

**Tonya R. Haigh**  
National Drought Mitigation Center  
803 Hardin Hall, University of Nebraska, Lincoln, NE 68583-0996  
Phone: 402-472-6781, [thaigh2@unl.edu](mailto:thaigh2@unl.edu)

**Education**

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|----------------------------------|--|-------------|------|
| University of Nebraska – Lincoln | Human Dimensions of Natural Resources Management | PhD         | 2019 |
| University of Nebraska – Lincoln | Survey Research Methods                          | Certificate | 2015 |
| South Dakota State University    | Rural Sociology                                  | MS          | 1998 |
| Hamline University               | Human and Physical Ecology                       | BS          | 1992 |

**Academic Employment**

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|--|--------------|
| <b>Research Assistant Professor/Social Science Coordinator/Project Coordinator</b> , National Drought Mitigation Center, UNL | 2021-present |
| <b>Rural Sociologist Research Associate/Project Manager</b> , National Drought Mitigation Center, UNL                        | 2015-2021    |

Dr. Tonya Haigh is a Research Assistant Professor and the Social Science Coordinator and Project Coordinator for the National Drought Mitigation Center at the University of Nebraska - Lincoln. Dr. Haigh’s research focuses on the adaptive capacity of agricultural producers and others to cope with drought. Her research connects social science with climate science by informing the development of stakeholder-driven resources and tools. Dr. Haigh has worked with ranchers, advisors, and researchers to develop the Managing Drought Risk on the Ranch website and has provided social science expertise to the development of climate decision support tools for Corn Belt producers and specialty crop growers. Dr. Haigh’s academic and research expertise includes social theory related to climate risk management, survey development and administration, quantitative data collection and analysis, and qualitative data collection and analysis. Project management expertise includes outcome-based planning and evaluation.

**First-Author Publications In-Review**

- Haigh, T., Wickham, E., Hamlin, S., Knutson, C. (In Review) Planners’ perceptions of strategies and barriers to achieving local drought preparedness. *Journal of the American Planning Association*.
- Haigh, T., Otkin, J., Woloszyn, M., Todey, D., Felkley, C. (In Review) Meeting the drought information needs of Midwest perennial specialty crop producers. *Journal of Applied Meteorology and Climatology*.

**Publications (ORCID <https://orcid.org/0000-0002-5240-685X>)**

Cravens, A.E., Henderson, J., Friedman, J., Burkardt, N., Cooper, A.E., **Haigh**, T., Hayes, M., McEvoy, J., Paladino, S., Wilke, A.K. and Wilmer, H. (2021) A typology of drought decision making: Synthesizing across cases to understand drought preparedness and response actions. *Weather and Climate Extremes*, 33, 100362.

- Ibarra, A.M.S., Hewitt, C., Winarto, Y.T., Walker, S., Keener, V.W., Bayala, J., Christel, I., Bloomfield, H., Halsnæs, K., **Haigh**, T., Jacob, D. and Brasseur, G.P., 2021. Resilience through climate services. *One Earth*, 4(8), pp.1050-1054.
- Haigh**, T., Hayes M., Smyth J., Prokopy L., Francis C., Burbach, M. (2021) Ranchers' use of drought contingency plans in protective action decision-making. *Rangeland Ecology & Management*, 74, 50-62.
- Lu, J., Singh, A.S., Koundinya, V., Ranjan, P., **Haigh**, T., Getson, J.M., Klink, J. and Prokopy, L.S., 2021. Explaining the use of online agricultural decision support tools with weather or climate information in the Midwestern United States. *Journal of Environmental Management*, 279, p.111758.
- Liu, T., Krop, R., **Haigh**, T., Smith, K. H., & Svoboda, M. (2021). Valuation of Drought Information: Understanding the value of the US Drought Monitor in land management. *Water*, 13(2), 112.
- Smith, K.H., Burbach, M.E., Hayes, M.J., Guinan, P.E., Tyre, A.J., Fuchs, B., **Haigh**, T. and Svoboda, M.D., 2021. Whose ground truth is it? Harvesting lessons from Missouri's 2018 bumper crop of drought observations. *Weather, Climate, and Society*, 13(2), pp.227-244.
- Haigh**, T., Schacht, W., Knutson, C., Smart, A., Volesky, J., Hayes, M., and Burbach, M. (2020) Preparing for Drought on the Ranch: Lessons from 2012. *Research Counts* 3(6). Boulder, CO: Natural Hazards Center, University of Colorado Boulder.
- Church, S.P., Bentlage, B., Weiner, R., Babin, N., Bulla, B.R., Fagan, K., **Haigh**, T., Carlton, J.S. and Prokopy, L.S., (2020). National print media vs. agricultural trade publications: communicating the 2012 Midwestern US drought. *Climatic Change*, pp.1-21.
- Noel, M., Bathke, D., Fuchs, B., Gutzmer, D., **Haigh**, T., Hayes, M., ... & Svoboda, M. (2020). Linking drought impacts to drought severity at the state level. *Bulletin of the American Meteorological Society*, 101(8), E1312-E1321.
- Liu, T., Smith, K. H., Krop, R., **Haigh**, T., & Svoboda, M. (2020). Critical Analysis of the Value of Drought Information and Impacts on Land Management and Public Health. *Water*, 12(4), 1064.
- Poděbradská, M., Noel, M., Bathke, D. J., **Haigh**, T. R., & Hayes, M. J. (2020). Ready for Drought? A Community Resilience Role-Playing Game. *Water*, 12(9), 2490.
- Haigh**, T., Otkin, J., Mucia, A., Hayes, M., Burbach, M. (2019). Drought early warning and the timing of range managers' drought response. *Advances in Meteorology*.
- Haigh**, T. R., Schacht, W., Knutson, C. L., Smart, A. J., Volesky, J., Allen, C., ... & Burbach, M. (2019). Socioecological determinants of drought impacts and coping strategies for ranching operations in the Great Plains. *Rangeland Ecology & Management*, 72(3), 561-571.
- Smart, A.J., Harmony, K., Scasta, J.D., Stephenson, M.B., Volesky, J.D., Vermeire, L.T., Mosley, J.C., Sedivec, K., Meehan, M., **Haigh**, T. and Derner, J.D., (2019). Critical decision dates for drought management in Central and Northern Great Plains rangelands. *Rangeland Ecology & Management*.
- Demisse, G. B., Tadesse, T., Wall, N., **Haigh**, T., Bayissa, Y., & Shiferaw, A. (2019). Linking seasonal drought product information to decision makers in a data-sparse region: A case study in the Greater Horn of Africa. *Remote Sensing Applications: Society and Environment*, 14, 200-206.

- Haigh**, T., Koundinya, V., Hart, C., Klink, J., Lemos, M., Mase, A. S., Prokopy, L., Singh, A., Todey, D., & Widhalm, M. (2018). Provision of climate services for agriculture: Public and private pathways to farm decision-making. *Bulletin of the American Meteorological Society*, 99(9):1781-1790.
- Otkin, J. A., **Haigh**, T., Mucia, A., Anderson, M. C., & Hain, C. (2018). Comparison of agricultural stakeholder survey results and drought monitoring datasets during the 2016 US Northern Plains flash drought. *Weather, Climate, and Society*, 10(4), 867-883.
- Church, S. P., Dunn, M., Babin, N., Mase, A. S., **Haigh**, T., & Prokopy, L. S. (2018). Do advisors perceive climate change as an agricultural risk? An in-depth examination of Midwestern US Ag advisors' views on drought, climate change, and risk management. *Agriculture and Human Values*, 35(2), 349-365.
- Carson, A., Windsor, M., Hill, H., **Haigh**, T., Wall, N., Smith, J., ... & Muste, M. (2018). Serious gaming for participatory planning of multi-hazard mitigation. *International journal of river basin management*, 16(3), 379-391.
- McEvoy, J., Bathke, D. J., Burkardt, N., Cravens, A. E., **Haigh**, T., Hall, K. R., ... & Wickham, E. (2018). Ecological drought: Accounting for the non-human impacts of water shortage in the upper Missouri headwaters basin, Montana, USA. *Resources*, 7(1), 14.
- Prokopy, L. S., Carlton, J. S., **Haigh**, T., Lemos, M. C., Mase, A. S., & Widhalm, M. (2017). Useful to Usable: Developing usable climate science for agriculture. *Climate Risk Management*, 15, 1-7.
- Tadesse, T., **Haigh**, T., Wall, N., Shiferaw, A., Zaitchik, B., Beyene, S., ... & Petr, J. (2016). Linking seasonal predictions to decision-making and disaster management in the Greater Horn of Africa. *Bulletin of the American Meteorological Society*, 97(4), ES89-ES92.
- Haigh**, T., G. Takle, J. Andresen, M. Widhalm, J.S. Carlton, J. Angel. (2015). Mapping the decision points and climate information use of agricultural producers across the U.S. Corn Belt. *Climate Risk Management*.
- Haigh**, T., L. Morton, M.C. Lemos, C. Knutson, L.S. Prokopy, Y.J. Lo, & J. Angel. (2015). Agricultural advisors as climate information intermediaries: Exploring differences in capacity to communicate climate. *Weather, Climate, and Society*, 7(1): 83-93.
- Tadesse, T., Bathke, D., Wall, N., Petr, J., & **Haigh**, T. (2015). Participatory Research Workshop on Seasonal Prediction of Hydro-climatic Extremes in the Greater Horn of Africa. *Bulletin of the American Meteorological Society*.
- Prokopy, L. S., Carlton, J. S., Arbuckle Jr, J. G., **Haigh**, T., Lemos, M. C., Mase, A. S., ... & Hart, C. (2015). Extension' s role in disseminating information about climate change to agricultural stakeholders in the United States. *Climatic Change*, 130(2), 261-272.
- Carlton, J.S., A.S. Mase, C.L. Knutson, M.C. Lemos, T. **Haigh**, D.P. Todey, L.S. Prokopy. (2015) The effects of extreme drought on climate change beliefs, risk perceptions, and adaptation attitudes. *Climatic Change*.
- Vogt, R., Burkhart-Kriesel, C. A., Cantrell, R., Lubben, B., McElravy, L. J., & **Haigh**, T. (2015). Climate and Energy: Opinions of Nonmetropolitan Nebraskans.
- Lemos, M. C., Lo, Y. J., Kirchhoff, C., & **Haigh**, T. (2014). Crop advisors as climate information brokers: Building the capacity of US farmers to adapt to climate change. *Climate Risk Management*, 4, 32-42.
- Haigh**, T. and C.L. Knutson. 2013. Roles of Perceived Control and Planning in Ranch Drought Preparedness. *Great Plains Research*, 23(1).

- Knutson, C. L., & **Haigh**, T. R. (2013). Ranchers in the United States, Scientific Information, and Drought Risk. *Drought, Risk Management, and Policy: Decision-Making Under Uncertainty*, 2, 171.
- Knutson, C., & **Haigh**, T. (2013). A Drought-Planning Methodology for Ranchers in the Great Plains. *Rangelands*, 35(1), 27-33.
- Prokopy, L., T. **Haigh**, A. Mase, J. Angel, C. Hart, C. Knutson, M. Lemos, Y. Lo, J. McGuire, L. Morton, J. Perron, D. Todey, M. Widhalm. (2013). Agricultural Advisors: A Receptive Audience for Weather and Climate Information? *Weather, Climate, and Society*, Vol. 5 (2), pp. 162-167.
- Arbuckle, J., L. Prokopy, T. **Haigh**, J. Hobs, T. Knott, C. Knutson, A. Loy, A. Mase, J. McGuire, L. Morton, J. Tyndall, M. Widhalm. (2013). Climate change beliefs, concerns, and attitudes toward adaptation and mitigation among farmers in the Midwestern United States. *Climatic Change Letters*. Vol. 117 (4), pp. 943-950.
- Loy, A., Hobbs, J. Arbuckle, J. Jr., Morton, L.W. Prokopy, L.S., **Haigh**, T., Knoot, T., Knutson, C., Mase, A.S., McGuire, J., Tyndall, J., and Widhalm, M. (2013). Farmer Perspectives on Agriculture and Weather Variability in the Corn Belt: A Statistical Atlas. CSCAP 0153-2013. Ames, IA: Cropping Systems Coordinated Agricultural Project (CAP): Climate Change, Mitigation, and Adaptation in Corn-based Cropping Systems.
- Knutson, C. L., **Haigh**, T., Hayes, M. J., Widhalm, M., Nothwehr, J., Kleinschmidt, M., & Graf, L. (2011). Farmer perceptions of sustainable agriculture practices and drought risk reduction in Nebraska, USA. *Renewable Agriculture and Food Systems*, 26(03), 255-266.

### **Grants, Pending**

- NASA ESA - Supporting Management Decisions by Specialty Crop Growers through Greater Use of NASA Satellite and Modeling Assets (Otkin PI, **Haigh** Co-I)
- NASA - Enhancing the Hydrological Drought Monitoring Capability of the US Drought Monitor (Roy PI, **Haigh** Co-I)
- National Oceanic and Atmospheric Administration (NOAA) Climate Program Office - Connecting Ecological Drought Monitoring Tools with Natural Resource Stakeholders in Montana (Otkin PI, **Haigh** Co-I)
- USDA NRCS Racial Equity and Justice Conservation Collaborative Agreement – Climate-Smart Indigenous Agriculture Project (**Haigh** PI)

### **Grants, Awarded**

- M. Svoboda, B. Fuchs, D. Bathke, T. Tadesse, C. Knutson, K. Smith and T. **Haigh**. 2020. USDA Support for the U.S. Drought Monitor and Climate Hub Activities for 2020-2023, USDA-OCE. 2020. (Co-I)
- B. Fuchs, M. Svoboda, C. Knutson, K. Smith, T. **Haigh** and B. Wardlow. 2020. Drought Information Services and Research for Agriculture across the United States, 2020-21, USDA-OCE. (Co-I)
- T. **Haigh** (PI). 2018. Connecting Drought Early Warning to the Decision-Making Needs of Specialty Crop Producers in the Midwestern United States. NOAA Climate Program Office (2018).
- T. **Haigh**, J. Otkin. (Co-PI). 2016. Enhancing Drought Early Warning Capabilities for Agricultural and Tribal Stakeholders in the Missouri River Basin Using Fast Response Drought Indicators. NOAA Climate Program Office.

## Research Outcomes/Impacts

Research on useful drought information for ranchers led to the development of the Ranch Drought Monitoring Dashboard: <https://drought.unl.edu/ranchplan/monitor.aspx>.

Research on the decision calendars of Midwestern specialty crop growers led to development of fact sheets on appropriate drought monitoring resources by season for specific cropping systems, found on the National Drought Mitigation Center website at <https://drought.unl.edu/Projects/Detail.aspx?id=41>.

Research on drought vulnerability, coping impacts, and planning led to ongoing development of the National Drought Mitigation Center's Managing Drought Risk on the Ranch website: <https://drought.unl.edu/ranchplan>.

Research evaluating the process and outcomes of scenario-based drought planning exercises informed the development of a new online guide to Collaborative Drought Planning using Scenario Exercises found at: <https://drought.unl.edu/scenarioguide/Overview.aspx>.

Quantitative and qualitative research on the climate information needs of U.S. Corn Belt farmers led to the development of new agricultural decision-support tools developed by the USDA AFRI-funded Useful to Usable Project (<http://agclimate4u.org>), now housed on Regional Climate Center websites such as <https://hprcc.unl.edu/agroclimate.php>.

## Invited Talks

**Haigh, T.** (April 2021) The Ranch Drought Monitoring Dashboard. Tools for Navigating Drought Webinar. Invited presentation.

**Haigh, T.** (May 2021) The Ranch Drought Monitoring Dashboard. Oklahoma Conservation Directors Drought Meeting. Invited presentation.

**Haigh, T.** (July 2021) The Ranch Drought Monitoring Dashboard. Oklahoma Southern Plains Drought Workshop. Invited presentation.

**Haigh, T.** (September 2021) Why Plan for Drought? Nebraska Women in Agriculture Conference. Invited presentation.

**Haigh, T.** (September 2021) NDMC Ranch Drought Management Resources. CCAST webinar. Invited presentation.

**Haigh, T., Otkin, J., Todey, D.** (2020) Midwestern Specialty Crop Growers' Decision-making during Drought. North Central Climate Collaborative. Invited Presentation.

**Haigh, T.** (2020) Rancher Decision-Making and Climate Risk Management. Center for Grassland Studies, Fall Seminar Series. Invited Seminar.

**Haigh, T.** (2019). Decision-making during Drought: A Case Study of the 2016 Drought. University of Nebraska Institution of Agriculture and Natural Resources. Invited Seminar.

**Haigh, T.** (2019). Adept at Adaptation: Identifying and Building Agricultural Managers' Adaptive Capacity for Climate Risk Management. University of Nebraska School of Natural Resources. Invited Seminar.

**Haigh, T.** (2016) Rangeland Resilience, Grazing Management, & Drought. Nebraska Grazing Conference. Invited Presentation.

**Haigh, T.** (2015). Adapting to Climate Change and Variability. American Dairy Association Discover Conference, Itasca, IL.

### **Conference Presentations (Lead Author/Presenter)**

- Haigh, T., Kluck, D., Todey, D., Woloszyn, M., Parker, B. (2021)** Spending Time: Value and Impacts of Regional Climate Services. American Geophysical Union (AGU) Fall Meeting.
- Haigh, T., Lisonbee, J., Skumovich, M., Woloszyn, M. (2021).** Perceptions of Flash Drought in the U.S.: How do End-Users and Researchers Compare? European Geosciences Union General Assembly 2021.
- Haigh, T. (2021)** Fitting Drought Science into the Contexts and Calendars of Agricultural Decision-Making. AMS 35th Conference on Hydrology. Invited Presentation.
- Haigh, T., J. Otkin, A. Mucia. (2019).** Managing for Drought, Part III: Destock Now or Later? American Meteorological Society Annual Meeting, Phoenix, AZ.
- Haigh, T., J. Otkin, A. Mucia. (2019).** The Timing of Livestock Producers' Drought Management Decisions during the 2016 Northern Great Plains Drought. Society for Range Management Annual Conference, Symposium.
- Haigh, T., Otkin, J., & Mucia, A. (2019).** Managing for Drought. Part III: Sources of Uncertainty in Decision-Making for Northern Plains Agricultural Producers Affected by the 2016 Drought. In *99th American Meteorological Society Annual Meeting*. AMS.
- Haigh, T., Otkin, J. A., & Mucia, A. (2018).** Views of the 2016 Northern Plains Flash Drought: Farmer Perspectives and Remote Sensing Data. In *98th American Meteorological Society Annual Meeting*. AMS.
- Haigh, T. (2017).** "The Map, the App, and the Graph: Farmers' Trust in, and Use of, Climate Information." Association of American Geographers Annual Meeting, Boston, MA.

### **Service to the University**

University of Nebraska – Lincoln School of Natural Resources Staff Advisory and Professional Development Committee (SAPDC), 2017-2021. Committee Chair 2018-2019.

University of Nebraska - Lincoln Faculty Advisory Committee, SADPC liaison, 2019-2021.

### **Professional Service**

Peer review for two scientific manuscripts related to agricultural drought adaptation and use of climate information in 2021.

Peer review for the South-Central Climate Adaptation Science Center Fiscal Year 2022 Award Competition.

Served on the advisory board of a research project examining transformational ecological drought funded by the National Climate Adaptation Science Center (NCASC).

North Central Climate Collaborative, UNL-SNR representative, 2015-present.

### **Professional Affiliations**

European Geosciences Union, member

American Meteorological Society, member

Society for Range Management, member

