasting, Boulder, CO

Nov 2014 UK Met Office, Exeter, UK

Oct 2014 University of Utah, Salt Lake City, UT

Jun 2014 International High Impact Weather Project Workshop, Silver Spring, MD

Jun 2013 Studies of Precipitation, flooding, and Rainfall Extremes Across Disciplines Workshop, Fort Collins, CO

Apr 2013 NSF Atmospheric and Geospace Sciences Post-Doctoral Fellowship Workshop, Boulder, CO

Apr 2013 Colorado State University, Fort Collins, CO

Mar 2013 WWRP/THORPEX Workshop on proposed High Impact Weather Project, Karlsruhe, Germany

Mar 2013 NCAR Science Day at National Science Foundation, Arlington, VA, Nov 2012

Aug 2012 Workshop on Enhancing Diversity in Climate Change Science and Applications: From Models to Adaptation, Boulder, CO

Jun 2012 NCAR Advanced Study Program Summer Colloquium on The Weather-Climate Intersection: Advances and Challenges, Boulder, CO

Aug 2011 National Research Council Committee on the Assessment of the NWS's Modernization Program, Boulder, CO

Jun 2011 California Extreme Precipitation Symposium, Davis, CA

May 2011 NOAA/NWS Space Weather Prediction Center, Boulder, CO

Apr 2011 NOAA/NSF Workshop on Risk Communications for Natural Hazards, Miami, FL

Dec 2010 Penn Symposium on Fostering and Financing Investments in Prevention and Protection, Wharton Risk Management and Decision Processes Center, Philadelphia, PA

Dec 2010 University of Colorado Center for Science and Technology Policy Research, Boulder, CO

Oct 2010 AMS/AGU Heads and Chairs meeting, Boulder, CO

Aug 2010 National Unified Operational Prediction Capability Workshop, Boulder, CO

May 2010 Societal Applications for Advanced Readiness Workshop, Salt Lake City, UT

Apr 2010 The Pennsylvania State University, State College, PA

Feb 2010 EMC/MMM/DTC Joint Hurricane Science Workshop, Boulder, CO

Mar 2009 Lamont-Doherty Earth Observatory, Palisades, NY

Mar 2009 Columbia University Center for Research on Environmental Decisions, New York, NY

Feb 2009 University of Wisconsin Climate, People, and the Environment Program, Madison, WI

Oct 2008 Policy Sciences Annual Institute, Boulder, CO

Sep 2008 University of Utah, Salt Lake City, UT
 Apr 2008 NOAA Earth System Research Laboratory, Boulder, CO
 Apr 2008 Workshop for the Creation of a National Capability for Conducting OSEs/OSSEs for the
 Ocean, Miami, FL
 Apr 2008 University of Colorado Center for Science and Technology Policy Research, Boulder, CO
 Feb 2008 National Weather Service Eastern Region MIC/HIC Meeting, Charlotte, NC
 Dec 2007 NCAR Advanced Study Program, Boulder, CO
 Jan 2007 Special Joint Session on Communicating Uncertainty, American Meteorological Society
 Annual Meeting, San Antonio, TX
 Dec 2006 Public Policy Institute of California, San Francisco, CA
 Jun 2005 THORPEX Workshop on a Pacific Predictability Campaign, Seattle, WA
 May 2005 NCAR / Inter-American Institute Program Planning Workshop, Boulder, CO
 Apr 2005 National Science Foundation, Arlington, VA
 Feb 2005 Cooperative Institute for Research in the Atmosphere, Fort Collins, CO
 Nov 2004 Purdue University, West Lafayette, IN
 Oct 2004 Santa Fe Institute, Santa Fe, NM
 Aug 2004 USWRP Open Workshop on the Implementation of THORPEX, Boulder, CO
 Oct 2003 Texas A&M University, College Station, TX
 Sep 2003 Columbia University, New York, NY
 Aug 2003 North American THORPEX Workshop, College Park, MD
 Dec 2002 THORPEX International Science Plan Workshop, Monterey, CA
 Oct 2002 Mesoscale Alpine Program Societal Impact Workshop, Bad Tölz, Germany
 Apr 2001 National Center for Atmospheric Research, Boulder, CO
 Nov 1999 University of Washington, Seattle, WA
 May 1999 University of Oklahoma, Norman, OK
 Mar 1999 University of Wisconsin, Madison, WI
 Jan 1999 National Centers for Environmental Prediction, Camp Springs, MD
 Nov 1998 Naval Research Laboratory, Monterey, CA