

Mr. Brian A. Fuchs
National Drought Mitigation Center
University of Nebraska-Lincoln
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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

3/2011-present, *Assistant 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

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. 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., Lower Rio Grande winter outlook forum for agriculture, USDA/NDMC, Weslaco, TX, "Drought and La Nina", Scholarly Service, Workshop, Regional. (December 7, 2016).

Primary association: Research/ARD

Fuchs, B., American Society of Agronomy/Crop Science Society of America/Soil Science Society of America Annual Meeting, American Society of Agronomy/Crop Science Society of America/Soil Science Society of America, Phoenix, AZ, "Monitoring and Forecasting Agricultural Drought", Scholarly Service, Conference, National, published in proceedings. (November 8, 2016).

Primary association: Research/ARD

Fuchs, B., South African Visitors to NDMC, NDMC/USDA, Lincoln, NE, "Products and Data available from the National Drought Mitigation Center", Scholarly Service, Workshop, Regional. (September 28, 2016).

Primary association: Research/ARD

Fuchs, B., South Dakota Stockgrowers Association Annual Convention, South Dakota Stockgrowers Association, Rapid City, SD, "Applications used in making the United States Drought Monitor", Scholarly Service, Conference, State. (September 23, 2016).

Primary association: Research/ARD

Fuchs, B., Puerto Rico Drought Monitor Forum, USDA/NDMC, San Juan, Puerto Rico, "Making the United States Drought Monitor", Scholarly Service, Conference, International. (September 1, 2016).

Primary association: Research/ARD

Fuchs, B., US Virgin Island Drought Monitor Forum, USDA/NDMC, St. Croix, US Virgin Islands, "Making the United States Drought Monitor", Scholarly Service, Conference, International. (August 30, 2016).

Primary association: Research/ARD

Fuchs, B., Wind River Workshop, NDMC, Wind River Reservation, WY, "NDMC: Wind River Project Update/Activities", Scholarly Service, Workshop, Regional. (July 26, 2016).

Primary association: Research/ARD

Fuchs, B., Nebraska CARC Committee Meeting, Nebraska Department of Agriculture, Lincoln, NE, "NE Drought Conditions, CARC Update: June 28, 2016", Scholarly Service, Other, State. (June 28, 2016).

Primary association: Research/ARD

Fuchs, B., North American Drought Monitor Forum, National Centers for Environmental Information, Ft. Worth, TX, "How to Increase Timeliness and Completeness of the NADM Narrative Release", Scholarly Service, Conference, International. (June 22, 2016).

Primary association: Research/ARD

Fuchs, B., North American Drought Monitor Forum, National Centers for Environmental Information, Ft. Worth, TX, "Applications used in making the United States Drought Monitor", Scholarly Service, Conference, International. (June 21, 2016).

Primary association: Research/ARD

Fuchs, B., Great Plains and Midwest Climate Outlook, NOAA/National Weather Service, Lincoln, NE, "Climate Outlook, June 16 2016", Scholarly Service, Other, Regional. (June 16, 2016).

Primary association: Research/ARD

Fuchs, B., Montana Drought Task Force Webinar, NDMC, Lincoln, NE, "Applications used in making the United States Drought Monitor", Research/Creative Activity, Other, Regional. (June 2, 2016).

Primary association: Research/ARD

Fuchs, B., Jet Propulsion Laboratory Visit to NDMC, NDMC, Lincoln, NE, "Applications used in making the United States Drought Monitor", Research/Creative Activity, Other, National. (May 19, 2016).

Primary association: Research/ARD

Fuchs, B., Nebraska GIS/LIS Association Annual Meeting, Nebraska GIS/LIS Association, Mahoney State Park, Gretna, NE, "GIS Applications used in making the United States Drought Monitor", Scholarly

Service, Conference, Regional. (April 8, 2016).

Primary association: Research/ARD

Fuchs, B., Midwest Climate Outlook and Drought Early Warning System (DEWS) Kickoff Meeting, NIDIS, St. Louis, MO, "The Midwest Drought of 2012: A Tale of Two Years", Scholarly Service, Workshop, Regional. (February 11, 2016).

Primary association: Research/ARD

Fuchs, B., Midwest Climate Outlook and Drought Early Warning System (DEWS) Kickoff Meeting, NIDIS, St. Louis, MO, "Products and Data available from the National Drought Mitigation Center", Scholarly Service, Workshop, Regional. (February 10, 2016).

Primary association: Research/ARD

Fuchs, B., OECS RRAC Drought Training Workshop, Organization of Eastern Caribbean States, St. Lucia, "Case Studies of Drought Monitoring from the United States: Products and Data available from the National Drought Mitigation Center", Scholarly Service, Workshop, International, Invited. (January 26, 2016).

Primary association: Research/ARD

Fuchs, B., OECS RRAC Drought Training Workshop, Organization of Eastern Caribbean States, St. Lucia, "Drought Monitoring and Early Warning Information Systems: Local to Global", Scholarly Service, Workshop, International, Invited. (January 26, 2016).

Primary association: Research/ARD

CONTRACTS, GRANTS, AND SPONSORED RESEARCH

Contract

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/Foundation, \$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/Foundation, \$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/Foundation, \$40,000.00. (October 3, 2013 - June 30, 2014).

Grant

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, \$284,588.00. (July 1, 2016-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. (August 15, 2014 - Present).
Presenter, Nebraska LEAD #34. (November 2016).

Professional Service

Reviewer, Journal Article, American Meteorological Society (AMS)
Reviewer, Journal Article, Journal of Applied Meteorology (AMS)

Consulting

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