

Nathaniel A. Brunsell

Curriculum Vitae

Department of Geography
1475 Jayhawk Blvd.
Lindley Hall 417
Lawrence, KS 66045-7613
(785) 864-2021
brunsell@ku.edu

Education

PhD, Biometeorology with emphasis in Remote Sensing, 2003
Utah State University, Logan, UT
Dissertation: An examination of scale issues involved with remotely sensed data

BS, Earth and Planetary Sciences, 1997
University of New Mexico, Albuquerque, NM
Undergraduate Honors Thesis: The effect of topography on precipitation

Professional Experience

Assistant Professor, 2004 - Present
Department of Geography – Atmospheric Sciences Program, University of Kansas

Postdoctoral Research Associate, 2002 - 2004
Department of Civil and Environmental Engineering, Duke University

Peer-Reviewed Publications

Baum, K. A., J. M. Ham, **N. A. Brunsell**, and P. I. Coyne: 2008, Surface boundary layer of cattle feedlots: implications for emission measurement. *Agricultural and Forest Meteorology*, **in review**.

Lyon, S., F. Dominguez, D. Gochis, **N. Brunsell**, C. Castro, F. Chow, D. Fuka, Y. Hong, P. Kucera, S. Nesbitt, Y. Fan, N. Salzmann, J. Schmidli, P. Snyder, A. Teuling, T. Twine, G. Lee, S. Levis, J. Lundquist, G. Salvucci, A. Sealy, T. Walter: 2008, Coupling Terrestrial and atmospheric water dynamics to improve prediction in a changing environment. *Bulletin of the American Meteorological Society*, **in review**.

Lash, R. R., **N. A. Brunsell** and A. T. Peterson: 2008, In search of environmental triggers to Ebola and Marburg viruses. *GeoCarto International*, **in review**.

[12] **Brunsell, N. A.**, J. M. Ham and C. E. Owensby: 2008, Assessing the multi-resolution information content of remotely sensed variables and elevation for evapotranspiration in a tall-grass prairie environment. *Remote Sensing of Environment*, **in press**.

- [11] Young, C. B. and **N. A. Brunsell**: 2008, Evaluating NEXRAD precipitation estimates for the Missouri River Basin: an analysis using daily raingage data. *Journal of Hydrologic Engineering*, *in press*.
- [10] **Brunsell, N. A.** and C. B. Young: 2008, Land surface response to precipitation events using MODIS and NEXRAD data, *International Journal of Remote Sensing*, *in press*.
- [9] **Brunsell, N. A.**: 2006, Characterization of land-surface precipitation feedback regimes with remote sensing. *Remote Sensing of Environment*, **100**, 200-211.
- [-] French, A. N., F. Jacob, M. C. Anderson, W. P. Kustas, W. Timmermans, A. Gieske, B. Su, H. Su, M. F. McCabe, F. Li, J. Prueger, and **N. Brunsell**: 2005, Erratum: surface energy fluxes with the Advanced Thermal Emission and Reflection Radiometer (ASTER) at the Iowa SMACEX site (USA). *Remote Sensing of Environment*, **99**, 471.
- [8] French, A. N., F. Jacob, M. C. Anderson, W. P. Kustas, W. Timmermans, A. Gieske, B. Su, H. Su, M. F. McCabe, F. Li, J. Prueger, and **N. Brunsell**: 2005, Surface energy fluxes with the Advanced Thermal Emission and Reflection Radiometer (ASTER) at the Iowa SMACEX site (USA). *Remote Sensing of Environment*, **99**, 55-65.
- [7] White, M.A., **N. Brunsell**, and M.D. Schwartz: 2004, Vegetation phenology in global change studies. In *Phenology: An Integrative Environmental Science*. M.D. Schwartz, editor. Kluwer Academic Publishers, New York, NY. 453-466.
- [6] **Brunsell, N. A.** and R. R. Gillies: 2003, Length scale analysis of surface energy fluxes derived from remote sensing. *Journal of Hydrometeorology*, **4**, 1212-1219.
- [5] **Brunsell, N. A.** and R. R. Gillies: 2003, Determination of scaling characteristics of AVHRR data with wavelets: Application to SGP97, *International Journal of Remote Sensing*, **24**, 14, 2945-2957.
- [4] **Brunsell, N. A.** and R. R. Gillies: 2003, Scale issues in land-atmosphere interactions: implications for the remote sensing of the surface energy balance, *Agricultural and Forest Meteorology*, **117**, 3-4, 203-221.
- [3] **Brunsell, N. A.** and R. R. Gillies: 2002, Incorporation of surface emissivity into a thermal atmospheric correction, *Photogrammetric Engineering and Remote Sensing*, **68**, 12, 1263-1269.
- [2] **Brunsell, N.** and Gillies, R.: 2001, The effect of emissivity on evaporation, in *Remote Sensing and Hydrology 2000: Proceedings of a Symposium Held at Santa Fe, New Mexico, April 2000*. eds: M. Owe, K. Brubaker, J. Ritchie and A. Rango, **267**, 276-280.
- [1] Menking, K. M., R. Y. Anderson, **N. A. Brunsell**, B. D. Allen, A. L. Ellwein, T. A. Loveland and S. W. Hostetler: 2000, Evaporation from groundwater discharge playas, Estancia Basin, central New Mexico. *Global and Planetary Change*, **25**, 133-147.

Conference Proceedings and Presentations

[25] **N. A. Brunsell**, T. L. Buck, K. Arnold and J. M. Ham: 2007, Variation in scintillometer and eddy tower footprints and implications for the validation of satellite derived energy fluxes in heterogeneous terrain. AGU Fall Meeting, 10-14 Dec, San Francisco, CA.

[24] Jones, A. R. and **N. A. Brunsell**: 2007, Investigation of the impacts of spatial variability of soil moisture on convective precipitation in the central plains. AGU Fall Meeting, 10-14 Dec, San Francisco, CA.

[23] Arnold, K., J. Ham and **N. Brunsell**: 2007, Energy balance closure when using eddy covariance: How good is good enough? American Society of Agronomy, 4-8 Nov, New Orleans, LA.

[22] Ham, J., **N. Brunsell**, K. Arnold, and K. Baum: 2007, Effect of sampling frequency and integration interval on eddy covariance measurements of heat, water vapor, and CO₂ fluxes. American Society of Agronomy, 4-8 Nov, New Orleans, LA.

[21] **N. A. Brunsell**: 2007, Understanding water cycle dynamics for increased predictability: where are we? WyGIS Geospatial Forum. University of Wyoming **[INVITED]**

[20] **Brunsell, N. A.**: 2007, Carbon and water cycling. The Role of Ideas in U.S. Climate Change Policy. 20 Oct, Lawrence, KS. **[INVITED]**

[19] Feddema, J. J. and **N. A. Brunsell**: 2007, Environmental impact of global warming on the state of Kansas. 2007 State of the State Kansas Economic Policy Conference. Kansas E3: Energy, the Environment, & Economics. 11 Oct, Lawrence, KS. **[INVITED]**

[18] **N. A. Brunsell** and J. M. Ham: 2007, Scaling evapotranspiration in prairie ecosystems: remote sensing, modeling and field measurements. American Ecological Engineering Society, 21-25 May, Manhattan, KS.

[17] **N. A. Brunsell** and A. R. Jones: 2007, Determining the spatial variability of water and carbon cycling, First Annual Kansas EPSCoR Ecoforecasting Meeting, 21 Apr, Manhattan, KS.

[16] **N. A. Brunsell** and J. M. Ham: 2006, Spatial scaling of water and energy fluxes in a tall-grass prairie. AGU Fall Meeting, 5-9 Dec, San Francisco, CA.

[15] Young, C. B. and **N. A. Brunsell**: 2006, Which is better: NEXRAD or Gage? AGU Fall Meeting, 5-9 Dec, San Francisco, CA.

[14] **Brunsell, N. A.** and J. M. Ham: 2006, Scaling surface energy fluxes in a tall-grass prairie using large aperture scintillometer and MODIS data. 27th Conference on Agricultural and Forest Meteorology, 22-26 May, San Diego, CA.

[13] Young, C. B., T. M. Brown and **N. A. Brunsell**: 2006, Evaluation of NEXRAD operational estimates of intense rainfall using a dense network of ALERT raingages. AGU Joint Assembly, 23-26 May, Baltimore, MD.

- [12] Young, C. B. and **N. A. Brunsell**: 2005, Evaluation of NEXRAD precipitation estimates for the Missouri River Basin using daily raingage data. AGU Fall Meeting, 5-9 Dec, San Francisco, CA.
- [11] **Brunsell, N. A.** and J. M. Ham: 2005, Water and heat fluxes from a large aperture scintillometer in an ungrazed prairie. Ameriflux Annual Science Meeting, 18-20 October, Boulder, CO.
- [10] **Brunsell, N. A.** and C. B. Young: 2005, Assessing spatial-temporal variability of vegetation-precipitation interactions with combined NEXRAD and MODIS data. AGU Joint Assembly, 23-27 May, New Orleans, LA.
- [9] **Brunsell, N. A.**: 2005, Quantifying the dominant time scales of land-surface precipitation feedbacks. AAG Annual Meeting, 5-9 April, Denver, CO.
- [8] Lash, R. R., **N. A. Brunsell**, A. T. Peterson and B. Coles: 2005, Spatiotemporal context of Ebola and Marburg hemorrhagic fever outbreaks in Africa. AAG Annual Meeting, 5-9 April, Denver, CO.
- [7] Prueger, J.H., W. P. Kustas, L. E. Hipps, J. L. Hatfield, A. Cahill, C. Williams, J. Albertson, W. E. Eichinger, D. I. Cooper, and **N. Brunsell**: 2004, Spatial variability of turbulent fluxes across a corn/soybean production region in central Iowa. 26th Conference on Agriculture and Forest Meteorology, 23-27, August, Vancouver, BC, Canada.
- [6] **Brunsell, N. A.** and J. D. Albertson: 2003, Separating soil- atmosphere and canopy – atmosphere contribution to CO₂ exchange. SERC-NIGEC Annual Meeting, 21-22 October, Indianapolis, IN.
- [5] **Brunsell, N. A.** and J. D. Albertson: 2003, Assessing the spatial scales of surface atmosphere interactions. AGU Fall Meeting, 8-12 December, San Francisco, CA.
- [4] **Brunsell, N. A.** and J. D. Albertson: 2003, Effects of surface heterogeneity on scalar and flux profiles in the atmospheric boundary layer. EGS-AGU-EUG Joint Assembly, 6-11 April, Nice, France.
- [3] **Brunsell, N. A.**, R. R. Gillies, B. Lapenta, and S. Dembeck: 2003, Aggregation of remotely sensed vegetation and derived latent heat flux. 83rd AMS Annual Meeting, 9-13 February, Long Beach, CA.
- [2] **Brunsell, N. A.**, and R. R. Gillies: 2002, Length scales of remotely sensed vegetation, surface radiometric temperature, and derived surface energy fluxes. 25th Conference on Agricultural and Forest Meteorology, 20-24 May, Norfolk, VA.
- [1] **Brunsell, N. A.**, K. M. Menking, R. Y. Anderson, and B. D. Allen: 1998, Atmospheric and hydrologic estimates of evaporation for the Estancia basin playa complex. New Mexico Geological Society Spring Meeting, 9 April, Socorro, NM.

Non-Peer Reviewed Publications

[3] **Brunsell, N. A.:** 2007, Book Review - Global Warming: Understanding the Forecast by David Archer, *Palios*, doi:10.2110/palo.2007.BR011.

[2] Brown, J. C., M. Purcell, and **N. Brunsell:** 2007, Scale, Problems of. *Encyclopedia of Environment and Society*. ed. by Paul Robbins. SAGE Publications.

[1] Young, C. B., T. M. Brown, and **N. A. Brunsell:** 2007, Evaluation of NEXRAD operational precipitation estimates in Kansas. Technical report for the Kansas Department of Transportation. 108 pages.

Currently Funded Projects

“Assessing climate change in Kansas” The Land Institute. \$36,012. (PI)

“Understanding and forecasting ecological change: causes, trajectories and consequences of environmental change in the Central Plains” NSF Epscor. KU funding: \$3,599,997. (Co-Investigator, KU PI: L. Krishtalka)

Previously Funded Projects

“Water and heat fluxes in a prairie ecosystem assessed using scintillometry and physically based modeling” KUCR General Research Fund. \$7,015.00. 2006-2007

“Assessing multi-scale spatial-temporal variability of surface energy fluxes using scintillometry and remote sensing” KUCR New Faculty General Research Fund. \$7,914.56. 2005-2006.

Teaching Experience

Atmospheric Science/Geography 521: Microclimatology, Spring 2006
Atmospheric Science 642: Remote Sensing of the Atmosphere, Spring (2005-Present)
Atmospheric Science 680: Physical Meteorology, Fall (2004-Present)
Atmospheric Science 697: Senior Seminar, Fall (2004-Present)
Atmospheric Science 606: Forecasting Practicum, Fall (2004-Present)
Atmospheric Science 607: Forecasting Intern, Fall (2004-Present)
Geography 531/731: Land-Atmosphere Interactions, Spring 2005, Fall 2007
Geography 104: Introduction to Physical Geography, Spring 2007, Fall 2007
Honors 190: State of Fear: Assessing Climate Change, Fall 2006

Short Courses:

State of Fear: Assessing Climate Change. Duke Talent Identification Program (Weekend course for Junior High School Students)

Awards

American Society for Photogrammetry and Remote Sensing. Lecia Geosystems Award for best scientific paper in remote sensing. Second Place, 2003.

Service

National:

Member of Agricultural and Forest Meteorology Scientific and Technological Planning Commission for the American Meteorological Society (2007-2009)

University:

Research Committee of the University Honors Program (2006-2007)

College:

College Academic Misconduct Committee (2006-2009)

Faculty search committee (Ecology and Evolutionary Biology, Ecological modeler, 2006-2007)

Department:

Graduate affairs committee (2005-2007)

Faculty search committee (Geography, Soils/Geomorphologist, 2006-2007)

Faculty search committee (Geography, Atmospheric scientist, 2006-2007)

Faculty search committee (Geography, Glaciologist, 2005-2006)

Undergraduate studies committee (2004-2005)

Graduate Student Committees

A. Jones – MA, Dept. of Geography, KU (Chair, anticipated 2008)

D. Smith – MA, Dept. of Geography, KU (Chair, anticipated 2008)

I. Masialetti – PhD, Dept. of Geography, KU

P. Protti – PhD, Dept. of Ecology and Evolutionary Biology, KU

T. Brown – MS, Dept. of Civil, Environmental and Architectural Engineering (2006)

Academic Development

Participant in the **NCAR Junior Faculty Forum: Coupling terrestrial and atmospheric water dynamics to improve predictability in a changing environment.** Boulder, CO. 9-11 July, 2007.

Participant in the **Geography Faculty Development Alliance.** Boulder, CO. 4-11 June, 2005.

Professional Organizations

American Geophysical Union

American Meteorological Society

Association of American Geographers

Manuscript Reviewer

Agricultural and Forest Meteorology, GeoForum, Geophysical Research Letters, International Journal of Remote Sensing, IEEE Transactions on Geoscience and Remote Sensing, Journal of the American Water Resources Association, Journal of Applied Meteorology and Climatology, Journal of Arid Environments, Journal of Hydrometeorology, Remote Sensing of Environment, Theoretical and Applied Climatology, Water Resources Research