

Brian K. Hornbuckle

3007 Agronomy Hall, 716 Farm House Lane, Ames, IA 50011-1051 USA
1-515-294-9868, bkh@iastate.edu, <https://faculty.sites.iastate.edu/bkh>

Professional Preparation

Sc.B.	Brown University, Electrical Engineering (Systems), Magna Cum Laude with Honors in Engineering, 1994.
M.A.	The University of Mississippi, Secondary Education (Science), 1996.
M.S.E.	The University of Michigan, Electrical Engineering (Electromagnetics), 1997.
Ph.D.	The University of Michigan, Electrical Engineering and Atmospheric Science (Geoscience and Remote Sensing), 2003.

Appointments

2018 -	Professor, Department of Agronomy, Department of Electrical and Computer Engineering (courtesy), Department of Geological and Atmospheric Sciences (courtesy), Iowa State University of Science and Technology.
2009 - 2018	Associate Professor, Iowa State University of Science and Technology.
2003 - 2009	Assistant Professor, Iowa State University of Science and Technology.
1996 - 2002	NSF and EPA STAR Graduate Research Fellow, The University of Michigan.
1994 - 1996	Chemistry and physics teacher, Clarksdale (Mississippi) High School.

Instruction (40% of Position Responsibility)

AGRON 183 Basic Skills for Agronomists Fall, 3-hour laboratory, 2016-present. Developing the skills that agronomists employ in their work with crops, soil, and the environment through activities involving tools and methodologies used by agronomists.

AGRON/MTEOR 206 Introduction to Weather and Climate Fall, 3-hours-per-week lecture, 2004-present. Basic concepts in weather and climate, including atmospheric measurements, radiation, stability, precipitation, winds, fronts, forecasting, and severe weather. Applied topics include global warming, ozone depletion, world climates and weather safety.

AGRON/ENSCI/MTEOR 405/505 Soil-Plant-Animal-Atmosphere Physics Spring (odd years), 3-hours-per-week lecture, 2005-present. The movement of energy and mass among the soil, vegetation, and atmosphere. The heat and water budget of humans, other animals, plants, and plant communities. Relevance to weather and climate, the effect of climate change on organisms, and remote sensing.

AGRON/E E/MTEOR 518 Microwave Remote Sensing Spring (even years), 3-hours-per-week lecture, 2006-present. Microwave remote sensing of Earth's surface and atmosphere using satellite-based or ground-based instruments. Specific examples include remote sensing of atmospheric temperature and water vapor, precipitation, ocean salinity, and soil moisture.

ENSCI 698 Environmental Science Seminar Spring, 1-hour-every-other-week seminar and symposium, 2007-present. Reports and discussion of recent research and literature.

Scholarship (40% of Position Responsibility)

- Hartman, T., R. Cirone, K. Togliatti, B. K. Hornbuckle, and A. VanLoocke, A Spatial and Temporal Evaluation of the SMAP Cropland b-parameter across the U.S. Corn Belt, *Remote Sensing of Environment*, doi:10.1016/j.rse.2023.113752, 2023.
- Walker, V. A., V. Wallace, E. Yildirim, W. E. Eichinger, M. H. Cosh, and B. K. Hornbuckle, From Field Observations to Temporally Dynamic Soil Surface Roughness Retrievals in the U.S. Corn Belt, *Remote Sensing of Environment*, doi:10.1016/j.rse.2023.113458, 2023.
- Jadidoleslam, N., B. K. Hornbuckle, W. Krajewski, R. Mantilla, and M. Cosh, Analyzing Effects of Crops on SMAP Satellite-based Soil Moisture using a Rainfall-runoff Model in the U.S. Corn Belt, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, doi:10.1109/JSTARS.2021.3131133, 2022.
- Park, J., P. Gurralla, B. K. Hornbuckle, and J. M. Song, Modeling the Microwave Transmissivity of Row Crops, *Applied Computational Electromagnetics Society Journal*, doi:10.47037/2020.ACES.J.360624, 2021.
- Togliatti, K., C. Lewis-Beck, V. A. Walker, T. Hartman, A. VanLoocke, M. H. Cosh, and B. K. Hornbuckle, Quantitative Assessment of Satellite L-band Vegetation Optical Depth in the U.S. Corn Belt, *IEEE Geoscience and Remote Sensing Letters*, 10.1109/LGRS.2020.3034174, 2020.
- NASA SMAP Science Team, 2017-present.
 - NASA Senior Review panel member, 2020.
 - NASA ECOSTRESS Science Team, 2022-present.

Service (20% of Position Responsibility)

- Department of Agronomy Faculty Senator; Chair, Faculty Development and Administrative Relations (FDAR) Council; Co-chair, Faculty Senate Workgroup on Extension Scholarship
- Director of Graduate Education, Agricultural Meteorology
- Department of Agronomy Advisory Council, Tenured/Tenure-track Representative
- Chair, Department of Agronomy Promotion and Tenure Committee
- Co-chair, Department of Agronomy Governance Document
- Department of Agronomy undergraduate academic advisor (15-20 students per semester)
- undergraduate research mentor (57 students up to present)

Engagement

- Local organizer, NASA SMAPVEX16-IA field experiment, 2016.
- “Agronomy and NASA?” Presented to more than 600 middle and high school students through the Iowa State Office of Precollegiate Programs for Talented and Gifted Investigation Series (2017-2019), 4-H Experience Agronomy (2015-2016), FFA Field Day (2015), Go Further Girls STEM conference (2023), and in local school districts.