

## Clinton M. Rowe

Department of Geosciences  
University of Nebraska-Lincoln  
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### Education

- 1988 Ph.D. in Climatology, University of Delaware  
Integration of background in Biology and Climatology through studies of the interaction of vegetation and the atmosphere, especially at the global scale.  
Areas of interest:     topical - physical climatology  
                                  methodological - computational methods  
Thesis: *Modeling Land-Surface Albedos from Plant Canopy Architecture.*
- 1982 M.S. in Geography/Climatology, University of Delaware.  
Studied microclimatology of natural and human-built environments, physical climatology and radiation climatology.  
Thesis: *Simulation of Shortwave Irradiance on Flat-Plate Solar Collectors in Urban Environments.*
- 1978 B.A. in Biology and Geography, University of Delaware.  
Emphasized ecology and the role of the physical environment, especially climate, in ecological processes.

### Employment

- 1997- Associate Professor, Meteorology/Climatology Program, Department of Geosciences, University of Nebraska-Lincoln. Courtesy appointment in School of Natural Resources Science.
- 1994-1997 Associate Professor, Department of Geography, University of Nebraska-Lincoln. Courtesy appointments in Geosciences and Agricultural Meteorology.
- 1986-1994 Assistant Professor, Department of Geography, University of Nebraska-Lincoln. Appointed Graduate Faculty Member, November 1988; Fellow, October 1992.
- 1984-1986 Research Assistant, Center for Climatic Research, University of Delaware. NSF grant ATM-8306946, "Modeling Interactions between Biosphere and Atmosphere on a Global Scale."
- 1982-1984 Instructor, Department of Geography, University of Delaware. Taught Introduction to Computer Methods in Geography.
- 1980-1983 Research Assistant, Center for Climatic Research, University of Delaware. NASA grant NAG 5-107, "A Climatically-Derived Global Soil Moisture Data Set for Use in the GLAS Atmospheric Circulation Model Seasonal Cycle Experiment."
- 1980 Instructor, Wilmington College. Taught Introduction to Physical Geography.

## Research Interests

### Meteorology/Climatology:

Land Surface-Atmosphere Interaction  
Boundary-layer Meteorology  
Surface Energy Balance Modeling  
Climate Modeling and Simulation  
Climate Change

### Computational Methods:

Numerical Modeling and Simulation  
Spatial Interpolation

## Teaching Interests

Physical Meteorology	Boundary-layer Meteorology
Climate Modeling	Bioclimatology
Global Climate Systems	Weather and Climate
Computational Methods in Meteorology/Climatology	Land-Atmosphere Interactions

## Awards

- 1988      Cornell National Supercomputing Facility. Selected to attend 1988 Summer Institute.
- 1985      Internship, Universities Space Research Association. One month internship at NASA Goddard Space Flight Center, Laboratory for Atmospheres.
- 1981      Travel Grant, Sigma Xi, University of Delaware.
- 1978-1980      Fellowship, Department of Geography, University of Delaware.

## Affiliations

Member,      American Meteorological Society  
                 American Geophysical Union  
                 Sigma Xi

Fellow,      Center for Great Plains Studies

## Publications

(graduate student advisees in bold-italic)

### *Peer-reviewed Journal Articles*

**Radell, D.B.** and **Rowe, C.M.** (2009) Modeling the influence of a regional water table on surface energy fluxes in the Nebraska Sand Hills, *Water Resources Research*, submitted.

**Gilliland, E. K.** and **Rowe, C.M.** (2009) A comparison of cumulus parameterization schemes in the WRF model, *J. Hydromet.*, in preparation.

**Radell, D.B.** and **Rowe, C.M.** (2008) An observational analysis and evaluation of land surface model accuracy in the Nebraska Sand Hills, *J. Hydromet.*, 9:601-621, doi: 10.1175/2007JHM913.1.

Feng, S., Oglesby, R. J., **Rowe, C. M.**, Loope, D. B., and Hu, Q. (2008), Atlantic and Pacific SST influences on Medieval drought in North America simulated by the Community Atmospheric Model, *J. Geophys. Res.*, 113, D11101, doi:10.1029/2007JD009347.

**Rowe, C.M.**, Loope, D.B., Oglesby, R.J., Van der Voo, R. and **Broadwater, C.E.** (2007) Inconsistencies between Pangean reconstructions and basic climate controls, *Science*, 318: 1284-1286.

Sridhar, V., Loope, D.B., Swinehart, J.B., Mason, J.A., Oglesby, R.J. and **Rowe, C.M.** (2006) Large wind shift on the Great Plains during the Medieval Warm Period, *Science*, 313: 345-347.

Loope, D.B., Steiner, M.B., **Rowe, C.M.** and Lancaster, N. (2004) Tropical westerlies over Pangean sand seas, *Sedimentology*, 51: 315-322.

Chen, X., Chen, X., **Rowe, C.**, Hu, Q. and Anderson, M. (2003) Geological and climatic controls on streamflows in the Nebraska Sand Hills, *Journal of the American Water Resources Association*, 39: 217-228.

Loope, D.B. and **Rowe, C.M.** (2003) Long-lived pluvial episodes during deposition of the Navajo Sandstone, *Journal of Geology*, 111: 223-232.

Loope, D.B., **Rowe, C.M.** and Joeckel, R.M. (2001) Annual monsoon rains recorded by Jurassic dunes, *Nature*, 412(no. 6842): 64-66.

Mote, T.L. and **Rowe, C.M.** (1996) A comparison of microwave radiometric data and modeled snowpack conditions for Dye 2, Greenland, *Meteorology and Atmospheric Physics*, 59: 245-256.

- Rowe, C.M.**, Kuivinen, K.C. and Jordan, R. (1995) Simulation of summer snowmelt on the Greenland ice sheet using a one-dimensional model, *Journal of Geophysical Research (Atmospheres)*, 100(D8): 16,265-16,273.
- Rowe, C.M.**, Anderson, M.R., Mote, T.L. and Kuivinen, K.C. (1995) Indications of melt in near-surface ice-core stratigraphy: Comparisons with passive microwave melt signals over the Greenland ice sheet, *Annals of Glaciology*, 21: 59-63.
- Rowe, C.M.**, Kuivinen, K. and Flores-Mendoza, F. (1994) Sensitivity of streamflow to climate change, *Great Plains Research*, 4: 27-49.
- Rowe, C.M.** (1993) Geography (Fractals in Physical Geography), *McGraw-Hill Yearbook of Science and Technology*, New York: McGraw-Hill, pp. 190-193.
- Mote, T.L., Anderson, M.R., Kuivinen, K.C. and **Rowe, C.M.** (1993) Passive microwave-derived spatial and temporal variations of summer melt on the Greenland ice sheet. *Annals of Glaciology*, 17: 233-238.
- Rowe, C.M.** (1993) Global land-surface albedo modelling, *International Journal of Climatology*, 13: 473-495.
- Rowe, C.M.** (1993) Incorporating landscape heterogeneity in land surface albedo models, *Journal of Geophysical Research (Atmospheres)*, 98(D3): 5037-5043.
- Rowe, C.M.** (1991) Modeling land-surface albedos from vegetation canopy architecture. *Physical Geography*, 12: 93-114.
- Willmott, C.J., **C.M. Rowe** and Y. Mintz (1985) Climatology of the terrestrial seasonal water cycle. *Journal of Climatology*, 5: 589-606.
- Willmott, C.J., S.G. Ackleson, R.E. Davis, J.J. Feddema, K.M. Klink, D.R. Legates, J. O'Donnell and **C.M. Rowe** (1985) Statistics for the evaluation and comparison of models. *Journal of Geophysical Research*, 90(C5): 8995-9005.
- Willmott, C.J., **C.M. Rowe** and W.D. Philpot (1985) Small-scale climate maps: a sensitivity analysis of some common assumptions associated with grid point interpolation and contouring. *The American Cartographer*, 12: 5-16.
- Rowe, C.M.** and C.J. Willmott (1984) Solar irradiance on flat-plate collectors in urban environments. *Solar Energy*, 33: 343-351.
- Rowe, C.M.** (1984) A method for determining the optimal orientation of flat-plate solar collectors. *Proceedings, Fifteenth Annual Pittsburgh Modeling and Simulation Conference*, 15: 221-226.

### *Monographs*

**Rowe, C.M.** (1982) Simulation of shortwave irradiance on flat-plate solar collectors in urban environments. *Publications in Climatology*, 35(1).

Willmott, C.J., J.R. Mather and **C.M. Rowe** (1981) Average monthly and annual surface air temperature and precipitation data for the world. Part 1. The eastern hemisphere. Part 2. The western hemisphere. *Publications in Climatology*, 34(1-2).

Mather, J.R. and **C.M. Rowe** (1979) The use of the climatic water balance to evaluate the validity of a precipitation record. University of Delaware Water Resources Center, Contribution No. 28. (also issued as part of *Publications in Climatology*, 32(1), 1979)

### *Book Reviews*

**Rowe, C.M.** (1995) Review of "Climate-Biosphere Interactions. Biogenic Emissions and Environmental Effects of Climate Change", by Richard G. Zepp, ed., in *Bulletin of the American Meteorological Society*, 76: 256-257.

**Rowe, C.M.** (1991) Review of "Air Pollution and Acid Rain: The Biological Impact", by A. Wellburn, in *Bulletin of the American Meteorological Society*, 72: 639-640.

### *Unpublished Reports*

**Rowe, C.M.** and Grelson, E.F. (1995) A Comparison of Weather Conditions Affecting LC-130 Flight Training Operations in Greenland, prepared for Polar Ice Coring Office, UNL.

### **Papers presented at professional meetings** (graduate student advisees in bold-italic)

**Rowe, C.M.**, Oglesby, R.J., Loope, D.B. and Van der Voo, R.J. (2007) Can Orbital Forcing Help Explain Reconstructed Monsoon Winds for the Early Jurassic?, AGU Annual Meeting, San Francisco.

**Radell, D.B.** and **Rowe, C.M.** (2007) Observations and influence of groundwater on surface fluxes using the Noah land surface model in the Nebraska Sand Hills, *Twenty-first Conference on Hydrology*, American Meteorological Society, San Antonio.

- Gilliland, E.K.** and **Rowe, C.M.** (2007) A comparison of cumulus parameterization schemes in the WRF model, *Twenty-first Conference on Hydrology*, American Meteorological Society, San Antonio.
- Rowe, C.M.**, Loope, D.B. and Oglesby, R.J. (2006) Curvature of monsoonal winds over Pangea: A new paleolatitudinal indicator. AGU Annual Meeting, San Francisco.
- Oglesby, R.J., **Rowe, C.M.**, Loope, D.B., Sridhar, V., Swinehart, J.B. and Mason, J.A. (2006) Dunes reveal unprecedented circulation pattern during Great Plains droughts. AGU Annual Meeting, San Francisco.
- Rowe, C.M.**, Anderson, M.A., **Radell, D.B.** and Loope, D.B. (2004) Local moisture cycling in the Nebraska Sand Hills – the key to dune stabilization? *Eighteenth Conference on Hydrology*, American Meteorological Society, San Diego.
- Anderson, M.A., **Rowe, C.M.**, **Radell, D.B.** and McCormick, J.R. (2004) Flash flooding during a severe drought situation: a case study of the 2002 Ogallala, NE event, *Twentieth Conference on Weather Analysis and Forecasting*, American Meteorological Society, San Diego.
- Radell, D.B.**, **Rowe, C.M.** and Anderson, M.R. (2003) Model sensitivity and statistical precipitation validation of the 11 June 2000 nocturnal MCS in Nebraska, *Tenth Conference on Mesoscale Processes*, American Meteorological Society.
- Rowe, C.M.**, Anderson, M.R., **Kaiser, J.W.**, **Radell, D.B.**, Hu, Q., and Chen X. (2003) Groundwater inputs to regional evapotranspiration in the Nebraska Sand Hills, *Seventeenth Conference on Hydrology*, American Meteorological Society, Long Beach, P1.16.
- Anderson, M.R., **Rowe, C.M.**, **Radell, D.B.**, **Kaiser, J.W.**, Hu, Q., and Chen, X. (2003) Impact of Sand Hills' soil properties on summer precipitation, *Seventeenth Conference on Hydrology*, American Meteorological Society, Long Beach, P1.10.
- Rowe C.M.**, Anderson, M.R., **Kaiser, J.W.**, **Radell, D.B.**, Hu, Q. and Chen, X. (2002) Warm-season precipitation in the Nebraska Sand Hills: sensitivity to moisture holding properties of the soil, *Mississippi River Climate and Hydrology Conference*, American Meteorological Society, New Orleans.
- Rowe C.M.**, Anderson, M.R., **Kaiser, J.W.**, **Radell, D.B.**, Hu, Q. and Chen, X. (2002) Atmospheric response to groundwater input: a sensitivity study in the Nebraska Sand Hills, *Mississippi River Climate and Hydrology Conference*, American Meteorological Society, New Orleans.

- Rowe C.M.**, Hu, Q. Anderson, M.R., and Chen, X. (2002) Using integrated modeling techniques to investigate the hydrological cycle in the Nebraska Sand Hills, *Mississippi River Climate and Hydrology Conference*, American Meteorological Society, New Orleans.
- Chen, X., Chen, X., Hu, Q., **Rowe C.M.** and Anderson, M.R. (2002) Modeling of Groundwater Flow and Its Application to the Analysis of Water Cycle in the Nebraska Sand Hills, *Mississippi River Climate and Hydrology Conference*, American Meteorological Society, New Orleans.
- Rowe, C.M.**, Anderson, M.R., **Kaiser, J.** and **Radell, D.** (2002) Warm-season land-atmosphere interactions in the Nebraska Sand Hills, *Sixteenth Conference on Hydrology*, American Meteorological Society, Orlando, J71-J74.
- Anderson, M.R., **Rowe, C.M.**, **Kaiser, J.** and **Radell, D.** (2002) Regional precipitation variations and atmospheric conditions over the Sand Hills region of Nebraska, *Thirteenth Symposium on Global Change and Climate Variations*, American Meteorological Society, Orlando.
- Rowe, C.M.**, Hu, Q., Anderson, M.R. and Chen, X. (2001) Using integrated modeling techniques to investigate the hydrological cycle in the Nebraska Sand Hills, Paper presented at the NASA/NOAA GCIP and Hydrology Meetings, May 2001, Potomac, MD.
- Ashley, W.S.**, Anderson, M.R. and **Rowe, C.M.**, (2000) Synoptic-scale conditions associated with the 31 May 1998 derecho, *Twentieth Conference on Severe Local Storms*, American Meteorological Society, Orlando.
- Mote, T.L. and **Rowe, C.M.** (1996) Snowpack metamorphism at Dye 2, Greenland inferred from SSM/I and surface meteorological observations, *Eighth Conference on Satellite Meteorology and Oceanography*, American Meteorological Society, 561-564.
- Kuivinen, K.C., Lawson, M.P., **Rowe, C.M.** and Clausen, H.B. (1996) Seasonal oxygen isotope records from Greenland ice cores as climatological indicators. I. Comparison with coastal temperatures. AGU Annual Meeting, San Francisco.
- Rowe, C.M.** Kuivinen, K.C., **Bathke, D.J.** and Clausen, H.B. (1996) Seasonal oxygen isotope records from Greenland ice cores as climatological indicators. II. Comparison with atmospheric circulation. AGU Annual Meeting, San Francisco.
- Rowe, C.M.** (1996) Climate studies in support of PICO operations in Greenland. Applied Geography Conference, Kansas City.
- Bathke, D.J.**, **Rowe, C.M.** and Kuivinen, K.C. (1996) Climatological tools. Applied Geography Conference, Kansas City.

- Anderson, M.R., **Rowe, C.M.**, George, K.M. and Mote, T.L. (1995) Atmospheric conditions during snowmelt at Dye 2, Greenland, *Fourth Conference on Polar Meteorology and Oceanography*, American Meteorological Society, 82-85.
- Rowe, C.M.** and Mote, T.L. (1995) Sensible heat advection and snowmelt on the Greenland ice sheet. AAG Annual Meeting, Chicago.
- Rowe, C.M.** and Mote, T.L. (1994) Large-scale atmospheric sensible heat advection and snowmelt on the Greenland ice sheet. AGU Annual Meeting, San Francisco.
- Rowe, C.M.** and Mote, T.L. (1994) Large-scale atmospheric sensible heat advection and snowmelt on the Greenland ice sheet. Planning Workshop on the Early Detection of Change on the Greenland Ice Sheet and Understanding Their Causes, Copenhagen.
- Anderson, M.R., Mote, T.L., **Rowe, C.M.** and George, K.L. (1994) Passive microwave determination of surface snowmelt. Planning Workshop on the Early Detection of Change on the Greenland Ice Sheet and Understanding Their Causes, Copenhagen.
- Rowe, C.M.**, Anderson, M.R., Mote, T.L. and Kuivinen, K.C. (1994) Indications of melt in near-surface ice-core stratigraphy: comparisons with passive microwave melt signals over the Greenland ice sheet. International Symposium on the Role of the Cryosphere in Global Change, Columbus, Ohio.
- Rowe, C.M.**, Kuivinen, K.C. and Anderson, M.R. (1994) Comparison of passive microwave melt signals over the Greenland ice sheet with indications of melt in near surface ice core stratigraphy. AAG Annual Meeting, San Francisco.
- Mote, T.L. and **Rowe, C.M.** (1994) A comparison of satellite microwave data and surface meteorological observations for Dye-2, Greenland. AAG Annual Meeting, San Francisco.
- Anderson, M.R., **Rowe, C.M.** and Ferraro, E. (1994) Three dimensional distribution of ice structures in the snowpack at Dye 2, Greenland. AAG Annual Meeting, San Francisco.
- Rowe, C.M.**, Kuivinen, K.C. and Jordan, R. (1993) Modeling snowmelt at Dye 2, Greenland using an energy and mass balance model. AGU Fall Meeting, San Francisco.
- Kuivinen, K.C., **Rowe, C.M.**, Anderson, M.R. and Jezek, K.C. (1993) Indications of melt in near surface ice core stratigraphy: comparisons with passive microwave melt signals over the Greenland ice sheet. AGU Fall Meeting, San Francisco.
- Anderson, M.R., **Rowe, C.M.**, and Ferraro, E.M. (1993) Three-dimensional distribution of ice structures in the Greenland snowpack. AGU Fall Meeting, San Francisco.



- Rowe, C.M.**, Kuivinen, K.C. and Jordan, R. (1993) Surface energy fluxes during the spring melt period on the Greenland ice sheet. AAG Annual Meeting, Atlanta.
- Rowe, C.M.**, Kuivinen, K.C. and Jordan, R. (1992) One-dimensional modeling of energy and mass fluxes over the seasonal snowpack on the Greenland ice sheet. AGU 1992 Fall Meeting, San Francisco.
- Kuivinen, K.C., Lawson, M.P., **Rowe, C.M.** and Clausen, H.B. (1992) Spatial and temporal variations in oxygen isotope records from Greenland ice cores. AGU 1992 Fall Meeting, San Francisco.
- Mote, T.L., Anderson, M.R., Kuivinen, K.C. and **Rowe, C.M.** (1992) Passive microwave-derived spatial and temporal variations of Greenland ice sheet surface characteristics: preliminary results. International Symposium on Remote Sensing of Snow and Ice, Boulder.
- Rowe, C.M.** and Kuivinen, K. (1992) Modeling the surface energy fluxes on the Greenland ice sheet. AAG Annual Meeting, San Diego.
- Rowe, C.M.**, Flores-Mendoza, F. and Kuivinen, K. (1991) Sensitivity of streamflow to climate change. AAG Annual Meeting, Miami.
- Rowe, C.M.** (1990) Fractal forestry: approximating canopy properties for climate models. AAG Annual Meeting, Toronto.
- Willmott, C.J., **Rowe, C.M.** and Legates, D.R. (1990) WIMP: The Water-Budget Interactive Modeling Program. Spring Meeting of the Southwest Division of the AAG, Fort Worth.
- Rowe, C.M.** (1989) Vegetation albedo model sensitivity to canopy parameterization. AAG Annual Meeting, Baltimore.
- Willmott, C.J., **C.M. Rowe** and D.R. Legates (1989) WIMP: The water-budget interactive modeling program. AAG Annual Meeting, Baltimore.
- Rowe, C.M.** (1988) Global land surface albedos derived from vegetation architecture. AAG Annual Meeting, Phoenix.
- Rowe, C.M.** (1987) Terrestrial albedos based on vegetation structure. AAG Annual Meeting, Portland.
- Rowe, C.M.** (1987) Monthly variation of terrestrial albedos derived from plant canopy structure. *Fourth Conference on Climate Variations: Climate Dynamics Update*, American Meteorological Society, Baltimore.

- Rowe, C.M.** (1986) Modeling land-surface reflectivities from plant canopy structure. AAG Annual Meeting, Minneapolis.
- Willmott, C.J. and **C.M. Rowe** (1985) Computer-aided instruction in the climatic water budget. AAG Annual Meeting, Detroit.
- Willmott, C.J., S.G. Ackleson, K.M. Klink, D.R. Legates, J. O'Donnell and **C.M. Rowe** (1984) More on the evaluation of climatic model performance. AAG Annual Meeting, Washington, DC.
- Rowe, C.M.** (1984) A method for determining the optimal orientation of flat-plate solar collectors. Fifteenth Annual Pittsburgh Modeling and Simulation Conference.
- Willmott, C.J., **C.M. Rowe** and Y. Mintz (1983) A global parameterization of the seasonal soil moisture and snowcover cycles for use in general circulation models. AAG Annual Meeting, Denver.
- Rowe, C.M.** (1982) Simulation of shortwave irradiance on flat-plate solar collectors in urban environments. AAG Middle States Division Meeting, Montclair, NJ.
- Willmott, C.J., **C.M. Rowe** and F.E. Gossette (1982) Small-scale isoline maps: some projection-related inaccuracies resulting from interpolation in Cartesian space. AAG Annual Meeting, San Antonio.
- Rowe, C.M.** and C.J. Willmott (1981) Sensitivity of isoline positions on small-scale maps to some common assumptions and methods of digital interpolation. AAG Middle States Division Meeting, Rochester, NY.
- Willmott, C.J. and **C.M. Rowe** (1981) Sensitivity of the climatic water budget to key boundary conditions and parameterizations. AAG Annual Meeting, Los Angeles.
- Rowe, C.M.** (1979) LaPorte revisited - a water budget analysis. AAG Annual Meeting, Philadelphia.

## **Grants**

### *Received*

- Strategic Cluster Award – Developing a Regional Climate Modeling Facility at UNL (Co-PI with Oglesby, Swanson, Ramamurthy and Hayes – UNL Office of Research award, \$50,000) July 2008 – June 2009
- Unidata equipment grant – replace meteorology server to provide longer archive of meteorological data (co-PI with Houston and Istanbuloglu – NSF award \$20,000) July 2006 – June 2007

Sand Hills Biocomplexity: Integrating biogeophysical processes across space and time (Co-investigator with Wedin, Loope, Henebry and 11 others – NSF award \$1.8 million) September 2003 – August 2007

Collaborative Research: Paleometeorological Records from Sand Dunes and Eolian Sandstones (NSF Geosciences, co-PI with Loope – NSF Award \$262,570) August 2002 – June 2006

Using Integrated Modeling Techniques to Investigate the Hydrological Cycle in the Nebraska Sand Hills (NOAA GCIP, PI with Hu, Anderson and Chen – NOAA award \$225,000) July 2000 – June 2003

Seasonal Oxygen Isotope Records from Greenland Ice Cores as Indicators of Climate Variability (NSF Office of Polar Programs, PI with Kuivinen – NSF award \$114,437)

Spatial and Temporal Variations of Surface Characteristics on the Greenland Ice Sheet as Derived from Passive Microwave Observations (NASA, co-PI with Anderson and Kuivinen – NASA award: \$334,197)

Unidata Equipment Grant - expand the undergraduate meteorology computer laboratory with file server and additional workstations (NSF Division of Atmospheric Sciences, co-PI with Anderson and Leathers – NSF award: \$17,998; UNL match: \$18,000)

Meteorology/GIS Computer Laboratory Network - create two interconnected computer networks to serve the meteorology and computer cartography/GIS programs in the department. (NSF Instructional Equipment Grant, co-PI with Anderson, Lavin, Leathers and Archer – NSF award: \$50,000; UNL match: \$50,001)

Instructional Improvement Grant (UNL College of Arts and Sciences – \$2000)

*Under review*

Dynamic Assessment of Climate/Environmental Change in the Himalaya: Integration of Geoscience and Information Technology (Nebraska Research Initiative, co-PI with Bishop, Shroder, Dasgupta, Qureshi and Oglesby – amount requested for UNL \$86,281)

Reconstructing Pangea's Geography and Atmospheric Circulation: Reconciling Eolian Sandstones, Climate Models, and Paleomagnetic Studies (NSF, PI with Oglesby and Loope – amount requested \$357,734)

Regional Climate Change and its Impacts: An End-to-End Approach (pre-proposal submitted to Nebraska EPSCoR office for NSF RII, co-PI with Oglesby, Swanson, Goddard, Ramamurthy and Hayes – amount requested from NSF \$5,000,000, University match \$2,610,824)

## Teaching Summary

### Courses Taught

Fall 1986	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
Spring 1987	GEOG 150	Physical Geography (2 sections)
	GEOG 454/854	Regional Climatology
Fall 1987	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 399	Independent Study: Numerical Climate Classification
Spring 1988	GEOG 353	Applied Climatology
	GEOG 498/898	Adv. Spec. Prob.: Introduction to Climate Modeling
Summer 1988	GEOG 150	Physical Geography
Fall 1988	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 898	Adv. Spec. Prob.: Land Surface Processes
Spring 1989	GEOG 150	Physical Geography
	GEOG 353	Applied Climatology
	GEOG 454/854	Regional Climatology
	GEOG 898	Adv. Spec. Prob.: Climate Processes
Fall 1989	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
Spring 1990	GEOG 150	Physical Geography
	GEOG 470	Great Plains Seminar: Climate Change on the Great Plains
	GEOG 498/898	Adv. Spec. Prob.: Climate and Climate Variability on the Great Plains
Summer 1990	GEOG 150	Physical Geography
Fall 1990	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 954	Seminar in Climate Change
Spring 1991	GEOG 353	Applied Climatology
	GEOG 498/898	Physical Meteorology
Summer 1991	GEOG 150	Physical Geography
Fall 1991	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 953	Seminar in Meteorology/Climatology
Spring 1992	GEOG 498/898	Physical Meteorology
Summer 1992	GEOG 150	Physical Geography
Fall 1992	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 953	Seminar in Meteorology/Climatology
Spring 1993	GEOG 353	Applied Climatology

Fall 1993	GEOG 498/898	Physical Meteorology
	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 954	Seminar in Climate Change
Spring 1994	GEOG 454	Regional Climatology
	GEOG 466	Physical Meteorology
Fall 1994	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 498/898	Adv. Spec. Prob.: Introduction to Climate Modeling
Spring 1995	GEOG 466/866	Physical Meteorology
Fall 1995	GEOG 150	Physical Geography
	GEOG 453/853	Physical Climatology
	GEOG 953	Seminar in Meteorology/Climatology
Spring 1996	GEOG 454	Regional Climatology
	GEOG 466	Physical Meteorology
Fall 1996	Faculty Development Leave	
Spring 1997	Faculty Development Leave	
Fall 1997	GEOG 466/866	Physical Meteorology
	GEOG 953	Seminar in Meteorology/Climatology
Spring 1998	METR 453/853	Physical Climatology
	METR 454/854	Regional Climatology
Summer 1998	METR 353	Applied Climatology
Fall 1998	METR 466/866	Physical Meteorology
	METR 953	Seminar in Meteorology/Climatology
Spring 1999	METR 453/853	Physical Climatology
	METR 953	Seminar in Meteorology/Climatology
Fall 1999	METR 466/866	Physical Meteorology
Spring 2000	METR 255	Introduction to Atmospheric Sciences
	METR 453/853	Physical Climatology
Fall 2000	METR 466/866	Physical Meteorology (w/ lab)
Spring 2001	METR 255	Introduction to Atmospheric Sciences (w/ lab)
	METR 953	Seminar in Meteorology/Climatology
Fall 2001	METR 466/866	Physical Meteorology (w/ lab)
Spring 2002	METR 255	Introduction to Atmospheric Sciences (w/ lab)
	METR 953	Seminar in Meteorology/Climatology
Fall 2002	METR 466/866	Physical Meteorology (w/ lab)
Spring 2003	METR 255	Introduction to Atmospheric Sciences (w/ lab)
	METR 898	Meteorological Analysis
Fall 2003	METR 466/866	Physical Meteorology (w/ lab)
	GEOS 898	Paleoclimate Modeling
Spring 2004	METR 255	Introduction to Atmospheric Sciences (w/ lab)
Fall 2004	METR 466/866	Physical Meteorology (w/ lab)
	METR 953	Seminar in Meteorology/Climatology
Spring 2005	METR 255	Introduction to Atmospheric Sciences (w/ lab)
	METR 498/898	Boundary-layer Meteorology

Fall 2005	METR 466/866	Physical Meteorology (w/ lab)
	METR 498	Computer Applications in Meteorology
Spring 2006	METR 255	Introduction to Atmospheric Sciences (w/ lab)
Fall 2006	Faculty Development Leave	
Spring 2007	METR 255	Introduction to Atmospheric Sciences (w/ lab)
	METR 466/866	Physical Meteorology (w/ lab)
Fall 2007	METR 498	Computer Applications in Meteorology
Spring 2008	METR 255	Introduction to Atmospheric Sciences (w/ lab)
Fall 2008	METR 423/823	Physical Meteorology (w/ lab)
	METR 993	Seminar in Meteorology/Climatology

### Supervisor

Fall 1991 - Fall 1997	GEOG 495/895	Internship in Meteorology/Climatology
Spring 1998- present	METR 495/895	Internship in Meteorology/Climatology

### Undergraduate Creative Activities and Research Experiences (UCARE) Projects

**Natalie Umphlett** (2003-2005) *Wind Flow over the Sand Hills.*

**Abby Thell** (2004-2006) *Temperature Variations due to Elevation and Ground Cover in the Nebraska Sand Hills.*

**Amy Ruf** (2005-2007) *Meteorology Factors Influencing UV Exposure and Possible Health Implications.*

**Andrea Van Etten** (2008-2009) *The Effects on the Climate of Using Switchgrass Instead of Corn.*

### Theses & Dissertations completed under my supervision

**Bathke, D.J.**, 1988: The influence of atmospheric circulation on winter oxygen isotope variability in Greenland ice cores, M.S. Thesis.

**Ashley, W.S.**, 2000: Observational analysis and numerical simulation of the 31 May 1998 derecho-producing mesoscale convective system, M.S. Thesis.

**Tawaye, Y.**, 2001: Relationships between rainfall in Niger and sea surface temperatures, M.S. Thesis.

**Broadwater, C.E., III**, 2006: Simulation of the Early Jurassic climate using CCSM3, M.S. Thesis.

**Gilliland, E.K.**, 2006: A comparison of cumulus parameterization schemes in the weather research and forecasting model, M.S. Thesis.

**Cumpton, D.C.**, 2006: A study of ice phase cloud microphysics parameterizations in the weather research and forecast model, M.S. Thesis.

**Radell, D.B.**, 2007: An examination of land surface-atmospheric interactions in the Nebraska Sand Hills, Ph.D. Dissertation.

**Graduate Students**  
(graduation date)

**Ph.D. Advisees**

David Radell (Dec. 2007)

**Ph.D. Committees (\* indicates reader)**

*Geography*

Limin Yang\* (May 1994)  
 Doug Goodin\* (Aug. 1993)  
 Thomas Mote\* (May 1994)  
 Fahad Alkolibi\* (Aug. 1995)  
 Wenli Yang\* (Aug. 1997)  
 Wai-lok Siu (May 1997)  
 Franz Mora\* (Aug. 2000)  
 Asad Ullah (Aug. 2000)

*Geosciences*

Sheldon Drobot\* (Aug. 2000)  
 Boniface Mills (May 2003)  
 Jeffery Stone (May 2005)  
 Karlyn Westover (May 2006)  
 Frank Aebly (Aug. 2007)

*Physics*

Stephanie Snedden (Dec. 2001)

*Electrical Engineering*

Jose Fernandez\* (Dec. 2004)

**M.S. Advisees**

Deborah Bathke (Aug. 1998)  
 Walker Ashley (Dec. 2000)  
 Yacoubou Tawaye (Dec. 2001)  
 Charles Broadwater (Aug. 2006)  
 Erin Gilliland (Aug. 2006)  
 Daniel Cumpton (Dec. 2006)  
 James Kaiser  
 Jeremy Wesely  
 Melissa Noehrenberg  
 Natalie Umphlett

**M.S./M.A. Committees**

*Geography*

Douglas Kluck (Dec. 1991)  
 Thomas Mote (May 1991)  
 Mark Svoboda (Aug. 1992)  
 Mace Bentley (Dec. 1995)  
 Natalie Williams (Dec. 1996)  
 Eric Grelson (May 1997)

*Geosciences*

Brian Fuchs (Dec 2000)  
 Chris Buttler (Aug 2005)  
 Evan Kuchera (Dec 2004)  
 Andrew Molthan (Aug 2005)  
 Ingrid Gotchel (May 2006)  
 Brandon Storm (Aug 2005)  
 Eve Halligan Co-Chair  
 Jessica Busse (May 2006)  
 Bryan Jackson (Aug 2007)  
 Jeramie Lippman  
 Brian Barjenbruch  
 Megan Essig  
 Jamie Lahowetz

*Electrical Engineering*

Sandy Jackson (Aug. 1995)

## Service Summary

### Internal

#### *Geography*

1986-1991 Secretary, Geography Faculty Meetings  
1986-1990 Supervisor, Physical Geography Labs  
1986-1988 Member, Geography Computer Committee  
1987 Member, Search Committee, Dynamic Climatologist  
1988-1989 Member, Search Committee, Geography Department Chair  
1988-1997 Member, Geography Facilities Committee  
1988-1989 Member, Geography Course Load Reduction Committee  
1988-1997 Coordinator, Geography Computer Accounts  
1988-1990 Undergraduate Advisor, Meteorology Major  
1989-1997 Member, Ad Hoc Committee on Physical Geography Curriculum  
1990-1992 Member, Search Committee, Geography Faculty Member  
1991-1992 Member, Salary Review Committee  
1993-1997 Member, Geography Curriculum Committee  
1993-1997 Member, Geography Grade Appeals Committee

#### *Geosciences*

1997-2001 Advisor, UNL American Meteorological Society Student Chapter  
1997-2006 Member, Geosciences Graduate Committee  
1997- Member, Geosciences Computer Committee  
1998-2005 Vice Chair, Department of Geosciences  
1998-2005 Executive Committee, Department of Geosciences, *ex officio*  
1999-2006 Member, Geosciences Graduate Admissions Committee  
2000-2002 Member, Dynamic Meteorology Search Committee  
2002-2003 Member, Water Science Search Committee

#### *College and University*

1988 Preparation of topic content for one-hour NETV program (with Dewey, Anderson and Leathers)  
1988-1990 Member, Organizing Committee, 14th Annual Great Plains Symposium, "Looking Back from the 21st Century: Impacts of Climate Change on the Great Plains"  
1990-1991 Member, Search Committee, Agricultural Meteorologist (Dept. of Ag. Meteorol.)  
1992-1993 Program Committee, 1993 Canadian-American Plains Conference  
1992 Natural Sciences representative, Red Letter Days  
1994 Guest Lecture, "Climate & Climate Change on the Great Plains", Water Resources Seminar  
1994 Member, PICO-UNL Transition Team  
1994-1997 Member, Academic Senate, Computational Services and Facilities Committee (CSFC); Chair, December 1995-August 1997  
1994-1996 Member, Science Advisory Board, Great Plains Regional Center for Global Environmental Change



1994-1995	CSFC representative, Campus Wide Information Systems (CWIS) Advisory Board
1997-1998	Member, Search Committee, Geosciences Department Chair
1997-	Chancellor's Representative, Academic Senate Computational Services and Facilities Committee (CSFC)
2002	Chair, Search Committee, Dynamic Meteorologist
2003-2006	Member, Arts & Science Executive Committee
2004	Member, Search Committee, Geosciences Department Chair
2004-2005	Chair, Search Committee, Climate Modeler, Water Resources Research Initiative
2005	Chair, Search Committee, Dynamic Meteorology Instructor
2006	Member, Search Committee, Dynamic Meteorologist
2008	Member, Search Committee, Mesoscale Meteorologist

## External

### *Professional Committees*

1998-2002	Member, User's Committee, Unidata Program Center
1995-2000	Member, Polar Ice Coring Office (PICO) Advisory Committee
2004-2007	Member, Center for Great Plains Studies Board of Governors

### *Invited Presentations and Interviews*

14 June 1988	Interview, <i>Lincoln Journal</i>
4 November 1988	Optimist's Club of Lincoln, Talk on "The Greenhouse Effect"
18 November 1988	Geography Department, Univ. of Oklahoma, Colloquium on "Modeling Land-surface Albedos from Vegetation Architecture"
23 January 1990	Jefferson Co. Young Farmers and Ranchers Education Association, Talk on "The Greenhouse Effect and Its Impact on Nebraska Agriculture"
15 May 1991	EROS Data Center, USGS, Seminar on "Simulation of Albedo Based on Vegetation Architecture"
2 August 1991	Interview, UNL Public Relations, "The Greenhouse Effect"
20 August 1991	Interview, A&S Public Relations, "NSF Grant for Meteorology Lab"
5 January 1992	Sunday Afternoon with a Scientist, UNL State Museum, "Winter Wonders: Snowflakes and Winter Storms"
5 January 1992	Interview, <i>Lincoln Journal</i> , "Winter Wonders"
20 January 1992	Monroe Elementary School, Monroe, NE, "Weather Forecasting"
6 April 1992	Nebraska Wesleyan University, "Impacts of Global Warming on the Great Plains"
4 September 1992	Interview, <i>Nebraska Blueprint</i> , "Numerical Modeling of Weather and Climate"
9 April 1993	Invited Panelist, "Unidata and the Climate Classroom", Climate Specialty Group, AAG, Atlanta.
7 January 1994	Interview, <i>Lincoln Journal</i> , "Greenland Ice Sheet and Climate Change"
19 November 1995	Sunday Afternoon with a Scientist, UNL State Museum, "Living and Working at the Ends of the Earth," with K.C. Kuivinen
22 March 2000	Lincoln Public Schools Zoo School, "Climate and Climate Change"

3 October 2003	University of Delaware, "Land-Atmosphere Interactions in the Nebraska Sand Hills"
6 October 2005	Nebraska Citizens for Science, "Hurricanes and Global Warming: What do we know?"
28 January 2007	2007 Winter Lecture Series, "Basic Warming Science"
9 February 2007	NPPD Board of Directors, "Basic Climate Change Science"
1 May 2007	OLLI, "Climate Change: What's in our Future?"
23 May 2007	Retired Physicians Group, "Climate Change: What's in our Future?"
17 April 2008	Dept. of Physics, Washburn Univ., "Climate Modeling Basics"
26 April 2008	OLLI, "Climate Change: What's in our Future?"

### *Reviews*

Manuscript reviews for *Annals, Association of American Geographers; Climate Research; Geography in America; Geophysical Research Letters; Great Plains Quarterly; Hydrological Sciences Journal; Journal of Hydrometeorology; Physical Geography; Remote Sensing and Photogrammetric Engineering; Water Resources Bulletin*, and The University of Nebraska Press.

Proposal reviews for the *National Science Foundation* (Geography and Regional Science; Climate Dynamics; Arctic Systems Science; Polar Programs), *NASA*, the *National Park Service*, the *High Plains Climate Center*, the *DOE/Atmospheric Radiation Measurement Program*, *Western Regional Climate Center*, and the *Great Plains Regional Center for Global Environmental Change*.

### *Other*

Organized special session on "Large-Scale Climatology" for AAG Climate Specialty Group at 1988 Annual Meeting of the AAG, Phoenix.

Judge of submissions for the Student Paper Competition at the 1991 Annual Meeting of the Great Plains-Rocky Mountains Division of the AAG.

Organized and chaired a special session on "Climate and the Cryosphere" for AAG Climate Specialty Group at 1992 Annual Meeting of the AAG, San Diego.

Organized and chaired a special session on "Topics on Snow and Ice" for AAG Climate Specialty Group at 1993 Annual Meeting of the AAG, Atlanta.

Organized three climate sessions for the 1996 Applied Geography Conference, Kansas City.

Annual presentation to Campbell Elementary School, Second grade classes on weather observations and weather forecasting (1998-2003).

## Continuing Education Activities

### *Workshops attended*

- 1988 Summer Institute, Cornell National Supercomputing Facility, Ithaca, NY.
- 1989 NASA Climate Data System Workshop, Goddard Space Flight Center, Greenbelt, MD.
- 1990 Scientific Data Manager, Site Administrator's Workshop, Unidata Program Center, Boulder, CO.
- 1991 Synoptic and Mesoscale Meteorology Instruction Workshop, NCAR, Boulder, CO.
- 1992 Unidata Site Administrator's Workshop, Unidata Program Center, Boulder, CO.
- 1993 Unidata Training Workshop, Unidata Program Center, Boulder, CO.
- 1994 Unidata Training Workshop, Unidata Program Center, Boulder, CO.
- 1996 Unidata Training Workshop, Unidata Program Center, Boulder, CO.
- 1998 MM5 Tutorial, NCAR MMM Division, Boulder, CO
- 1998 MM5 Workshop, NCAR MMM Division, Boulder, CO
- 1999 Unidata Training Workshop, Unidata Program Center, Boulder, CO.
- 2000 Unidata User's Workshop, Unidata Program Center, Boulder, CO.