

## CHARLES E. KONRAD II

### PERSONAL

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Director of the Southeast Regional Climate Center  
Professor  
University of North Carolina at Chapel Hill  
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### EDUCATION

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Ph.D., University of Georgia, March 1993  
Geography with a specialization in applied climatology  
Dissertation title: *A Sub-Synoptic Climatology of Heavy Rain over the Appalachian Region*

M.S., University of Virginia, December 1988  
Environmental science with a specialization in meteorology  
Thesis Title: *An Examination of Cold Air Outbreaks over Eastern North America*

B.S., Virginia Polytechnic Institute, June 1985  
Geophysics with a minor in geology

American Meteorological Society Certified Consulting Meteorologist, April 2007 to present

### PROFESSIONAL EXPERIENCE

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**Professor**, Department of Geography, University of North Carolina at Chapel Hill, 2019 to present

**Associate Professor**, Department of Geography, University of North Carolina at Chapel Hill, 1999-2018.

**Director**, Southeast Regional Climate Center, Chapel Hill, 2010-present

**Adjunct Professor**, Department of Marine Earth and Atmospheric Sciences, North Carolina State University, 2010-present.

**Deputy Director and Regional Climatologist**, Southeastern Regional Climate Center, Chapel Hill, 2007-2009

**Assistant Professor**, Department of Geography, University of North Carolina at Chapel Hill, 1993-1999.

**Science and Math Tutor**, Athletic Department, University of Georgia, 1990-1992.

**Graduate Teaching Assistant**, Department of Geography, University of Georgia, 1989-1992.

**Graduate Research Assistant**, Department of Environmental Science, University of Virginia, 1986-89.

**Graduate Teaching Assistant**, Department of Environmental Science, University of Virginia, 1986-88.

**High School Earth Science Teacher**, Pulaski County Public Schools, Virginia 1985-1986.

## **BIBLIOGRAPHY**

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### ***Books and Book Chapters***

**Konrad, C.E.** and P. Knox, 2018: Southeastern U.S. Drought and Wildfires of 2016: NOAA Assessment. Available at [http://www.sercc.com/zephyr/NIDIS Drought Assessment](http://www.sercc.com/zephyr/NIDIS_Drought_Assessment).

**Konrad, C.E.** and C.M. Fuhrmann, 2013: Climate of the Southeast United States: Past, present and future. In Ingram, K.T., K. Dow, and L. Carter (Eds.) *Climate of the Southeast United States: Variability, Change, Impacts, and Vulnerability*, Island Press: Washington D.C.

### ***Refereed Journal Articles***

Eck, M., Murray, A., Ward, A., and **C.E. Konrad**: 2020: Influence of growing season temperature and precipitation anomalies on crop yield in the southeastern U.S. *Agricultural and Forest Meteorology* <http://doi.org/10.1016/j.agrformet.2020.108053>

Ward, A., Clark, J., McLeod, J., Woodul, R., Moser, H., and **C.E. Konrad**: 2019: The impact of heat exposure on reduced gestational age in pregnant women in North Carolina, 2011–2015 *International Journal of Biometeorology* <https://doi.org/10.1007/s00484-019-01773-3>

Sugg, J.W., and **C.E. Konrad**, 2019 Defining hydroclimatic regions using daily rainfall characteristics in the southern Appalachian Mountains. *International Journal of Digital Earth*. <https://doi.org/10.1080/17538947.2019.1576785>

Sugg, J.W., and **C.E. Konrad**, 2017: Relating warm season hydroclimatic variability in the southern Appalachians to synoptic weather patterns using self-organizing maps. *Climate Research* 74, 145-160.

Grabich, S.C., Robinson, W.R., J., **C.E. Konrad C.E.**, J. A. Horney, 2017: Impact of hurricane exposure on reproductive health outcomes, Florida, 2004. *Disaster Medicine and Public Health Preparedness*. 1, 407-411.

McLeod, J., Shepherd, M., and **C. E. Konrad**. 2017: Spatio-temporal rainfall patterns around Atlanta, Georgia and possible relationships with urban land cover. *Urban Climate*. <https://doi.org/10.1016/j.uclim.2017.03.004>

- Conlon, K.C., Kintziger, K.W., Jagger, M., Stefanova, L., Uejio, C.K., and **C.E. Konrad**. 2016: Working with climate projections to estimate disease burden: Perspectives from public health. *International Journal of Environmental Research and Public Health*, 13(8), 804; doi:10.3390/ijerph13080804.
- Fuhrmann, C. M., Sugg, M. M., **Konrad, C. E.**, and Waller, A. 2016: Airborne pollen characteristics and the influence of temperature and precipitation in Raleigh, North Carolina, USA (1999-2012) *Aerobiologia*, 1-14. DOI: 10.1007/s10453-016-9442-6
- Sugg, J.W., Fuhrmann, C.M., Perry, L.B., Hall, D.K., and **C.E. Konrad**. 2016: Sub-regional snow cover distribution across the southern Appalachian Mountains. *Physical Geography*, 37, DOI: 10.1080/02723646.2016.1162020.
- Grabich, S.C., Robinson, W.R., Engel, S.M., **Konrad, C.E.**, Richardson, D.B., and J.A. Horney. 2015: County-level hurricane exposure and birth rates: application of difference-in-differences analysis for confounding control. *Emerging Themes in Epidemiology*, 12(1), DOI: 10.1186/s12982-015-0042-7.
- Grabich, S.C., Horney, J., **Konrad C.E.**, and D.T. Lobdell 2015: Measuring the storm: Methods of quantifying hurricane exposure with pregnancy outcomes. *Natural Hazards Review*. 17, DOI: 10.1061/(ASCE)NH.1527-6996.0000204.
- Sugg, M.M., **Konrad C.E.**, and Fuhrmann, C.M. (2015). Relationships between maximum temperature and heat-related illness across North Carolina, USA. *International Journal of Biometeorology*, 1-13. DOI 10.1007/s00484-015-1060-4
- Fuhrmann, C. M., Sugg, M. M., **Konrad, C. E.**, and Waller, A. (2015). Impact of extreme heat events on emergency department visits in North Carolina (2007 to 2011). *Journal of Community Health*, 1-11. DOI: 10.1007/s10900-015-0080-7
- Kovach, M.M. and **C.E. Konrad** 2015: Area-level risk factors for heat-related illness in rural and urban locations across North Carolina, USA. *Applied Geography*, 60, 175-183.
- Kovach, M.M. and **C.E. Konrad** 2014: Meteorological impacts of inland-moving tropical cyclones. *Physical Geography*, 27, 245-271.
- Fuhrmann, C.M., **C.E. Konrad**, M.M Kovach, J.T. McLeod, W.G. Schmitz, and P.G. Dixon: 2014: Ranking of tornado outbreaks in the United States and their climatological characteristics. *Weather and Forecasting*, 29, 684-701.
- Knox, P.N., C.M. Fuhrmann, and **C.E. Konrad** 2014: Challenges and opportunities for Southeast agriculture in a changing climate: Perspectives from state climatologists. *Southeastern Geographer*, 54, 118-136.
- Fuhrmann, C.M. and **C.E. Konrad**. 2013: A trajectory approach to analyzing the ingredients associated with heavy winter storms in central North Carolina. *Weather and Forecasting*, 28, 647-667.

- Kunkel, K.E., L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Weubbles, **C.E. Konrad**, C.M. Fuhrmann, B.D. Keim, M.C. Kruk, A. Billot, H. Needham, M. Shafer, and J.G. Dobson, 2013: Regional climate trends and scenarios for the U.S. National Climate Assessment. Part 2: Climate of the Southeast United States. NOAA Technical Report NESDIS 142-2.
- Fuhrmann, C.M. **Konrad, C.E.**, Kovach, M., and D.J. Perkins. 2011: The August 2007 heat wave in North Carolina: Meteorological factors and local variability. *Physical Geography*, 32, 217-240.
- Perry, L. B., **Konrad, C. E.**, Hotz, D. G., and Lee, Lawrence. 2010: Synoptic classification of snowfall events in the Great Smoky Mountains, USA. *Physical Geography*, 31,156-171.
- Konrad C.E.** and L. B. Perry, 2010: Relationships between tropical cyclones and heavy rainfall in the Carolina region of the United States. *The International Journal of Climatology*, 30,522-534.
- Keighton, S., Lee, L., Holloway, B., Hotz, D., Zubrick, S. Hovis, J. Votaw, G, Perry, L.B., **Konrad, C. E.**, Miller, D., and Etherton, B. 2009: A collaborative approach to study northwest flow snow in the southern Appalachians. *Bulletin of the American Meteorological Society*, 90, 977-991.
- Fuhrmann, C.M., **Konrad, C. E.**, and L. E. Band, 2008: Climatological perspectives on the rainfall characteristics associated with landslides in western North Carolina. *Physical Geography*, 29, 289-305.
- Perry L. and C. E. **Konrad, 2007**: Antecedent upstream air trajectories associated with northwest flow snowfall in the southern Appalachians, USA. *Weather and Forecasting*, 22, 334-352.
- Martin, J. and **C.E. Konrad, 2006**: Directional characteristics of potentially damaging wind gusts in the Southeast United States. *Physical Geography*, 27, 155-169.
- Perry L. and **C. E. Konrad, 2006**: Relationships between northwest flow snowfall and topography in the southern Appalachians. *Climate Research*, 32, 35-47.
- Chen, F. and **C. E. Konrad, 2006**: A synoptic climatology of summertime heat and humidity in the Piedmont Region of North Carolina. *Applied Meteorology and Climatology*, 45, 674-685.
- Murphy, M. and **C. E. Konrad, 2005**: Spatial and temporal patterns of thunderstorm events that produce cloud-to-ground lightning in the interior southeastern United States. *Monthly Weather Review*, 133, 1417-1430.
- Konrad, C. E.**, Meaux, M. F., and D. A. Meaux, 2002: Relationships between tropical cyclone attributes and precipitation totals: Considerations of scale. *The International Journal of Climatology*, 22, 237-247.
- Konrad, C. E.**, 2001: Diurnal variations in the landfall times of tropical cyclones over the eastern United States. *Monthly Weather Review*, 129, 2627-2631.
- Konrad, C. E.**, 2001: The heaviest precipitation events over the eastern United States: Considerations of scale. *Journal of Hydrometeorology*, 2, 309-325.
- Colucci, S. J., Baumhefner, D. P., and **C. E. Konrad**, 1999: Numerical prediction of a cold-air outbreak: A case study with forecast ensembles. *Monthly Weather Review*, 127,1538-1550.

- Konrad, C. E.**, 1998: Intramonthly indices of the Pacific / North American teleconnection pattern and their relationship with temperature characteristics over the United States. *Theoretical and Applied Climatology*. 60, 11-19.
- Konrad, C. E.**, 1998: A hydroclimatological analysis of the lower Roanoke River basin. *Physical Geography*. 19, 15-34.
- Konrad, C. E.**, 1998: Persistent planetary scale circulation patterns and their relationship with the intensity of cold air outbreaks over the eastern United States. *The International Journal of Climatology*. 18, 1209-1221.
- Konrad, C. E.**, 1998: An empirical approach for delineating the spatial patterns of freezing rain in the Appalachian region of the USA. *Climate Research* 10, 217-227.
- Konrad, C. E.**, 1997: Synoptic features associated with heavy rainfall over the interior southeastern United States. *Weather and Forecasting*, 12, 553-567.
- Konrad, C. E.**, 1996: Relationships between the intensity of cold air outbreaks and the evolution of synoptic and planetary scale features across North America. *Monthly Weather Review*, 124, 1067-1083.
- Konrad, C. E.**, 1996: Relationships between precipitation event attributes and topography in the southern Blue Ridge Mountains of the southeastern United States. *The International Journal of Climatology*, 16, 49-62.
- Konrad, C. E.**, 1995: When to plan outdoor activities: The diurnal and seasonal patterns of wetness in the southeastern United States. *The Southeastern Geographer*, 35, 150-167.
- Konrad, C. E.**, 1995: An investigation of maximum precipitation rates in the southern Blue Ridge Mountains of the Southeastern United States. *Climate Research* 5, 159-166.
- Konrad, C. E.**, 1994: Moisture trajectories associated with heavy rainfall in the Appalachian region of the United States. *Physical Geography*, 15, 227-248.
- Konrad, C. E.**, and V. Meentemeyer, 1994b: Lower tropospheric warm air advection patterns associated with heavy rainfall over the Appalachian region. *The Professional Geographer*, 46, 143-155.
- Konrad, C. E.**, and S. J. Colucci, 1989: An examination of extreme cold air outbreaks over eastern North America. *Monthly Weather Review*, 117, 2687-2700.
- Konrad, C. E.**, and S. J. Colucci, 1988: Synoptic climatology of 500 mb circulation changes during explosive cyclogenesis. *Monthly Weather Review*, 116, 1431-1443.

***Refereed Journal Articles (In progress)***

***Products of Engaged Scholarship and Creative Activity***

**Konrad, C.E.**, Online video course developed for Mid-Atlantic Trainers Association (1 hour in length) 2020. *Heat Vulnerability and Safety in Athletic Activities: A Web-Based Tool to Forecast Wet Bulb Globe Temperature*. Athletic trainers across the country receive credits for taking the course.

**Konrad, C.E.**, Ward, A., Clark, J. and D. Bertrand 2018-2020. The web-based Wet Bulb Globe Temperature application. <https://www.sercc.com/wbgt/>

**Konrad, C. E.**, Boyles, R., and J. McGuire, 2009-2017. The Climate Perspectives website. (<http://www.sercc.com/perspectivesmap?region=conus>).

**Konrad, C. E.**, Boyles, R., Ward, A., and A. Hiatt, 2015-2020. The web-based Heat-Health Vulnerability Tool. <http://convergence.unc.edu/tools/heat>).

## **SCHOLARLY PRESENTATIONS**

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### ***Invited keynotes and presentations – last 4 years***

*Climate Change in North Carolina*. Invited presentation at the Amberly Retirement Community Meeting, December 13, 2019. Cary, NC.

*The Delivery of Impact-Based Decision Support Tools: Lessons Learned from a Physical Scientist*. Invited keynote at 44th Annual Climate Diagnostics and Prediction Workshop. October 24, 2019. Durham, NC.

*Use of NC DETECT Syndromic Surveillance Data to Identify Relationships Between Temperature and Heat-related Disease*. National Syndromic Surveillance Program's Community of Practice Monthly Webinar. June 18, 2019

*Climate Change and Its Impacts Across the Southeast U.S.* Invited keynote at the Virginia Department of Health Public Health Impacts of Climate Summit. June 10, 2019. Richmond, VA

*Public Health Impacts of Climate Change: Extreme Heat and Hurricanes*. Invited presentation at the Virginia Department of Health Public Health Impacts of Climate Summit. June 10, 2019. Richmond, VA

*Trends in the Character of Hurricanes and Their Impact on Heavy Rainfall and Flooding in North Carolina*. Invited Plenary Talk at the North Carolina Association of Flood Plain Management. (NCAFPM) Conference. May 6, 2019. Wrightsville Beach, NC.

*Climate Change in North Carolina*. Invited presentation at the Raleigh Garden Club meeting, February 19, 2019. Chapel Hill, NC.

*Trends in the Character of Hurricanes and Their Impact on Heavy Rainfall Across the Carolinas*. Invited presentation at the Climate Resilience Conference. October 29, 2018. Columbia, SC.

*Heat-Health Vulnerability in North Carolina and the Development of a Web-Based Tool to Predict Emergency Room Visits.* Invited presentation at the Urban Heat Island Workshop. August 6, 2019. Athens, GA.

*Heat-Health Vulnerability in North Carolina and the Development of a Web-Based Tool to Predict Emergency Room Visits.* Presented at the Climate Prediction Applications Science Workshop, May 24 2018, Fargo, ND.

*Weather Synopsis and Forecasting Challenges Associated with the January 2018 Winter Weather Events.* Invited presentation at the UNC Adverse Weather Coordination Review. February 20, 2018. Chapel Hill, NC

*Climate Variability, Extreme Weather, and Pragmatism.* Invited webinar presentation for Atrium-Carolinas Health Care System. February 20, 2018.

*Leveraging Expertise and Partnerships in Climate-Public Health Work.* Invited presentation at the annual meeting of the American Association of State Climatologists. June 28-30 2017. Asheville, NC.

*Climate Variability, Extreme Weather, and Pragmatism.* Invited presentation at the Chatham County Climate Carnival. May 13, 2017. Pittsboro, NC

*The Southeast U.S. Drought of 2016 and Public Health Impacts of Wildfire Smoke.* Presented at the Climate Prediction Applications Science Workshop, May 2-4 2017, Anchorage, AK.

*The Southeast U.S. Drought: 2016-2017.* Invited webinar presentation at the Southeast and Caribbean Team (SECART) Annual Meeting. February 1, 2017.

*Climate Highlights for the Southeast U.S.* Invited webinar presentation for the Guest Expert Series, sponsored by the National Center for Environmental Information (NCEI). December 15, 2016.

*Climate Change in North Carolina.* Invited presentation at the Great Decisions Speaker Series at Farrington Village, October 13, 2016. Chapel Hill, NC.

*Going to Extremes: Tropical Storms and Hurricanes.* Invited presentation at the Climate Resilience Conference. September 12, 2016. Charlotte, NC.

*The Climate of the Southeast U.S.: Geographic Patterns and Trends in Extreme Events.* Invited webinar sponsored by the Community Collaborative Rain, Hail, & Snow Network (CoCoRaHS). July 14, 2016.

*A Web-Based Heat-Health Vulnerability Tool for North Carolina.* Invited presentation at the Heat-Health Webinar sponsored by the NOAA Climate Program Office (CPO). April 28, 2016.

*Climate Change: Communicating the Science.* Invited presentation at the Southeast and Caribbean Community of Practice Workshop. April 13, 2016. Tybee Island, GA.

*An Overview of the Recent Weather and Climate across the Southeast and Caribbean.* Invited webinar presentation hosted by the Southeastern and Caribbean Regional Team. January 28, 2016.

*Meteorological Overview of the Heavy Rainfall and Flooding in South Carolina in October 2015.* Invited webinar presentation hosted by the Southeastern and Caribbean Climate Community of Practice. December 8, 2015.

*El Nino 101 and Impacts from Recent El Nino Events.* Invited webinar presentation hosted by the Southeastern and Caribbean Regional Team. November 19<sup>th</sup> 2015.

*An Overview of Climate Change Facts.* Invited Presentation at the American Water Works 2015 Annual Conference. November 15, 2015. Raleigh, NC.

*Climate Change in North Carolina.* Invited presentation at Chapel Hill Garden Club meeting, October 27, 2015. Chapel Hill, NC.

*Heat-Health Vulnerability in North Carolina: The Heat-Health Vulnerability Tool.* Invited Presentation at the Responding to Climate Adaptation Needs in Delaware Roundtable. Dover, DE. September 21, 2015.

*Climate Change in Florida: Potential Impacts on Public Health. Presented at the Building Resilience Against Climate Effects (BRACE).* Invited presentation at the 2015 Technical Advisory Meeting. September 18, 2015. Tallahassee, FL.

*Climate Change in North Carolina.* Invited presentation at the American Public Works Association (APWA) annual meeting, June 17-19, 2015. Hickory, NC.

*Characterizing Weather Events and Variability in the Context of Climate Change and Health Research.* Invited presentation at the 2015 Water Microbiology Conference, May 18-21 2015. Chapel Hill, NC.

#### ***Conference presentations– last 4 years***

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*Development of a Web-Based Tool to Forecast Wet Bulb Globe Temperature for Populations Who Engage in Exertional Outdoor Activities.* Presented at the 99<sup>th</sup> Annual Meeting of the American Meteorological Society. January 8, 2019. Phoenix, AZ.

*Development of a Web-Based Tool to Forecast Wet Bulb Globe Temperature for Populations Who Engage in Exertional Outdoor Activities..* Presented at the 73rd Conference of the Southeastern Division of the Association of American Geographers. November 18, 2019. Johnson City, TN.

*The Southeast U.S. Drought of 2016 and Public Health Impacts of Wildfire Smoke.* Presentation at the Climate Resilience Conference. October 30, 2018. Columbia, SC.

*Using the Web-Based Climate Perspectives Tool to Characterize Weather Extremes and Streaks of Unusual Weather.* Presented at the 22<sup>nd</sup> conference on Applied Climatology. June 26-28, 2017. Asheville, NC.



*Relationships Between Synoptic Scale Atmospheric Fields and Precipitation across the Eastern United States.* Preprints of the 112th Conference of the Association of American Geographers. March 29th, 2016. San Francisco, CA

*Climate Perspectives: A Web-Based Tool for Assessing the Unusualness of the Weather.* Presented at the 43<sup>rd</sup> Conference on Broadcast Meteorology. June 10-12, 2015. Raleigh, NC.

*Determining Fine-Grained Climatological Patterns of Dryness and Drought across the Carolinas.* Presented at the Climate Prediction Applications Science Workshop, March 24-26 2015, Las Cruces, NM

*Relationships between Temperature and Heat-Related illness in North Carolina.* Presented at the 95<sup>th</sup> Annual Meeting of the American Meteorological Society. January 7, 2015. Phoenix, AZ

*The Spatial Patterns of Tornado Vulnerability Across the United States.* Presented at the 68th Conference of the Southeastern Division of the Association of American Geographers. November 24, 2014. Athens, GA.

*Relationships between Temperature and Heat-Related Illness in North Carolina.* Presented at the 20<sup>th</sup> International Congress of Biometeorology. September 30, 2015. Cleveland, OH

## **TEACHING**

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### ***Courses taught at UNC- Chapel Hill over the last 3 years***

Spring 2019    Geog 412: Synoptic Meteorology (11 students)  
Fall 2018      Geog 111: Introduction to Weather and Climate (102 students)  
Fall 2017      Geog 111: Introduction to Weather and Climate (66 students)  
Spring 2017    Geog 412: Synoptic Meteorology (5 students)  
Fall 2016      Geog 111: Introduction to Weather and Climate (113 students)  
Spring 2016    Geog 412: Synoptic Meteorology (8 students)  
Fall 2015      Geog 111: Introduction to Weather and Climate (147 students)

### ***Graduate Students Supervised***

Rachel Woodul TBD 2022

Montana Eck Ph.D TBD 2021

Jordan Clark M.A. 2019. *Measures of Heat Stress and Their Relationship with Morbidity and Mortality across North Carolina.*

Johnathan Sugg Ph.D. 2017. *Geovisualization of Mountain Climate Hydroclimate Variability: Linkages Between Atmospheric Circulation and the Spatial Pattern of Precipitation*

Jenna Hartley M.S. 2016. *Spatial and Temporal Patterns of Gastrointestinal Illness and Their Relationships with Precipitation across North Carolina.*

Maggie Sugg Ph.D. 2015. *Climate-Health Vulnerability: Identifying Relationships Between Maximum Temperature and Heat-Related Illness across North Carolina.*

Christopher Fuhrmann Ph.D. 2012. *A Trajectory Approach to Analyzing the Ingredients Associated with Heavy Winter Storms in Central North Carolina.*

Maggie Kovach M.A. 2011. *The Spatial Distribution of Meteorological Impacts Associated with Inland-Moving Tropical Cyclones.*

Gretchen Carlson M.A. 2009. *Spatial and Temporal Patterns of Summer Season Precipitation Across the Carolina Coastal Region.*

Matthew Cuviallo 2007. *A Model for Refining Precipitation-Type Forecasts for Winter Weather in the Piedmont Region of North Carolina.*

Baker Perry Ph.D. Ph.D. 2006. *Synoptic Climatology of Northwest Flow Snowfall in the Southern Appalachians.*

Adam Smith. M.A. 2005. *The Location of Heaviest Warm Season Rain Relative to Frontal Boundaries.*

Mark Murphy M.A. 2004. *The Spatial and Temporal Synoptic Characteristics of Thunderstorms that Produce Cloud-to-Ground Lightning across the Interior Southeastern U.S.*

Dwight Wilhelm M.A. 2003. *Forcing Fields Associated with Heavy Rainfall Across the Eastern U.S.*

Mike Senn M.A. 2003. *A Synoptic Climatology of Tornadoes Across the Southeastern U.S.*

David Meaux M.A. 2002. *The Spatial and Temporal Patterns of North Carolina Tornadoes.*

### ***Undergraduate Honors Theses Directed***

Jessica Suggs. 2015. *A Systematic Analysis of Direct and Indirect Casualties Associated with Atlantic Basin Tropical Cyclones.*

Christopher Fuhrmann. 2004. *An Assessment of Cloud-to-Ground Lightning Patterns and Probabilities Associated with Variable Topography and Elevation in the Interior Southeastern USA.*

Melanie Verdier. 2000. *Relationships between Tropical Cyclone Attributes and Precipitation Totals.*

## GRANTS (Direct costs only)

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Cochran, F. and **C. E. Konrad (CO-PI)** Expanding Research and Engagement on Hazardous Extremes and Risk Assessments with Health Care Coalitions in the Southeast. *National Oceanic and Atmospheric Association (NOAA)*. 9/1/2020 – 3/1/2022. 50% effort, **\$60,947**.

**Konrad, C. E.**, (PI) Assisting water utility managers with climate and weather information & tools. *National Oceanic and Atmospheric Association (NOAA)*. 9/1/2019 – 3/1/2021. 100% effort, **\$ 12,765**.

**Konrad, C. E.**, (PI) Developing National Weather Service Climate Services. *National Oceanic and Atmospheric Association (NOAA)*. 9/1/2019 – 8/31/2020. 100% effort, **\$ 10,154**.

**Konrad, C. E.** (PI) Regional Climate Centers. *National Oceanic and Atmospheric Association (NOAA)*. 7/1/2016 – 3/5/2021. 100% effort, **\$1,936,300**

**Konrad, C. E.** (PI) Carolinas Regional Integrated Science Assessments. *National Oceanic and Atmospheric Association (NOAA)*. 9/1 2016 – 8/31/2020. 100% effort. **\$660,259**.

Kovach, M.M. and **C.E. Konrad** (Co-PI). *The Environmental Protection Agency (EPA)*. Science to Achieve Results Fellowships (STAR) for Graduate Environmental Study. Human Health Risk Assessment: Public Health (No. F13D10708), Identifying Climate Thresholds for Heat-related Illness in North Carolina. 8/1/2014 - 5/31/2016. 0% effort, **\$63,000**.

**Konrad C. E.** (Co-PI) and M.M. Kovach, M.M. The *National Science Foundation (NSF)*. Doctoral Dissertation Research Improvement Grant (DDRI: (No. 1434202), Identifying Climate Thresholds for Heat-related Illness in North Carolina, 8/1/2014-5/31/2015. 0% effort, **\$7952**.

**Konrad, C. E.** (PI) Regional Climate Centers. *National Oceanic and Atmospheric Association (NOAA)*. 10/1/2013 - 6/30/2016. 100% effort, **\$732,771**.

**Konrad, C. E.** (PI) Climate-Public Health Toolbox. *National Oceanic and Atmospheric Association (NOAA)*. 7/1/2012 – 12/31/2012. 100% effort, **\$13,000**.

**Konrad, C. E.** (PI) Carolinas Regional Integrated Science Assessments. *National Oceanic and Atmospheric Association (NOAA)*. 9/1 2011 – 8/31/2016. 100% effort, **\$130,394**.

**Konrad, C. E.** (PI) Southeast Regional Climate Assessment. *National Oceanic and Atmospheric Association (NOAA)*. 4/1/2011 – 3/31/2012. 100% effort, **\$140,552**.

**Konrad, C. E.** (PI) Regional Climate Centers. *National Oceanic and Atmospheric Association (NOAA)*. 4/1/2010 – 9/30/2013. 100% effort, **\$1,036,297**

Robinson, P.J, and **C. E. Konrad** Regional Climate Centers. *NOAA*, 4/1/2010 – 9/30/2013. Estimated 50% effort. **\$667,168**.

Stallins, J.A., Bentley, M., **Konrad, C. E.**, Diem, J. Complex Controls on the Distribution of Lightning Characteristics and Property Damage in an Urbanized Region. *National Science Foundation*, 2003-2007, 0% effort, **\$72,355**.

**Konrad, C. E.** Synoptic Climatology of Precipitation Forcing fields over the Eastern U.S. *National Science Foundation*. BCS-9911315. 7/1/2000 -6/30/2003, 100% effort, **\$80,179**.

Band, L. E., **Konrad, C. E.**, Moody, A. Drought Vulnerability in the Catawba River basin. *Duke Energy Foundation*, 2003-2004, Estimated 25% effort, **\$75,000**.

Rindfuss, R. R., Walsh, S. J., Entwisle, B., **Konrad, C. E.**, Moody, A., Curran, S. Sawangdee, Y., Soil, Water, and Pixels: A Study of Nang Rong, Thailand. *NASA*. 1997-2000. Estimated 15% effort, **\$427,500**.

Robinson, P. J. and **C. E. Konrad** Active Meteorology: An Introduction to Weather and Climate. *Chancellor's Task Force on Instructional Technology*. 1997, 50% effort, **\$29,826**.

**Konrad, C. E.**, Atmospheric Controls on the Intensity of Heavy Rainfall Associated with Landfalling Tropical Disturbances in the Southeastern United States. *University Research Council*. 1997, 100% effort, **\$1,000**.

Walsh, S. J., Butler, D. R., **Konrad, C. E.**, and R. Peet. The Roanoke River Bioreserve: A Preliminary Assessment of the Impact of Flow Modification on Hydrology, Geomorphological Processes, and Vegetation. *The Nature Conservancy*. 1994-1996, Estimated 15% effort, **\$85,178**.

**Konrad, C. E. 1994:** A Synoptic Climatology of Springtime Temperature Variability *International Business Machines Fund Award*. 100% effort, **\$3,000**.

**Konrad, C. E.** and V. Meentemeyer. Subsynoptic characteristics of Heavy Rain over the Appalachian region. *National Science Foundation* SES-9105628. 1991-1992, 100% effort, **\$2,650**.

## **PROFESSIONAL SERVICE (last 4 years)**

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### ***Media interviews and stories***

*Inside Climate News*. In Louisville and dozens of cities east of the Mississippi, winter never really happened. March 5, 2020

*Spectrum Cable News*. Warming Climate Means More Variability in North Carolina's Winter Weather. December 20, 2019.

*The Greenville News*. The danger zone: When heat meets humidity this summer in the Carolinas. July 29, 2019

*The State*. Hate Columbia's heat now? It will be 'dangerously hot' in a few years, study says. July 16, 2019.

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*Forbes Magazine*. "Regional climate centers provide vital services". June 9, 2017.

*The Greensboro Record and Wilmington Star*. "Bill would protect hurricane forecasting programs". April 14, 2017

*The Washington Post*. "The raging wildfires in the Southeast could be a glimpse of what is to come". November 30, 2016.

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*The Christian Science Monitor*. "Is climate change behind the rise in extreme tornado outbreaks?" November 23, 2016

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*The Winston-Salem Journal*. "U.S. Senate candidates Richard Burr and Deborah Ross said this about climate change". October 16 2016.

*The Roanoke Times*. "Warm regards for Christmas: Records likely broken by holiday heat. December 22, 2015"

*WGOW Talk Radio*. Radio interview regarding tornado vulnerability across the U.S. June 18, 2014.

*The Associated Press*, and hundreds of newspapers across the country including *USA Today*. "Florida more vulnerable to tornadoes than Midwest". June 19, 2014.

*Go Green Radio*. Radio interview on climate change. March 5 2014.

*Climate Wire*. "Extreme weather comes to Congress and the nation". February 13, 2014.

*The Weather Channel*. "More heat waves, drought and sea level rise in store for SE U.S." November 14, 2013.

### ***Engagements with high school teachers, athletic personnel and students***

Invited engagement with the NC Sports Medicine Advisory Committee (SMAC) on heat stress and use of the SERCC's web-based wet bulb globe temperature prediction tool. Chapel Hill, NC. October 8, 2019

Invited "Ask a Meteorologist" session with Durham, NC Public School teachers. September 18, 2019.

Invited lead on engagement with high school athletic directors and trainers on heat safety. Sponsored by North Carolina High School Athletic Association (NCHSAA) in Chapel Hill, NC June 17, 2019

Invited participant and speaker in the Climate Leadership and energy awareness program (LEAP) at UNC Chapel Hill on the following dates: August 3, 2016; August 5, 2015; July 30, 2014; July 31, 2012

Invited Participant and speaker at the NASA Teacher Work at UNC Chapel Hill on the following dates: June 18, 2013; June 19, 2012.

***Invited Reviews for Scholarly Journals***

*Science, Health & Place, Climate Change, Environmental Health Perspectives, Natural Hazards, Physical Geography, Journal of Applied Meteorology and Climatology*

***Grant Proposal Reviews***

National Science Foundation, Sea Grant

***Departmental Service***

Member of the Graduate Committee 2019-present

Member of the Post-Tenure Review Committee 2014-present

Chair, Faculty Search Committee for medical geographer, 2016

Chair, Faculty Search Committee for opportunity hire, 2016

Member of the Undergraduate Committee 2010-2015

Chair of the Teaching Effective Committee 2011-2014

Chair, Faculty Search Committee for water position, 2013