

Mr. Brian A. Fuchs
National Drought Mitigation Center
University of Nebraska-Lincoln
School of Natural Resources
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EDUCATION

MS, University of Nebraska, 2000.
Major: Geosciences
Supporting Areas of Emphasis: Climatology
Dissertation Title: "Diurnal Variations of Winter Precipitation in the Central Plains"

BS, University of Nebraska, 1997.
Major: Meteorology/Climatology

PRESENT POSITION

3/2017-present, *Associate Geoscientist*, NDMC, School of Natural Resources, University of Nebraska, Lincoln, NE.
Provide programmatic technical research- and outreach-related support for the National Drought Mitigation Center. Duties include conducting collaborative research with NDMC and other scientists on drought monitoring and risk/impact assessment tools and methodologies on a state, regional, and international scales. Job functions include working with a collaborative team in the preparation and authoring of the U.S. Drought Monitor, North American Drought Monitor, and other monitoring tools; analyzing technical data and information, developing programs, presentations, and publications; developing new materials and maintaining/updating existing materials on the NDMC website; and assisting with the development of grant proposals to external funding agencies and organizations. Duties also include assisting with organizational aspects of conferences and training seminars/workshops and actively contributing to these meetings as a presenter and discussant, providing scientific support to the NIDIS Help Desk and preparing materials for the NDMC's quarterly publication "DroughtScape".

EXPERIENCE & TRAINING

3/2011-3/2017, *Assistant Geoscientist*, NDMC, School of Natural Resources, University of Nebraska, Lincoln, NE.
12/2005-3/2011, *Climate Specialist*, NDMC, School of Natural Resources, University of Nebraska, Lincoln, NE.
5/2000-11/2005, *Regional Climatologist*, High Plains Regional Climate Center, School of Natural Resources, University of Nebraska, Lincoln, NE.

PROFESSIONAL MEMBERSHIPS

American Meteorological Society. (January 2006 - Present).
Nebraska Climate Assessment and Response Committee. (December 2005 - Present).
American Association of State Climatologists. (August 2000 - Present).
National Data Stewardship Team. (May 2000 - Present).

RESEARCH PUBLISHED INTELLECTUAL CONTRIBUTIONS

Refereed Journal Articles

Bachmair, S., Stahl, K., Collins, K., Hannaford, J., Acreman, M., Svoboda, M., Knutson, C., Smith, K. H., Wall, N., Fuchs, B., Crossman, N. D. and Overton, I. C. (2016), Drought indicators revisited: the need for a wider consideration of environment and society. *WIREs Water*, 3: 516–536. doi:10.1002/wat2.1154

Knutson, C., Fuchs, B. (2016) New Tools for Assessing Drought Conditions for Range Management. *Rangelands* Volume 38, Issue 4, 177-182, 0190-0528. <http://dx.doi.org/10.1016/j.rala.2016.05.003>.
<http://www.sciencedirect.com/science/article/pii/S019005281630030X>

Svoboda, M., Fuchs, B., Poulsen, C., Nothwehr, J. (2015). The Drought Risk Atlas: Enhancing Decision Support for Drought Risk Management in the United States. *The Drought Risk Atlas: Enhancing Decision Support for Drought Risk Management in the United States*.

Tadesse, T., Wardlow, B., Brown, J. F., Svoboda, M., Hayes, M. J., Fuchs, B., Gutzmer, D. (2015). Assessing the Vegetation Condition Impacts of the 2011 Drought across the U.S. Southern Great Plains Using the Vegetation Drought Response Index (VegDRI). *Journal of Applied Meteorology and Climatology*.
<http://journals.ametsoc.org/doi/pdf/10.1175/JAMC-D-14-0048.1>

Trnka, M., Brázdil, R., Balek, J., Semerádová, D., Hlavinka, P., Možný, M., Štěpánek, P., Dobrovolný, P., Zahradníček, P., Dubrovský, M., Eitzinger, J., Fuchs, B., Svoboda, M., Hayes, M., Žalud, Z. (2014). Drivers of soil drying in the Czech Republic between 1961 and 2012. Royal Meteorological Society, John Wiley & Sons, Ltd. *International Journal of Climatology*. <http://onlinelibrary.wiley.com/doi/10.1002/joc.4167/abstract>

Fuchs, B. (2012). The Impact of Drought on Food Production. Eric J. Fitch (Ed.), (6th ed., vol. 14, pp. 3-6). *Water Resources Impact*. American Water Resources Association. <http://www.awra.org/impact/>

CHAPTERS IN BOOKS, MAGAZINE ARTICLES AND TECHNICAL REPORTS

Svoboda, M., Fuchs, B. (2017). Handbook of Drought Indicators and Indices. In Donald A. Wilhite and Roger S. Pulwarty (Ed.), *Drought and Water Crises: Integrating Science, Management, and Policy* (pp. 541). Boca Raton, FL: CRC Press.

Svoboda, M., Fuchs, B. Handbook of Drought Indicators and Indices. World Meteorological Organization (WMO) and Global Water Partnership (GWP), 2016: Integrated Drought Management Programme (IDMP), Integrated Drought Management Tools and Guidelines Series 2. Geneva. ISBN 978-92-63-11173-9
http://www.droughtmanagement.info/literature/GWP_Handbook_of_Drought_Indicators_and_Indices_2016.pdf

Hayes, M. J., Perez, M. L., Adreu, J., Svoboda, M., Fuchs, B., Engle, N. (2016) Perspectives from the Outside: Contributions to the Drought Paradigm Shift in Brazil from Spain, Mexico, and the United States. In *Drought in Brazil: Proactive Management and Policy*. Taylor and Francis.

Fuchs, B. A., Umphlett, N. A., Timlin, M. S., Ryan, W., Doesken, N., Angel, J., Kellner, O., Hillaker, H. J., Knapp, M., Xiamao Lin, S. F., Andresen, J., Pollyea, A., Spoden, G., Guinan, P., Akyuz, A., Rogers, J. C., Edwards, L. M., Todey, D., Bergantino, T. (2014). From Too Much to Too Little: How the central U.S. drought of 2012 evolved out of one of the most devastating floods on record in 2011., Brian A. Fuchs, Deborah A. Wood, Dee Ebbeka (Ed.), (pp. 105).
<http://drought.unl.edu/Portals/0/docs/CentralUSDroughtAssessment2012.pdf>

Fuchs, B., Svoboda, M., Wilhite, D., Hayes, M. J. (2013) Drought Indices for Drought Risk Assessment in a Changing Climate. In Handbook of Engineering Hydrology, Vol. 2: Modeling Climate Changes and Variability. Saeid Eslamian (Ed.), (vol. 2). Handbook of Engineering Hydrology, Vol. 2: Modeling Climate Changes and Variability.

Fuchs, B. (2013). 2013 Drought Outlook. Pork Magazine. Vance Publishing Corporation.
<http://www.porknetwork.com/>

PRESENTATIONS GIVEN

Fuchs, B., Technical Workshop on Drought and Seasonal Forecasting Tools, "Products and Data available from the National Drought Mitigation Center," NDMC/USDA, Austin, TX. (December 6, 2017).

Fuchs, B., Nebraska CARC meeting, "NE Drought Conditions CARC Update: October 30, 2017," NE Dept of Ag, Lincoln, NE. (October 30, 2017).

Fuchs, B., SNR Class, "Products and Data available from the National Drought Mitigation Center," SNR, Lincoln, NE. (October 27, 2017).

Fuchs, B., South Korean Visitors to the NDMC, "The NDMC's Drought Risk Atlas," NDMC, Lincoln, NE. (October 10, 2017).

Fuchs, B., South African Visitors to the NDMC, "Products and Data available from the National Drought Mitigation Center," NDMC, Lincoln, NE. (October 6, 2017).

Fuchs, B., ARS Stocking Summit, "Quick Drought Response Index (QuickDRI)," USDA/ARS, Nunn, CO. (September 19, 2017).

Fuchs, B., Midwest Regional Climate Center Workshop, "What is NIDIS and the Midwest DEWS," MRCC, Champaign, IL. (September 13, 2017).

Fuchs, B., Midwest Regional Climate Center Workshop, "Products and Data available from the National Drought Mitigation Center," MRCC, Champaign, IL. (September 12, 2017).

Fuchs, B., Montana Climate Mini-Summit, "Products and Data available from the National Drought Mitigation Center," NOAA/NIDIS, Montana. (August 24, 2017).

Fuchs, B., South African Visitors to the NDMC, "Products and Data available from the National Drought Mitigation Center," NDMC, Lincoln, NE. (August 23, 2017).

Fuchs, B., Climate and Drought Outlook webinar series, "Midwest/Great Plains Climate-Drought Outlook," NOAA/NIDIS, Lincoln, NE. (August 17, 2017).

Fuchs, B., outlook forum, "Drought Early Warning and Preparedness," NDMC/USDA, El Paso, TX. (August 11, 2017).

Fuchs, B., outlook forum, "What is the United States Drought Monitor ?," NDMC/USDA, El Paso, TX. (August 11, 2017).

Fuchs, B., Nebraska CARC meeting, "NE Drought Conditions CARC Update: July 10, 2017," NE Dept of Ag, Lincoln, NE. (July 10, 2017).

Fuchs, B., North Central US Drought Update webinar, "Regional Drought Update and the Making of the U.S. Drought Monitor," NOAA/NIDIS, Lincoln, NE. (June 21, 2017).

Fuchs, B., LPS Science Teachers, "The United States Drought Monitor: A Cornucopia of Data, a Single Map," LPS, Lincoln, NE. (June 14, 2017).

Fuchs, B., Great Plains Tribal Water Alliance Climate Training Workshop, "Updating and Enhancing the National Drought Mitigation Center's Drought Risk Atlas," HPRCC/NDMC, Lincoln, NE. (May 31, 2017).

Fuchs, B., Summer Outlook Forum for Agriculture in the Lower Rio Grande Valley, "The United States Drought Monitor: A Cornucopia of Data, a Single Map," NDMC/USDA, Weslaco, TX. (May 23, 2017).

Fuchs, B., WERA 1012, "Making the Connection between the United States Drought Monitor and CoCoRaHS," WERA, Estes Park, CO. (May 17, 2017).

Fuchs, B., Lower Elkhorn NRD Board Meeting, "The United States Drought Monitor: A Cornucopia of Data, a Single Map," Lower Elkhorn NRD, Norfolk, NE. (May 11, 2017).

Fuchs, B., Climate Outlook Forum, "Drought Early Warning and Preparedness," NDMC/USDA, Clovis, NM. (April 26, 2017).

Fuchs, B., Climate Outlook Forum, "The United States Drought Monitor: A Cornucopia of Data, a Single Map," NDMC/USDA, Clovis, NM. (April 26, 2017).

Fuchs, B., United States Drought Monitor Forum, "Drought in 2016: Lessons Learned," USDA, Keystone, SD. (April 5, 2017).

Fuchs, B., United States Drought Monitor Forum, "The Drought Impact Reporter," USDA, Keystone, SD. (April 5, 2017).

Fuchs, B., United States Drought Monitor Forum, "The United States Drought Monitor: A Cornucopia of Data, a Single Map," USDA, Keystone, SD. (April 3, 2017).

Fuchs, B., Kenya Visitors to the NDMC, "An Overview of the National Drought Mitigation Center," NDMC, Lincoln, NE. (February 21, 2017).

Fuchs, B., NOAA Central Regional Climate Outlook, "Great Plains and Midwest Climate Outlook," NOAA, Webinar. (February 16, 2017).

Fuchs, B., NRCS Visit to the NDMC, "An overview of the National Drought Mitigation Center," NDMC, Lincoln, NE. (February 10, 2017).

Fuchs, B., Annual Meeting of the American Meteorological Society, "Updating and Enhancing the National Drought Mitigation Center's Drought Risk Atlas," AMS, Seattle, Washington. (January 25, 2017).

Fuchs, B., "The US Drought Monitor and tools from the National Drought Mitigation Center," USDA Climate Hub, Webinar. (January 18, 2017).

CONTRACTS, GRANTS, AND SPONSORED RESEARCH

Contract

Umphlett, N. (Principal Investigator), Svoboda, M. (Investigator), Bathke, D. (Investigator), Fuchs, B. (Investigator), "NIDIS Help Desk Support," Sponsored by Dept of Commerce-NOAA, Federal, \$150,000.00. (September 1, 2017 - August 31, 2018).

Umphlett, N. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "NOAA High Plains Reg Climate Center," Sponsored by Dept of Commerce-NOAA, Federal, \$110,050.00. (August 1, 2016-March 5, 2017).

Umphlett, N. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), Bathke, D. "NOAA High Plains Reg Climate Center," Sponsored by Dept of Commerce-NOAA, Federal, \$150,000. (August 1, 2016-March 5, 2017).

Shulski, M. (Principal Investigator), Hayes, M. (Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "NOAA High Plains Reg Climate Center," Sponsored by Dept of Commerce-NOAA, Federal, \$162,572.00. (October 1, 2013 - July 31, 2016).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), Smith, K. (Investigator), "Drought Monitoring for MENA TO#3," Sponsored by Development Alternatives Inc, Industry, \$40,052.00. (March 11, 2015 - January 29, 2016).

Hayes, M. J. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Fuchs, B. (Investigator), Smith, K. (Investigator), "Tech Assist on Drought Preparedness," Sponsored by World Bank Group-IBRD, Associations/Foundations, \$25,000.00. (July 1, 2014 - June 30, 2015).

Shulski, M. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "NOAA High Plains Reg Climate Center," Sponsored by Dept of Commerce-NOAA, Federal, \$129,050.00. (October 1, 2013 - March 31, 2015).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Fuchs, B. (Investigator), Smith, K. (Investigator), "Tech Assist on Drought Preparedness," Sponsored by World Bank Group-IBRD, Associations/Foundations, \$25,000.00. (July 1, 2014 - June 30, 2015).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Fuchs, B. (Investigator), Smith, K. (Investigator), "Tech Assist on Drought Preparedness," Sponsored by World Bank Group-IBRD, Associations/Foundations, \$40,000.00. (October 3, 2013 - June 30, 2014).

Grant

Fuchs, B. (Principal Investigator), Svoboda, M. (Investigator), "Drought Information Services," Sponsored by Dept of Agriculture-OCE, Federal, \$927,774.00. (October 1, 2017 - September 30, 2018).

Fuchs, B. (Principal Investigator), Svoboda, M. (Investigator), Bathke, D. (Investigator), Tadesse, T. (Investigator) "Drought Information Services," Sponsored by Dept of Agriculture-OCE, Federal, \$827,501.00. (October 1, 2016 - September 29, 2017).

Fuchs, B. (Principal Investigator), Svoboda, M. (Investigator) "2016-2017 La Nina, Rio Grande Basin," Sponsored by USDA Southern Plains Climate Hub, ARS Grazinglands Research Laboratory, Federal, \$100,000.00. (September 29, 2016 – July 31, 2017).

Bulling, D. (Principal Investigator), Pytlik Zillig, L. (Investigator), Abdel-Monem, T. (Investigator), Shank, N. (Investigator), Bernadt, T. (Investigator), Wall, N. (Investigator), Bathke, D. (Investigator), Fuchs, B. (Investigator), Stiles, C. (Investigator), "Drought Planning Using THIRA," Sponsored by Dept of Commerce-NOAA, Federal, \$198,343.00. (July 1, 2017-June 30, 2018).

Fuchs, B. (Principal Investigator), Hayes, M. (Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Tadesse, T. (Investigator), "Eastern Caribbean Drought Workshops," Sponsored by Organization of Eastern Caribbean States (OECS), \$49,227.00. (January 22, 2015 - May 20, 2016).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Tadesse, T. (Investigator), Bathke, D. (Investigator), Fuchs, B. (Investigator), "National Drought Mitigation Center," Sponsored by Dept of Commerce-NOAA, Federal, \$833,404.00. (June 1, 2015 - May 31, 2018).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "Drought Information Services," Sponsored by Dept of Agriculture-OCE, Federal, \$839,442.00. (September 30, 2015 - September 29, 2016).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Tadesse, T. (Investigator), Fuchs, B. (Investigator), Bathke, D. (Investigator), "Drought Risk Management for the US," Sponsored by Univ of Oklahoma, Universities, \$693,696.00. (September 1, 2014 - August 31, 2016).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Hayes, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Rapid Response Drought Monitoring," Sponsored by NASA, Federal, \$336,379.00. (October 29, 2015 - August 13, 2016).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Hayes, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Rapid Response Drought Monitoring," Sponsored by NASA, Federal, \$93,169.00. (June 25, 2015 - August 13, 2016).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Hayes, M. J. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Rapid Response Drought Monitoring," Sponsored by NASA, Federal, \$124,225.00. (December 12, 2014 - August 13, 2016).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Hayes, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Rapid Response Drought Monitoring," Sponsored by NASA, Federal, \$58,113.00. (August 15, 2014 - August 13, 2016).

Knutson, C. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator) "Drought Impacts: Vulnerability Thresholds in Monitoring and Early Warning Research" Sponsored by the National Science Foundation/Belmont Forum ICER, Federal, \$542,073. (September 1, 2013-August 31, 2017).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Hayes, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Rapid Response Drought Monitoring," Sponsored by NASA, Federal, \$324,564.00. (August 14, 2012 - August 13, 2016).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), "Improving U.S. Drought Monitoring," Sponsored by Dept of Agriculture, Federal, \$150,000.00. (October 31, 2014 - January 30, 2016).

Hayes, M. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "Improving U.S. Drought Monitoring," Sponsored by Dept of Agriculture, Federal, \$240,000.00. (July 16, 2014 - January 15, 2016).

Hayes, M. J. (Principal Investigator), Svoboda, M. (Investigator), Knutson, C. (Investigator), Fuchs, B. (Investigator), Tadesse, T. (Investigator), Bathke, D. (Investigator), "Drought Information Service," Sponsored by Dept of Commerce-NOAA, Federal, \$739,803.00. (October 1, 2013 - September 30, 2015).

Svoboda, M. (Principal Investigator), Hayes, M. J. (Investigator), Fuchs, B. (Investigator), Shulski, M. (Investigator), "NDMC Drought Risk Atlas," Sponsored by Dept of Commerce-NOAA, Federal, \$132,945.00. (August 1, 2013 - July 31, 2015).

Hayes, M. J. (Principal Investigator), Svoboda, M. (Investigator), Fuchs, B. (Investigator), "NDMC Drought Info Services for Ag," Sponsored by Dept of Agriculture, Federal, \$200,000.00. (September 27, 2013 - February 28, 2015).

Svoboda, M. (Principal Investigator), Hayes, M. (Investigator), Fuchs, B. (Investigator), Shulski, M. (Investigator), "NDMC Drought Risk Atlas," Sponsored by Dept of Commerce-NOAA, Federal, \$127,186.00. (August 1, 2012 - July 31, 2014).

Wardlow, B. (Principal Investigator), Svoboda, M. (Investigator), Tadesse, T. (Investigator), Fuchs, B. (Investigator), Callahan, K. (Investigator), 62464, "ET Mapping Over North America", Univ of Maryland, Universities, Research, \$29,144.00. (June 22, 2012-June 21, 2013).

SERVICE

University Service

Faculty Mentor, NDMC Student Intern. (October, 2017 – present).

Committee Member, Search Committee for the Director of the High Plains Regional Climate Center. (August 2017 - December 2017).

Faculty Mentor, NDMC Student Intern. (August 15, 2014 – June 30, 2017).

Presenter, Nebraska LEAD #34. (November 2016).

Professional Service

Reviewer, Journal Article, American Meteorological Society (AMS)

Reviewer, Journal Article, Journal of Applied Meteorology (AMS)

Reviewer, Journal Article, Natural Hazards

Consulting

Non-Governmental Organization (NGO), World Meteorological Organization/Global Water Partnership, Geneva, Switzerland. (March 2015 - April 2016).