

Martha E Durr

Nebraska State Climatologist

Professor, School of Natural Resources University of Nebraska -  
Lincoln

3310 Holdrege Street

Lincoln, Nebraska 68583-0997

402.472.6711

mshulski3@unl.edu

## EDUCATION

---

- 1999 to 2002 PhD in Soil Science / Climatology  
Title >> Climatological characterization of wind and snow and  
assessing the use of living snow fences in Minnesota.  
Department of Soil, Water and Climate, University of Minnesota
- 1996 to 1998 M.S. in Agricultural Meteorology  
Title >>The penetration of photosynthetically active and ultraviolet  
radiation in vegetative canopies.  
Department of Agronomy, University of Nebraska-Lincoln
- 1992 to 1996 B.S. in Meteorology  
Department of Marine, Earth and Atmospheric Sciences, North Carolina  
State University

## PROFESSIONAL EXPERIENCE

---

- 2021-present Director, Nebraska State Climate Office and State  
Climatologist Professor  
School of Natural Resources, University of Nebraska-Lincoln
- 2016-2021 Director, Nebraska State Climate Office and State  
Climatologist Associate Professor  
School of Natural Resources, University of Nebraska-Lincoln
- 2013-2016 Director, NOAA High Plains Regional Climate Center  
and Associate Professor  
School of Natural Resources, University of Nebraska-Lincoln
- 2009 - 2013 Director, NOAA High Plains Regional Climate Center and Assistant  
Professor School of Natural Resources, University of Nebraska-  
Lincoln
- 2002- 2009 Research Professional  
Alaska Climate Research Center, Geophysical Institute, University of  
Alaska Fairbanks
- 1999 - 2002 Graduate Research Assistant  
Department of Soil, Water and Climate, University of Minnesota

1997-1998 Graduate Research Assistant  
Climate and Bio-Atmospheric Sciences Group, Department of Agronomy,  
University of Nebraska-Lincoln

#### GRANTS AWARDED

---

2022 Nebraska Mesonet (PI), Nebraska Department of Natural Resources, \$75,000.

2021 Nebraska Mesonet (PI), Nebraska Department of Natural Resources, \$75,000.

2020 Nebraska Mesonet (PI), Nebraska Department of Natural Resources, \$75,000.  
Tribal College Student Climate Change Research (Co-PI), USDA NIFA TCRGP,  
\$27,900.  
Extreme Weather Impacts on Native Prairie Restoration (Co-PI), USDA NIFA  
TCRGP, \$87,009.

2019 Nebraska Mesonet (PI), Nebraska Department of Natural Resources,  
\$75,000.

2018 Nebraska Mesonet (PI), Nebraska Department of Natural Resources,  
\$75,000.  
Adaptive Capacity and Resilience in the New Arctic (Co-PI), National Science  
Foundation, \$99,864.  
An Integrated Approach to Improved Wind Forecasting in Nebraska (PI),  
Nebraska Center for Energy Science Research, \$69,998.

2017 Nebraska Mesonet (PI), Nebraska Department of Natural Resources,  
\$75,000. Risk Management Education for Livestock and Forage Producers  
(Co-PI), U.S. Department of Agriculture, \$98,439.  
An Integrated Approach to Improved Wind Forecasting in Nebraska (PI),  
Nebraska Center for Energy Science Research, \$54,998.

2016 Nebraska Mesonet (PI), Nebraska Department of Natural Resources, \$150,000.  
Increasing the Capacity for Municipal Climate Adaptation Planning in the  
Lower Missouri River Basin States (PI), National Oceanic and Atmospheric  
Administration,  
\$207,842.

2015 Nebraska Mesonet (PI), Nebraska Department of Natural Resources, \$150,000.  
Regional Climate Services Support in the High Plains Region: The High Plains  
Regional Climate Center (PI), National Oceanic and Atmospheric Administration,  
\$393,782.

- 2013 Statewide Weather Monitoring for Nebraska (PI), Nebraska Department of Natural Resources, \$300,000.  
Regional Climate Services Support in the High Plains Region: The High Plains Regional Climate Center (PI), National Oceanic and Atmospheric Administration, \$1,218,274.  
Center for Integrated Earth Observation and Modeling (CIEOM): Needs, Strategic Plans, and Funding Outlooks (Co-PI), University of Nebraska Lincoln, \$10,000.  
Regional Climate Services Support in the High Plains Region: The High Plains Regional Climate Center (PI), National Oceanic and Atmospheric Administration, \$312,068.  
Soybean Producer Use of Soywater (Co-PI), Nebraska Soybean Board, \$6,000. Developing "CornSoyWater" - A Web-based Irrigation Decision Aid for Corn and Soybeans in Nebraska (Co-PI), \$122,000.
- 2012 Enhancing Decision Support for Drought Risk in the United States: The Drought Risk Atlas (Co-PI), National Oceanic and Atmospheric Administration, \$273,822.
- 2011 Central Great Plains Climate Change Education Partnership (Co-PI), National Science Foundation, \$211,985.  
Useful to Usable (U2U): Transforming Climate Variability and Change Information for Cereal Crop Producers (Co-PI), U.S. Department of Agriculture, Agriculture and Food Research Initiative, \$5,000,000.
- 2010 Regional Climate Services Support in the High Plains Region: The High Plains Regional Climate Center (PI), National Oceanic and Atmospheric Administration, \$1,286,475.  
Educational Outreach in Nebraska Through Weather Camp (PI), National Oceanic and Atmospheric Administration, \$4,300.
- 2009 Beaufort and Chukchi Sea Mesoscale Meteorology Model Study (Co-PI), Minerals Management Service, U.S. Department of the Interior, \$1,400,000.
- 2006 Beaufort Sea Mesoscale Meteorology Model Study (Co-PI), Minerals Management Service, U.S. Department of the Interior, \$340,000.  
Climate change in the Koyukuk and Yukon Flats Regions of Alaska (Co-PI), Alaska Fish and Wildlife Service and University of Alaska Fairbanks, \$5,000.
- 2005 Quality Assurance of Weather Data and the Probability of Favorable Weather for Prescribed Fire in Alaska (Co-PI), Joint Fire Sciences Program, U.S. Forest Service \$75,000.  
Climate of the Coastal Zone of the Alaskan North Slope (PI), British Petroleum Corporation, \$10,000.

- 2001 Implementation of Climatological Summaries for Snow Fence Design Training and Web Site Development (PI), Minnesota Department of Transportation, \$17,200.

## PUBLICATIONS

---

### Peer-Reviewed Articles and Reports

1. Frankson, R. K.E. Kunkel, L.E. Stevens, M. Shulski, N.A. Umplett, C.J. Stiles, 2022: Nebraska State Climate Summary 2022. NOAA Technical Report NESDIS 150-NE. NOAA/NESDIS, Silver Spring, MD, 5 pp.
2. Frankson, R. K.E. Kunkel, L.E. Stevens, D.R. Easterling, M. Shulski, A. Akyuz, N.A. Umplett, C.J. Stiles, 2022: North Dakota State Climate Summary 2022. NOAA Technical Report NESDIS 150-NE. NOAA/NESDIS, Silver Spring, MD, 5 pp.
3. Frankson, R. K.E. Kunkel, L.E. Stevens, D.R. Easterling, X. Lin, M. Shulski, N.A. Umplett, C.J. Stiles, 2022: Kansas State Climate Summary 2022. NOAA Technical Report NESDIS 150-NE. NOAA/NESDIS, Silver Spring, MD, 5 pp.
4. Dai, S., M.D. Shulski, H. Yang, R. W. Elmore (2021). Evaluation of Long-Term Degree-Days Estimated with Several Methods for Corn in Nebraska, USA. *Theoretical and Applied Climatology*. *In Press*.
5. Jalalzadeh Fard, B., R. Mahmood, M. Hayes, C. Rowe, A. Abadi, M. Shulski, S. Medcalf, R. Lookadoo, J. Bell (2021). Mapping heat vulnerability index based on different urbanization levels in Nebraska, USA. *GeoHealth*, 5, e2021GH000478.
6. Shulski, M.D. and D. DiLeo, 2020. What is Happening to our Common Home? Reflections from One Catholic Climate Scientist and One Theological Ethicist. *Journal of Moral Theology*. 9(1): 71-89.
7. Flanagan, P.X., R. Mahmood, N.A. Umplett, E. Haacker, C. Ray, W. Sorensen, M.D. Shulski, C.J. Stiles, D. Pearson, P. Fajman, 2020. A Hydrometeorological Assessment of the Historic 2019 Flood of Nebraska and Iowa. *Bulletin of the American Meteorological Society*. DOI 10.1175/BAMS-D-19-0101.1.
8. Boustead, B.M., M.D. Shulski, S.D. Hilberg, 2019. The Long Winter of 1880-1881. *Bulletin of the American Meteorological Society*.
9. Conant, R.T., D. Kluck, M. Anderson, A. Badger, B.M Boustead, J. Derner, L. Farris, M. Hayes, B. Livneh, S. McNeeley, D. Peck, M. D. Shulski, and V. Small, 2018. Northern Great Plains. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterline, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 941-986. doi:10.7930/NCA4.2018.CH22.
10. Shulski M.D., S. Cooper, G. Roebke, A. Dutcher, 2018. The Nebraska Mesonet: Technical overview of an automated state weather network. *Journal of Oceanic and Atmospheric Technology*.
11. Hu, Q., Z. Tang, M.D. Shulski, N. Umplett, T. Abdel-Monem, F. Uhlarik, 2018. An examination of Midwestern US cities' preparedness for climate change and extreme hazards. *Natural Hazards*, doi:10.1007/s11069-018-3420-y.
12. Frankson, R., K. Kunkel, L. Stevens and M. Shulski, 2017: Nebraska State Climate Summary. NOAA Technical Report NESDIS 149-NE, 4 pp.
13. Frankson, R., K. Kunkel, L. Stevens, D. Easterling, M. Shulski, and A. Akyuz,

- 2017: North Dakota State Climate Summary. NOAA Technical Report NESDIS 149-ND, 4 pp
14. Frankson, R., K. Kunkel, L. Stevens, D. Easterling, X. Lin, and M. Shulski, 2017: Kansas State Climate Summary. NOAA Technical Report NESDIS 149-KS, 4 pp
  15. Wang, T., T.E. Franz, R. Li, J. You, M.D. Shulski, C. Ray, 2017. Evaluating Climate and Soil Effects on Regional Soil Moisture Spatial Variability Using EOFs. *Water Resources Research*, 53, 4022-4035, doi:10.1002/2017WR020642.
  16. Wang T., T.E. Franz, J. You, M.D. Shulski, C. Ray, 2017. Evaluating Controls of Soil Properties and Climatic Conditions on the Use of an Exponential Filter for Converting Near Surface to Root Zone Soil Moisture Contents, *Journal of Hydrology*, 548, 683-696, doi:10.1016/2017.03.055.
  17. Aegerter C., J. Wang, C. Ge, S. Irmak, R. Oblesby, B. Wardlow, H. Yang, J. You, M.D. Shulski, 2017, Mesoscale Modeling of the Meteorological Impacts of Irrigation During the 2012 Central Plains Drought, *Journal of Applied Meteorology and Climatology*, 56, 1259-1283, doi:10.1175/JAMC-D-16-0292.1.
  18. Wilhite D.A., K.C. Morrow, M.D. Shulski, 2017. Changes in Arctic Climate and Central U.S. Weather Patterns: Is There a Link?, *Bulletin of the American Meteorological Society*, doi: 10.1175/BAMS-D-16-0110.
  19. Zhang J., F. Liu, W. Tao, J. Krieger, M.D. Shulski, X. Zhang, 2016. Mesoscale Climatology and Variation of Surface Winds over the Chukchi-Beaufort Coastal Areas, *Journal of Climate*, 29, 2721-2739.
  20. Wang T., T.E. Franz, W. Yue, J. Szilagyi, V.A. Zlotnik, J. You, X. Chen, M.D. Shulski, A. Young, 2016. Feasibility analysis of using inverse modeling for estimating natural groundwater recharge from a large-scale soil moisture monitoring network, *Journal of Hydrology*, 533, 250-265.
  21. Wang J., A.L. Kessner, C. Aegerter, A. Sharma, L. Judd, B. Wardlow, J. You, M.D. Shulski, S. Irmak, A. Kilic, J. Zeng, 2016. A multi-sensor view of the 2012 central Plains drought from space, *Frontiers in Environmental Science*, 10.3389/fenvs.2016.00045.
  22. Boustead B.E.M., S. Hilberg, M.D. Shulski, and K.G. Hubbard, 2015. The Accumulated Winter Season Severity Index (AWSSI), *Journal of Applied Meteorology and Climatology*, 54, 1693-1712.
  23. Shulski, M.D., W. Baule, C. Stiles, and N.A. Umphlett, 2015. Investigation of Nebraska's variable and changing climate: A Historical Perspective. *Great Plains Research*, 25 (2) 109-120.
  24. Prokopy L.S., C.E. Hart, R. Massey, M. Widhalm, J. Andresen, J. Angel, T. Blewett, O.C. Doering, R. Elmore, B.M. Gramig, P. Guinan, B.L. Hall, A. Jain, C.L. Knutson, M.C. Lemos, L.W. Morton, D. Niyogi, R. Power, M.D. Shulski, C. X. Song, E.S. Takle, and D. Today, 2015. Improving team communication for enhanced delivery of agro-climate decision support tools. *Agricultural Systems*, 138, 31-37.
  25. Dai, S., M.D. Shulski, K.G. Hubbard, and E.S. Takle, 2015. A spatiotemporal analysis of Midwest US temperature and precipitation trends during the growing season from 1980 to 2013. *International Journal of Climatology*, 10.1002/joc.4354.
  26. Wang, T., T.E. Franz, V.A. Zlotnik, J. You, and M.D. Shulski, 2015. Investigating soil controls on soil moisture spatial variability: Numerical simulations and field observations. *Journal of Hydrology*, 525, 576-586.
  27. C.J., Umphlett, N., Rattling Leaf, Sr., J., Shulski, M.D., Kluck, D., Hayes, M., and McNutt, C. 2015. Improving climate resiliency in tribal communities: Partnering for change in the Missouri river basin. *Water Resources Impact*. 17(4):15-17.

28. Baule W., and M.D. Shulski, 2014. Climatology and trends of wind speed in the Beaufort/Chukchi Sea coastal region from 1979 - 2009. *International Journal of Climatology*, 34(8), 2819-2833.
29. Coop, A.J., K.G. Hubbard, M.D. Shulski, J. You, and D.B. Marx, 2014. Spatial accuracy of climate networks: A case study in Nebraska. *Journal of Applied Meteorology and Climatology*, 53(8), 1932-1942.
30. Takle E.S., C.J. Anderson, J. Andresen, J. Angel, R. Elmore, B.M. Gramig, P. Guinan, S. Hilberg, D. Kluck, R. Massey, D. Niyogi, J. Schneider, M. Shulski, D. Todey, and M. Widhalm, 2014. Climate forecasts for corn producer decision-making. *Earth Interactions*, 18 (5), 1-8.
31. Shulski M., J. You, J. Krieger, W. Baule, J. Zhang, X. Zhang, and W. Horowitz, 2014. Quality assessment of meteorological data for the Beaufort and Chukchi Sea coastal region using automated routines. *Arctic*, 67(1), 104-112.
32. Lussenden H.B., N.A. Umphlett, M.D. Shulski, D. Ebert, 2014. Winter wind chill climatology for the High Plains region. *Journal of Service Climatology*,
33. Shulski M., N. Umphlett, K. Hubbard, and T. Pathak, 2013. Climate Change - What does it mean for Nebraska?, Institute of Agriculture and Natural Resources NebGuide, G2208.
34. Zhang, X., J. Zhang, J. Krieger, M. Shulski, F. Liu, S. Stegall, W. Tao, J. You, W. Baule, and B. Potter, 2013. Beaufort and Chukchi Seas mesoscale meteorology modeling study, Final Report, U.S. Department of the Interior, Bureau of Ocean Energy Management, Alaska OCS Region, Anchorage, AK. OCS Study BOEM 2013-0119. 203 pp.
35. Kunkel K.E., L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, M.C. Kruk, D.P. Thomas, M. Shulski, N.A. Umphlett, K.G. Hubbard, K. Robbins, L. Romolo, A. Akyuz, T. Pathak, T.R. Bergantino, and J.G. Dobson, 2013. Regional Climate Trends and Scenarios for the U.S. National Climate Assessment, Part 4: Climate of the U.S. Great Plains. NOAA Technical Report, NESDIS 142-4.
36. Pathak T., K. Hubbard and M. Shulski, 2012. Soil Temperature: A guide for planting agronomic and horticulture crops in Nebraska. Institute of Agriculture and Natural Resources NebGuide, vol. g2122.
37. Saito K., S. Yamaguchi, H. Iwata, Y. Harazono, K. Kosugi, M. Lehning, M. Shulski, 2012. Climatic physical snowpack properties for large-scale modeling examined by observations and a physical model. *Polar Science*, 6(1), 79-95.
38. Bieniek P.A., U.S. Bhatt, R.L. Thoman, H. Angeloff, J. Partain, J. Papineau, F. Fritsch, E. Holloway, J.E. Walsh, C. Daly, M. Shulski, G. Hufford, D.F. Hill, S. Calos, R. Gens, 2012. Climate divisions for Alaska based on objective methods, *Journal of Climate*, 51(7), 1276- 1289.
39. Klein D. and M. Shulski, 2011. Reindeer and lichens incompatible in a Bering Sea island ecosystem. *Arctic*, 64 (3), 353-361.
40. McNeeley S. and M. Shulski, 2011. Anatomy of a closing window: Vulnerability to changing seasonality in Interior Alaska. *Global Environmental Change*, doi:10.1016/j.gloenvcha.2011.02.2003.
41. Wendler G., J. Conner, B. Moore, M. Shulski, and M. Stuefer, 2011. Climatology of Alaskan wildfires with special emphasis on the extreme year of 2004. *Theoretical and Applied Climatology*, 104, 459-472.
42. DeGaetano A.T., T.J. Brown, S.D. Hilberg, K. Redmond, K. Robbins, P. Robinson, M. Shulski, and M. McGuirk, 2010. Towards regional climate services: The role of NOAA's Regional Climate Centers. *Bulletin of the American Meteorological Society*, 91, 1633-1644.

43. Wendler G., M. Shulski, and B. Moore, 2010. Changes in the climate of the Alaskan North Slope and the ice concentration of the adjacent Beaufort Sea. *Theoretical and Applied Climatology*, 99, 67-74.
44. Shulski M., J. Walsh, E. Stevens, and R. Thoman, 2009. Diagnosis of extended cold season temperature anomalies in Alaska. *Monthly Weather Review*, 138 (2), 453-462.
45. Wendler G., and M. Shulski, 2009. A century of climate change for Fairbanks, Alaska. *Arctic*, 62 (3): 295-300.
46. Klein, D., and M. Shulski. 2009. Lichen recovery following heavy grazing by reindeer delayed by climate warming, *Ambio*, 38, 11-16.
47. Damoah R., N. Spichtinger, R. Servranckx, M. Fromm, E. Eloranta, I. Razenkov, P. James, M. Shulski, C. Forster, and A. Stohl, 2006. Transport modeling of a pyro-convection event in Alaska. *Atmospheric Chemistry and Physics*, 6,173-185.
48. Wendler G., M.D. Shulski, and B. Hartmann, 2005. Potential climatic effects of cirrus contrails for the subarctic setting of Fairbanks, Alaska. *Theoretical and Applied Climatology*, 81,149-159.
49. Wendler G., B. Hartmann, C. Wyatt, M.D. Shulski, and H. Stone, 2005. Midsummer energy balance for the ice covered southern seas, *Boundary Layer Meteorology*, 117,131-148.
50. Fan X., J.-F. Chou, B.-R. Guo, and M.D. Shulski, 2004. A coupled simple climate model and its global analysis. *Theoretical and Applied Climatology*, 79, 31-43.
51. Shulski M.D., and M.W. Seeley, 2004. Application of snowfall and wind statistics to snow transport modeling for snowdrift control in Minnesota. *Journal of Applied Meteorology*, 43, 1711-1721.
52. Shulski M.D., E.A. Walter-Shea, K.G. Hubbard, G.Y. Yuen, and G. Horst, 2004. Penetration of photosynthetically active and ultraviolet radiation into alfalfa and tall fescue canopies. *Journal of Agronomy*, 96, 1562-1571.
53. Yuen G.Y., C.C. Jochum, L.J. Giesler, M.D. Shulski, E.A. Walter-Shea, and K.G. Hubbard. 2002, UV-B biosimetry in turfgrass canopies. *Crop Science*, 42, 859-868.
54. Shulski M.D. and M. Seeley. 2001, Climatological characterization of snowfall and snow drift in Minnesota for the design of living snow fences. Mn/DOT Agreement No. 74708. University of Minnesota, Minneapolis.

#### **Books and Book chapters**

1. Birge, H., Shulski, M., Trump, B., Ernakovich, J., Hefley, T., Huntington, O., Jardine, C., Klasa, K., Lines, Laurie-Ann, Linkov, I., Garcia, J., Meek, C., Torpy, K., Watson, A. "An Information- Based Resilience Framework for the Changing Arctic." *Cybersecurity and Resilience in the Arctic*, edited by B. Trump, K. Hossain, I. Linkov, vol. 58, IOS Press, 2020, pp. 427-443. NATO Science for Peace and Security Series - D: Information and Communication Security.
2. Shulski, M. and G. Wendler. 2007. *The Climate of Alaska*, University of Alaska Press, Fairbanks, AK, 216 pp.

#### **Popular Literature**

1. Shulski, M.D. 2019 - present. NEBRASKAland Magazine regular weather story.
2. Shulski, M., and H.M. Mogil. 2009. Alaska's weather and climate, *Weatherwise*, Jan/Feb, 14-21.
3. Klein, D., J. Walsh, and M. Shulski, 2009. What killed the reindeer of St Matthew

Island?, Weatherwise, Nov/Dec 33-38.

## PRESENTATIONS

---

### **Invited Speaker**

Topic: Climate and Drought Outlook

NOAA North Central Regional Webinar Series (x5), Climate Assessment and Response Committee for the State of Nebraska (Lincoln, NE, x2 / year), Four States Irrigation Council (Ft. Collins, CO), Nebraska Department of Environmental Quality Seminar Series (Lincoln, NE), University of Nebraska Briefing to State Legislators (Lincoln, NE), Tri-County Urban Area Security Initiative: Critical Infrastructure and Key Resources Subcommittee (Omaha, NE)

Topic: Climate Change and Implications for Nebraska and the Region

Rotary Club Meetings, (Holdrege, Plattsmouth, NE), Sunrise Kiwanis Meeting (Lincoln, NE), Nebraska Game and Parks Commission seminar (Lincoln, NE), Nebraska Farm Bureau Executive Committee Meeting (Kearney, NE), Green Bellevue Meeting (Bellevue, NE), UNL Sustainability Summit, (2 talks, Lincoln, NE), Creighton University Student Summit (Omaha, NE), Youth Climate Summit (Lincoln, NE), Nuffeldt International Agricultural Scholars Program (Ames, IA), Institute of Agriculture and Natural Resources Growing Nebraska Summit (Lincoln, NE), International Water for Food Conference (Lincoln, NE), Weather and Climate Resources for Farm Management, (Ord, NE), Nebraska Conservation Summit (Omaha, NE), Nebraska Urban Pest Management Conference (Lincoln, NE), Oescher Lifelong Learning Seminar (Lincoln, NE)

Topic: Climate Change: Sectoral Impacts and Emerging Issues

Environmental Engineering Conference (Lawrence, KS), Environmental Protection Agency Region 7 Creating Resilient Water Utilities Workshop (Lenexa, KS), University of Nebraska - Lincoln Humanities Symposium (Lincoln, NE), Nebraska Corn Board and Corn Growers Association Board Meeting (Lincoln, NE), Sac and Fox Nation Environmental Department's 3<sup>rd</sup> Annual Campfire Talk (Reserve, KS), High Plains American Meteorological Society Annual Conference (North Platte, NE), Forum for Sustainable Water Management (Lincoln, NE), North Central Regional Water Network Workshop (Lincoln, NE), Great Plains Government Finance Officers Association Spring Meeting (Omaha, NE), Northern Plains Resources Conservation Act Regional Roundtable (Rapid City, SD), Workshop on Planning and Response to Extreme Weather Events and Climate Change (Olathe, KS), Kansas State University EPSCoR Climate Change and Mitigation Annual Research Symposium (Lawrence, KS), University Industry Consortium Annual Meeting (Lincoln, NE), Kansas Wheat Board (Manhattan, KS), Oescher Lifelong Learning Seminar (Lincoln, NE)

Topic: Nebraska's 2019 Flood Season

NOAA Monthly Climate Update Press Webinar, Nebraska Extension Webinar, Nebraska Farmers Union Conference (Norfolk, NE), Nebraska Legislative Briefing (Lincoln, NE), CBS News Documentary: Climate Reckoning in the Heartland (Lincoln, NE), Nebraska Educational Television: Speaking of Nebraska (Lincoln, NE)

Topic: Climate for Cities: Partnering for Municipal Climate Adaptation



Public Forum on Climate Extremes (Kearney, NE), School of Natural Resources Fall Seminar Series (Lincoln, NE), North Central Climate Collaborative Webinar Series, Oescher Lifelong Learning Seminar (Lincoln, NE), Nebraska Educational Television Public Radio (Lincoln, NE)

Topic: The Nebraska Mesonet

National Soil Moisture Workshop (Lincoln, NE), High Plains Chapter of the American Meteorological Society Meeting (Hastings, NE), NOAA National Weather Service Integrated Warning Team Workshop (Lincoln, NE), International Water for Food Conference (Lincoln, NE), Upper Elkhorn Natural Resource District Board Meeting (O'Neill, NE), Central Platte Natural Resource District Board Meeting (Grand Island, NE)

Topic: Regional and Local Climate Services

Nebraska Extension In-Service (Mead, NE), Integrating Weather and Climate Information into Management Decisions (Lincoln, NE), Nebraska Extension Crop Production Clinic (Gering, Kearney and North Platte, NE), Agriculture Builders of Nebraska Meeting (Lincoln, NE), Climate Change Seminar for Elected Officials in Nebraska (Lincoln, NE), Federal Executives Association Luncheon (Lincoln, NE), Drought Resiliency for Kansas Tribal Nations Workshop, (Kansas City, MO), Heartland Regional Climate Adaptation Network (Iowa City, IA), Wind River Indian Reservation Workshop (Lincoln, NE), Regional Climate Partners Workshop (Brookings, SD and Casper, WY), Sustainable Agriculture in a Changing Climate: North Central Region Professional Development Program Workshop (Nebraska City, NE), Nebraska No-Till Conference (Holdrege, NE), Sustainable Agriculture in a Changing Climate: North Central Region Professional Development Program Workshop (Nebraska City, NE), Heartland Climate Change Conference: Agricultural Decision Making with a Water and Climate Change Perspective (Nebraska City, NE), Oglala Sioux Climate Meeting (Kansas City, MO), Missouri River Basin Climate Collaboration Team Meeting (Nebraska City, NE), Tribal College Faculty Training Session (Boulder, CO), American Indian Alaska Native Climate Change Working Group Meeting (Kansas City, MO)

**Conference Presentations** (\*Underline indicates graduate student)

1. Cooper, S., M. Shulski. An integrated approach to improved wind forecasting in Nebraska, Invited presentation to the Nebraska Power Conference, Lincoln, NE, October, 2019.
2. Cooper, S., M. Shulski. An integrated approach to improved wind forecasting in Nebraska, Invited presentation to the Nebraska Wind and Solar Conference, Lincoln, NE, October, 2019.
3. Shulski, M. Our Climate Future: A look at regional impacts to our Changing Climate, Invited presentation to the National Environmental Health Association Conference, Omaha, NE, September, 2019.
4. Shulski, M. What is happening to Our Common Home?, Invited presentation to Laudato Si' and the U.S. Catholic Church: A conference series on our common home, Omaha, NE, June, 2019.
5. Shulski, M. Nebraska's 2019 flood season, Invited Presentation to the Workshop on

Improving Sub-Seasonal to Seasonal (S2S) Precipitation Forecasting, San Diego, CA, May, 2019.

6. Shulski, M., N. Umphlett, Z. Tang, T. Abdel-Monem, F. Uhlarik, Localizing Climate Information for Municipal Planning in the Central U.S., Poster presentation at the American Geophysical Union Annual Meeting, New Orleans, LA, December 2017.
7. Shulski, M. N. Umphlett, Z. Tang, T. Abdel-Monem, F. Uhlarik, Informing Decisions and Increasing Resilience - Working with municipal planners in the lower Missouri River Basin, Oral presentation at the 23<sup>rd</sup> Conference on Applied Climatology, Asheville, NC, June 2017.
8. Shulski, M., S. McNeeley, G. Collins, C. Knutson, M. Svoboda, D. Kluck. Capacity Building for Tribal Communities: An example of a community-led social-ecological-climate partnership in the Northern Plains, Oral presentation at the Annual American Meteorological Society Meeting, Phoenix, AZ, January 2015.
9. Shulski, M., N. Umphlett, J. Lahowetz, W. Baule, and W. Sorensen. Climate Impact Reporter  
- A New Tool to Archive and Display Impacts to Extreme Climate Events, Poster presentation at the Nebraska Water Symposium, Lincoln, NE, October 2013.
10. Umphlett, N., J. Lahowetz, M. Shulski, W. Sorensen, and W. Baule. The Climate Impact Reporter, Oral presentation at the American Association of State Climatologists Annual Meeting, St. Louis, MO, July 2013.
11. Umphlett, N., J. Lahowetz, M. Shulski, W. Sorensen, and W. Baule. Climate Impact Reporter: A new tool for archiving and displaying climate-related impacts to extreme events. Poster presentation at the Climate Prediction Application Science Workshop, Logan, UT, April 2013.
12. Shulski, M., W. Baule, J. Krieger, J. You, J. Zhang, X. Zhang, and W. Horowitz. Development and Analysis of a New Meteorological Database for the Beaufort and Chukchi Seas Coastal Regions, Poster presentation at the Alaska Marine Science Symposium, Anchorage, AK, January 2013.
13. Krieger, J., J. Zhang, F. Liu, M. Shulski, W. Tao, and X. Zhang. Chukchi/Beaufort High-resolution Atmospheric Reanalysis (CBHAR), Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2012.
14. Umphlett, N., N. Wall, T. Haigh, Z. Tang, M. Hayes, and M. Shulski. Climate-related Risk and a Resilient Rural Future: An exploration of linkages and the role of the High Plains Regional Climate Center and the National Drought Mitigation Center, Oral presentation at the Rural Futures Conference, Lincoln, NE, May 2012.
15. Zhang, X., J. Zhang, J. Krieger, F. Liu, W. Tao, and M. Shulski. Toward Producing a High-Resolution Regional Reanalysis for Arctic Marginal Ice Zone along Alaska Coast, Poster presentation at the 4<sup>th</sup> World Climate Research Programme International Conference On Reanalysis, Silver Spring, MD, May 2012.
16. Umphlett, N., and M. Shulski. Stakeholder Engagement in the U.S. Central Region for Improving Regional Climate Services and Climate Change Education, Poster presentation at the American Meteorological Society Annual Meeting, New Orleans, LA, January 2012.
17. Krieger, J., J. Zhang, F. Liu, M. Shulski, and X. Zhang. Toward Producing a Beaufort/Chukchi Seas Regional Reanalysis. Poster presentation at the 16<sup>th</sup> Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land

- Surface (IOAS-AOLS) in New Orleans, LA, January 2012.
18. Krieger, J., J. Zhang, M. Shulski, F. Liu, W. Tao, and X. Zhang. Toward Producing a Beaufort/Chukchi Seas Regional Reanalysis. Poster presentation at the Alaska Marine Science Symposium, Anchorage, AK, January 2012.
  19. Baule, W. and M. Shulski. A comparison of the warm-season wind regimes of the Beaufort/Chukchi Seas Coasts using observations and the North American Regional Reanalysis. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2011.
  20. Potter, B., J. Lenters, K. Hinkel, M. Shulski, N. Healey, A. Irmak, S. Jones, and Y. Sheng. The Summertime Energy Balance of a Thermokarst Lake in Northern Alaska: A Three-Year Study of Seasonal and Interannual Variability. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2011.
  21. Liu, F., J. Krieger, J. Zhang, M. Shulski, and X. Zhang. Evaluation of the Surface Layer Scheme in WRFDA. Poster presentation at the 12<sup>th</sup> WRF Users' Workshop, Boulder, CO, June 2011.
  22. Boustead, B., S. Hilberg, M. Shulski, and K. Hubbard. An Accumulated Winter Season Severity Index (AWSSI). Oral presentation at the 19<sup>th</sup> Conference on Applied Climatology, Asheville, NC, June 2011.
  23. Prokopy, L.S., J. Andresen, D. Niyogi, M. Shulski, and D. Todey. Useful to Usable (U2U): Transforming Climate Variability and Change Information for Cereal Crop Producers. Poster presentation at the American Meteorological Society 19th Conference on Applied Climatology, Asheville, NC, June 2011.
  24. Krieger, J., J. Zhang, M. Shulski, F. Liu, and X. Zhang. Beaufort/Chukchi Seas Mesoscale Meteorology Modeling Study. Poster presentation at the 11<sup>th</sup> Conference on Polar Meteorology and Oceanography, Boston, MA, May 2011.
  25. Pathak, T., K. Hubbard, and M. Shulski. Soil Temperature: Indicator of earlier shifts and a guide for planting agricultural and horticulture crops. Poster presentation at the Climate Information for Managing Risks International Symposium, Orlando, FL, May 2011.
  26. Shulski, M., N. Umphlett, and S. Hilberg. Assessing Climate Information Needs in the Agricultural Community: A look at the Central US., Oral presentation at the NOAA Climate Prediction Application Science Workshop, Des Moines, IA, March 2011.
  27. Umphlett, N., and M. Shulski. High Plains Regional Climate Center: Increasing the awareness of climate issues through stakeholder engagement and public outreach events. Poster presentation at the American Meteorological Society Annual Meeting, Seattle, WA, January 2011.
  28. Zhang, J., J. Krieger, M. Shulski, F. Liu, S. Stegall, J. Gonowon, X. Zhang, and D. Atkinson. Chukchi/Beaufort Seas Meteorology Study: Mesoscale and Climatological Aspects. Poster presentation at the Alaska Marine Science Symposium, Anchorage, AK, January 2010.
  29. Shulski, M., K. Hubbard, and J. You. Development of an Irrigation Scheduling Tool for the High Plains Region, Poster presentation at the American Geophysical Union Fall Conference, San Francisco, CA, December 2009.
  30. Krieger, J., J. Zhang, M. Shulski, and X. Zhang. Coupling a Thermodynamic Sea Ice Model with WRF. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2009.

31. Walsh, J., K. Klein, and M. Shulski. Extreme Winter Cyclones and the Extinction of a Reindeer Population. Oral presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2009 (invited).
32. Zhang, J., U. Bhatt, J. Krieger, M. Shulski, X. Zhang, and D. Atkinson. Regional Climate Change Downscaling for Alaska. Poster presentation at the American Geophysical Union Fall Meeting, San Francisco, CA, December 2009.
33. Zhang, J., J. Krieger, M. Shulski, and X. Zhang. Beaufort Sea Coastal Wind Regime Study from Observations and Model Simulations. Poster presentation at the 10<sup>th</sup> Conference on Polar Meteorology and Oceanography, Madison, WI, May 2009.
34. Zhang, J., J. Krieger, M. Shulski, X. Fan, and D. Morton. Chukchi/Beaufort Seas Surface Wind Field Study, Oral presentation at the Alaska Weather Symposium, Fairbanks, AK, March 2009.
35. Krieger, J., J. Zhang, D. Atkinson, X. Zhang, and M. Shulski, 2009. Sensitivity of WRF Model Forecasts to Different Physical Parameterizations in the Beaufort Sea Region. Poster presentation at the 8<sup>th</sup> Conference on Coastal Atmospheric and Oceanic Prediction and Processes, Phoenix, AK, January 2009.
36. Zhang, J., J. Krieger, M. Shulski, and X. Zhang. Beaufort Sea Coastal Wind Regime Study From Observations and Model Simulations. Poster presentation at the American Geophysical Union Fall Conference, San Francisco, CA, December 2008.
37. Klene, A., M. Shulski, X. Fan, J. Krieger, D. Morton, and J. Zhang. The Influence of the Brooks Range on the Wind Regime of the Beaufort Sea Coast. Oral presentation at the Association of American Geographers 104<sup>th</sup> Annual Meeting, Boston, MA, April 2008.
38. Shulski, M., A. Klene, J. Zhang, X. Fan, J. Krieger, and D. Morton. The influence of Sea Ice and Topography on the Wind Regime of the Beaufort Sea Coast. Poster presentation at the American Geophysical Union Fall Conference, San Francisco, CA, December 2007.
39. Fan, X., J. Zhang, J. Krieger, D. Morton, M. Shulski, A. Klene, and X. Zhang. Assimilating QuikSCAT SeaWinds with WRF Model for High Latitude Sea Breeze simulation, Poster presentation at the American Geophysical Union Fall Conference, San Francisco, CA, December 2007.
40. Wendler, G., and M. Shulski. Climate Change in Alaska. Poster presentation at the Arctic Science Conference, Anchorage, AK, September 2007.
41. Morton, D., J. Krieger, X. Fan, M. Shulski, J. Zhang, and A. Klene. A Study of The Effects of Data Assimilation on Mesoscale Meteorological Modeling in the Beaufort Sea Region. Oral presentation at the 7<sup>th</sup> Conference on Coastal Atmospheric and Oceanic Prediction and Processes. San Diego, CA, September 2007.
42. Krieger, J., J. Zhang, X. Fan, D. Morton, A. Klene, and M. Shulski. Modeling the Beaufort Sea coastal wind regime using MM5 and WRF. Poster presentation at the 9<sup>th</sup> Conference on Polar Meteorology and Oceanography, St. John's, Newfoundland, Canada, May 2007.
43. A. Klene, D.J. Morton, J. Zhang, X. Fan, J.R. Krieger, and M. Shulski. Initial Evaluation of Real-time Weather Forecasts for the Beaufort Sea Region, Alaska. Poster presentation at the Association of American Geographers 103rd Annual Meeting, San Francisco, CA, April 2007.
44. Fan, X., J. Krieger, D. Morton, J. Zhang, M. Shulski, and A. Klene. Simulating Beaufort Sea Coastal Wind Events Using MM5 and WRF. Oral presentation at the Great Alaska Weather

- Modeling Symposium, Fairbanks, AK, March 2007.
45. McNeeley, S., M. Shulski, K. Lemkuhl, and J. Walsh. Climate Change and Variability in Interior Alaska: An Interdisciplinary Approach to Data Integration and Synthesis for Understanding Regional Patterns Relevant to Stakeholders. Poster presentation at the Arctic Science Conference, Fairbanks, AK, September 2006.
  46. Shulski, M. and G. Wendler. An Overview of Long-Term Climate Variability and Change in Alaska. Oral presentation at the Arctic Science Conference, Fairbanks, AK, October 2006.
  47. Shulski, M. and G. Wendler. A climatological perspective of wildfires in Alaska. Poster presentation at the European Geosciences Union, Vienna, Austria, April 2006.
  48. Shulski, M., L. Jones, and G. Wendler. Trends in Storminess Along Alaska's West Coast. Poster presentation at the American Geophysical Union Fall Conference, San Francisco, CA, December 2005.
  49. Shulski, M. and G. Wendler. Climate Variability and Change in Alaska. Oral presentation at the 15<sup>th</sup> Conference on Applied Climatology, Savannah, GA, June 2005.
  50. Shulski, M. and G. Wendler. Researching observed climate change and variability in Alaska, Poster presentation at the International Conference on Arctic Research Planning (ICARP II), Copenhagen, Denmark, November 2005.
  51. Shulski, M., G. Wendler, S. Alden, and N. Larkin. Alaska's Exceptional 2004 Fire Season. Oral presentation at the 6<sup>th</sup> Fire and Forest Meteorology Symposium, Canmore, Canada, October 2005.
  52. Shulski, M. and G. Wendler. Changes in climate and associated extreme events in Alaska. Oral presentation at the American Association for the Advancement of Science - Arctic Science Conference, Anchorage, AK, October 2004.
  53. Shulski, M. and G. Wendler. Extreme temperature and precipitation events in Alaska. Poster presentation at the American Geophysical Union, San Francisco, CA, December 2003.
  54. Shulski, M. and M. Seeley. Trend analysis of the 20<sup>th</sup> century snowfall record for Minnesota. Oral presentation at the American Meteorological Society, Symposium on Global Change and Climate Variations, Orlando, FL, January 2002.
  55. Shulski, M. and M. Seeley. Climatological Characterization of Wind and Snowfall in Minnesota for Assessing the Impact of Living Snow Fences. Oral presentation at the 24<sup>th</sup> Conference on Agricultural and Forest Meteorology, Davis, CA, August 2000.

## HONORS AND AWARDS

---

- >> Environmental Champion Award from Green Bellevue (2020)
- >> University of Alaska Fairbanks Travel Award for participation in the International Conference on Arctic Research Planning in Copenhagen, Denmark (2005)
- >> Research Partnership Award for University of Minnesota Center for Transportation Studies living snow fence design and website implementation interdisciplinary project (2003) [http://climate.umn.edu/snow\\_fence/index.html](http://climate.umn.edu/snow_fence/index.html)

## OTHER PROFESSIONAL ACTIVITIES

---

1. Reviewer, Journal of Geophysical Research, Climate Dynamics, Danish Journal of Geography, Arctic, Journal of Disaster Research, Meteorology and Atmospheric Physics, Environmental Studies and Sciences, Natural Hazards, Bulletin of the American Meteorological Society, Journal of Geophysical Research - Atmospheres, Geophysical Research Letters
2. Member, American Association of State Climatologists, American Geophysical Union, American Meteorological Society, Lincoln-Lancaster County Air Pollution Control Advisory Board
3. Member  
School of Natural Resources Promotion and Tenure Committee (2018 - present) School of Natural Resources Graduate Committee (2010-15)  
School of Natural Resources Faculty Advisory Committee (2015-17)
4. Chair, Applied Climate Science Program Area, School of Natural Resources (2017-18)
5. Search Committee Member:
  - National Drought Mitigation Center Director, School of Natural Resources, University of Nebraska Lincoln (2016)
  - Applied Climatologist, High Plains Regional Climate Center, School of Natural Resources, University of Nebraska Lincoln (2015)
  - Communications Specialist, School of Natural Resources, University of Nebraska Lincoln (2016)
  - Dean and Director, Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska - Lincoln (2010)
6. Search Committee Chair, National Drought Mitigation Center Director, School of Natural Resources, University of Nebraska - Lincoln (2019)
7. Host and Organizer, High Plains Regional Climate Annual Meeting (2010-14)
8. Host and Presenter:  
American Association of State Climatologists Annual Meeting (2018) Arctic - Mid-latitude Climate Connections (2018)
9. Co-host and presenter for the following workshops:  
Nebraska Climate Summit (2019)  
Informing Decisions for Municipal Climate Adaptation Workshop, Lincoln, NE (2017) Fish and Wildlife Professional Workshop, Lincoln, NE (2017)  
Climate and Agriculture Tools Workshop, Brookings, SD and Casper, WY (2016)  
Climate Resiliency Extension Professional Development, Lincoln, NE (2015) Implications of a Changing Arctic on Water Resources and Agriculture in the Central U.S., Lincoln, NE (2015)  
Regional Climate Services, Lincoln, NE (2015)  
Climate Summary Training for the Wind River Reservation Region, Lincoln, NE (2015)

Climate and Drought Summary for Kansas-based Tribes, Lincoln, NE (2015) Climate and Drought Summary Training for Kansas-based Tribes, Lawrence, KS (2015) Climate Prediction Applications Science Workshop - Des Moines, IA, March 1 - 4, 2010 Atmospheric Circulation, Dynamics, and Chemistry session at Global Change Connection to the Arctic Conference (GCCA-6) - Tokyo, Japan, December 12-13, 2005

## TEACHING and ADVISING

---

### **Courses Developed and Taught**

Climate in Crisis	School of Natural Resources, 100-level, Achievement Centered Learning Course (Global Awareness) Annually, 2011 - present
Weather and Climate	School of Geography, 100-level, University of Alaska Fairbanks Fall 2007
Geography of Climate and Environmental Change	School of Geography, 400-level, University of Alaska Fairbanks Spring 2008, 2009
Introduction to Atmospheric Science	Department of Soil, Water and Climate, 100-level University of Minnesota Fall 2000

Invited Lecturer in six courses for a total of 18 presentations

### **Ph.D. Advisor**

2014-present	Topic: Optimization of a mesoscale meteorological observation network School of Natural Resources, University of Nebraska - Lincoln
2014-2019	Topic: Assessing climate capacity in the Missouri River Basin for municipalities School of Natural Resources, University of Nebraska - Lincoln
2011-2016	Topic: Climate change and agriculture in the Great Plains School of Natural Resources, University of Nebraska - Lincoln
2010-2014	Topic: Categorization of winter season severity and the winter of 1880-81 School of Natural Resources, University of Nebraska - Lincoln



Service on Ph.D. Committee 5 students

**M.S. Thesis Advisor**

2010-2012 Topic: Western Arctic coast wind climatology and trends University of Nebraska - Lincoln

2006-2008 Topic: Climate and predictability of Alaskan wildfires University of Alaska Fairbanks

Service on 5 M.S. Thesis Committees

**Undergraduate Advisor**

Thesis 14 students

Honors Student Project 5 students