

Tanya M. Brown-Giammanco

tbrown@ibhs.org

EDUCATION

Ph.D. in Wind Science and Engineering, NSF IGERT Fellow

Texas Tech University, Lubbock, August 2010

Dissertation: Development of a Statistical Relationship between Ground-Based and Remotely-Sensed Damage in Windstorms

M.S. in Water Resources Science

University of Kansas, Lawrence, August 2006

Research Topic: Evaluation of NEXRAD Estimated Precipitation Using ALERT Raingage Precipitation

B.S. in Atmospheric Science

University of Kansas, Lawrence, May 2004

Concentrations: Hydrometeorology, General Meteorology

POSITIONS

Managing Director, Research & South Carolina Wind & Hail Underwriting Association Hail Chair, Insurance Institute for Business & Home Safety

August 2010–present

Research, engineering, and staff co-manager of the IBHS Research Center, managing specific projects, equipment, personnel, and budgets of the facility; provide engineering and thought leadership; contribute to the development of novel instruments, test equipment, and data collection platforms; conduct original experimental, field, or insurance claims research in the perils of wind, wind-driven rain, hail, wildfire, and natural weathering and their effects on buildings and components; conduct tests using existing test standards, and develop new, more appropriate science-based test methods; contribute to the development/refinement of building mitigation best practices through IBHS' FORTIFIED Home program and RICOWI Best Practices Guides for Roofing; staff liaison to IBHS Research Advisory Council and Residential Committee; service and leadership on external committees within standards and professional organizations.

Faculty Associate, Texas Tech University, National Wind Institute

August 2010–present

Conduct research in support of mobile field operations for the Texas Tech University Hurricane Research Team; manage database of historical deployments.

Graduate Research Assistant, Texas Tech University, National Wind Institute

August 2009–August 2010

Conducted research on damage assessments and remote-sensing imagery.

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Graduate Research Assistant, University of Kansas, Department of Civil and Architectural Engineering

February 2005 – June 2006

Conducted research on NEXRAD radar and ALERT network rain gages; analyzed radar data using GIS.

Head Graduate Teaching Assistant, University of Kansas, Department of Geography

January 2002 – May 2006

Taught ATMO 105 lab: Introduction to Meteorology

Senior Peer Advisor, University of Kansas, Freshman-Sophomore Advising Center

May 2003 – July 2006

Supervised other peer advisors; worked with students and advisors at summer, fall, and spring New Student Orientation sessions, assisting in the advising and enrollment processes.

PEER REVIEWED PUBLICATIONS

Brown, T.M., Liang, D., Womble, J.A. (2012). Predicting ground-based damage states from windstorms using remote-sensing imagery. *Wind Struct*, 15(5), 369-383.

Brown, T.M., Giammanco, I.M. (2013). IBHS multi-faceted hail research initiative. *RCI Interface*, February 2013.

Brown, T.M., Pogorzelski, W.H., Giammanco, I.M. (2015). Evaluating hail damage using property insurance claims data. *Weather Clim Soc*, 7(3), 197-210.

Dixon, C.R., Masters, F.J., Prevatt, D.O., Gurley, K.R., Brown, T.M., Peterka, J.A., Kubena, M.E. (2014). The influence of unsealing on the wind resistance of asphalt shingles. *J Wind Eng Ind Aerod*, 130, 30-40.

Giammanco, I.M., Brown, T.M., Grant, R.G., Dewey, D.L., Hodel, J.D., Stumpf, R.A. (2015). Evaluating the hardness characteristics of hail through compressive strength measurements. *J Atmos Oceanic Tech*, 32(11), 2100-2113.

Giammanco, I.M., Maiden, B.R., Estes, H.E., Brown-Giammanco, T.M. (2016). Using 3D laser scanning technology to create digital models of hailstones. *B Am Meteorol Soc*, 98(7), 1341-1347.

Jian, Z., Kumjian, M.R., Schrom, R.S., Giammanco, I.M., Brown-Giammanco, T.M., Estes, H., Maiden, R., Heymsfield, A.J. (2018). Comparisons of electromagnetic scattering properties of real hailstones and spheroids. *J Appl Meteorol Clim*, 58(1), 93-112.

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Kovar, R.N., Brown-Giammanco, T.M., Lombardo, F.T. (2018). Leveraging remote-sensing data to assess garage door damage and associated roof damage. *Front Built Environ*, 4(61), 1-12.

Liang, D., Cong, L., Brown, T.M., Song, L. (2012). Comparison of sampling methods for post-hurricane damage survey. *J Homel Secur Emerg*, 9(2), Article 1.

Luo, J, Liang, D., Kafali, C., Li, R., Brown, T.M. (2014). Enhanced remote-sensing scale for wind damage assessment. *Wind Struct*, 19 (3), 321-337.

Quarles, S.L., Brown, T.M., Cope, A.D. (2013). Water entry through attic vents. *RCI Interface*, March 2013.

Standohar-Alfano, C.D., Estes, H., Johnston, T., Morrison, M.J., Brown-Giammanco, T.M. (2017). Reducing losses from wind-related natural perils: Research at the IBHS Research Center. *Front Built Environ*, 3(9), 1-19.

SELECTED CONFERENCE PRESENTATIONS

Brown, T.M., et al. (2008). "Using high-resolution aerial imagery to document damage in the Witch Creek Fire." *33rd Annual Hazards Research and Applications Workshop*, Broomfield, CO.

Brown, T.M., Liang, D., Womble, J.A. (2009). "Development of a statistical relationship between ground-based and remotely-sensed damage in windstorms." *Proceedings, 11th Americas Conference on Wind Engineering*, San Juan, Puerto Rico.

Brown, T.M., Liu, Z., Morrison, M.J., Cope, A.D., Smith, D.A. (2011). "Comparison of field and full-scale laboratory pressure data at the IBHS Research Center." *Proceedings, 13th International Conference on Wind Engineering*, Amsterdam, Netherlands.

Brown, T.M., Giammanco, I.M., Robinett, D.S. (2012). "Observations of hailstone characteristics utilizing a new instrumentation platform." *Proceedings, 26th Conference on Severe Local Storms*, Nashville, TN.

Brown, T.M., Pogorzelski, W.H. (2014). "Claims Analysis Study of May 24, 2011." *Proceedings, 94th American Meteorological Society Annual Meeting*, Atlanta, GA.

Brown, T.M., Giammanco, I.M., Kumjian, M.R. (2014). "IBHS Hail Field Research Program 2012-2014." *Proceedings, 27th Conference on Severe Local Storms*, Madison, WI.

Brown, T.M. (2015). "Relative impact resistance of new and aged roofing materials." *International Roofing Expo*, New Orleans, LA.

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- Brown, T.M., Quarles, S.L., Giammanco, I.M., Brown, R. (2015). "Building vulnerability to wind-driven rain entry and effectiveness of mitigation techniques." *Proceedings, 14th International Conference on Wind Engineering*, Porto Alegre, Brazil.
- Brown, T.M. (2015). "Severe Thunderstorms Impacts and Mitigation—Hail Mitigation." *Natural Hazards Mitigation Association Symposium*, Broomfield, CO.
- Brown-Giammanco, T.M., Giammanco, I.M. (2018). "An Overview of the Insurance Institute for Business & Home Safety's Hail Research Program." *Proceedings, 29th Conference on Severe Local Storms*, Stowe, VT.
- Cope, A.D., Brown, T.M., Liu, Z., Smith, D.A., Morrison, M.J. (2012). "Full-scale simulation of wind pressures and wind effects." *ASCE Structures Congress*, Chicago, IL.
- Estes, H.E., Brown-Giammanco, T.M., Giammanco, I.M. (2016). "Durability of polymer-modified asphalt shingles." *ISAP Symposium concurrent with 53rd Petersen Asphalt Research Conference*. Jackson Hole, WY. July 18-21, 2016.
- Giammanco, I.M., Brown, T.M., Schroeder, J.L. (2009). "Texas Tech University's Hurricanes at Landfall Project-2008." *Proceedings, 11th Americas Conference on Wind Engineering*, San Juan, Puerto Rico.
- Giammanco, I.M., Brown, T.M. (2014). "Observations of hailstone characteristics in multi-cell and supercell thunderstorms." *Proceedings, 94th American Meteorological Society Annual Meeting*, Atlanta, GA.
- Giammanco, I.M., Brown, T.M., Kumjian, M.R., Heymsfield, A.J. (2014). "Observations of Hailstone Sizes and Shapes from the IBHS Hail Measurement Program: 2012-2014." *Proceedings, 27th Conference on Severe Local Storms*, Madison, WI.
- Giammanco, I.M., Maiden, B.R., Estes, H.E., Brown-Giammanco, T.M. (2016). "Using 3-D laser scanning technology to create digital models of hailstones." *Proceedings, 28th Conference on Severe Local Storms*, Portland, OR.
- Giammanco, I.M., Brown-Giammanco, T.M. (2018). "In situ hail observations using a rapidly deployable network of hail impact disdrometers." *Proceedings, 98th American Meteorological Society Annual Meeting*, Austin, TX.
- Giammanco, I.M., Brown-Giammanco, T.M. (2018). "Comparisons of WSR-88D Dual-Pol Hail Size Discrimination Algorithm Output with Physical Hail Measurements and In Situ Impact Disdrometer Data." *29th Conference on Severe Local Storms*, Stowe, VT.
- Herzog, R., Roodvoets, D., Brown, T.M., Lawry, L. (2012). "RICOWI 2011 DFW hail

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investigation." *RICOWI Spring Seminar*, Dallas, TX.

- Kumjian, M.R., Brown, T.M., Giammanco, I.M. (2014). "IBHS Field Research Project 2014 case studies: comparison of polarimetric radar observations and surface hail characteristics." *27th Conference on Severe Local Storms*, Madison, WI.
- LaDue, J.G., Levitan, M., Wurman, J., Karstens, C., Lombardo, F.T., MacAloney II, B.W., Brown-Giammanco, T.M., Coulbourne, W.L., Womble, J.A., Camp, J.P. (2017). "Progress of the ASCE Wind Speed Estimation Standards Committee." *Proceedings, 95th American Meteorological Society Annual Meeting*, Seattle, WA.
- LaDue, J.G., Levitan, M., Marshall, T., Brown-Giammanco, T.M., Womble, A., Wurman, J., Lombardo, F.T., Karstens, C.D., Coulbourne, W., James, K., Robinson, J. (2020). "Demonstrating a Future Application of the Wind Speed Estimation to Tornadoes." *Proceedings, 100th American Meteorological Society Annual Meeting*, Boston, MA.
- LaDue, J.G., Levitan, M., Standohar-Alfano, C., Roueche, D.B., Scott, P., Brown-Giammanco, T.M., Womble, A., Wurman, J., Lombardo, F.T., Karstens, C.D., Peterson, C.J., Coulbourne, W. (2020). "Using the Jointly Branded ANSI Compliant Standard as a Form of R20 to Improve Post-storm Assessments of Damaging Wind." *Proceedings, 100th American Meteorological Society Annual Meeting*, Boston, MA.
- Liu, Zhuzhao, Brown, Tanya M., Cope, Anne D., Reinhold, Timothy A. (2011). "Simulation wind conditions/events in the IBHS Research Center full-scale test facility." *13th International Conference on Wind Engineering*, Amsterdam, Netherlands.
- Lombardo, F.T., Brown, T.M., Womble, J.A., LaDue, J.G. (2010). "The future of the EF Scale." *Second AAWE Workshop*, Marco Island, FL.
- Luo, B., Liang, D., Mehta, K.C., Brown, T.M. (2011). "Evaluation of synthetic strategies for windstorm damage assessment." *13th International Conference on Wind Engineering*, Amsterdam, Netherlands.
- Morrison, M.J., Brown, T.M., Liu, Z. (2012). "Comparison of field and full-scale laboratory peak pressures at the IBHS Research Center." *ATC-SEI Advances in Hurricane Engineering Conference*, Miami, FL.
- Quarles, S.L., Brown, T.M., Cope, A.D., Lopez, C., Masters, F.J. (2012). "Water entry through sealed and un-sealed roof sheathing: a preliminary study." *ATC-SEI Advances in Hurricane Engineering Conference*, Miami, FL.
- Reynolds, A.E., Krupar, R., Brown, T.M., Liang, D., Womble, J.A. (2008). "February 2008 Super Tuesday tornado outbreak damage assessment." *Proceedings, Sixth International Workshop on Remote Sensing for Disaster Response*, Pavia, Italy.

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Shedd, L., Kumjian, M.R., Giammanco, I.M., Brown-Giammanco, T.M., Maiden, R. (2020). "Analysis of Hailstone Physical Properties from the IBHS Field Project: 2012-2017." *Proceedings, 100th American Meteorological Society Annual Meeting*, Boston, MA.

Shedd, L., Kumjian, M.R., Giammanco, I.M., Brown-Giammanco, T.M., Maiden, R. (2020). "Physical Properties of Hailstones Collected during the IBHS Field Project: 2012-2017." *Proceedings, 100th American Meteorological Society Annual Meeting*, Boston, MA.

Sirico III, R.A., Giammanco, I.M., Kumjian, M.R., Brown-Giammanco, T.M. (2018). "The Influence of Environmental Variables on Hailstone Material Properties." *Proceedings, 29th Conference on Severe Local Storms*, Stowe, VT.

Womble, J.A., Smith, D.A., Schroeder, J.L., Liang, D., Brown, T.M., Mehta, K.C. (2010). "Imagery-based wind damage functions." *Proceedings, ASCE/SEI Structures Congress*, Orlando, FL.

Womble, J.A., LaDue, J.G., Levitan, M.L., Brown-Giammanco, T.M., Coulbourne, B., Lombardo, F.T., Kopp, G.A. (2016). "Development of the ASCE/SEI Standard for the estimation of tornado wind speeds." *Proceedings of CSCE Annual Conference*, London, ON.

Womble, J.A., Brown-Giammanco, T.M., Morrison, M.J., Kovar, R.N., Lombardo, F.T. (2019). "Garage door wind damage vulnerabilities for residential and commercial buildings." *THWARTS*, Urbana-Champaign, IL.

INVITED TALKS

Central Piedmont Community College Women in Construction—February 2012

Palmetto AMS Mini-Technical Conference (keynote)—March 2012

Texas Department of Insurance War on Hail Symposium—November 2012

WIND Regional Symposium—May 2012

WIND 2013—January 2013

RAA Cat Modeling—February 2013, February 2016

ARMA Steep Slope Committee Meeting—August 2013

National Insurance Conference of Canada—September 2013

KAPCIC Annual Conference—October 2013

National Tornado Summit—February 2014, February 2017, February 2018, March 2019

NAMIC Annual Convention—September 2014

Natural Hazard Mitigation Association—July 2015

Best of Success—September 2015

Wichita Chapter of CPCU—March 2016, April 2017

NAMIC Personal Lines Seminar—April 2016

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PLRB Claims Conference—April 2016

Zencup—July 2016

Atlas National Sales Meeting—February 2019

NAMIC Management Conference—June 2019

PLRB Eastern Regional Adjusters Conference—October 2019

GenRe Executive Forum—January 2020

TAMEST Natural Hazards Summit—June 2020

FIELD RESEARCH EXPERIENCE

Texas Tech University Hurricane Research Team, 2008–present

Texas Tech University StickNet Team 4 leader for VORTEX 2 (Verification of the Origins of Rotation in Tornadoes Experiment 2), 2009–2010

Central Florida Tornado Damage Assessment, February 2007

Super Tuesday Tornado Damage Assessment, February 2008

Witch Creek Wildfire Damage Assessment, May 2008

RICOWI Dallas/Ft. Worth Hailstorm Damage Assessment, June 2011

IBHS Hailstone Characteristics Field Project, 2012–present

Hurricane Harvey Damage Assessment, August 2017

PROFESSIONAL ORGANIZATIONS

American Meteorological Society (2000–present)

Severe Local Storms Science and Technological Activities Committee (2017–present)

American Association for Wind Engineering (2007–present)

Palmetto Chapter of the AMS (2012–present)

Roofing Industry Committee on Weather Issues (RICOWI), Board of Directors (2012–2018)

Chair, Roofing Best Practices Committee (2014–2018)

American Society of Civil Engineers, Associate Member (2015–present)

PROFESSIONAL SERVICE ACTIVITIES

ASCE Committee on Wind Speed Estimation (2015–present)

Steering Committee

Chair, EF Scale Subcommittee

Member, In Situ and Remote-Sensing Subcommittees

Underwriters Laboratory Standards Technical Panel for UL 2218 (2014–present)

Journal & Grant Program Scientific Reviews

Journal of Wind Engineering and Industrial Aerodynamics (2013–present)

Wind and Structures (2014–present)

Bulletin of the American Meteorological Society (2019–present)

NIST Disaster Resilience Research Grants Program

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SCIENTIFIC AND ENGINEERING CONSULTING

Engineering Consultant, Insurance Institute for Business & Home Safety

August 2007–December 2008, July 2009–July 2010

Developed hail research agenda for new research center; developed procedure for post-disaster investigations; conducted research on Witch Creek (CA) Wildfire; provided technical review of training videos; conducted analysis of closed-claim insurance data for hurricanes.

Engineering Consultant, LNSS & Associates

August 2008–February 2009

Conducted remote-sensing damage investigations of homes impacted by Hurricanes Katrina and Ike, differentiating between storm surge and wind damage; data were used to create damage functions based on construction type and wind speeds.