

Brian K. Hornbuckle

3007 Agronomy Hall, 716 Farm House Lane, Ames, IA 50011-1051
515-294-9868, bkh@iastate.edu

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.

Recent Publications

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*, 36(6), 816-823, 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*, 15, 247-260, doi:10.47037/2020.ACES.J.360624, 2021.

Togliatti, K., C. Lewis-Beck, V. A. Walker, T. Hartman, A. VanLooke, 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.

Lewis-Beck, C., V. A. Walker, J. Niemi, P. Caragea, and B. K. Hornbuckle. Extracting Agronomic Information from SMOS Vegetation Optical Depth in the US Corn Belt Using a Nonlinear Hierarchical Model, *Remote Sensing*, 12, 827, doi:10.3390/rs12050827, 2020.

Lewis-Beck, C., Z. Y. Zhu, V. Walker, and B. Hornbuckle, Modeling crop phenology in the US Corn Belt using spatially referenced SMOS satellite data, *Journal of Agricultural, Biological, and Environmental Statistics*, 25(4), 657-675, doi:10.1007/s13253-020-00419-x, 2020.

Walker, V. A., B. K. Hornbuckle, M. H. Cosh, and J. H. Prueger. Seasonal Evaluation of SMAP Soil Moisture in the U.S. Corn Belt, *Remote Sensing*, 11, 2488, doi:10.3390/rs11212488, 2019.

Togliatti, K., T. Hartman, V. A. Walker, T. J. Arkebauer, A. E. Suyker, A. VanLoocke, and B. K. Hornbuckle. Satellite L-band Vegetation Optical Depth is Directly Proportional to Crop Water in the US Corn Belt, *Remote Sensing of Environment*, doi:10.1016/j.rse.2019.111378, 2019.

Other Publications

Hornbuckle, B. K., J. C. Patton, A. VanLoocke, A. E. Suyker, M. C. Roby, V. A. Walker, E. R. Iyer, D. E. Herzmann, and E. A. Endacott, SMOS Optical Thickness Changes in Response to the Growth and Development of Crops, Crop Management, and Weather, *Remote Sensing of Environment*, doi:10.1016/j.rse.2016.02.043, 2016.

Patton, J. and B. Hornbuckle, Initial Validation of SMOS Vegetation Optical Thickness in Iowa, *IEEE Geoscience and Remote Sensing Letters*, doi:10.1109/LGRS.2012.2216498, 2013.

Rowlandson, T. L., B. K. Hornbuckle, L. M. Bramer, J. C. Patton, and S. D. Logsdon, Comparisons of Evening and Morning SMOS Passes over the Midwest United States, *IEEE Transactions on Geoscience and Remote Sensing*, Special Issue on the European Space Agency's Soil Moisture and Ocean Salinity Mission (SMOS) - Instrument Performance and First Results, doi:10.1109/TGRS.2011.2178158, 2012.

Hornbuckle, B. K., and A. W. England, Radiometric sensitivity to soil moisture at 1.4 GHz through a corn crop at maximum biomass, *Water Resources Research*, 40, W10204, 12 pages, doi:10.1029/2003WR002931, 2004.

Synergistic Activities

- | | |
|--------|---|
| 2020 | NASA Senior Review panel member. |
| 2016 | Local organizer, NASA SMAPVEX16-IA field experiment. |
| 2003 - | Iowa State University co-representative, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI). |

Affiliations

- | | |
|------------------|--|
| Past Students | Erik D. Kabela (Savannah River National Laboratory), Cihan Erbas (Yeni Yüzyil University, Istanbul, Turkey), Tracy L. Rowlandson (ZedX-BASF), Eric S. Russell (Washington State University), Samantha L. Irvin Purdy (USDA Agricultural Research Service), Jason C. Patton (University of Wisconsin, Madison), Ben D. Carr (State of Washington Department of Ecology), Victoria A. Walker (USDA Agricultural Research Service), Kati E. Togliatti (USDA Agricultural Research Service). |
| Current Students | Richard Cirone (Ph.D. 2022), Kyle DeLong (M.S. 2022). |