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Curriculum Vitae

Rezaul Mahmood

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EDUCATION:

University of Dhaka, Dhaka, Bangladesh	Geography	B. Sc. 1988
University of Dhaka, Dhaka, Bangladesh	Geography	M. Sc. 1989
State University of New York, Albany, NY	Geography/climatology	M.A. 1993
University of Oklahoma, Norman, OK	Geography/climatology	PhD. 1999

CURRENT APPOINTMENTS:

Professor (2018-Present), School of Natural Resources, University of Nebraska-Lincoln

Director (2018-Present), High Plains Regional Climate Center, University of Nebraska-Lincoln

Editor-in-Chief, *Earth Interactions* (2009-present; Jointly Published by The American Meteorological Society, The American Geophysical Union, and The American Association of Geographers)

Member, AMS Publications Commission (2013-present)

Member, Technical Data Committee, Kentucky Water Plan Committee (2016-2018)

Chair, Functional Standards and Practices Subcommittee, American Association of State Climatologist (AASC), (2016-present)

Member, AASC Mesonet Steering Committee (2016-present)

COURSES TAUGHT:

Meteorology	Introduction to Physical Geography
Weather Analysis and Forecasting	Computer based Statistics
Physical Climatology	Dynamic Meteorology

CURRENT RESEARCH:

Meso-scale meteorology and climatology and observations
Modeling impacts of land use land cover change on weather and climate
Modeling impacts of soil moisture on weather and climate

Land-surface-atmosphere interactions
Air quality meteorology

RECENT APPOINTMENTS:

Professor (2011- 2018), Department of Geography and Geology, Western Kentucky University

Associate Director (2006-2018), Kentucky Climate Center and Kentucky Mesonet

Co-Director (2009-2018), WKU-High Performance Computing Center

Member, National Climate Assessment Development and Advisory Committee, 2011-2014.

Member, Board of Directors, Applied Geography Conference, 2012-2015.

Associate Professor, 2006-2011, Department of Geography and Geology, Western Kentucky University

Assistant Professor, 2001-2006, Department of Geography and Geology, Western Kentucky University

Post-Doctoral Research Associate, 1999-2001, High Plains Regional Climate Center (HPRCC), School of Natural Resource Sciences, University of Nebraska-Lincoln (UNL)

PEER REVIEWED PUBLICATIONS & BOOK CHAPTERS:

*Undergraduate student; **Graduate student; Post-doc; ***Research Staff

76. Rodgers, W.**, **Mahmood R.**, Leeper, R., and Yan, J. 2018. Land cover change, surface mining, and their impacts on a heavy rain event in the Appalachia. *Annals of the American Association of Geographers* (in press)

75. Younger, K.**, **Mahmood, R.**, Goodrich, G., Pielke, R. A. Sr., and Durkee, J. 2018. Mesoscale surface equivalent temperature (T_E) for East Central USA. *Theoretical and Applied Climatology* doi.org/10.1007/s00704-018-2468-7

74. Johnson, C. M.*, Xingang, F., **Mahmood, R.**, Groves, C., Polk, J., and Yan, J. 2018. Evaluating Weather Research and Forecasting model sensitivity to land and soil conditions representative of karst landscapes. *Boundary-Layer Meteorology* 166: 503-530. DOI 10.1007/s10546-017-0312-8

73. Dewan, A., Ongee, E., Rafiuddin, M., Rahman, M. M., **Mahmood, R.** 2018. Lightning activity associated with precipitation and CAPE over Bangladesh. *International Journal of Climatology* 38: 1649–1660, DOI: 10.1002/joc.5286

72. **Mahmood, R.**, Boyles, R., Brinson, K., Fiebrich, C., Foster, S. A., Hubbard, K. G., Robinson, D., Andresen, J., and Leathers D. 2017. Mesonets: Meso-scale weather and climate observations for the U.S. *Bulletin of the American Meteorological Society* 98: 1349-1361.
71. Craft, K**, **Mahmood, R.**, King, S. A., Goodrich, G., and Yan, J. 2017. Droughts of the twentieth and early twenty first centuries: Influences on the production of beef and Forage in Kentucky, USA. *Science of the Total Environment* 577:122-135.
70. Chen, L., Zhuguo, M., **Mahmood, R.**, Zhao, T., Li, Z., and Li, Y. 2017. Recent land cover changes and sensitivity of the model simulations to various land cover datasets for China. *Meteorology and Atmospheric Physics* 129: 395-408. DOI: 10.1007/s00703-016-0478-5.
69. **Mahmood, R.** and Pielke Sr., R. A. 2017. Land use/cover change and climate. *Wiley-AAG International Encyclopedia of Geography* 1-11, DOI: 10.1002/9781118786352.wbieg0511
68. Winchester, J.***, **Mahmood, R.**, Rodgers, W.***, Hossain, F., Rappin, E., Durkee, J., and Chronis, T. 2017. A Model-based assessment of potential impacts of man-made reservoirs on precipitation. *Earth Interactions* 21: 1-31.
67. Dewan, A., Ongee, E., Rahman, M. M. **Mahmood, R.**, and Yamane, Y. 2017. Spatial and temporal analysis of a 17–year lightning climatology over Bangladesh with LIS data. *Theoretical and Applied Climatology* DOI 10.1007/s00704-017-2278-3.
- López-Espinoza, Zavala-Hidalgo, J., **Mahmood, R.**, Gómez-Ramos, R. 2018. Assessing the effects of land Use and land cover change on weather forecasts: A case study in the valley of Mexico. *Atmospheric Research* (submitted)
- Winchester, J.***, **Mahmood, R.**, Rodgers, W., Silva, P. J., Lovanh, N., Durkee, J., and Loughrin, J. 2018. Sulfur dioxide dispersions from concentrated animal feeding operations in the southeastern United States. *Atmospheric Pollution Research* (submitted)
- Nair, U. S., Rappin***, E., Foshee, E., Smith, W., Pielke Sr., R. A., **Mahmood, R.**, Case, J. L., Blankenship, C. B., Shepherd, M., Santanello, J. A., Niyogi, D. A. 2017. Is extreme rainfall from tropical systems in the Louisiana Gulf Coast influenced by land cover and soil moisture? *Nature Scientific Reports* (in revision)
- Hu, Z., Xu, Z., Ma, Z., **Mahmood, R.**, Yang, Z. 2018. Potential surface hydroclimate responses to increases in greenhouse gas concentrations and land use and land cover changes. *International Journal of Climatology* (in revision)
- Tollerud, H., Brown, J., Loveland, T., **Mahmood, R.**, Bilss, N. 2018. Drought and land cover conditions in the Great Plains. *Earth Interactions* (revised version submitted)

- Zhang, T., **Mahmood, R.**, Lin, X., and Pielke Sr. R.A., 2018. Potential land cover influence on temperature and equivalent temperature in the Central Great Plains. *Weather and Climate Extremes* (submitted)
- Rappin, E., **Mahmood, R.**, Nair, U., and Pielke Sr., R. A. 2016. Impacts of irrigation on daily and seasonal precipitation in the Great Plains. *Earth Interactions* (in revision)
66. **Mahmood, R.**, Pielke Sr., R. A., and McAlpine, C. 2016. Climate relevant land use and land cover change policies. *Bulletin of the American Meteorological Society* 97:195-202.
65. Pielke, R. A., **Mahmood, R.**, and McAlpine, C. 2016. Land's complex role in climate change. *Physics Today* 69 (10): 40-46. (invited) [Also published in a Japanese language journal, *Parity*, June, no. 6, 2017].
64. Quintanar, A. I., **Mahmood, R.**, Suarez*, A., and Leeper**, R. 2016. Atmospheric sensitivity to roughness length in a regional atmospheric model over the Ohio-Tennessee river valley. *Meteorology and Atmospheric Physics* 128:315–330. DOI 10.1007/s00703-015-0415-z
63. Lin, X., Pielke, Sr., R. A., **Mahmood, R.**, Fiebrich, C. A., and Aiken R. 2016. Observational evidence of temperature trends at two levels in the surface layer. *Atmospheric Chemistry and Physics* 16: 827–841.
62. Kusunose, Y. and **Mahmood, R.** 2016. Imperfect forecasts and decision making in agriculture. *Agricultural Systems* 146: 103-110.
61. Xu, Z., **Mahmood, R.**, Yang, Z-L, Fu, C., Su, H. 2015. Investigating diurnal and seasonal climatic response to land use and land cover change over monsoon Asia with the Community Earth System Model. *Journal of Geophysical Research-Atmospheres* 120: 1137-1152. DOI: 10.1002/2014JD022479.
60. Craft, K**, **Mahmood, R.**, King, S. A., Goodrich, G., and Yan, J. 2015. Twentieth century droughts and agriculture: Examples from impacts on soybean production in Kentucky, USA. *Ambio* 44: 557-568. DOI 10.1007/s13280-014-0598-4
59. Ren, D., Leslie, L. M., Shen, X., Hong, Y., Duan, Q., **Mahmood, R.**, Li, Y., Huang, G., Guo, W., Lynch, M. J. 2015. The gravity environment of Zhouqu debris flow of August 2010 and its implication for future recurrence. *International Journal of Geosciences* 6: 317-325.
58. Fan, X., Ma, Z., Yang, Q., Han, Y., and **Mahmood, R.**, Zheng, Z. 2015. Land use/land cover changes and regional climate over the Loess Plateau during 2001-2009 – Part I. Observed evidences. *Climatic Change* 129: 427-440. DOI 10.1007/s10584-014-1069-4.
57. Fan, X., Ma, Z., Yang, Q., Yunhuan Han, Y., and **Mahmood, R.** 2015. Land use/land cover

changes and regional climate over the Loess Plateau during 2001-2009 – Part II. Interrelationship from observations. *Climatic Change* 129: 441-455. DOI 10.1007/s10584-014-1068-5.

56. **Mahmood, R.**, Pielke Sr., R. A. Hubbard, K. G., Niyogi, D., Dirmeyer, P., McAlpine, C., Carleton, A., Hale, R., Gameda, S., Beltran-Przekurat, A., Baker, B., McNider, R., Legates, D. R., Shepherd, M., Du, J., Blanken, P., Frauenfeld, O. W., Nair, U. S., and Fall, S. 2014. Land cover changes and their biogeophysical effects on climate. *International Journal of Climatology* 34: 929–953. DOI: 10.1002/joc.3736
55. Suarez, A. *, **Mahmood, R.**, Quintanar, A. I., Beltran-Przekurat, A., and Pielke Sr., R. A. 2014. A comparison of the MM5 and the Regional Atmospheric Modeling System simulations for land-atmosphere interactions under varying soil moisture. *Tellus A: Dynamic Meteorology and Oceanography* 66, 21486, <http://dx.doi.org/10.3402/tellusa.v66.21486>.
54. Durkee, J., Degu, A. M., Hossain, F., **Mahmood, R.**, Winchester**, J., and Chronis, T. 2014. Investigating the effect of Land between the Lakes on storm patterns. *Journal of Applied Meteorology and Climatology* 53: 1506-1524.
53. Loveland, T. R. and **Mahmood, R.** 2014. A design for a sustained assessment of climate Forcing and feedbacks related to land use land cover change. *Bulletin of the American Meteorological Society* 95: 1563-1572.
52. Lin, X., Hubbard, K. G., **Mahmood, R.**, and Sassenrath, G. F. 2014. Assessing satellite-based start-of-season trends in the U.S High Plains. *Environmental Research Letters* 9 doi:10.1088/1748-9326/9/10/104016.
51. Lovanh, N., Quintanar, A. I., Rysz, M., Loughrin, J., **Mahmood, R.** 2014. Effect of heat fluxes on ammonia emission from swine waste lagoon based on neural network analyses. *Journal of Environmental Science and Technology* 7:16-29. DOI: 10.3923/jest.2013.
50. Quintanar, A. I., **Mahmood, R.**, Lovanh, N., Rawley, J.*, E. Becerra-Acosta and Loughrin, J. 2013. Estimating greenhouse gas emission from a waste lagoon. *Applied Engineering in Agriculture* 29: 511-519. (doi: 10.13031/aea.29.10013)
49. Craft, K**, **Mahmood, R.**, King, S. A., Goodrich, G., and Yan, J. 2013. Drought and corn in Kentucky. *Applied Geography* 45: 353-362.
48. **Mahmood, R.**, Keeling*, T., Foster, S. A., and Hubbard, K. G. 2013. Did irrigation impact 20th century temperature in the High Plains aquifer region? *Applied Geography* 38:11-21.
47. **Mahmood, R.**, Keeling*, T., Foster, S. A., and Hubbard, K. G. 2013. Corrigendum to “Did irrigation impact 20th century temperature in the High Plains aquifer region?” *Applied Geography* 40:51.

46. **Mahmood, R.**, Littell, A**, Hubbard, K. G., and You, J. 2012. Observed data-based assessment Of relationships among soil moisture at various depths, precipitation, and temperature. *Applied Geography*, 34: 255-264.
45. Quintanar, A. I. and **Mahmood, R.** 2012. Ensemble forecast spread induced by soil moisture Changes over mid-south and neighbouring mid-western region of the USA. *Tellus A: Dynamic Meteorology and Oceanography*, DOI: 10.3402/tellusa.v64i0.17156
44. Loughrin, J. H, Quintanar, A. I., Cook, K. L., Lovanh, N. C., **Mahmood, R.**, Becerra-Acosta, E. 2012. Seasonal Variation in heat fluxes, predicted emissions of malodorants, and wastewater quality of an anaerobic swine waste lagoon. *Water, Air, & Soil Pollution*, DOI 10.1007/s11270-012-1134-4.
43. Durkee, J., Campbell, L.*, Berry, K.*, Jordan, D.*, Goodrich, G., **Mahmood, R.**, and Foster, S. 2012. A synoptic perspective of the record 1-2 May 2010 Mid-south rain and flood event. *Bulletin of the American Meteorological Society*, 93: 611-620.
42. Leeper, R.***, **Mahmood, R.**, Quintanar, A. I. 2011. Influence of karst landscape on Planetary boundary layer atmosphere: A Weather Research and Forecast (WRF) model-based investigation. *Journal of Hydrometeorology*, 12: 1512-1529.
41. **Mahmood, R.**, Leeper, R.***, Quintanar, A. I. 2011. Sensitivity of planetary boundary layer atmosphere to historical and future changes of land use/land cover, vegetation fraction, and soil moisture in Western Kentucky, USA. *Global and Planetary Change*, 78: 36-53 doi:10.1016/j.gloplacha.2011.05.007.
40. Sen Roy, S. , **Mahmood, R.**, Quintanar, A. I., and Gonzalez*, A. 2011. Impacts of irrigation on dry Season precipitation in India. *Theoretical and Applied Climatology*, 104: 193-207, DOI: 10.1007/s00704-010-0338-z.
39. Legates, D. R., **Mahmood, R.**, Levia, D. F., DeLiberty, T. D., Quiring, S., Houser, C., Nelson, F. E. 2011. Soil Moisture: A central and unifying theme in physical geography. *Progress in Physical Geography* 35:65-86.
38. Loughrin, J.H., Quintanar, A.I., N. Lovanh, **Mahmood, R.** 2011. Heat flux measurements and modeling of malodorous compounds above an anaerobic swine lagoon. *Water, Air, and Soil Pollution*, 27: 463-471, DOI: 10.1007/s11270-010-0601-z.
37. Pielke Sr., R. A., Pitman, A., Niyogi, D., **Mahmood, R.**, McAlpine, C. Hossain, F., Klein Goldewijk, K., Nair, U., Betts, R., Fall, S., Reichstein, M., Kabat, P., de Noblet-Ducoudré, N. 2011. Land use/land cover changes and climate: Modeling analysis and observational evidence. *Wiley Interdisciplinary Reviews: Climate Change* 2: 828-850, doi: 10.1002/wcc.144. (invited)
- Quintanar, A. I., Rodgers, W.***, **Mahmood, R.**, Loughrin, J. H., and Lovanh, N. 2011. Energy flux comparisons in the surface layer of a waste lagoon during warm and cool season

clear skies. *Meteorological Applications* (accepted)

36. **Mahmood, R.**, Pielke Sr., R. A. Hubbard, K. G., Niyogi, D., Bonan, G., Lawrence, P., Baker, B., McNider, R., McAlpine, C., Etter, A., Gameda, S., Qian, B., Carleton, A., Beltran-Przekurat, A., Chase, T., Quintanar, A. I., Adegoke, J. O., Vezhapparambu, S., Conner, G., Asefi, S., Sertel, E., Legates, D. R., Wu, Y., Hale, R., Frauenfeld, O. N., Watts, A., Shepherd, M., Mitra, C., Anantharaj, V. G., Fall, S., Lund, R., Nordfelt, A., Blanken, P., Du, J., Chang, H-I., Leeper**, R., Nair, U. S., Dobler, S., Deo, R., Syktus, J. 2010. Impacts of land use land cover change on climate and future research priorities. *Bulletin of the American Meteorological Society* 91: 37-46.
35. You, J., Hubbard, K. G., **Mahmood, R.**, Sridhar, V., Todey, D. 2010. Quality control of soil water data in ACIS - A case study in Nebraska. *ASCE, Journal of Hydrologic Engineering* 15: 200-209.
34. **Mahmood, R.** and Hubbard, K. G. 2009. Agricultural Cool Island (ACI). In *Land Use Policy*. Eds. A. C. Denman and Oliver M. Penrod. New York: Nova Science Publishers. pp. 217-229.
33. Quintanar, A. I., **Mahmood, R.**, Motley, M. V.*, Yan, J., Loughrin, J., Lovanh, N. 2009. Simulation of boundary layer trajectory dispersion sensitivity to soil moisture conditions: MM5 and Noah-based investigation. *Atmospheric Environment* 43: 3774-3785.
32. Quintanar, A. I., **Mahmood, R.**, Loughrin, J. H., Lovanh, N., Motley*, M. V. 2009. A system for estimating Bowen Ratio and evaporation from waste lagoons. *ASABE, Applied Engineering in Agriculture* 25: 923-932.
31. Pielke Sr., R. A., Davey, C., Niyogi, D., Fall, S., Steinweg-Woods, J., Hubbard, K. G., in, X., Cai, M., Lim, Y-K., Li, H., Nielsen-Gammon, J., Gallo, K., Hale, R., **Mahmood, R.**, Foster, S., McNider, R. T., Blanken, P. 2009. Reply to comment by David E. Parker, Phil Jones, Thomas C. Peterson, and John Kennedy on "Unresolved Issues with the Assessment of Multi-Decadal Global Land Surface Temperature Trends" *Journal of Geophysical Research-Atmospheres* 114, D05105, doi:10.1029/2008JD010938.
30. Leeper, R.** , **Mahmood, R.**, Quintanar, A. I. 2009. Near surface atmospheric response to simulated changes in land-cover, vegetation fraction, and soil moisture over Western Kentucky. *Publications in Climatology* Vol. 62. No. 2. Pp. 41. (peer-reviewed monograph)
29. Foster, S. and **Mahmood, R.** 2009. Spatial metadata for weather stations and the Interpretation of climate data. In *Historical Climate variability and Impacts in the United States*. Eds. Lesley-Ann Dupigny-Giroux and Cary Mock. Springer-Verlag: New York. pp. 189-206.
28. **Mahmood, R.** 2008. The Kentucky Mesonet: Background and future applications. In *The*

Corn and Climate Report: A Practical Guide to Help Midwestern Farmers Understand and Respond to a Changing Climate. Eds. Jordan, B., Kluck, D., Mock, D., Schulz, P., Takle, G., and Wash, S. Ames, IA: Iowa State University. pp. 18-19. (Online)

27. **Mahmood, R.**, Hubbard, K. G., Leeper, R. *, and Foster, S. A. 2008. Increase in near surface atmospheric moisture content due to land use changes: Evidence from the observed dew point temperature data. *Monthly Weather Review*, 136:1554-1561.
26. **Mahmood, R.**, and Foster, S. A. 2008. Meso-scale weather and climate observations in Kentucky for societal benefit. *Focus on Geography*, 50: 32-36. (Special issue on Kentucky)
25. Quintanar, A., **Mahmood, R.**, Loughrin, J., Lovanh, N. C. 2008. A coupled MM5-Noah land surface model-based assessment of sensitivity of planetary boundary layer variables to anomalous soil moisture conditions. *Physical Geography*, 29: 54-78 (DOI: 10.2747/0272-3646.29.1.54)
24. Loughrin, J. H., Lovanh, N., and **Mahmood, R.** 2008. Equilibrium sampling used to monitor malodors in a swine waste lagoon. *Journal of Environmental Quality*, doi:10.2134/jeq2006.0534 (37: 1-6)
23. Loughrin, J. H., Lovanh, N., Quintanar, A., and **Mahmood, R.** 2008. Sampling of Malodorous compounds in air using stir bar sorptive extraction. *Transaction of the ASABE* 51:1747-1752.
22. **Mahmood, R.** and Hubbard, K. G. 2007. Relationship between soil moisture of near surface and multiple depths of the root zone under heterogeneous land uses and varying hydroclimatic conditions. *Hydrological Processes*, DOI: 10.1002/hyp.6578 (pp. 3449-3462)
21. Roy, S. S., **Mahmood, R.** Niyogi, D. D. S., Lei, M., Foster, S. A., Hubbard, K., G., Douglas, E., Pielke Sr., R. A. 2007. Impacts of the agricultural Green Revolution induced land use changes on air temperatures in India. *Journal of Geophysical Research-Atmospheres*, Vol. 112, D21108, doi:10.1029/2007JD008834.
20. Pielke Sr., R. A., Davey, C., Niyogi, D., Fall, S., Steinweg-Woods, J., Hubbard, K. G., Lin, X., Cai, M., Lim, Y-K., Li, H., Nielsen-Gammon, J., Gallo, K., Hale, R., **Mahmood, R.**, Foster, S., McNider, R. T., Blanken, P. 2007. Unresolved Issues with the Assessment of Multi-Decadal Global Land Surface Temperature Trends. *Journal of Geophysical Research- Atmospheres*, 112, D24S08, doi:10.1029/2006JD008229.
19. **Mahmood, R.**, Foster, S. A., Logan*, D. 2006. The GeoProfile Metadata, Exposure of Instruments, and Measurement Bias in Climatic Record Revisited. *International Journal of Climatology*, 26: 1091-1124.
18. **Mahmood R.**, Foster, S. A., Keeling*, T., Hubbard, K. G., Carlson*, C., and Leeper*, R. 2006.

Impacts of irrigation on 20th century temperature in the Northern Great Plains. *Global and Planetary Change*, 54: 1-18. (Special issue on LULCC and its impacts on Climate)

17. **Mahmood, R.** and Hubbard, K. G. 2005. Assessing bias in evapotranspiration and soil moisture estimates due to the use of modeled solar radiation and dew point temperature data. *Agricultural and Forest Meteorology*, 130: 71-84.
16. **Mahmood, R.**, Hubbard, K. G., and Christy Carlson* 2004. Modification of growing season surface temperature records in the Northern Great Plains due to land use transformation: verification of modeling results and implication for global climate change. *International Journal of Climatology*, 24:311-327.
15. **Mahmood, R.** and Hubbard, K. G. 2004. An analysis of simulated long-term soil moisture data for three land uses under contrasting hydroclimatic conditions in the Northern Great Plains. *Journal of Hydrometeorology*, 5:160-179.
14. **Mahmood, R.**, Legates, D. R., Meo, M. 2004. The role of soil water availability in potential rainfed rice productivity in Bangladesh: Applications of the CERES-Rice model. *Applied Geography*, 24: 139-159.
13. **Mahmood, R.** and Hubbard, K. G. 2003. Simulating sensitivity of soil moisture and evapotranspiration under heterogeneous soils and land uses. *Journal of Hydrology*, 280:72-90.
12. **Mahmood, R.**, Meo, M., Legates, D. R., and Morrissey, M. L. 2003. The CERES-Rice model-based estimates of potential monsoon season rainfed rice productivity in Bangladesh. *The Professional Geographer*, 55: 261-275.
11. Hubbard, K. G., **Mahmood, R.** and Carlson, C.* 2003. Estimating daily dew point Temperature for the Northern Great Plains using maximum and minimum temperature. *Agronomy Journal*, 95:323-328.
10. Adegoke, O. A., Pielke Sr., R. A., Eastman, J., **Mahmood, R.**, and Hubbard, K. G. 2003. Impact of irrigation on mid summer surface fluxes and temperature under dry synoptic conditions: A regional atmospheric model study of the U. S. High Plains. *Monthly Weather Review*, 131: 556-564.
9. **Mahmood, R.** and Hubbard, K. G. 2002. Anthropogenic land use change in the North American Tall Grass-Short grass transition and modification of near surface hydrologic cycle. *Climate Research*, 21: 83-90.
8. **Mahmood, R.** and Hubbard, K. G. 2002. Effect of time of temperature observation and Estimation of daily solar radiation for the Northern Great Plains, USA. *Agronomy Journal*, 94: 723-733.

7. **Mahmood, R.**, Hubbard, K. G., and Carlson, C.* 2002. Land use change and modification of near-surface thermal records in the Northern Great Plains. *Bulletin of the American Meteorological Society*, 83: 504.
6. **Mahmood, R.**, Hubbard, K. G., and Hou, Q. 2001. Soil moisture monitoring and modeling in the Great Plains. In, *Automated Weather Stations for Applications in Agriculture and Water Resources Management: Current Use and Future Perspectives*, (Ed.) Hubbard, K. G. and Sivakumar, M. V. K. Lincoln, NE: High Plains Climate Center and Geneva, Switzerland : World Meteorological Organization. pp. 163-171.
5. **Mahmood, R.** 1998. Air temperature variations and rice productivity in Bangladesh: a comparative study of the performance of the YIELD and the CERES-Rice models. *Ecological Modelling*, 106: 201-212.
4. **Mahmood, R.** 1998. Thermal climate variations and potential modifications in cropping Pattern in Bangladesh. *Theoretical and Applied Climatology*, 61:231-243.
3. **Mahmood, R.** 1997. Impacts of Air Temperature Variations on the Boro Rice Phenology in Bangladesh: Implications for Irrigation Requirements. *Agricultural and Forest Meteorology*, 84:233-247.
2. **Mahmood, R.** 1996. Scale issues in soil moisture modelling: problems and prospects. *Progress in Physical Geography*, 20:273-291.
1. **Mahmood, R.** and Hayes, J. T. 1995. A model-based assessment of impacts of climate change on the boro rice yield in Bangladesh. *Physical Geography*, 16:463-86.

OTHER SCHOLARLY PUBLICATIONS:

- Loveland, T., **Mahmood, R.**, Toral Patel-Weynand, Karstensen, K., Beckendorf, K., Bliss, N., and Carleton, A. 2012. *National Climate Assessment Technical Report on the Impacts of Climate and Land Use and Land Cover Change*. Prepared for the National Climate Assessment Development and Advisory Committee (NCADAC). 82 p.
- Niyogi, D., Mahmood, R. and Adegoke, J. O. 2009. Editorial: Land-Use/Land-Cover Change and Its Impacts on Weather and Climate. *Boundary-layer Meteorology*, 133, 297-298.
- Frauenfeld, O. W. and **Mahmood, R.** 2008. Editorial: Impacts of Land Use and Land Cover Change on the Atmosphere Special Collection. *Journal of Applied Meteorology and Climatology*.
- Mahmood, R., Pielke Sr., R., Hubbard, K. G. 2007. Effect of human activities on the atmosphere. *Eos, Transactions, American Geophysical Union*, 88: 580.

Mahmood R., Pielke Sr., R. A., Hubbard, K. G. 2006. Editorial: Land Use/land cover change and its impacts on climate. *Global and Planetary Change*, 54: vii

CONFERENCE PAPERS:

Lovanh, N., Loughrin, J., Rysz, M., Quintanar, A. I., Oh, B. T, and **Mahmood, R.** 2015. Neural network analysis on the effect of heat fluxes on greenhouse gas emissions from anaerobic swine waste treatment lagoon. *ASABE 1st Climate Change Symposium: Adaptation and Mitigation*. May 3-5, Chicago, IL, USA. pp. 2-6.

Grogan, D. M., Foster, S., Mahmood R. 2010. The Kentucky Mesonet: perspectives on data access, distribution, and use for a meso-scale surface network. *Proceedings of the 90th Annual Meeting of the American Meteorological Society/26th Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*. American Meteorological Society, Boston. pp. 1-7. (www.ametsoc.org)

Zachary G. Brown, S. A. Foster, R. Mahmood, S. Struebig, D. Grabowski, M. Grogan, and M. Ferris 2008. An Overview of the Kentucky Mesonet. *Proceedings of the 17th Conference on Applied Climatology*. American Meteorological Society, Boston. pp. 1-7. (www.ametsoc.org)

Baldwin*, W. M. and Mahmood, R. 2005. An assessment of key aspects of warm and cool season severe flash flooding in the Southern Appalachians. *Proceedings of 21st Conference on Weather Analysis and Forecasting*. American Meteorological Society, Boston. pp. 1-12. (www.ametsoc.org)

Henry*, C, Mahmood, R., Smallcomb, C., Mclane, M., and Champlin*, D. 2005. The evolution of a warm season severe eastern Kentucky flash flood. *Proceedings of 21st Conference on Weather Analysis and Forecasting*. American Meteorological Society, Boston. pp. 1-11. (www.ametsoc.org)

Legates, D. R., Leathers, D. J., DeLiberty, T. L., Quelch, G. E., Brinson, K., Buttke, J., **Mahmood, R.**, and Foster, S. 2005. DEOS: The Delaware Environmental Observing System. *CD-ROM Proceedings, 85th Annual Meeting of the American Meteorological Society*, The American Meteorological Society: Boston. pp. 1-5.

Mahmood, R., Hubbard, K. G., Carlson, C. 2002. Land use change and modification of near surface temperature records in the Northern Great Plains: verification of modeling results. *Proceedings, 13th Conference on Applied Climatology*, The American Meteorological Society: Boston. pp. 262-264.

Mahmood, R. and Hubbard, K. G. 2002. Sensitivity of soil moisture and evapotranspiration to soils and land use heterogeneity. *Proceedings, 13th Conference on Applied Climatology*, The American Meteorological Society: Boston. pp. 265-268.

Adegoke, J. O, Pielke Sr., R. A., Eastman, J. L., **Mahmood, R.**, Hubbard, K. G. 2002. Modeling the impacts of irrigation on midsummer surface energy budget and the convective boundary layer (CBL) in the U. S. high plains. *Proceedings, 16th Conference on Hydrology, The American Meteorological Society*. The American Meteorological Society: Boston. pp. 192-195.

Mahmood, R. and Hubbard, Kenneth G. 2000. Time of observation and estimation of daily solar radiation for the Northern Great Plains. *Proceedings, 12th Conference on Applied Climatology*, The American Meteorological Society: Boston. pp. 78-81.

Hubbard, Kenneth G., **Mahmood, R.** , Hou, Q. 2000. Daily soil moisture measurement network of the Northern Great Plains: sensors, their calibration, and applications. *Proceedings, 12th Conference on Applied Climatology*, The American Meteorological Society: Boston. pp. 150-152.

Mahmood, R. Humes, K. S., and Legates, D. R. 1999. Scale-aggregation of Landsat-TM data and information loss. *Proceedings, 1999 ASPRS Annual Conference, Portland, Oregon*, pp. 733-742. The American Society for Photogrammetry and Remote Sensing: Bethesda, MD.

Meo, M. and **Mahmood, R.** 1999. The effect of the 1995-96 southwestern drought on fire suppression activities in Oklahoma. *Proceedings, 11th Conference on Applied Climatology*, pp. 161-166. The American Meteorological Society: Boston.

Mahmood, R, 1996. Model-based Estimates of Air Temperature Variations on the Boro Rice Phenology in Bangladesh. *Proceedings, 22nd Annual Conference on Agricultural and Forest Meteorology*, pp. 367-368. The American Meteorological Society: Boston.

OTHER EDITORIAL EXPERIENCE:

Mahmood, R., Pielke Sr., R. A., and Hubbard, K. G. 2006. *Guest Editors* for a theme issue on Land use change and its impacts on Climate. Published by the journal *Global and Planetary Change*.

Frauenfeld, O and Mahmood, R. 2008. Coordinating Editors for a theme issue on Land use change and its impacts on Climate. *Journal of Applied Meteorology and Climatology*.

AWARDS/HONORS:

Recipient of the Ogden College of Science and Engineering, Western Kentucky University Award for Most Prolific Proposer of FY 2015.

Recipient of the WKU Award for Research and Creativity, 2013-2014. (One faculty per year from the entire University)

Recipient of the Ogden College of Science and Engineering, WKU, Award for Research and Creativity, 2013-2014.

Recipient of the Ogden College of Science and Engineering, Western Kentucky University Award for Most Prolific Proposer of FY2013.

Recipient of the Western Kentucky University Award for Research and Creativity, 2005-2006. (One faculty per year from the entire University)

Recipient of the Ogden College of Science and Engineering, WKU, Award for Research and Creativity, 2005-2006.

WKU Nominee for the Kentucky Academy of Science's Distinguished Scientist Award, 2006.

Winner of the Ralph E. and Margaret Olson Geography Graduate Student of the Year Scholarship, 1997. (Received: \$1000)

Winner of the Francis E. Lortz Scholarship of 1995. Presented by the *American Society for Photogrammetry and Remote Sensing*, Rolla Region. (Received: \$500)

Second Prize Winner for the Paper, Titled, "Impacts of Air Temperature Fluctuations on the Boro Rice Phenology in Bangladesh: A Model-based assessment". Climate Specialty Group Student Paper Competition, 91st Annual Conference of the American Association of Geographers, Chicago, March 14-18, 1995.

Honorable Mention for the Presentation of the Paper, Titled, "Impacts of El Nino Related Monsoonal Rainfall Variability and Resultant Rice Productivity in Bangladesh and Eastern India: A Model-based Assessment". Annual Conference 1994, South West Division, American Association of Geographers. Held at Hot Springs, Arkansas, October 21-22.

GRANTS:

Total Grant Support Successfully Obtained: ~\$9 million

PIs-Rezaul Mahmood, Udaysankar Nair, Eric Rappin, Roger Pielke Sr., and Dallas Staley. 2017. Collaborative Research: The Great Plains Irrigation Experiment (GRAINEX) for Understanding the Influence of Irrigation on the Planetary Boundary Layer and Weather Events. Submitted to: NSF. Science Budget: \$663,859. Field work: \$1,291,036. Status: **Funded**. Supplemental Funding: \$44,601.

PIs-Stuart Foster and Rezaul Mahmood. 2017. Kentucky Mesonet. Submitted to: Commonwealth of Kentucky. Total budget: \$750,000. Status: **Funded**.

PI- Rezaul Mahmood. 2017. Emission dispersion modeling from the livestock farms. Submitted to: The United States Department of Agriculture. Total Budget: \$70,717. Status: **Funded**.

PIs-Rezaul Mahmood, Janey Camp, Eric Toman, Ramiro Berardo, Xingang Fan, Jonathan Gilligan, Gregory Goodrich, George Hornberger, and Eric Rappin. 2017. Midwest Climate, Water

Resources, Energy, and Transportation Consortium (MCWET). Submitted to: NOAA. Total budget: \$3,499,959. Status: Pending.

PIs-Rezaul Mahmood and Stuart Foster, 2017. Department of Commerce: NOAA Scientific and Technical Support. Submitted to: NOAA. Total Budget: \$160,000. Status: **Funded**.

PIs-Stuart Foster and Rezaul Mahmood. 2016. Kentucky Mesonet. Submitted to: Commonwealth of Kentucky. Total budget: \$750,000. Status: **Funded**.

PI-Rezaul Mahmood. 2016. Mesonet data application for Public Health. Kentucky Population Health Institute and Kentucky Department of Public Health. Total Budget: \$10,000. Status: **Funded**.

PIs-Zhonfeng Xu, Rezaul Mahmood, Jiangfeng Wei, and Ying Han. 2016. A dynamical downscaling study on the response of monsoon Asian climate to the anthropogenic changes in greenhouse gases concentration and land use/cover. Submitted to: NSFC. Budget: ~800000 RMB (~\$119000). Status: **Funded**.

PIs-Zhongfeng Xu, Jianfeng Wei, and Rezaul Mahmood. 2016. Land-atmosphere coupling over the Tibetan Plateau and its influence on meso- and small-scale convections by using a high-resolution WRF model. Submitted to: NSFC. Budget: ~800000 RMB (~\$119000). Status: **Funded**.

PIs-Rezaul Mahmood, Janey Camp, Eric Toman, Ramiro Berardo, Mark Cohen, Xingang Fan, Jonathan Gilligan, Gregory Goodrich, George Hornberger, Eric Rappin, and Robyn Wilson. 2016. Midwest Climate, Water Resources, Energy, and Transportation Consortium (MCWET). Submitted to: NOAA. Total budget: \$3,496,841. Status: Not funded.

PIs-Stuart Foster and Rezaul Mahmood. 2016. Kentucky Mesonet Critical Instrumentation Upgrades. Submitted to: Kentucky Agricultural Development Fund. Total budget: \$105,250. Status: **Funded**.

PI- Rezaul Mahmood. 2016. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: ~\$63,000. Status: **Funded**.

PIs-Rezaul Mahmood, Udaysankar Nair, Eric Rappin, Roger Pielke Sr., and Dallas Staley. 2015. Collaborative Research: The Great Plains Irrigation Experiment (GRAINEX) for Understanding the Influence of Irrigation on the Planetary Boundary Layer and Weather Events. Submitted to: NSF. Total Budget: \$674,465. Status: Pending.

PIs Eric Rappin, Rezaul Mahmood, and Jeremy Pal. 2015. Collaborative Research: A Multiscale Spatiotemporal Study of the Impacts of Land Cover Change on the West African Monsoon. Submitted to: NSF. Total Budget: \$427,112. Status: Pending.

PIs-Rezaul Mahmood and Stuart Foster, 2015. Department of Commerce NOAA Scientific and Technical Support. Submitted to: NOAA. Total Budget: \$206,666. Status: **Funded**.

PIs David Crocker III, Phil Silva, Kathleen Purvis-Roberts, Rezaul Mahmood, and Matthew Nee 2015-18. Aerosol formation from agricultural volatile organic compounds. Submitted to: NSF. Total Budget: \$765,131. Status: **Funded**.

PI- Rezaul Mahmood. 2015. Emission dispersion modeling from the livestock farms. Submitted to: The United States Department of Agriculture. Total Budget: ~\$102,000. Status: **Funded**.

PIs Xiaomao Lin, Tao Li, Eric Rappin, and Rezaul Mahmood. 2015. Weather Forecast-Based Real-Time Nitrogen and Phosphorus Optimization System in Philippine Rice. Submitted to: Global Center for Food Systems Innovation (GCFSI), MSU. Total budget: ~\$250,000. Status: Not funded.

PIs Rezaul Mahmood, Udaysankar Nair, Eric Rappin, Roger Pielke Sr., and Dallas Staley. 2014. Collaborative Research: The Great Plains Irrigation Experiment (GRAINEX) for Understanding the Influence of Irrigation on the Planetary Boundary Layer and Weather Events. Submitted to: NSF. Total Budget: \$553,787. Status: Not funded.

PIs-Janey Camp, Rezaul Mahmood, Eric Rappin, Amanda Carrico, Peter Newton, Chris Small, Heather Johnson, and Andrew Hostetler. 2015. Hazard SEES Collaborative Research: Social and physical dimension of land use and cyclone vulnerability. Submitted to: NSF. Total Budget: ~\$3,000,000. Status: Not funded.

PI-Rezaul Mahmood. 2014. Meso-scale equivalent temperature. Graduate Student Research Fellowship. Submitted to WKU: Total budget: ~\$26,000. Status: **Funded**.

PIs-Rezaul Mahmood and Scott Dobler, 2014. Drought Monitoring at the Meso-scale. Submitted to the American Geophysical Union (AGU). Total budget: \$27,000. Status: **Funded**.

PIs- David Sanford (UK), Rezaul Mahmood and Stuart Foster, 2014. Development of a farmer friendly ag-weather website for Kentucky. Submitted to Corn Growers Association of Ky and Small Grain Growers Association of KY. Total Budget: \$26,000 WKU portion (\$24,000). Status: **Funded**.

PIs-Rezaul Mahmood and Stuart Foster, 2014. Department of Commerce NOAA Scientific and Technical Support. Submitted to: NOAA. Total Budget: \$100,000. Status: **Funded**.

PI- Rezaul Mahmood. 2014 Emission dispersion modeling from the livestock farms. Submitted to: The United States Department of Agriculture. Total Budget: ~\$101,000. Status: **Funded**.

PIs-Eric Rappin, Rezaul Mahmood, Xingang Fan, Joseph Santanello, 2014. A mesoscale perspective of soil moisture influences on extreme weather patterns in both current and potential future thermodynamic climate scenarios. Submitted to: NSF. Total budget: \$487,665. Status: In review.

PIs-Janey Camp, Rezaul Mahmood, Eric Rappin, Amanda Carrico, and Andrew Hostetler, 2014. Coastal SEES Collaborative Research: Land Use Land Cover Changes and Their Impacts on

Post-landfall Cyclones in Coastal Bangladesh - Identifying Sustainable Land Management Options. Submitted to: NSF. Total Budget: \$1,992,321 Status: Not Funded.

PIs-Rezaul Mahmood and Stuart Foster, 2013. Department of Commerce NOAA Scientific and Technical Support. Submitted to: NOAA. Total Budget: \$75,000. Status: **Funded**.

PIs-Rezaul Mahmood and Scott Dobler, 2013. Drought Monitoring at the Meso-scale (summary proposal). Submitted to the American Geophysical Union (AGU). Total budget: \$2,000. Status: **Funded**.

PIs-Xingang Fan and Rezaul Mahmood, 2013. Soil Temperature Variability, Land Memory of Heat, and Associated Regional Climate Predictability. Submitted to: NSF. Total Budget: \$475,134. Status: Not Funded.

PIs David Crocker III, Phil Silva, Rezaul Mahmood, Matthew Nay, and Kathleen Purvis-Roberts. 2013. Aerosol formation from agricultural volatile organic compounds. Submitted to: NSF. Total Budget: \$472,903. Status: Not funded.

PI- Rezaul Mahmood. 2013. Emission dispersion modeling from the livestock farms. Submitted to: The United States Department of Agriculture. Total Budget: ~\$97,000. Status: **Funded**.

PI- David Van Sanford, Co-PIs Paul Vincelli, Yoko Kusonose, Carol Hanley, Senthold Asseng, Pam Knox, Brenda Ortiz, Al Sutherland, and Rezaul Mahmood. 2013. Adaptation to Climate variability and change through use of forecast-based crop management: An integrated project. Submitted to: USDA-AFRI. Total Budget: \$999,458. Status: Not funded.

PI-Phil Silva, Co-PIs, Kim Cook, David Cocker, Akua-Asa Awuku, and Rezaul Mahmood. 2013. Emissions and Atmospheric Fate of Ammonia and Amines from Managed Agroecosystems. Submitted to: USDA-NIFA. Total Budget: \$340,000. Status: Not funded.

PI- David Van Sanford, Co-PIs Rebecca McCulley, Paul Vincelli, Jerry Skees, Rezaul Mahmood, and Stuart Foster. 2012. Developing and Delivering Useful Climate Information and Decision Support Tools for Kentucky Agriculture: Preparing for Extreme Events. Submitted to: NOAA. Total Budget: \$100,000. Status: Not funded.

PIs-Rezaul Mahmood and Stuart Foster, 2012. Department of Commerce NOAA Scientific and Technical Support. Submitted to: NOAA. Total Budget: \$50,000. Status: **Funded**.

PI- David Van Sanford, Co-PIs Rebecca McCulley, Carol Hanley, Chad Lee, Sue Nokes, Matthew Dixon, Rezaul Mahmood, Stuart Foster, Al Sutherland. 2012. Development of a farmer-friendly agweather website for Kentucky. Total Budget: \$38,916. Status: **Funded**

PIs-Rezaul Mahmood and Tom Loveland. 2012. Linking socio-economic decisions, technological advancement, and biogeophysical impacts of land use land cover change on climate in the Great Plains: A synthesis. Submitted to: USGS. Total Budget: \$132,726. Status: Not funded.

PI- Rezaul Mahmood. 2012. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: \$85,852. Status: **Funded**.

PI-Stuart Foster, Co-PI Rezaul Mahmood, 2012. Soil Monitoring with Kentucky Mesonet, Phase II. Submitted to: KY Agricultural Development Fund. Total budget: \$19,629. Status: Not funded.

PI-Stuart Foster, Co-PI Rezaul Mahmood, 2012. WKU: Expanded weather monitoring for Barren County. Submitted to: Kentucky Agricultural Development Fund. Total budget: \$23,950. Status: **Funded**.

PI-Xingang Fan, Co-PI Rezaul Mahmood. 2011. Investigating the Imbalance of Energy and Water Budget and Its Control over Regional Climate from the NASA MERRA Reanalysis. Submitted to NASA. Total Budget: \$298,803. Status: Not Funded.

PI-Rezaul Mahmood, Nanh Lovanh, John Loughrin, Phil Silva, George Day, Joseph Taraba. 2010. Factors controlling the emissions of malodors and greenhouse gases from livestock operations: Monitoring to mathematical modeling of fate and transport processes. Submitted to: The United States Department of Agriculture. Total Budget: \$2,369,393 Status: Not funded.

PI- Rezaul Mahmood. 2010. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: \$147,306. Status: **Funded**.

PI- Cathleen Webb and Rezaul Mahmood. 2009. NSF-REU: Impacts of Land Use/Land Cover on Mammoth Cave/Upper Green River Watershed in Western Kentucky. Submitted to: The NSF. Total budget: \$349,806. Status: **Funded**.

PIs- Claire Rinehart and Rezaul Mahmood. 2009. WKU-High Performance Computing Center. Submitted to: U. S. Department of Education. Total Budget: \$2,379,000. Status: **Funded**.

PI-Xingan Fan, Co-PI Rezaul Mahmood. Land Memory of Heat and Response of Regional Climate. Submitted to: NOAA. Total Budget: \$477,207. Status: Not Funded.

PI-Rezaul Mahmood, Robert Tindall, and Stuart Foster. Scoping Workshop for Identifying Decision Tools for Non-coastal Flood Response and Mitigation in the Contiguous US. Submitted to: NOAA. Total Budget: \$50,000. Status: Not funded.

PI-Stuart Foster, Co-PI Rezaul Mahmood. Developing an environmental monitoring system for Kentucky. Submitted to: NOAA. Total budget: \$700,000. Status: **Funded**.

PI- Rezaul Mahmood. 2009. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: \$135,229. Status: **Funded**.

PI-Rezaul Mahmood. Timing Shifts in Occurrence of Continental-scale Seasonal High and Low Atmospheric Moisture Content. Submitted to WKU: Total Budget: \$5,000. Status: **Funded**.

PI-Rezaul Mahmood, Nanh Lovanh, and John Loughrin. 2009. Factors controlling the emissions of malodors and greenhouse gases from livestock operations: Monitoring to mathematical modeling of

fate and transport processes. Submitted to USDA. Total Budget: \$391,182. Status: Not funded.

PI-Rezaul Mahmood, James Gary, and Jun Yan. 2009. MRI: Acquisition of Land-Surface Energy Flux Measurement Equipments and Building Cyberinfrastructure for Understanding the Role of Soil Moisture in Development of Planetary Boundary Layer. Submitted to: The NSF. Total budget: \$1,159,000. Status: Not funded.

PI- Cathleen Webb and Rezaul Mahmood. 2008. Impacts of Land Use/Land Cover in the Upper Green River Watershed in Western Kentucky. Submitted to: The NSF. Total budget: \$428,000. Status: Not funded.

PI-Nanh Lovanh, John Loughrin, and Rezaul Mahmood. 2008. Factors controlling the emissions of malodors and greenhouse gases from livestock operations: Monitoring to mathematical modeling of fate and transport processes. Submitted to USDA. Total Budget: \$579,000. Status: Not funded.

PI-Stuart Foster, Co-PI Rezaul Mahmood. 2008. Developing an environmental monitoring system for Kentucky. Submitted to: NOAA. First Year budget: \$668,997. Status: **Funded**.

PI- Rezaul Mahmood. 2008. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: \$112,599. Status: **Funded**.

PI-Rezaul Mahmood, James Gary, Jun Yan, and Stuart Foster. 2008. MRI: Acquisition of Land-Surface Energy Flux Measurement Equipments and Building Cyberinfrastructure for Understanding the Role of Soil Moisture in Development of Planetary Boundary Layer. Submitted to: The NSF. Total budget: \$1,200,000. Status: Not funded.

PI- Phillip Womble, Tim Stombaugh, Rezaul Mahmood, John Spadaro. 2007. AgWatch: A Method of Detecting Crop Disease Breakouts Using Multispectral Sensors. Pre-proposal. Submitted to: National Institute For Hometown Security. Total Budget: \$973,000. Status: Not Funded.

PI- Eugene S. Takle, WKU PI-Rezaul Mahmood, Co-PIs Jun Yan, Gregory Goodrich, Yanmei Li, Stuart Foster. 2007. Midwest Consortium for Climate Assessment (MiCCA). Submitted to: NOAA. WKU budget: \$250,000. Status: Not Funded.

PI-Stuart Foster, Co-PI Rezaul Mahmood. 2007. Developing an environmental monitoring system for Kentucky. Submitted to: NOAA. First Year budget: \$400,000. Status: **Funded**.

PI- Rezaul Mahmood. 2007. Emission dispersion modeling from the livestock firms. Submitted to: The United States Department of Agriculture. Total Budget: \$82,878. Status: **Funded**.

PI-Rezaul Mahmood, Roger Pielke Sr., Kenneth Hubbard. 2007. Workshop on Detecting the Atmospheric Response to the Changing Face of the Earth (Boulder, Colorado, August 27-29, 2007). Submitted to: The National Science Foundation. Total Budget: \$15,000. Status: **Funded**.

PI-Stuart Foster, Co-PI Rezaul Mahmood. 2006. Developing an environmental monitoring system for Kentucky. Submitted to: NOAA. First Year budget: \$1, 500, 000. Status: **Funded.**

PI-Rezaul Mahmood. Changes in timing of first and last days of frost and annual frost frequency due to land use change. WKU Faculty Research Council. Total Budget: \$5, 000. Status: **Funded.**

PI-Rezaul Mahmood, Co-PI Jun Yan, Lakshmi Narasimhan, Christi McMichael, John Tibe, and Stuart Foster. 2007. Pre-proposal: The Center for Integrated Land Atmosphere Studies (CILAS). Submitted to: **The National Science Foundation.** Total Budget: \$4, 200, 000. Status: Not funded

PI-Lakshmi Narasimhan, Co-PI Rezaul Mahmood, James Gary, Jun Yan, and Christi McMichael. Collaborative Research: EDAM: An anchor desk for Environmental Disaster Analysis & Management -Design of foundational infrastructure based on high performance & grid computing. Submitted to: The National Science Foundation. Total Budget: \$368, 199. Status: Not funded.

PI- Rezaul Mahmood. 2006. Emission dispersion modeling from the livestock farms. Submitted to: The United States Department of Agriculture. Total Budget: \$40, 000. Status: **Funded.**

PI-Rezaul Mahmood. 2006. Flash flood climatology of the Appalachian region. Submitted to: The National Climatic Data Center/NOAA. Total Budget: \$1, 900. Status: **Funded.**

PI-Rezaul Mahmood. 2005. Collaborative research: Spatio-temporal variability of soil moisture and land memory processes in the Great Plains. Submitted to: The National Science Foundation. Total Budget: \$225, 704. Status: Not funded.

PI- Rezaul Mahmood. 2005. The First Assessment of Observed Data-based Soil Moisture Variations in the Northern Great Plains. Total Budget: \$5, 000. Status: **Funded.**

PI-Rezaul Mahmood 2005. Measurement and modeling of near surface micro- and meso-scale processes. Submitted to: The United States Department of Agriculture. **Total Budget: \$45, 000.** Status: **Funded.**

PI-Michael Trapasso, Co-PI Rezaul Mahmood. 2005. Establishment of research grade climate/meteorology laboratory facility. Proposal submitted to KY NSF-EPSCoR. **Total Budget: \$75, 000.** Status: **Funded.**

PI-David Legates, Co-PI Rezaul Mahmood and Collaboratores. 2005. Estimating bias in precipitation measurement. Submitted to The National Science Foundation. **Total Budget: \$290, 000.** Status: Not funded.

PI- Michael Trapasso, Co-PI Rezaul Mahmood. 2005. Enhancement of computation facilities for the Climate/Meteorology program. **Total Budget: \$10, 000.** Status: **Funded.**

PI-Cathleen Webb, Co-PI Rezaul Mahmood. 2004. Summer Research Experience for Undergraduates in the Mammoth Cave/ Upper Green River Watershed. Proposal submitted to:

The National Science Foundation (NSF). **Total Budget: \$254, 000.** Status: **Funded**

PI-Kenneth G. Hubbard, Rezaul Mahmood, and David R. Legates. 2004. Spatio-temporal variability of soil moisture and land memory processes in the Great Plains. Submitted to: The National Science Foundation. Total Budget: \$347, 000. Status: Not Funded.

PI-Rezaul Mahmood, Daniel Leathers, and David R. Legates. 2004. An alternative hypothesis of El Nino related monsoonal rainfall variability in Bangladesh and Eastern India. Submitted to: The National Science Foundation. Total Budget: \$282,000. Status: Not Funded.

PI-Rezaul Mahmood. 2004. Assessing Precipitation Variability in the Mid-latitudes Using A High Density Precipitation Measuring Network in the Mammoth Cave National Park. Budget: \$1, 000. Status: **Funded.** (second phase)

PI- Michael Trapasso, Co-PI Rezaul Mahmood. 2004. Enhancement of computation facilities for the Climate/Meteorology program. Amount requested: \$25, 000. Status: Not Funded.

PI-Rezaul Mahmood and Co-PI Stuart Foster. 2004. Development of south central Kentucky mesonet. Total Budget: **\$24, 000.** Status: **Funded.**

PI-Rezaul Mahmood. 2004. Impacts of Land Use Change on Near Surface Dew Point Temperature Records in the Great Plains. Submitted to the National Climatic Data Center. Total Budget: **\$2,500.** Status: **Funded.**

PI-Rezaul Mahmood, Daniel Leathers, and David R. Legates. 2003. An alternative hypothesis of El Nino related monsoonal rainfall variability in Bangladesh and Eastern India. Submitted to: The National Science Foundation. Total Budget: \$318,000. Status: Not Funded.

PI-Kenneth G. Hubbard, Rezaul Mahmood, and David R. Legates. 2003. Spatio-temporal variability of soil moisture and land memory processes in the Great Plains. Submitted to: The National Science Foundation. Total Budget: \$264, 000. Status: Not Funded.

PI-Rezaul Mahmood. 2003. Flash flooding in the Eastern Kentucky: A hydrometeorological case study. Submitted to: The National Oceanic and Atmospheric Administration. **Total Budget: \$10, 000.** Status: **Funded.**

PI- Michael Trapasso, Co-PI Rezaul Mahmood. 2003. Real-time meteorological data feed to Climate/Meteorology lab. **Total Budget: \$24, 000.** Status: **Funded**

PI-Rezaul Mahmood. 2003. Relationship between near-surface and root zone soil moisture: Implication for remote sensing. WKU faculty research council. **Total Budget: \$5, 000.** Status: **Funded**

PI-Rezaul Mahmood. 2003. Assessing Precipitation Variability in the Mid-latitudes Using A High Density Precipitation Measuring Network in the Mammoth Cave National Park. **Total**

Budget: \$1, 000. Status: Funded.

PI-Stuart Foster, Co-PI Rezaul Mahmood. 2003. Joint initiative on local and regional hydroclimatic research. Funding source: Applied Research and Technology Program (ARTP), Western Kentucky University. **Total Budget: \$25, 000. Status: Funded.**

PI-Stuart Foster, Co-PI Rezaul Mahmood. 2003. Developing an environmental monitoring system for Kentucky. Proposed budget: \$3,248,500. Status: Pending

PI-Rezaul Mahmood. 2003. Precipitation measurement at the Mammoth cave National Park. Funding Source: Kentucky Council on Postsecondary Education. **Total Budget: 13, 000. Status: Funded.**

PI-Michael Trapasso, Co-PI Rezaul Mahmood. 2002. Meteorological lab upgrade. Funding organization: Western Kentucky University. **Total Budget: \$24, 762. Status: Funded.**

PI-Rezaul Mahmood. 2002. Determining Sensitivity of a Physically-based Soil Water Model to Estimated Solar Radiation and Relative Humidity. Proposal Submitted to Western Kentucky University Faculty Research Council. **Total Budget: \$5, 000. Status: Funded.**

PI-Rezaul Mahmood. 2003. An assessment of El Nino related monsoonal rainfall variability in Bangladesh and eastern India. KY NSF-EPSCoR. Proposed total budget: \$49, 000. Status: Not funded.

PI-Rezaul Mahmood. 2002. An alternative hypothesis of El Nino related monsoonal rainfall variability in Bangladesh and eastern India. Proposal submitted to: The National Science Foundation, CAREER Program. Amount requested: \$491, 921. Status: Not funded.

PI-Kenneth G. Hubbard, Co-PI Rezaul Mahmood and Alan Basist. 2002. Soil moisture climatology and land memory processes in the Northern Mississippi and Missouri Basins. Proposal submitted to: The Office of Global Programs, The National Oceanic and Atmospheric Administration (NOAA). Amount Requested: \$189, 223. Status: Not funded.

PI-Cathleen Webb, Co-PI Rezaul Mahmood. 2002. Summer Research Experience for Undergraduates in the Mammoth Cave/ Upper Green River Watershed. Proposal submitted to: The National Science Foundation (NSF). Amount requested: \$314, 061. Status: Not funded.

PI-Michael Trapasso, Co-PI Rezaul Mahmood. 2002. Meteorological lab upgrade. Funding organization: Western Kentucky University. Proposed budget: \$33, 632. Status: Not funded.

PI-Rezaul Mahmood, Co-PI Chris Groves. 2002. Mammoth cave meteorological flux measuring instrumentation. Funding Organization: National Park Service. Proposed budget: \$200, 000. Status: Not funded.

PI-Kenneth G. Hubbard, Co-PI Rezaul Mahmood and Alan Basist. 2001. Soil moisture climatology and land memory processes in the Northern Mississippi and Missouri Basins.

Proposal submitted to: The Office of Global Programs, The National Oceanic and Atmospheric Administration (NOAA). Amount Requested: \$267, 277. Status: Not funded.

PI-Cathleen Webb, Co-PI Rezaul Mahmood. 2001. Summer Research Experience for Undergraduates in the Mammoth Cave/ Upper Green River Watershed. Proposal submitted to : The National Science Foundation (NSF). Amount requested: \$284,880. Status: Not funded.

PI-Nevil Speer 2001. A case study of anthropogenic inputs in a karst/non-karst watershed: stakeholder participation in watershed management. Proposal submitted to: The United States Department of Agriculture (USDA). Amount Requested: \$590,296. Status: Not funded

PI-Rezaul Mahmood, Co-PI Burl I. Naugle, Co-PI Christopher Groves, Co-PI Sturat Foster. 2001. Flooding in karst watersheds: a hydrometeorological and hydro-geomorphic analysis. Proposal submitted to: KYEPSCoR. Amount requested: \$20,000. Status: Not funded.

PI-Rezaul Mahmood. 2001. El Nino related monsoonal rainfall variability in Bangladesh and eastern India: an analysis of synoptic-scale atmospheric forcing. Proposal Submitted to Western Kentucky University Faculty Research Council. **Total Budget: \$3,930.** Status: **Funded.**

PI-Kenneth G. Hubbard, Co-PI Rezaul Mahmood and Geoffrey Henebry. 2000. Soil moisture persistence and water cycling through land-surface-atmosphere-continuum in the Northern Great Plains. Proposal submitted to: The National Aeronautics and Space Administration (NASA). Amount Requested: \$595,324. Status: Not funded.

PI-Kenneth G. Hubbard, Co-PI Rezaul Mahmood and Alan Basist. 2000. Soil moisture climatology and land memory processes in the Northern Mississippi and Missouri Basins. Proposal submitted to: The Office of Global Programs, National Oceanic and Atmospheric Administration (NOAA). Amount Requested: \$401,812. Status: Not funded.

PI-Kenneth G. Hubbard, Co-PI Rezaul Mahmood, Mary Knapp, Allen Bender, JohnENZ, and Gary Peterson. 2000. Understanding Drought and mitigating its impacts through monitoring, modeling, and education. Pre-proposal submitted to: United States Department of Agriculture-North Central Region. Amount requested: \$85,878. Status: Not funded.

PI-Rezaul Mahmood. Impacts of scale-aggregation of Landsat-TM data on energy flux estimation. Funded by Oklahoma NASA Space Grant Consortium (OSGS), 1999. Amount: \$2,500. **Funded**

Dissertation Field Research Grant from the University of Oklahoma, 1998. Amount: \$1,850. **Funded.**

Travel Grant from the Department of Geography and College of Geosciences, The University of Oklahoma, 1998. Amount: \$750. **Funded**

PI-D. R. Legates, Co-PI Rezaul Mahmood. The Himalayan Snow Melt Runoff and It's Impact on the Flooding Magnitude of the Lower Ganges-Brahmaputra basin. Pre-proposal Submitted to: National Aeronautics and Space Administration. Amount Requested: \$210, 000. Status: Not

funded. 1997.

PI-Mark Morrissey, Co-PI- Rezaul Mahmood. El Nino Related Monsoonal Rainfall Variability and Rice Productivity in South Asia. Submitted to: National Science Foundation. Amount Requested: \$9, 150. Status: Not funded. 1997.

PI-D. R. Legates, Co-PI May Yuan and Rezaul Mahmood. Interactions between Monsoonal Rainfall Variability and Rice Productivity in South Asia Using a GIS-based Approach. Submitted to: National Science Foundation. Amount Requested: \$120,000. Status: Not funded. 1997.

Received \$250 from the Graduate Student Senate to participate 94th annual meeting of the American Association of Geographers at Boston, Massachusetts. 1998.

Received \$250 from the Graduate Student Senate to participate 93rd annual meeting of the American Association of Geographers at Fort Worth, Texas. 1997.

Received \$200 from the Graduate Student Senate to participate 92nd annual meeting of the American Association of Geographers at Charlotte, North Carolina. 1996.

Received \$600 from University at Albany Graduate Student Organization for the research project, titled, "Monsoonal Fluctuations and Rice Yield in Bangladesh: Application of a Numerical Crop Yield Model". 1992.

Received \$500 from University at Albany Benevolent Association for the research project, titled, "Monsoonal Fluctuations and Rice Yield in Bangladesh: Application of a Numerical Crop Yield Model". 1991.

INVITED PRESENTATIONS:

University of Alabama, Tuscaloosa, AL (1999)
University of Nebraska-Lincoln, Lincoln, NE (1999)
Kent State University, Kent, OH (2000)
University of Montana, Missoula, MN (2000)
California State University, Los Angeles, CA (2001)
Western Kentucky University, Bowling Green, KY (2001)
University of Missouri-Columbia, Columbia, MO (2001)
Kansas State University, Manhattan, KS (2001)
University of Minnesota, Twin Cities, MN (2002)
University of Delaware, Newark, DE (2003)
University of Kentucky, Lexington, KY (2012)
Chinese Academy of Sciences, Beijing, China (2012)
University of Alabama at Huntsville, AL (2013)
Texas A&M University, TX (2013)
Vanderbilt University, TN (2013)
National Autonomous University of Mexico (UNAM; 2015)
University of Oklahoma (2015)

University of Nebraska-Lincoln (2016)

GRANT REVIEWER:

Various programs of The National Science Foundation, USA, including:

Office of Polar Programs,
Atmospheric Science,
Hydrology, and
Geography and Regional Science.

University Grant Committee, Hong Kong.

MANUSCRIPT REVIEWER:

Nature Climate Change, Geophysical Research Letters, Journal of Geophysical Research-Atmosphere, Journal of Applied Meteorology and Climatology, Bulletin of the American Meteorological Society, Journal of Atmospheric and Oceanic Technology, Weather, Climate, and Society, International Journal of Climatology, Climate Research, Agricultural and Forest Meteorology, Journal of Civil and Environmental Engineering, Physical Geography, Applied Geography, Journal of Hydrology, Hydrological Sciences Journal, Journal of the American Water Resources Association, Agricultural Water Management, Journal of Spatial Hydrology, International Journal of Environmental Pollution, International Journal of Remote Sensing, Geography Compass, and Global and Planetary Change.

EDITORIAL BOARD MEMBER:

Physical Geography (2006-2010)
Geography Compass (2006-2015)

PROFESSIONAL MEMBERSHIP:

The American Academy of Advancement of Science (AAAS)
The American Association of Geographers (AAG)
The American Meteorological Society (AMS)
The American Geophysical Union (AGU)
The American Association of State Climatologists (AASC)

RESEARCH ASSISTANT PROFESSOR, POST-DOCTORAL and RESEARCH STAFF MENTORING:

Dr. Eric Rappin
Dr. Arturo Quintanar
Ronnie Leeper

William Rodgers

PROFESSIONAL STAFF SUPERVISION and MENTORING:

Michael Grogan, Stephen Struebig, Dana Grabowski, Megan Ferris, David Pedigo, Jason Givens, Andrew Quilligan, Ara Nazem, James Thompson, Patrick Collins, Charles O'Connell, William Schwind, Christopher Jones, Fatima Chebchoub, Melissa Griffin, James Wood and Jason Smith

DISSERTATION COMMITTEE:

F. Cruz, 2009, The University of New South Wales, Sydney, Australia
Prakash K. Patil, 2002, Department of Geography, University of Pune, India.

GRADUATE THESIS PROJECT DIRECTOR FOR THE FOLLOWING STUDENTS:

Daniel Taylor (Outstanding Graduate Student in Geoscience--2004), Dasen Kendrick (2005), Christina Henry (2006), William Baldwin (2007), Ashley Littell (2007; Outstanding Graduate Student in Geoscience--2007), and Ronnie Leeper (2009; Outstanding Graduate Student in Geoscience; and Outstanding Graduate Student of the Ogden College of Science and Engineering--2009), Michael Grogan (2010), Kortney Croft (2011), Mitchell Gaines (2012) William Rodgers (2014), James Kyle Thompson (2014), Jesse Winchester (2015), Keri Younger (2015), Austin Wardall (2016), and Dolly Na-Yemeh (2017).

THESIS COMPLETED AND CURRENT PROFESSIONAL AFFILIATION:

Title: Synoptic atmospheric conditions, land cover, and equivalent temperature variations in Kentucky. Completed by: Dolly Na-Yemeh. **Thesis Project Director:** Dr. Rezaul Mahmood, May, 2017.

Currently a Ph.D. student at the University of Oklahoma.

Title: Dispersion of ammonia from concentrated animal feeding operations. Completed by: Austin Wardall. **Thesis Project Director:** Dr. Rezaul Mahmood, December, 2016.

Currently employed in the private sector.

Title: Assessing meso-scale equivalent temperature in Kentucky. **Completed By:** Keri Younger. **Thesis Project Director:** Dr. Rezaul Mahmood. April, 2015.

Currently employed in the private sector.

Title: Emissions from concentrated animal feeding operations during wet and dry periods in the Southeastern United States. **Completed By:** Jesse Winchester. **Thesis Project Director:** Dr.

Rezaul Mahmood. March, 2015

Currently employed in the private sector.

Title: Station exposure and resulting bias in temperature observations: A comparison of the Kentucky Mesonet and ASOS data. **Completed by:** James Kyle Thompson. **Thesis Project Director:** Dr. Rezaul Mahmood. December, 2014.

Currently employed in the private sector.

Title: Land cover change and its impacts on a flash flood producing rain event in eastern Kentucky. **Completed by:** William Rodgers. **Thesis Project Director:** Dr. Rezaul Mahmood April, 2014.

Currently employed by the Kentucky Climate Center, Western Kentucky University.

Title: Application of the Weather Research and Forecasting (WRF) model to simulate a squall line: Implications of choosing parametrization scheme combinations and model initialization data sets. **Completed by:** Mitchell Gaines. **Thesis Project Director:** Dr. Rezaul Mahmood. April, 2012.

Currently employed by the National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA).

Title: Economic impacts of drought on Kentucky corn, hay, and soybeans. **Completed by:** Kortney E. Craft. **Thesis Project Director:** Dr. Rezaul Mahmood. January, 2011.

Title: Information technology implementation decisions to support the Kentucky Mesonet. **Completed by:** Michael Grogan. **Thesis Project Director:** Dr. Rezaul Mahmood. April, 2010.

Currently employed in private sector.

Title: Near surface atmospheric response to simulated changes in land-cover, vegetation fraction, soil moisture over western Kentucky. **Completed by:** Ronnie Leeper. **Thesis Project Director:** Dr. Rezaul Mahmood. Summer, 2009.

Currently employed by Cooperative Institute of Climate and Satellite Studies, NCSU/NCEI, NOAA.

Title: Spatio-temporal analysis of observed soil moisture data from Nebraska. **Completed by:** Ashley Littell. **Thesis Project Director:** Dr. Rezaul Mahmood. April, 2007.

Currently employed in private sector.

Title: An analysis of key aspects of warm and cool season flash flooding in the southern Appalachians. **Completed by:** William Baldwin. **Thesis Project Director:** Dr. Rezaul

Mahmood. April, 2007.

Ph.D. completed at the Mississippi State University.

Title: Flash flooding in eastern Kentucky: An analysis of 3-4 August 2001 event. **Completed by:** Christina Henry. **Thesis Project Director:** Dr. Rezaul Mahmood. November, 2006.

K-12 Teacher.

Title: The relationship between meteorological patterns and rural ground ozone concentration. **Completed by** Dasen Kendrick. **Thesis Project Director:** Dr. Rezaul Mahmood. December, 2005.

Currently employed in the private sector.

Title: Evaluating Spatial Variability of Precipitation in Kentucky with Exploratory Data Analysis. **Completed by** Daniel R. Taylor. **Thesis Project Director:** Dr. Rezaul Mahmood. September, 2004.

Currently employed by the US Government. (September, 2004)

UNDERGRDUATE STUDENT MENTORING AND THEIR CURRENT PROFESSIONAL AFFILIATION:

Dan Taylor (works for the USACE), William Baldwin (Currently a doctoral student at the MSU), David Logan (graduated in 2004), Christopher A. Hawkins (works for the local govt, in Kentucky), Ronnie Leeper (research associate-NCSU/NCDC/NOAA), Travis Keeling (Outstanding undergraduate student award in Geography, currently works for the NWS), Jessica S. Phillips (works in the private sector), William Rodgers (Outstanding undergraduate student in Geography award; Research Associate, Kentucky Climate Center, WKU), Nicholas Lawalin (works for an engineering farm), Ashley Littell (outstanding undergraduate and graduate student award; works in the private sector), Astrid Gonzalez (outstanding undergraduate student in Meteorology; graduate student at PSU), Jane Wix (Works for the National Weather Service), Timothy Malone (work in the private sector as a forecaster), Danny Gant (Works for the National Weather Service), Jeremy Taylor (works in the private sector), Dan Vecellio (NSF-REU Student, 2010), Justin Rawley (NSF-REU student, 2010), Ryan Torres (US Army), Ian Blaylock (Currently at NWS), Lee Campbell (graduated), Kyle Berry (graduated), Matthew Payne (Currently at ESRI), Sean Freeman (Student, Florida State University), Emily Morris (NSF-REU Student, 2011), Andrew Fultz (NSF-REU student, 2012), Christopher Johnson (2012-14), Emily Thornton (2012-14), Bryan Knowles (graduated in 2014; and 2016), Victoria Hampton (Gatton Academy Staff), Jacob Wilkins (2013-15; BGMU), Dakota Smith (2014), Logan Mitchell (CURRENT), Tori Schow (2017), Nathan Crowdus (CURRENT), Grant Larkin (CURRENT), and Greg Docekal (CURRENT), Dylan Clark (CURRENT), Daniel Martin (CURRENT), CJ Padgett (CURRENT).

HONORS THESIS SUPERVISED:

Title: Aerosol size distribution measurements during the 2014 NASA SARP Campaign in the Central Valley and Sierra Nevada Mountains in California.

Completed By: Victoria Hampton. Thesis Project Director: Dr. Rezaul Mahmood. April, 2015.

Title: Constructing a Radar data-based Summer Season Flash Flood Rainfall Climatology of Eastern Kentucky and West Virginia.

Currently employed by Western Kentucky University.

Completed by: Jane M. Wix. **Thesis Project Director:** Dr. Rezaul Mahmood. April, 2010.

Currently employed by the National Weather Service (NWS).

Title: Sensitivity of planetary boundary layer to varying soil moisture: A comparison of the MM5 and the RAMS simulations.

Completed by: Astrid Gonzalez. **Thesis Project Director:** Dr. Rezaul Mahmood. May, 2010.

Completed Ph. D. from the Pennsylvania State University and currently employed by the US Air Force as a researcher.

HONORS THESIS COMMITTEE:

Ian Blaylock (Committee member, 2012)

Emily Morris (2013; Appalachian State University)

PAST PROFESSIONAL EXPERIENCE (TEACHING):

- * Instructor, Physical Geography, Department of Geography, The University of Oklahoma, Spring and Summer, 1996.
- * Lecturer, Computer Science Minor Program, SUNYA, Spring, 1993. Assigned to Teach Introduction to Mainframe Computing and Programming with Mainframe SPSS.
- * Teaching Assistant, Computer Science Minor Program, SUNYA, Fall, 1991 to Fall, 1992.
- * Teaching Assistant for the Course 'Geography of New York State' at the Department of Geography and Planning, SUNYA, in spring, 1991.
- * Lecturer, Dept. of Geography, Dhaka City College, Dhaka, Bangladesh, August, 1989 - March, 1990.

PAST PROFESSIONAL EXPERIENCE (RESEARCH):

- * Post-doctoral research associate, High Plains Regional Climate Center, School of Natural

Resource Sciences, University of Nebraska-Lincoln. 1999 – 2001.

* Research assistant, Science and Public Policy Program, Summer, 1997 to Spring, 1999. Title of the project: “Climate prediction, information, and policy response: a retrospective assessment of drought management in Oklahoma.”

* Student Intern, Space Imaging/EOSAT, Summer, 1996 to Spring, 1997.

* Research Assistant, Department of Geography, The University of Oklahoma, Fall, 1994 to Spring, 1996. Title of the project: “Abnormal precipitation and floods and droughts in the Southern Great Plains.”

* Member, University at Albany Graduate Student Organization's research grant review committee, 1992.

* Geographer-Researcher and SPANS Analyst, Agricultural Sector Team, Canadian International Development Agency, Dhaka, Bangladesh, April - August, 1990.

* Research Assistant, Center for Urban Studies, University of Dhaka, Bangladesh, April-July, 1989.

* Assisted faculty members as a research assistant in 12 research projects (1983-1988).

PROFESSIONAL ACTIVITIES (SERVICE):

Co-organizer of a session, titled, “**Advances in Understanding Land-Atmosphere Interactions**” at the annual meeting of the American Geophysical Union, 2013.

Invited Chair of a Panel Discussion Session, titled, “**Urban Climate: Global Impact and Mitigation Techniques**”, at the 106th annual meeting of the AAG, 2010.

Co-organizer, two special sessions in hydroclimatology, at the 106th annual meeting of the AAG, 2010.

Chair, special session in hydroclimatology at the 106th annual meeting of the AAG, 2010.

Lead organizer (with Stuart Foster, Bill Caldwell, Steve Peek, Scott Dobler, Ara Nazem, and Michael Grogan) of **Kentucky Mesonet Workshop**. October 7-8, 2008, Bowling Green, Kentucky.

Lead organizer (with Roger Pielke Sr. and Kenneth G. Hubbard) of a **NSF funded workshop**, titled, **Detecting the Atmospheric Response to the Changing Face of the Earth: A Focus on Human-Caused Regional Climate Forcings, Land-Cover/Land-Use Change, and Data Monitoring**, August 27-29, 2007 Boulder, CO.

Organized first meeting of KY-Mesonet consortium. (Geography Symposium: “Building the

Kentucky Mesonet”). **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006.

Organizer, two special sessions in hydroclimatology and land use/land cover change, at the 102nd annual meeting of the AAG, 2006.

Organizer, three special sessions in hydroclimatology, at the 101st annual meeting of the AAG, 2005.

Chair, one special session in hydroclimatology, at the 101st annual meeting of the AAG, 2005.

Organizer, two special sessions in hydroclimatology, at the 100th annual meeting of the AAG, 2004.

Chair, one special session in hydroclimatology, at the 100th annual meeting of the AAG, 2004.

Organizer, special session in hydroclimatology, at the 99th annual meeting of the AAG, 2003.

Chair, one special session in hydroclimatology, at the 99th annual meeting of the AAG, 2003.

Organizer, two special sessions in hydroclimatology at the 97th annual meeting of the American Association of Geographers, 2001.

Chair, one special session on hydroclimatology at the 97th annual meeting of the Association of American Geographers, 2001.

Young Scholar Director, 1997-1999, Climate Specialty Group (CSG), The American Association of Geographers.

Organizer, two special sessions in hydroclimatology at the 94th annual meeting of the American Association of Geographers, 1998.

Chair, one special session in hydroclimatology at the 94th annual meeting of the American Association of Geographers, 1998.

Organizer, two special sessions in hydroclimatology at the 93rd annual meeting of the American Association of Geographers, 1997.

Organizer, three special sessions in hydroclimatology at the 92nd annual meeting of the American Association of Geographers, 1996.

Chair, Special Session on Precipitation Climatology: Temporal Aspects, at the 92nd annual meeting of the American Association of Geographers, 1996.

PROFESSIONAL PRESENTATIONS:

*Student

**Post-doc

Poster, titled, “The role of soil moisture over irrigated land on precipitation in the northern Great Plains at convective scales” was presented at the **98th Annual Meeting of the American Meteorological Society**, Austin, TX, January 7-11, 2018 (co-authored with Eric Rappin, U. Nair, and R. Pielke Sr.).

Poster, titled, “A comparison of air temperatures at irrigated and nonirrigated sites in Andalusia, Spain.” was presented at the **98th Annual Meeting of the American Meteorological Society**, Austin, TX, January 7-11, 2018 (co-authored with Logan Mitchell*, P. Ordóñez, A. I. Quintanar, and C. Ochoa-Moya).

Poster, titled, “Influence of "small" elevation changes on mesoscale temperature variations” was presented at the **98th Annual Meeting of the American Meteorological Society**, Austin, TX, January 7-11, 2018 (Co-authored with Nathan Crowdus)

Poster, titled, “Characterizing temporal changes of agricultural particulate matter number concentrations, was presented at the **Annual Meeting of the American Geophysical Union**, New Orleans, LA, December 10-14, 2017 (co-authored with Pierce Larkin, Gregory Docekal, and Philip J. Silva)

Poster, titled, “Utilization of weather and climate monitoring and forecasting data for public health climate change capacity building in Kentucky,” was presented at the **69th Annual Conference of Kentucky Public Health Association**, Owensboro, KY, April 11-13, 2017 (co-authored with Janie Cambron, Cynthia Lamberth, Andrew Quilligan, Nathan Crowdus*, Eric Rappin, and Benjamin Scott).

Paper, titled, “Synoptic Conditions, land cover and equivalent temperature variations in Kentucky” was presented at the **102nd Annual Meeting of the American Association of Geographers**, Boston, MA, April 5-9, 2017 (co-authored with Dolly Na-Yemeh*, Gregory Goodrich, Kevin Cary, and Joshua Durkee).

Paper, titled, “Geoprofiles and data about data” was presented at the **47th Student Research Conference**, WKU, Bowling Green, KY, March 25, 2017 (co-authored with Dolly Na-Yemeh*, Gregory Goodrich, Kevin Cary, and Joshua Durkee).

Poster, titled, “An analysis of Urban Heat Islands in Kentucky” was presented at the **97th Annual Meeting of the American Meteorological Society**, Seattle, WA, January 22-26, 2017 (co-authored with Logan Mitchell*).

Poster, titled, “At-Risk populations due to ammonia pollution from concentrated animal feeding operations in western Kentucky” was presented at the **102nd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY, November 4-5, 2016 (co-authored with Austin Wardall* and Jun Yan).

Paper, titled, "Synoptic conditions and equivalent temperature variations in Kentucky" was presented at the **102nd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY, November 4-5, 2016 (co-authored with Dolly Na-Yemeh*).

Paper, titled, "Land Cover Change, Irrigation, and their impacts on climate" was presented at the **University of Nebraska-Lincoln**, September 28, 2016. (invited)

Poster, titled, "Elevation and Mesoscale Temperature Variations" was presented at the **National Conference of Undergraduate Research** (NCUR), UNC - Asheville, NC campus, April 7-9, 2016 (co-authored with Nathan Crowdus*).

Paper, titled, "Meso-scale equivalent temperature in Kentucky" was presented at the **96th Annual Meeting of the American Meteorological Society**, New Orleans, LA, January 10-14, 2016. (co-authors: Keri Younger*, Gregory Goodrich, Roger Pielke Sr., Joshua Durkee, and Xingang Fan)

Paper, titled, "Agriculture-driven Land Use Land Cover Change and Climate" was presented at the **Annual Meeting of the American Geophysical Union**, December 14-18, 2015. (invited)

Paper, titled, "Climatic impacts of land cover change" was presented at the **University of Oklahoma**, September 18, 2015. (invited)

Paper, titled, "Climatic impacts of land cover change" was presented at the **National Autonomous University of Mexico (UNAM)**, August 28, 2015. (invited)

Paper, titled, "Kentucky Mesonet: An Infrastructure for Weather and Climate Observation" was presented at the **Kentucky Department of Public Health**, Frankfort, Kentucky, June 29, 2015. (invited)

Paper, titled, "An assessment of 26 April 2011 Pre-Frontal Squall Line in Kentucky" was presented at the **94th Annual Meeting of the American Meteorological Society**, Atlanta, GA, February 2-6, 2014. (co-authored with Emily Thornton* and Joshua Durkee)

Poster, titled, "The impacts of land cover change on local precipitation over the Land Between the Lakes region", was presented at the **94th Annual Meeting of the American Meteorological Society**, Atlanta, GA, February 2-6, 2014. (co-authored with Jesse N. Winchester* W. Rodgers, E. Rappin, J. Durkee, F. Hossain, and A. Degu)

Poster, titled, "Station exposure and resulted bias in temperature observations: A comparison between the Kentucky Mesonet and ASOS Data" was presented at the **94th Annual Meeting of the American Meteorological Society**, Atlanta, GA, February 2-6, 2014. (co-authored with J. Kyle Thompson* and S. A. Foster)

Paper, titled, "Influence of karst landscape on weather systems: A WRF model study on responses for different land and soil types" was presented at the **94th Annual Meeting of the American Meteorological Society**, Atlanta, GA, February 2-6, 2014. (co-authored with Chris M. Johnson*, X. Fan, R. Mahmood, C. Groves, J. Polk, and J. Yan)

Paper, titled, "Soil moisture modifications associated with land cover changes and their impacts on weather and climate" was presented at the **Annual Meeting of the American Geophysical Union**, San Francisco, CA, December 9-13, 2013.

Paper, titled, "Impacts of land use and land cover change on climate" was presented at the **Department of Earth and Environmental Science, Vanderbilt University**, Nashville, TN, October 18, 2013. (Invited)

Paper, titled, "Climatic impacts of land cover change" was presented at the **Department of Geography, Texas A&M University**, College Station, TX, September 27, 2013. (Invited)

Paper, titled, "Meso-scale weather and climate observation in Kentucky" was presented at the **Department of Atmospheric Science, The University of Alabama in Huntsville**, Huntsville, AL, September 4, 2013. (Invited)

Paper, titled, "The Impacts of Urbanization on Daily Precipitation Trends in the Kentucky-Ohio River Valley" was presented at the **93nd Annual Meeting of the American Meteorological Society**, Austin, TX, January 5-10, 2013. (co-authored with Andrew Fultz* and Joshua Durkee)

Paper, titled, "Modeling Urban Impacts on Regional Weather of Central U.S.," was presented at the **93nd Annual Meeting of the American Meteorological Society**, Austin, TX, January 5-10, 2013. (co-authored with Laura J. Schisler*, J. Young, and X. Fan)

Paper, titled, "Land Cover Change and Its Impacts on Climate" was presented at the **Institute of Atmospheric Physics, Chinese Academy of Sciences**, May 28, 2012, Beijing, China. (Invited)

Paper, titled, "Kentucky Mesonet: An Introduction" was presented at the **Institute of Atmospheric Physics, Chinese Academy of Sciences**, May 28, 2012, Beijing, China. (Invited)

Paper, titled, "Kentucky Mesonet: An Overview and Update", was presented at the **92nd Annual Meeting of the American Meteorological Society**, New Orleans, LA, January 22-26, 2012.

Paper, titled, "An analysis of WRF Physics Parameterization Scheme Combinations for the January 29 and 30th 2008 Ohio Valley Squall Line Event", was presented at the **92nd Annual Meeting of the American Meteorological Society**, New Orleans, LA, January 22-26, 2012. (co-authored with Mitchell Gaines* and Ronnie Leeper)

Paper, titled, "Kentucky Mesonet: Weather and Climate Data Resources Unique to Kentucky", was presented at the **Climate Change and Small Grains Production Workshop**, University of Kentucky, Lexington, Feb. 20-21, 2012. (Invited)

Poster, titled, "An Analysis of WRF Physics Parameterization Schemes for the January 29 and 30th 2008 Ohio Valley Squall line Event", was presented at the **107th Annual Meeting of the American Association of Geographers**, Seattle, WA, April 12-16, 2011. (co-authored with Mitchell Gaines* and Ronnie Leeper)

Poster, titled, “Synoptic Analysis of Historic May 2010 Flood”, was presented at the **107th Annual Meeting of the American Association of Geographers**, Seattle, WA, April 12-16, 2011. (co-authored with Lee Campbell*, Kyle Berry*, Dustin Jordan*, Joshua Durkee, Greg Goodrich, and Stuart Foster)

Poster, titled, “Impact Analysis of the May 2010 Mid-South Flood”, was presented at the **2011 National Severe Weather Workshop**, Norman, OK, March 3-5, 2011. (co-authored with Kyle Berry*, Lee Campbell*, Dustin Jordan*, Joshua Durkee, Gregory Goodrich, Rezaul Mahmood, Stuart Foster)

Poster, titled, “**Synoptic Analysis of 2010 Mid-South Flood**”, was presented at the **2011 National Severe Weather Workshop**, Norman, OK, March 3-5, 2011. (co-authored with Lee Campbell*, Kyle Berry*, Dustin Jordan*, Joshua Durkee, Gregory Goodrich, Rezaul Mahmood, Stuart Foster)

Poster, titled, “Impacts of Land-use and Land Cover Change on Eastern Kentucky Flash Floods”, was presented at the **65th Annual SEDAAG Meeting**, Birmingham, Alabama, November 20-23, 2010. (co-authored William Rodgers*)

Poster, titled, “A Synoptic Analysis of the Historic 2010 Mid-South Flood”, was presented at the **65th Annual SEDAAG Meeting**, Birmingham, Alabama, November 20-23, 2010. (co-Authored with Kyle Berry*, Lee Campbell*, Dustin Jordan*, Joshua Durkee, Gregory Goodrich, and Stuart Foster)

Poster, titled, “Urbanization and its Impacts on Precipitation Around Three Urban Centers in the Kentucky-Ohio River Valley”, was presented at the **65th Annual SEDAAG Meeting**, Birmingham, Alabama, November 20-23, 2010. (co-authored with Ryan Torres* and Joshua Durkee)

Poster, titled, “Economic Impacts of Drought on Kentucky’s Agriculture”, was presented at the **65th Annual SEDAAG Meeting**, Birmingham, Alabama, November 20-23, 2010. (co-authored with Kortney Craft* and Stephen King)

Poster, titled, “An Analysis of WRF Physics Parameters for the January 29th and 30th 2008 Ohio Valley Squall Line Event”, was presented at the **65th Annual SEDAAG Meeting**, Birmingham, Alabama, November 20-23, 2010. (Mitchell Gaines*; mentored by Rezaul Mahmood and Ronnie Leeper)

Paper, titled, “An Analysis of WRF Physics Parameters for the January 29th and 30th 2008 Ohio Valley Squall Line Event”, was presented at the **96th Annual Meeting of the Kentucky Academy of Sciences**, Bowling Green, KY 12-13 November, 2010. (co-authored with Mitchell Gaines* and Ronnie Leeper)

Paper, titled, “Historic 2010 Mid-South Flood”, was presented at the **96th Annual Meeting of the Kentucky Academy of Sciences**, Bowling Green, KY 12-13 November, 2010. (co-authored with Lee Campbell*, Kyle Berry*, Dustin Jordan*, Josh Durkee, Greg Goodrich, and Stuart Foster)

Paper, titled, “Economic Impacts of Drought on Kentucky's Agriculture” was presented at the **96th Annual Meeting of the Kentucky Academy of Sciences**, Bowling Green, KY 12-13 November, 2010. (co-authored with Kortney Craft* and Stephen King)

Poster, titled, “A Hazards Analysis of the Historic 1-2 May 2010 Mid-South Flood” was presented at the **96th Annual Meeting of the Kentucky Academy of Sciences**, Bowling Green, KY 12-13 November, 2010. (co-authored with Kyle Berry*, Lee Campbell*, Dustin Jordan*, Josh Durkee, Greg Goodrich, and Stuart Foster)

Paper, titled, “Sensitivity of planetary boundary layer atmosphere to changes of land use/land cover, vegetation fraction, and soil moisture in Western Kentucky, USA”, was presented at the **106th Annual Meeting of the American Association of Geographers**, Washington, DC, April 14-18, 2010. (co-authored with Ronnie Leeper** and Arturo Quintanar**)

Poster, titled, “Impacts of land-use and land cover change on eastern Kentucky flash floods”, was presented at the **106th Annual Meeting of the American Association of Geographers**, Washington, DC, April 14-18, 2010. (co-authored with William Rodgers* and Ronnie Leeper**)

Poster, titled, “Sensitivity of Planetary Boundary Layer to Varying Volumetric Soil Moisture”, was presented at the **106th Annual Meeting of the American Association of Geographers**, Washington, DC, April 14-18, 2010. (co-authored with Astrid Suarez-Gonzalez*, A. I. Quintanar**, A. Beltran-Przekurat, and R. A. Pielke Sr.)

Poster, titled, “Ensemble forecast spread induced by soil moisture changes”, was presented at the **90th Annual Meeting of the American Meteorological Society/22nd Conference on Climate Variability and Change**, Atlanta, GA, 17-21 January, 2010 (co-authored with A. I. Quintanar**).

Paper, titled, “The influence of karst hydrology on local planetary boundary layer”, was presented at the **90th Annual Meeting of the American Meteorological Society/24th Conference on Hydrology**, Atlanta, GA, 17-21 January, 2010 (co-authored with R. D. Leeper** and A. I. Quintanar**).

Paper, titled, “The Kentucky Mesonet: Perspectives on data access, distribution, and use for a mesoscale surface network”, was presented at the **90th Annual Meeting of the American Meteorological Society/26th Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology**, Atlanta, GA, 17-21 January, 2010 (co-authored with D. M. Grogan** and S. Foster).

Paper, titled, “Quality Assurance Methods for the Kentucky Mesonet”, was presented at the **90th Annual Meeting of the American Meteorological Society/15th Symposium on Meteorological Observation and Instrumentation**, Atlanta, GA, 17-21 January, 2010 (co-authored with Megan

M. Ferris**, S. Struebig, M. Grogan**, and S. Foster).

Poster, titled, “Equipment and instrumentation used at a Kentucky Mesonet environmental monitoring station”, was presented at the **90th Annual Meeting of the American Meteorological Society/15th Symposium on Meteorological Observation and Instrumentation**, Atlanta, GA, 17-21 January, 2010 (co-authored with Stephen Struebig**, D. Grabowski**, and S. A. Foster).

Poster, titled, “Site identification and selection for the Kentucky Mesonet”, was presented at the **90th Annual Meeting of the American Meteorological Society/15th Symposium on Meteorological Observation and Instrumentation**, Atlanta, GA, 17-21 January, 2010 (co-authored with James Kyle Thompson* and S. A. Foster).

Poster, titled, “Impacts of temporal and spatial resolutions of model initialization data”, was presented at the **90th Annual Meeting of the American Meteorological Society/14th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS)**, Atlanta, GA, 17-21 January, 2010 (co-authored with T.J. Malone*, Western Kentucky University, Bowling Green, KY; R. D. Leeper**, and A. I. Quintanar**).

Poster, titled, “A sensitivity study of energy fluxes and evaporation from a waste lagoon to different stability model formulations”, was presented at the **90th Annual Meeting of the American Meteorological Society/12th Conference on Atmospheric Chemistry**, Atlanta, GA, 17-21 January, 2010 (co-authored with William N. Rodgers*, A. I. Quintanar**, J. Loughrin, and N. Lovanh).

Poster, titled, “Sensitivity of planetary boundary layer to varying volumetric soil moisture”, was presented at the **90th Annual Meeting of the American Meteorological Society/22nd Conference on Climate Variability and Climate Change**, Atlanta, GA, 17-21 January, 2010. (co-authored with Astrid Suarez-Gonzalez*, A. I. Quintanar**, A. Beltran-Przekurat, and R. A. Pielke Sr.)

Poster, titled, “Flash Flood Climatology of the Appalachian Mountains: Focus on Eastern Kentucky and West Virginia Summer Rainfall Events”, was presented at the **90th Annual Meeting of the American Meteorological Society/18th Conference of Applied Climatology**, Atlanta, GA, 17-21 January, 2010. (co-authored with Jane Wix* and William Rodgers*)

Paper, titled, “Seasonal outlook and emergency management”, was presented at the Kentucky Weather Conference, Bowling Green, KY, January 15-16, 2010.

Poster, titled, “Urbanization and its Impacts on Precipitation Around Three Urban Centers in the Kentucky-Ohio River Valley”, was presented at the **64th SEDAAG Meeting**, Knoxville, Tennessee, November 21-24, 2009 (co-authored with Ryan Torres* and Joshua Durkee).

Poster, titled, “Sensitivity of MM5 and RAMS Meso-scale Models to Soil Moisture Variations”, was presented at the **64th Annual SEDAAG Meeting**, Knoxville, Tennessee, November 21-24, 2009. (co-authored with Astrid Suarez-Gonzalez*, A. I. Quintanar**, A. Beltran-Przekurat, and R. A. Pielke Sr.)

Poster, titled, "Site identification and selection for the Kentucky Mesonet", was presented at the **64th Annual SEDAAG Meeting**, Knoxville, Tennessee, November 21-24, 2009. (co-authored with James Kyle Thompson* and S. Foster)

Poster, titled, "Comparison of Eastern Kentucky and West Virginia Summer Flash Flood Rainfall Events", was presented at the **64th Annual EDAAG Meeting**, Knoxville, Tennessee, November 21-24, 2009. (co-authored with Jane Wix* and William Rodgers*)

Paper, titled, "Kentucky Mesonet: Background and an update", was presented at the Annual IFLOWS conference, Prestonbourg, KY, 9-10 November, 2009. (co-authored with Stuart Foster and Stephen Struebig**)

Paper, titled, "An update from Kentucky" was presented at the **Annual meeting of the American Association of State Climatologists** at Grand Rapids, MI, 7-10 July, 2009.

Paper, titled, "A comparative sensitivity evaluation of the WRF and MM5 models under varied soil moisture condition", was presented at the **105th Annual Meeting of the American Association of Geographers**, Las Vegas, NV, 22-27 April, 2009. (co-authored with Ronnie Leeper** and Arturo Quintanar**)

Poster, titled, "Summer Season Flash Flood Climatology for the Appalachian Mountain Region of Eastern Kentucky", was presented at the Student Research Conference, Western Kentucky University, Bowling Green, KY, March 2009. (co-authored with Jane Wix* and Nicholas Rodgers*)

Poster, titled, "Summer Season Flash Flood Climatology for the Appalachian Mountain Region of Eastern Kentucky", was presented at the **105th Annual Meeting of the American Association of Geographers**, Las Vegas, NV, March 22-27, 2009. (co-authored with Jane Wix* and Nicholas Rodgers*)

Poster, titled, "Soil Moisture Analysis for the 2007 Drought in the Southeastern Region of the United States", was presented at the 39th annual WKU Student Research Conference, Bowling Green, KY, 21 February, 2009. (with Astrid Gonzalez*)

Poster, titled, "Soil Moisture Analysis for the 2007 Drought in the Southeastern Region of the United States", was presented at the Kentucky-West Virginia LSAMP 2009 Student Research Symposium, Roanoke, WV, 24-25 April, 2009. (with Astrid Gonzalez*)

Presentation, titled, "Applications of Regional Atmospheric Modeling System (RAMS) to Assess Sensitivity of Planetary Boundary Layer to Varying Volumetric Soil Moisture", was presented at the Kentucky-West Virginia LSAMP 2009 Student Research Symposium, Roanoke, WV, 24-25 April, 2009. (with Astrid Gonzalez*)

Presentation, titled, "Atmosphere and Emissions" was presented at the USDA PIs meeting at Auburn, AL, 22 January, 2009.

Paper, titled, “The Kentucky Mesonet: Background and future applications”, was presented at the **Workshop on Corn and Climate**, Iowa State University, Ames, IA, 9-10 September, 2008. **(Invited Presentation and Panelist)**

Paper, titled, “Data collection and quality assurance of the Kentucky Mesonet” was presented at the **17th Conference on Applied Climatology**, Whistler, BC, Canada, 11-15 August, 2008. (co-authored with Megan Ferris**, Stuart Foster, Dana Grabowski**, Stephen Struebig**, Zach Brown**, and Michael Grogan**)

Paper, titled, “Sensitivity of planetary boundary layer variables to anomalous soil moisture conditions: The MM5-based assessment”, was presented at the **104th Annual Meeting of the American Association of Geographers**, Boston, MA, 14-19 April, 2008. (co-authored with Arturo Quintanar**, John Loughrin and Nanh Lovanh)

Poster, titled, “Flash Flood Climatology of the Appalachian Region (1978-2005)”, was presented at the **104th Annual Meeting of the American Association of Geographers**, Boston, MA, 14-19 April, 2008. (co-authored with William Rodgers*)

Paper, titled, “Simulating Near-Surface and Atmospheric Responses to changes in Land-Cover and Vegetation Fraction”, was presented at the **104th Annual Meeting of the American Association of Geographers**, Boston, MA, 14-19 April, 2008. (co-authored with Ronnie Leeper* and Arturo Quintanar**)

Poster, titled, “Near-surface and atmospheric response to modeled land use and vegetation fraction changes”, was presented at the **62nd Annual meeting of Southeastern Division, The American Association of Geographers**, Charleston, SC 18-20, November, 2007. (co-authored with Ronnie Leeper* and Arturo Quintanar**)

Poster, titled, “Flash floods in the Appalachian region”, was presented at the **62nd Annual meeting of Southeastern Division, The American Association of Geographers**, Charleston, SC 18-20, November, 2007. (co-authored with William Rodgers*)

Paper, titled, “Implementation of the communications and technology infrastructure to support the Kentucky Mesonet” was presented at the **93rd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY 8-10 November, 2007. (Co-authored with D. Michael Grogan**, Zachary Brown**, and Stuart A. Foster)

Paper, titled, “Installation and maintenance of scientific instrumentation as part of the Kentucky Mesonet”, was presented at the **93rd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY 8-10 November, 2007. (Co-authored with Stephen Struebig**, Dana Grabowski**, and Stuart A. Foster)

Paper, titled, “Near-surface and atmospheric response to modeled land-Use and vegetation fraction changes”, was presented at the **93rd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY 8-10 November, 2007. (Co-authored with Ronnie D. Leeper*, Arturo I.

Quintanar**)

Paper, titled, “The MM5-based assessment of sensitivity of planetary boundary layer variables to anomalous soil moisture conditions”, was presented at the **93rd Annual Meeting of the Kentucky Academy of Sciences**, Louisville, KY 8-10 November, 2007.

Paper, titled, “Impact of Vegetation Roughness Parameters Changes In Boundary Layer Variables” was presented at the NSF funded Workshop on **Detecting the Atmospheric Response to the Changing Face of the Earth: A Focus on Human-Caused Regional Climate Forcings, Land-Cover/Land-Use Change, and Data Monitoring**, August 27-29, 2007 Boulder, CO. (co-authored with Quintanar**, Arturo I., John Loughrin, and Nanh C. Lovanh)

Paper, titled, “Numerical Modeling of Near-Surface and Atmospheric Response to Land-Use and Fractional Vegetation Coverage Change” was presented at the NSF funded Workshop on **Detecting the Atmospheric Response to the Changing Face of the Earth: A Focus on Human-Caused Regional Climate Forcings, Land-Cover/Land-Use Change, and Data Monitoring**, August 27-29, 2007 Boulder, CO. (co-authored with Ronnie Leeper* and Arturo Quintanar**)

Illustrated Paper, titled, “Pacific Decadal Oscillation, Streamflow, and Precipitation in the Mammoth Cave/Upper Green River Watershed, KY”, was presented at the **103rd Annual Meeting of the American Association of Geographers**, San Francisco, CA, 17-21 April, 2007. (co-authored with Christopher Westendorf*) (NSF-REU participant)

Poster, titled, “Temporal Shifts in Seasonal High (Peaks) and Low (Dips) Diurnal Temperature Range”, was presented at the **103rd Annual Meeting of the American Association of Geographers**, San Francisco, CA, 17-21 April, 2007. (co-authored with Nicholas Lawalin*)

Poster, titled, “Increase in Near Surface Atmospheric Moisture Content Due to Land Use Changes”, was presented at the **103rd Annual Meeting of the American Association of Geographers**, San Francisco, CA, 17-21 April, 2007. (co-authored with Ronnie Leeper*)

Paper, titled, “Spatio-Temporal Variations of Observed Soil Moisture in Nebraska During the Warm Season”, was presented at the **103rd Annual Meeting of the American Association of Geographers**, San Francisco, CA, 17-21 April, 2007. (co-authored with Ashley Littell*)

Poster, titled, “Flash Floods in the Appalachian Region (1993-2005)”, was presented at the **103rd Annual Meeting of the American Association of Geographers**, San Francisco, CA, 17-21 April, 2007. (co-authored with William Rodgers*)

Paper, titled, “Kentucky Mesonet: Instrumentation and an update” was presented at the **87th Annual meeting of the American Meteorological Society/16th Conference on Applied Climatology**, San Antonio, TX 21-26, January, 2007.

Paper, titled, “Shifts in the U. S. seasonal daily temperature range (DTR) peaks and dips in the 20th century” was presented at the **87th Annual meeting of the American Meteorological**

Society/16th Conference on Applied Climatology, San Antonio, TX 21-26, January, 2007.

Paper, titled, “The development of GeoProfiles for United States Historical Climatology Network stations in Kentucky” was presented at the **87th Annual meeting of the American Meteorological Society/16th Conference on Applied Climatology**, San Antonio, TX 21-26, January, 2007. (co-authored with Stuart Foster)

Paper, titled, “Exploring spatial and temporal variability of DTR among USHCN stations in the Ohio River Valley” was presented at the **87th Annual meeting of the American Meteorological Society/16th Conference on Applied Climatology**, San Antonio, TX 21-26, January, 2007. (co-authored with Stuart Foster)

Paper, titled, “Building the Foundation of the Kentucky Mesonet” was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006. (Co-authored with Stuart Foster).

Poster, titled, “Increase in Near Surface Atmospheric Moisture Content Due to Land Use Changes” was presented at the **61st Annual meeting of Southeastern Division, The American Association of Geographers**, Morgantown, WV 19-21, November, 2006. (co-authored with Ronnie Leeper*)

Poster, titled, “Flash Floods in the Appalachian Region (1993 - 2005)” was presented at the **61st Annual meeting of Southeastern Division, The American Association of Geographers**, Morgantown, WV 19-21, November, 2006. (co-authored with William Rodgers*)

Poster, titled, “Diurnal Temperature Range Analysis” was presented at the **61st Annual meeting of Southeastern Division, The American Association of Geographers**, Morgantown, WV 19-21, November, 2006. (co-authored with Nicholas Lawalin*)

Paper, titled, “Spatio-Temporal Variations of Observed Soil Moisture in Nebraska During the Warm Season” was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006. (Co-authored with Ashley Littell*)

Poster, titled, “Flash Floods in the Appalachian Region (1993-2005)” was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006. (Co-authored with William N. Rodgers*)

Poster, titled, “Diurnal Temperature Range Analysis for the Eastern United States in the 20th Century” was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006. (Co-authored with Nicholas Lawalin*)

Poster, titled, “The Influence of Land Use Change on Near Surface Atmospheric Moisture Content” was presented at the **92nd Annual Meeting of the Kentucky Academy of Sciences**, Morehead, KY 9-11 November, 2006. (Co-authored with Ronnie Leeper*)

Paper, titled, "Building the Kentucky Mesonet: A Commitment to the Commonwealth" was presented at the **University of Kentucky, Biosystems and Agricultural Engineering**. December 1, 2006. (invited; Co-authored with Stuart Foster)

Paper titled, "The Kentucky Mesonet: Building Partnerships with Local Communities", was presented at the **Green River Resource Conservation & Development Council / GRADD Natural Resources Council**. Owensboro, KY, November 14, 2006. (invited; co-authored with Stuart Foster)

Paper, titled, "Kentucky Mesonet: An overview of the current status and future goals" was presented at the **Annual Scientific Symposium of the Ohio River Basin Consortium for Research and Education**, Murray, KY 25-27 October, 2006. (Invited presentation)

Paper, titled, "Agricultural Cool Island" was presented at the **102nd Annual Meeting of the American Association of Geographers**, Chicago, IL, 7-11 April, 2006.

Paper, titled, "An assessment of key aspects of warm and cool season severe flash flooding in the southern Appalachians" was presented at the **102nd Annual Meeting of the American Association of Geographers**, Chicago, IL, 7-11 April, 2006. (co-authored with William Baldwin*)

Poster, Titled, "Relationship Between Mesometeorological Patterns and Ground Ozone Concentration Variability" was presented at the **Nov. 20-22, 2005 60th Annual meeting of Southeastern Division, The American Association of Geographers, West Palm Beach, FL** 20-22, November, 2005. (co-authored with Dasen Kendrick*)

Paper, titled, "Forecasting, radar and damage analysis of the 13 July 2004 derecho through central Kentucky" was presented at the **91st Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 10-12 November, 2005. (co-authored with Ashley Littell* and Stuart Foster)

Paper, titled, "Relationship between mesometeorological patterns and ground ozone concentration variability" was presented at the **91st Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 10-12 November, 2005. (co-authored with Dasen Kendrick* and Stuart Foster)

Paper, titled, "An assessment of key aspects of warm and cool season severe flash flooding in the Southern Appalachians" was presented at the **21st Meeting of the Weather Analysis and Forecasting**, Washington, DC, 1-5 August, 2005. (co-authored with William Baldwin*)

Paper, titled, "The evolution of a warm season severe eastern Kentucky flash flood" was presented at the **21st Meeting of the Weather Analysis and Forecasting**, Washington, DC, 1-5 August, 2005. (co-authored with Christina Henry*)

Paper, titled, "Impacts of irrigation on regional-scale temperature in the Great Plains" was

presented at the **101st Annual Meeting of the American Association of Geographers**, Denver, CO, 5-9 April, 2005.

Paper, titled, “The life cycle of a warm season severe eastern Kentucky flash flood” was presented at the **101st Annual Meeting of the American Association of Geographers**, Denver, CO, 5-9 April, 2005. (co-authored with Christina Henry*)

Paper, titled, “An assessment of May 2, 2002 flash flood of Buchanan County, Virginia” was presented at the **101st Annual Meeting of the American Association of Geographers**, Denver, CO, 5-9 April, 2005. (co-authored with Jessica Phillips*)

Poster, titled, “Large-scale climate variations and streamflow response in the Green River basin, KY” was presented at the **101st Annual Meeting of The American Association of Geographers**, Denver, CO, 5-9 April, 2005. (co-authored with Leslie Lyons*; NSF-REU participant)

Paper, titled, “Instrument exposure bias in temperature records” was presented at the **90th Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 4-6 November, 2004. (co-authored with Dr. Stuart Foster)

Paper, titled, “The evolution of a severe eastern Kentucky flash” was presented at the **90th Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 4-6 November, 2004. (co-authored with Christina Henry*)

Paper, titled, “An analysis of May 2, 2002 severe flash flooding of Buchanan county, Virginia” was presented at the **90th Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 4-6 November, 2004. (co-authored with Jessica Phillips*)

Poster, titled, “Streamflow response in the Green River basin during large-scale climate variations” was presented at the **90th Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 4-6 November, 2004. (co-authored with Leslie Lyons*)

Poster, titled, “Seasonal variations of significant weather events across south central Kentucky was presented at the **90th Annual Meeting of the Kentucky Academy of Sciences**, Murray, KY 4-6 November, 2004. (co-authored with Ashley Littell*)

Paper, titled, “Life cycle of a severe eastern Kentucky flash flood” was presented at the **59th Annual meeting of Southeastern Division, The American Association of Geographers**, Biloxi, MS 21-23, November, 2004. (co-authored with Christina Henry*)

Paper, titled, “An investigation of May 2, 2002 flash flood of Buchanan county, Virginia” was presented at the **59th Annual meeting of Southeastern Division, The American Association of Geographers**, Biloxi, MS 21-23, November, 2004. (co-authored with Jessica Phillips*)

Poster, titled, “Large-scale climate variations and streamflow response in the Green River basin”

was presented at the **59th Annual meeting of Southeastern Division, The American Association of Geographers**, Biloxi, MS 21-23, November, 2004. (co-authored with Leslie Lyons*)

Paper, titled, “Assessing bias in evapotranspiration and soil moisture due the use of modeled solar radiation and dew point temperature” was presented at the **100th annual conference of the American Association of Geographers** at Philadelphia, Pennsylvania, March 13- March 20, 2004.

Paper, titled, “Land use change, modification of soil moisture content, and near surface temperature records in the Northern Great Plains” was presented at the **99th annual conference of the American Association of Geographers** at New Orleans, Louisiana, March 5- March 9, 2003.

Paper, titled, “An analysis of simulated point Soil Moisture for Three Land Uses Under Contrasting Hydroclimatic Conditions in the Northern Great Plains” was presented at the **57th annual conference of the American Association of Geographers, Southeastern Division** at Richmond, VA, November 23-26, 2002.

Poster, titled, “Climate prediction, information, and policy response: a retrospective assessment of drought management in Oklahoma” was presented at the **PI’s conference, NOAA-OGP**, South Carolina, September, 2002.

Paper, titled, “Land use change and modification of near surface temperature records in the Northern Great Plains: verification of modeling results” was presented at the **13th Conference on Applied Climatology**, Portland, Oregon, May 13-16, 2002.

Paper, titled, “Sensitivity of soil moisture and evapotranspiration to soils and land use heterogeneity” was presented at the **13th Conference on Applied Climatology**, Portland, Oregon, May 13-16, 2002.

Paper, titled, “Soil moisture and evapotranspiration in Great Plains: the role of heterogeneous soil physical properties and land uses” was presented at the **56th annual conference of the American Association of Geographers, Southeastern Division** at Lexington, KY, November 17-20, 2001.

Paper, Titled, “Understanding soil water climatology of the Northern Great Plains: application of a soil water balance model” was presented at the **97th annual conference of the American Association of Geographers** at New York, New York, February 27- March 4, 2001.

Paper, Titled, “Land use change and its impacts on the soil moisture hydrology in the Northern Great Plains” was presented at the **97th annual conference of the American Association of Geographers** at New York, New York, February 27- March 4, 2001.

Poster, titled, “Soil moisture monitoring and modeling in the Northern Great Plains”, was presented at the **GEWEX/BAHC International Workshop on Soil Moisture**, University of Oklahoma, Norman, Oklahoma, May 15-19, 2000.

Paper, titled, "Application of a soil water balance model to historical soil moisture estimation over eastern Nebraska", was presented at the **12th Conference on Applied Climatology**, Asheville, North Carolina, May 8-11, 2000.

Paper, titled, "Daily soil moisture measurement network of the Northern Great Plains: sensors, their calibration, and applications", was presented at the **12th Conference on Applied Climatology**, Asheville, North Carolina, May 8-11, 2000.

Paper, titled, "Time of observation and estimation of daily solar radiation for the Northern Great Plains", was presented at the **12th Conference on Applied Climatology**, Asheville, North Carolina, May 8-11, 2000.

Paper, titled, "Soil moisture monitoring and modeling in the Plains", was presented at the **International Workshop on Automated Weather Stations for Applications in Agriculture and Water Resources Management: Current Use and Future Perspectives**, University of Nebraska-Lincoln, Lincoln, Nebraska, March 6-10, 2000.

Paper, Titled, "El Nino Related Monsoonal Rainfall Variability in South Asia: Testing of Some Hypotheses" was presented at the **94th annual conference of the American Association of Geographers** at Boston, Massachusetts, March 25-29, 1998.

Paper, Titled, "El Nino Related Monsoonal Rainfall Variability in South Asia" was presented at the **93rd Annual Conference of the American Association of Geographers** at Fort Worth, Texas, April 1-5, 1997.

Paper, Titled, "Seasonal Distribution of Precipitation Extremes Over the Southern Great Plains", was presented at the **92nd Annual Conference of the American Association of Geographers** at Charlotte, North Carolina, April 9-13, 1996.

Paper, Titled, "Model-based Estimates of Impacts of Air temperature Variations on the Boro Rice Phenology in Bangladesh" was presented at the **76th Annual Conference of the American Meteorological Society**, Atlanta, Georgia, January 28-February 3, 1996.

Paper, Titled, " Impacts of Air Temperature Fluctuations on the Boro Rice Phenology in Bangladesh: A Model-based assessment" was presented at the **91st Annual Conference of the American Association of Geographers** at Chicago, Illinois, March 14-18, 1995.

Paper, Titled, "Impacts of El Nino Related Monsoonal Rainfall Variability and Resultant Rice Productivity in Bangladesh and Eastern India: A Model-based Assessment" was presented at the **Annual Conference of the South West Division, The American Association of Geographers**, held on the 21-22nd October, 1994, Hot Springs, Arkansas.

Paper, Titled, "Systematic Climate Perturbation and Boro Rice Yield in Bangladesh: Application of a Parametric Crop Yield model" was presented at the **90th Annual Conference of The American Association of Geographers at San Francisco**, California, 29 March - 2 April, 1994.

Paper, Titled, "Monsoonal Fluctuations and Rice Yield in Bangladesh: Application of a Numerical Crop Yield model" was presented at the **1992 Annual Conference of the Middle States Division, The American Association of Geographers** at Syracuse, New York.

Paper, Titled, " Some Aspects of Variations of Rainfall Over Bangladesh" was presented in the **9th Annual Student Conference on water resources organized by the American Water Resources Association** held on the 6th April, 1991 at Syracuse, New York.