J. Arn Womble, PhD, PE

Curriculum Vitae

August 29, 2018

EDUCATION

- **Texas Tech University**
  Ph.D. Civil Engineering
  Emphasis: Wind Science and Engineering, *Minor emphasis:* Structural Engineering
- **Colorado State University**
  M.S. Civil Engineering *Emphasis:* Wind-Tunnel Modeling of Structures
- **Texas Tech University**
  B.S. Civil Engineering, *Magna cum Laude*

RESEARCH INTERESTS

- Exploration of extreme wind damage to the natural and built environments
- Remote sensing for wind damage assessment
- Reality-capture-enhanced structural damage modeling (lidar and photogrammetry)
- Behavior of structures subjected to extreme loads
- Building aerodynamics

ACADEMIC and INDUSTRY APPOINTMENTS

- **Insurance Institute for Business and Home Safety (Richburg, SC)** 2018 – present
  Research Wind Engineer
- **West Texas A&M University (Canyon, TX)** 2014 – 2018
  Assistant Professor of Civil Engineering
  Director of WTAMU Natural Hazards Engineering Research Laboratory
  Awards: NSF-CAREER Award; WTAMU Outstanding Researcher Award (2017-18)
- **WindForce Associates, Inc. (Lubbock/Amarillo, TX)** 2006 – Present
  President and Founder (Wind Engineering Consulting)
  Expert Witness, Windstorm litigation
- **South Plains College (Levelland, TX)** 2012 – 2014
  Assistant Professor of Engineering and Mathematics
- **Kingdom Preparatory Academy Christian School (Lubbock, TX)** 2011 – 2012
  Instructor (part-time): Advanced Physics/Pre-Engineering, Mathematics, Logic
- **Texas Tech University**
  Adjunct Instructor (part-time): Wind Engineering 2006 – 2009
  NSF IGERT Doctoral Research Fellow (Wind Science & Engineering) 2003 – 2005
- **Cermak Peterka Petersen (CPP), Inc. (Fort Collins, CO)** 1996 – 2003
  Wind Engineering Consultants
  Wind Tunnel Project Manager

- **Walter P. Moore and Associates (Dallas/Ft Worth, TX)** 1994 – 1996
  Structural Design Engineer
- **Colorado State University, Fluid Dynamics Laboratory (Fort Collins, CO)** 1992 – 1994
  Graduate Research Assistant (wind-tunnel modeling for wind loads on structures)
- **Superconducting SuperCollider Laboratory (Dallas, TX)** 1992
  Finite Element Stress Analyst (Student Co-Op Program)
- **Roberts and Thoma, Inc. Structural Engineers (Lubbock, TX)** 1990 – 1991
  CAD Technician (part-time)
- **Institute for Disaster Research (Texas Tech University)** 1989 – 1991
  Student Research Assistant – wind damage research (part-time)
- **Empire Builders (Lubbock, TX – family business)** 1981 – 1991
  Building construction assistant/ laborer (part-time and summers)

PROFESSIONAL ENGINEERING REGISTRATION

- Professional Engineer (Colorado PE #33380)
- Professional Engineer (Mississippi PE #17896)

HONORS AND AWARDS

- NSF-CAREER Award (2018)
- Outstanding Faculty Intellectual Contribution Award, West Texas A&M University (2018)
- Outstanding Faculty Researcher Award, WTAMU School of Engineering (2018)
- NSF-IGERT Doctoral Fellowship (Texas Tech University)
- Chi Epsilon Civil Engineering Honor Society
- Tau Beta Pi Engineering Honor Society
- Fife Graduate Fellowship (Tau Beta Pi)
- ASCE Student Technical Paper Contest First Place Award – Texas/New Mexico Section
- ASCE Student Technical Paper Contest Second Place Award – Texas Section
- ASCE Construction Engineering Research Paper Contest
- Chi Epsilon Southwest Regional Scholarship
- Texas Society of Professional Engineers Scholarship
- Texas Tech University McFadden Scholarship
- Texas Elks Foundation "Most Valuable Student" Scholarship
- Eagle Scout

PROFESSIONAL ACTIVITIES

Memberships

- American Association for Wind Engineering (AAWE)
- American Society of Civil Engineers (ASCE) – National Organization
- American Society of Civil Engineers (ASCE) – High Plains Branch (Amarillo, TX)
- ASCE Structural Engineering Institute/SEI
- ASCE/SEI Wind Effects Committee
- Structural Engineers Association of Texas (SEAoT)
- Tau Beta Pi, National Engineering Honor Society (Fellow)
- Chi Epsilon, National Civil Engineering Honor Society

Professional Service

- 2014 – present: ASCE Tornado Wind Speed Estimation Standards Committee
  - Chair, Remote Sensing Subcommittee
  - Member, Steering Committee
  - Member, Main Committee
  - Member, EF-Scale Subcommittee
  - Member, Forensic Engineering Subcommittee
- ASCE/SEI Structures Congress 2018, Fort Worth, Texas (Session Organizer)
- National Tornado Summit 2019, Oklahoma City, Oklahoma (Panel Session Organizer)
- National Tornado Summit 2018, Oklahoma City, Oklahoma (Panel Session Organizer)
- National Tornado Summit 2017, Oklahoma City, Oklahoma (Session Organizer – two sessions)
- 13th Americas Conference on Wind Engineering, Gainesville, Florida (Moderator – two sessions)
- ASCE/SEI Structures Congress 2017, Denver, Colorado (Session Organizer)
- Invited Panelist: 5th International Natural Disaster Mitigation Specialty Conference; Canadian Society for Civil Engineering, London, Canada-Ontario. Participated as invited panelist for Young Professional Members Group. Panel: "Designing Resilient Infrastructure" (2016).
- Expert Panel Discussion (Invited Member) – "Bringing Wind Research to Practice," 11th Americas Conference on Wind Engineering, Puerto Rico, June 22-26, 2009, convened by Applied Technology Council (Issues involving use of EF Scale in hurricanes)
- Doctoral Graduate Committee Member, Tanya M. Brown, Texas Tech University Wind Science and Engineering Program (2010)
- Technical Paper Reviewer – ASCE/SEI Structures Congress (2009)
- Technical Reviewer – ASCE 5th Congress on Forensic Engineering, ASCE Technical Council on Forensic Engineering (2009)
- Technical Session Organizer and Moderator: "Wind or Water? (Separating Wind and Storm-Surge Damage in Hurricanes)" ASCE/SEI Structures Congress, April 2008, Vancouver.
- Technical Session Organizer and Moderator: "Lessons from Recent Windstorms" ASCE/SEI Structures Congress, April 2008, Vancouver, BC.
- Technical Session Organizer and Co-Chair "Remote Sensing for Rapid Disaster Damage Assessment," ASCE Structures Congress, May 2007, Long Beach, CA.

Journal Reviewer

- *Journal of Wind Engineering and Industrial Aerodynamics*
- *Journal of Performance of Constructed Facilities*
- *Journal of Automation in Construction*
- *Engineering Structures*
- *Wind and Structures*
- *Journal of Structural Engineering*
- *Journal of Geomatics, Natural Hazards and Risk*
- *Frontiers in Built Environment: Wind Engineering*

Reviewer – National Science Foundation

- 2018: National Science Foundation Review Panel (Engineering for Natural Hazards)
- 2017: National Science Foundation Site Visit Review Team (NSF RAPID Center, Univ. of Washington)
- 2017: National Science Foundation Review Panel. Industry-expert ad reviewer (Advanced Cyberinfrastructure Program)
- 2016: National Science Foundation Review Panel
- 2016: Industry-expert ad-hoc reviewer for proposal submitted to NSF Industry/University Cooperative Research Center (I/UCRC) Program; October 2016
- 2015: National Science Foundation Review Panel, Washington, DC, Engineering for Natural Hazards

University Service

- 2018: Master of Engineering Graduate Advisory Committee (WTAMU)
- 2017: University Graduate Programs Planning Committee (WTAMU)
- 2016: Campus Instructional Technology Committee (WTAMU)
- 2018: Civil Engineering Senior Design (faculty consultant and reviewer)
- 2018: Mechanical Engineering Senior Design (faculty consultant and reviewer)
- 2017 - 2018: WT 125 President's Long-Range Planning Committee
- 2017: WTAMU Research Conference - Poster Judge
- 2017: Civil Engineering Senior Design (faculty consultant and report reviewer)
- 2017: Member of WTAMU team preparing ABET Self-Study report
- 2016: Civil Engineering Senior Design (faculty consultant and report reviewer
- 2016: WTAMU Research Conference - Poster Judge
- 2016: WTAMU/ECSM - GIS Poster Contest - Volunteer Judge
- 2016: Discover WT - Volunteer (Engineering Mechanics Demonstration)
- 2016: WTAMU Etiquette Dinner-Faculty Representative
- 2016: Recruiting Trip - South Plains College Advising Day (Levelland, TX)
- 2015: Student Webinar - Fundamentals of Engineering Exam: Organized student group to participate in student webinar presented by Texas Board of Professional Engineers "Professional Engineering and the FE Exam." ~35 students (primarily juniors and seniors) attended on campus; other students attended remotely (online) off-campus.
- 2015: Faculty Search Committee for New Electrical Engineering Faculty: 2015: Host: South Plains College Pre-Engineering Students Visit to WTAMU: Hosted potential students from South Plains College pre-engineering program
- 2015: WTAMU Etiquette Dinner-Faculty Representative (2015)
- 2015: FARO Laser Scanner Demonstration: Arranged demonstration of FARO laser scanner equipment to ECSM faculty and student researchers
- 2014: ABET Accreditation: Member of WTAMU team preparing ABET Self-Study report for initial accreditation for Civil Engineering program.

Selected Media Coverage

- May 3, 2018 - "**Good News with Dave: Age old tornado questions answered with research at WTAMU**." Interview with "Doppler" Dave Oliver, TV Channel 10, Amarillo, TX: (May 3, 2018) http://www.newschannel10.com/clip/14322827/good-news-with-dave-age-old-tornado-questions-answered-with-research-at-wtamu
- Mar. 25, 2018 – "**Professor Receives NSF-CAREER Award for Tornado Research**," *Amarillo Globe News*.
- Mar. 20, 2018 – "**Womble Becomes First WTAMU Professor to Win National Award**" *The Amarillo*

Pioneer. https://www.amarillopioneer.com/blog/2018/3/20/womble-becomes-first-wtamu-professor-to-win-national-award

- Mar. 20, 2018 – **"WT assistant professor receives National Science Foundation CAREER Award"** Amarillo, TX News Channel 7 – ABC. http://abc7amarillo.com/news/local/wt-assistant-professor-receives-national-science-foundation-career-award
- Dec. 12, 2015 - "**WT, Tech researchers study tornadoes' destructive power**" Interview with *Amarillo Globe News*: Investigation of Pampa TX tornado damage at Halliburton Facility
- Dec. 10, 2015 - "**Tornado Damage Research at WTAMU**" Interview with Amarillo TV Channel 10: Investigation of Pampa TX tornado damage at Halliburton Facility
- Dec. 10, 2015 - "**WT Professors Leading Charge on Tornado Damage Research in Pampa**" Interview with Amarillo TV Channel 7: Investigation of Pampa TX tornado damage at Halliburton Facility

RESEARCH ACTIVITIES

Sponsored Projects

- (PI) ***CAREER: Remote Sensing for Understanding of Tornado Actions and Broadened STEM Education in Rural West Texas***, Principal Investigator, National Science Foundation (NSF). ($500,000). Funded. 2018-2023
- (PI) ***Ontario Tornadoes Project – Pilot Part II***, for University of Western Ontario, ($30,000). Funded. 2018-2019:
- (PI) ***RAPID: Preservation of 3D Damage Data for Reality-Capture-Enhanced Modeling of Engineered Steel Structures Subjected to Hurricane Harvey on the Texas Coast on August 25, 2017***, National Science Foundation. ($29,961). Funded. 2017-2018.
- (PI) ***MRI: Acquisition of 3D Laser Scanner for Research Evaluating Structural and Agronomic Damage from Catastrophic Meteorological Events in 'Tornado Alley'***, National Science Foundation. Collaboration with WTAMU Engineering, Agriculture, and USDA Crop Production Laboratory. $101,580 Funded. 2016-2019.
- (PI) ***RAPID/ Collaborative Research: Multi-Platform 3-D Data Preservation of Tornado Damage to Engineered Structures in Texas during November 16-17, 2015***, National Science Foundation. Collaboration with University of Nebraska and Texas Tech University National Wind Institute; multi-platform reality capture for tornado damage to Halliburton industrial facility and center pivot irrigation systems (Pampa, TX) $20,736. Funded. 2016-2018.
- (PI) Womble, J. A. & Leitch, K. R., Killgore 2016 Faculty Research Grant: **New Platforms for 3D-Reality Capture in Wind Damage Assessment**, Co-Principal Investigator, Killgore Research Center, WTAMU. $5,000. Funded
- **NHERI Wall of Wind Experimental Facility User Worksho**p (Florida International University), Workshop participant. Wall of Wind Experimental Facility Workshop to foster collaborative research proposals Sponsored by NSF-NHERI/ National Hazards Engineering Research Infrastructure ($450). Funded. 2016
- **WTAMU Foundation Faculty Development Grant**, , WTAMU Foundation. Funds to attend the Structures Congress of the American Society of Civil Engineers (ASCE) Structural Engineering Institute (SEI), April 5-8, 2017, in Denver, Colorado. Funded.
- (PI) Womble, J. A. Killgore 2015 Faculty Research Grant: **Feature Extraction from Digital Images for Automated Wind Damage Assessment**, , WTAMU. "Feature Extraction from Digital Images for Automated Wind Damage Assessment" ($5,000) Funded.
- (Co-PI) Hunt, E. M., Leitch, K. R. , Mulamba, O., & Womble, J. A., **MRI: Acquisition of a High-Temperature X-ray Diffraction System - Transforming Materials Science and Culture in West Texas**, National Science Foundation (NSF). ($236,766) Funded.
- (Co-PI) Hunt, E. M., Lockwood-Cooke, P., Davis, F., Garcia, D., Womble, J. A. **FFATA: Teaming Engineering and Mathematics Students: Part 2**, GOV-National Science Foundation (NSF).

$599,996. Funded. 2011-2017.

- "**Collection of Remote Sensing Imagery and Building Damage Information in the Aftermath of Hurricane Charley**" with Beverley J. Adams and Kishor C. Mehta, SGER Research Proposal #0454564 funded by National Science Foundation (August 2004). funded

Additional Proposals

- 2016-2019: Womble, J.A., Wood, R.L, Witich, C.E., Zuo, D., Moritz, M., Brian E. Smith, Tornado Damage to Center-Pivot Irrigation Structures (A New Rural EF-Scale Damage Indicator), Principal Investigator, National Institute of Standards and Technology. Collaboration with Texas Tech University, University of Nebraska-Lincoln, and National Weather Service. ($667,301) Not funded.
- 2015-2017: Womble, J. A. & Leitch, K. R., Rapid, Robust Wind Damage Assessment for Single-Family Residences Using Image Edge Detection, Principal Investigator, Research Proposal Submitted to National Science Foundation $192,294. Not funded.
- 2017: Womble, J.A., Development of Laser-Based Reality Capture for Multidisciplinary Forensic Investigations. WTAMU Killgore Faculty Research Program $2,473 ($4,320 in-kind) Not funded.
- "MRI: Development of a Multidimensional-Hypersptectral Data Fusion System for Disaster Assessment," with Daan Liang, Brian S. Nutter, and Kishor C. Mehta, Submitted to National Science Foundation/MRI Program (January 2008). Not funded
- "Hyperspectral Imagery: A New Frontier for Windstorm Damage," with Daan Liang, Brian S. Nutter, and Kishor C. Mehta, Submitted to National Science Foundation (2007). $203,709. Not funded
- "A Novel Method for Assessing Windstorm Damage from Hyperspectral Imagery," Brian S. Nutter, Daan Liang, Kishor C. Mehta, and J. Arn Womble, Research Proposal submitted to the U.S. Department of Defense (April 2007) $260,541, not funded.
- "Hyperspectral Imagery: A New Frontier for Windstorm Damage Assessment," with Daan Liang, Brian S. Nutter, and Kishor C. Mehta, Research Proposal #0653778 submitted to National Science Foundation (September 2006), not funded.
- "Hyperspectral Imagery: A New Frontier for Windstorm Damage Assessment," with Daan Liang, Brian S. Nutter, and Kishor C. Mehta, Research Proposal #0653778 submitted to National Science Foundation (September 2006). Not funded
- "Development of an Enhanced Hurricane Scale," Research Proposal submitted to Advanced Technology Council and NIST (June 2006). Not funded
- "Collaborative Research on Decisions, Risk, and Uncertainty (DRU) Advancing Risk, Decision, and Economic Analysis of Catastrophes: Learning from Hurricane Katrina and Other Recent Events," with ImageCat, Inc., Submitted to NSF with MCEER, ImageCat, and CREATE (Feb. 2006).
- "A Benefit-Cost Analysis of NASA Earth Science Products for Disaster Management Decision Support Tools," with ImageCat, Inc., Pacific Disaster Center, University of New Mexico CREATE, PBS&J, TTU Wind Science and Engineering Center, Dewberry, Inc., EarthData, and SeaSpace Corp., Research Proposal submitted to NASA (January 2005). Not funded
- "Advanced Technology for Performance-Based Wind Engineering," with K.C. Mehta, B.J. Adams, B.S. Nutter, and D. Liang, submitted to National Science Foundation (2004). Not funded
- "Development of Post-Windstorm Damage State Functions for Rapid Loss Estimation, Using Remote Sensing Data," with Kishor C. Mehta and Beverley J. Adams, Research Pre-Proposal submitted to National Science Foundation (September 2004). Not funded
- "Rapid Hurricane and Windstorm Damage Assessment Using Remote Sensing," with Kishor C. Mehta and Marc L. Levitan, Research Proposal submitted to National Science Foundation (2002). Not funded

RESEARCH / CONSULTING ACTIVITIES – Wind Damage Investigations

- Hurricane Harvey, Rockport, TX (2017): GEER Team Lead – Structural Damage Investigations
- Hurricane Harvey, Rockport, TX (2017): NSF-RAPID Research grant for 3D Damage Data Collection
- Pampa, TX Tornado Outbreak (2015) – NSF-RAPID Research grant for 3D Damage Data Collection
- Joplin, Missouri Tornado Outbreak (2011) (Remote-sensing investigation)
- Tuscaloosa and Birmingham, Alabama Tornado Outbreak (2011) (Remote-sensing investigation)
- Hurricane Ike, Galveston/Bolivar, Texas (2008)
- Clovis, New Mexico Tornado (2007)
- Hurricane Rita, Texas and Louisiana (2005) (Remote-sensing investigation)
- Hurricane Katrina, Mississippi Coast and Louisiana (2005)
- Hurricane Ivan, Mobile, Alabama – Pensacola, Florida (2004)
- Hurricane Charley, Port Charlotte – Punta Gorda, Florida (2004)
- Hurricane Isabel, Outer Banks, North Carolina (2003)
- Downslope Wind Events, Larimer County, CO (1996)
- Hurricane Fran, Wilmington, North Carolina (1996)
- Dallas County, Texas Thunderstorms (1996)
- Hurricane Opal, Florida Panhandle (1995)
- Ellis County, Texas Thunderstorms (1994)
- Hurricane Andrew, Miami, Florida (1992)
- Limon, Colorado Tornado (1990)

CONSULTING ACTIVITIES – Expert Witness

- FEMA v. Southern Farm Bureau Insurance (Hurricane Katrina – Pass Christian, MS, 2010)
- Kelley v. Texas Windstorm Ins. Agency (Hurricane Ike – Crystal Beach, TX, 2010)
- Dillon/Ariola v. USAA/Citizens (Hurricane Ivan – Pensacola Beach, FL, 2009)
- Dillon/Ensenada v. USAA/Citizens (Hurricane Ivan – Pensacola Beach, FL, 2009)
- Dillon/Gulf Blvd v. USAA/Citizens (Hurricane Ivan – Pensacola Beach, FL, 2009)
- Dillon/Sabine v. USAA/Citizens (Hurricane Ivan – Pensacola Beach, FL, 2009)
- Dillon/Ensenada v. USAA/Citizens (Hurricane Dennis – Pensacola Beach, FL, 2009)
- Wilder v. State Farm (Hurricane Katrina – Gulfport, MS, 2009)
- Stewart v. USAA/Citizens (Hurricane Ivan – Pensacola, FL, 2009)
- Jackson v. USAA/Citizens (Hurricane Ivan – Pensacola, FL, 2009)
- Simons/Southwind Townhomes v SF (Hurricane Katrina – Biloxi, MS, 2010)
- Anatole Bay HOA v. State Farm (Hurricane Katrina – Biloxi, MS, 2009)
- Martinique Condos v. State Farm (Hurricane Katrina – Biloxi, MS, 2009)
- Ashe v. USAA/Citizens (Hurricane Ivan – Pensacola, FL, 2008)
- Tijerina v. State Farm (Tornado, Eagle Pass, TX, 2009)
- Meade-Koerner v. USAA (Hurricane Katrina – Pass Christian, MS, 2009)
- Fayards Grocery v. State Farm (Hurricane Katrina – D'Iberville, MS, 2009)
- Beck v. State Farm (Hurricane Katrina – Ocean Springs, MS, 2009)
- Miller v. State Farm (Hurricane Katrina – Pass Christian, MS, 2009)
- Fahlberg v. State Farm (Hurricane Katrina – Pascagoula, MS, 2009)
- Hines-McDaniel v. AIG (Hurricane Katrina – Pass Christian, MS, 2008)
- Sibley v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Remel v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2008)

- Jones v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Goodfellow v. State Farm (Hurricane Katrina – Diamondhead, MS, 2008)
- Ellsworth v. State Farm (Hurricane Katrina – Diamondhead, MS, 2008)
- Mokay v. State Farm (Hurricane Katrina – Diamondhead, MS, 2008)
- Gagne v. State Farm (Hurricane Katrina – Diamondhead, MS, 2008)
- McCall v. USAA (Hurricane Katrina – Gulfport, MS, 2008)
- Indovina v. State Farm (Hurricane Katrina – Waveland, MS, 2008)
- Gordon v. State Farm (Hurricane Katrina – Long Beach, MS, 2008)
- Heitzmann v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Perkins v. State Farm (Hurricane Katrina – Waveland, MS, 2008)
- David v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Marmillion v. AIG (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Wagner v. Met P&C (Hurricane Katrina – Bay St. Louis, MS, 2008)
- Picou v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Hawkins v. State Farm (Hurricane Katrina – Biloxi, MS, 2007)
- Mladinich v. Met P&C (Hurricane Katrina – Gulfport, MS, 2007)
- Lisanby v. USAA (Hurricane Katrina – Pascagoula, MS, 2007)
- Carney v. State Farm (Hurricane Katrina – Pearlington, MS, 2007-8)
- Mikovich v. Met P&C (Hurricane Katrina – D'Iberville, MS, 2007)
- Evans v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Werby v. USAA (Hurricane Katrina – Gulfport, MS, 2007)
- Rice v. MetLife Auto & Home (Hurricane Katrina – Gulfport, MS, 2007)
- Gaspard v. State Farm (Hurricane Katrina – Diamondhead, MS, 2007)
- W. Guice v. Met P&C (Hurricane Katrina – Biloxi, MS, 2007)
- Corban v. USAA (Hurricane Katrina – Long Beach, MS, 2007)
- Liles v. MetLife (Hurricane Katrina – Pearlington, MS, 2007)
- Beckham v. State Farm (Hurricane Katrina – Diamondhead, MS, 2007)
- Susskind & Cleary v. State Farm (Hurricane Katrina – Diamondhead, MS, 2007)
- Jefferson Davis Historical Monument/Beauvoir
  v. Charleter Oak et al. St Paul Travelers (Hurricane Katrina – Biloxi, MS, 2007)
- Lizana v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Saunders v. State Farm (Hurricane Katrina – Waveland, MS, 2007)
- Durost v. State Farm (Hurricane Katrina – Biloxi, MS, 2007)
- Flammer & Fonte v. State Farm (Hurricane Katrina – Pass Christian, MS, 2007, 2010)
- Burrow v. State Farm (Hurricane Katrina – Pascagoula, MS, 2007)
- Gannon v. Farm Bureau (Hurricane Katrina – Long Beach, MS, 2007)
- Shiyou v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Smith v. State Farm (Hurricane Katrina – Pass Christian, MS, 2007)
- Mikelonis v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Bass v. State Farm (Hurricane Katrina – D'Iberville, MS, 2007)
- Langguth v. State Farm (Hurricane Katrina – Pass Christian, MS, 2007)
- Fowler v. State Farm (Hurricane Katrina – Pass Christian, MS, 2007)
- Netherland v. USAA (Hurricane Katrina – Bay St. Louis, MS, 2007)
- Candiotto v. State Farm (Hurricane Katrina – Waveland, MS, 2007)
- Riviere v. USAA (Hurricane Katrina – Gulfport, MS, 2007)

- Higdon v. State Farm (Hurricane Katrina – Pascagoula, MS, 2006)
- Lee & Stanley v. Met P&C (Hurricane Katrina – Pascagoula, MS, 2006)
- Lott v. State Farm (Hurricane Katrina – Pascagoula, MS, 2006)
- Taylor v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2006)
- Tuepker v. State Farm (Hurricane Katrina – Long Beach, MS, 2006)
- Desporte v. State Farm (Hurricane Katrina – D'Iberville, MS, 2006)
- Walters v. State Farm (Hurricane Katrina – Pass Christian, MS, 2006)
- Sellier v. State Farm (Hurricane Katrina – Pass Christian, MS, 2006)
- J. Guice v. State Farm (Hurricane Katrina – Ocean Springs, MS, 2006-7)
- James v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2006)
- McFarland v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2006)
- Plotkin v. State Farm (Hurricane Katrina – Bay St. Louis, MS, 2006)

CONSULTING ACTIVITIES – Wind Tunnel Testing

- National Museum of the Marine Corps, Quantico, VA
- 1180 Peachtree Street Tower, Atlanta, Georgia
- Emerald Beach Resort Towers, Panama City Beach, FL
- The Beach Residences Condominiums, Lido Key, FL
- The Alagon Condominium Tower, Tampa, FL
- Orchid Beach Club Towers, Lido Key, FL
- Moody Gardens Convention Center &Hotel Expansion, Galveston, TX
- Univ. of California LITC and Science+Engineering Buildings, Merced, CA
- Connecticut Convention Center – Adriaen's Landing, Hartford, CT
- Columbus Center Redevelopment, Boston, MA
- Omaha Convention Center and Arena, Omaha, NE
- The Venetian Hotel Expansion, Las Vegas, NV
- 1000 Main Office Tower, Houston, TX
- M.D. Anderson Basic Science Research Building, Houston, TX
- The Tower Residences Condominium Tower, Sarasota, FL
- Heritage Tower – John Knox Village, Pompano Beach, FL
- New River Village Condominiums, Fort Lauderdale, FL
- The Trieste Condominium Tower, Naples, FL
- Las Olas City Centre Tower, Fort Lauderdale, FL
- Landmark Tower, Fort Worth, TX
- One Watermark Place Condominiums, West Palm Beach, FL
- St. Regis Museum and Tower, San Francisco, CA
- Miller Park Crane Collapse, Milwaukee, WI

CONSULTING ACTIVITIES – WindForce Associates, Inc. Wind Engineering Consulting

- Consulting Clients:
  - LNSS and Associates Wind Engineers
  - TTU Wind Engineering Research Center
  - ImageCat, Inc.
  - Multidisciplinary Center for Extreme Event Research/MCEER
  - Ambient Air Technologies
  - McDonald-Mehta Engineers
  - Kiesling Associates
- Expert Witness Reports/Testimony re. Forensic investigation of wind/surge damage; litigation support (Hurricanes Katrina, Ike, Ivan, and Dennis)
- Remote-sensing assessment of wind damage
- Wind Speed Risk Assessment for Federal Home Loan Bank of Dallas
- Development of graduate engineering course: Remote Sensing of Wind Damage
- Extreme wind hazard analysis (risk assessment)
- Site-specific extreme windspeed analyses and tornado hazard assessment for design of nuclear power facilities
- Remote-sensing assessment of wind damage to cotton modules

CONSULTING ACTIVITIES – Structural Design Experience

- Dallas County 2000 Bed Jail Facility, Dallas, Texas
- Sundance Fourth and Main Office Building, Fort Worth, Texas
- Sundance East Retail/Cinema Complex, Fort Worth, Texas
- Foley's Department Store, Sugarland, Texas
- Health Education Center and Medical Offices, El Dorado, Arkansas
- Bass Performing Arts Center – Symphony Hall, Fort Worth, Texas
- NationsBank / Trans-America Square Office Tower, Charlotte, North Carolina
- Disney Reedy Creek Sports Complex Baseball Stadium/Fieldhouse, Orlando, FL
- J.W. Ray Learning Center School Addition, Dallas, Texas
- Walsh Center for Performing Arts (Texas Christian University), Fort Worth, Texas
- 8000-seat Colorado Springs World Arena, Colorado Springs, Colorado
- Seuss Landing Amusement Park, Orlando, Florida

SELECTED GRADUATE COURSEWORK

- Wind Engineering
- Wind Effects on Structures (Aerodynamics/Vibrations)
- Atmospheric Science Field Measurement Lab (storm chase)
- Experimental Fluid Mechanics Laboratory (wind tunnel)
- Dynamics of Severe Storms (Atmospheric Science)
- Failure Analysis-Infrastructure Assessment
- Probability and Statistics for Researchers
- Windstorm Hazard Economics
- Remote Sensing of the Environment
- Geographic Information Systems (GIS)
- Advanced GIS

- Design of Wood Structures
- Design of Steel Structures
- Matrix Structural Analysis
- Fundamentals of Vibrations
- Structural Dynamics I and II
- Development of Multi-Disciplinary Research
- Fluid Mechanics
- Computational Fluid Dynamics
- Introduction to Time Series and Forecasting
- Design of Light-Gage Metal Structures
- Engineering Foundations Design
- Finite Element Analysis
- Design of Pre-stressed Concrete Structures
- Advanced Reinforced Concrete Design
- Advanced Mechanics of Materials

TEACHING ACTIVITIES

Courses Taught

- *Wind Engineering*, TTU
- *Wind Engineering Measurements Laboratory*, TTU
- *Engineering Mechanics: Dynamics*, SPC, WTAMU
- *Structural Dynamics*, WTAMU
- *Matrix Structural Analysis*, WTAMU
- *Classical Structural Analysis*, WTAMU
- *Mechanical Vibrations*, WTAMU
- *Concrete Design*, WTAMU
- *Steel Design*, WTAMU
- *Advanced Physics,* KPA
- *Formal Logic,* KPA

PUBLICATIONS

Dissertation

Remote-Sensing Applications to Windstorm Damage Assessment, Womble, J.A., Doctoral Dissertation in Civil Engineering, Texas Tech University, December 2005.

Thesis

Wind-Induced Internal Building Pressures, Womble, James Arn, Master's Thesis, Colorado State University Department of Civil Engineering, Fort Collins, 1994.

Articles in Progress

Womble, J.A., R.L. Wood, M.E. Mohammadi (2018). "**Multi-Scale Remote Sensing of Tornado Effects**." *Frontiers in Built Environment* (invited article –under review).

Wood, R. L., Wittich, C. I., & Womble, J. A. (in progress). "**Damage Characterization for Extreme Impact and Fire Loads to Reinforced Concrete Highway Bridges (Case study of Feb. 2017 crash at the Interstate 40-Bushland**

Road Bridge, Potter County, TX)," *ASCE Journal of Bridge Engineering* (in progress).

Kijewski-Correa, T., J. Gong, A. Kennedy, J. A. Womble, S. Cai, J. Cleary, T. Dao, F. Leite, D. Liang, K. Peterman, C. Sun, A. Taflanidis and R. L. Wood. (in progress). "**Coordinated Structural Damage Investigations for Hurricanes Harvey and Irma**." *Natural Hazards Review*. (in progress).

Presentations in Progress

Roueche, D.B. Roueche, Pinelli, Pei, Haan, Rasouli, Maravej, Zisis, Refan, Kijewski-Correa, Womble, Cai, Cleary, Dao, Liang, Peterman, Sun, Wood, Lombardo, Krupar, Smith, Prevatt, Gurley, Paz (2019). **Post-Hurricane Data Collection and Integration for Data-Driven Physical Modeling: Case Study on the Impacts of Building Codes on Wind-Induced Residential Building Damage following Hurricanes Harvey and Irma in 2017**. ASCE Structures Congress, Orlando, FL.

Womble, J.A., R.L. Wood, M.E. Mohammadi, P.J. Hughes (2019). **Three-Dimensional Damage Scene Captures for Hurricane Harvey Forensics Investigations**, ASCE Structures Congress, Orlando, FL.

Kijewski-Correa, T., J. Gong, A. Kennedy, J. A. Womble, S. Cai, J. Cleary, T. Dao, F. Leite, D. Liang, K. Peterman, C. Sun, A. Taflanidis and R. L. Wood. (2018). "**Performance of Low-Rise Construction Under Wind and Coastal Hazards During the Landfall of Hurricane Harvey**." ASCE Forensic Engineering Congress, Austin, TX.

Womble, J.A., R.L. Wood, C.I. Wittich (2019). Panel Session: **"Optimizing RAPID Damage Investigations with 3D Scene Captures,"** National Tornado Summit, Oklahoma Department of Insurance, Oklahoma City, March 2019.

Book Chapters

ASCE/SEI/AMS/ANSI Standard for Tornado Wind Speed Estimation (chapters on: General Provisions and Remote Sensing), public consensus standard targeted for 2019 publication (in progress).

Womble, J.A., and T.P. Marshall (in progress). "Wind Damage" invited chapter for ***The Handbook of Non-Synoptic Wind Storm Hazards***, Oxford University Press (OUP) Handbooks program in Physical Sciences (in progress)

Book Chapters: ***Wind Issues in the Design of Buildings***, ASCE/SEI Committee on Structural Wind Engineering, ASCE Press (2012). Authored sections on "Damage to Single-Family Homes" and "Internal Pressure Effects".

Publications and Presentations

1. Hughes, P.J., J.A. Womble, R.L. Wood, M.E. Mohammadi, R.C. Johnston, Y. Liao (2018). **"Forensic wind analysis with 3D data capture,"** 5th American Association for Wind Engineering Workshop, Miami, FL, August 12-14, 2018 (presentation).
2. Johnston, R.C., J.A. Womble, P.J. Hughes, G.A. Kopp (2018). **"In Search of Missing Tornadoes,"** 5th American Association for Wind Engineering Workshop, Miami, FL, August 12-14, 2018 (presentation).
3. Y. Liao, R.L. Wood, M.E. Mohammadi, P.J. Hughes, J.A. Womble (2018). **"Investigation of rapid remote sensing techniques for forensic wind analyses,"** 5th American Association for Wind Engineering Workshop, Miami, FL, August 12-14, 2018 (presentation).
4. Womble, J.A., R.L. Wood, P.J. Hughes, M.E. Mohammadi (2018). "**Preserving the Evidence (3D Damage Scene Capture for Detailed Structural Forensics)**," Natural Hazards Center Researchers Meeting, July 11-12, 2018, Broomfield CO (invited presentation).
5. Martindale, G.P., M.E. Mohammadi, R.L. Wood, C.E. Wittich, J.A. Womble (2018). **Damage Characterization for Extreme Impact and Fire Loads to Reinforced-Concrete Highway Bridges.** ASCE Engineering Mechanics Institute, Boston, Massachusetts.
6. Womble, J. A. (2018). **Remote Sensing for the ASCE Tornado Wind Speed Estimation Standard**. ASCE/SEI Structures Congress 2018, Fort Worth, Texas (presentation)
7. Womble, J.A. (2018). **Remote Sensing for Tornado Treefall**. Northern Tornado Workshop, Toronto, Ontario, Canada, April 5, 2018 (presentation)
8. Womble, J. A., Levitan, M.L., LaDue, J.G., Brown-Giammanco, T. (2018). "**Improving the EF Scale and Other Tornado Wind Speed Estimation Methods: Development of a New ASCE/ SEI/ AMS/ ANSI Standard**," National Tornado Summit, Oklahoma City, February 2018 (presentation).
9. Womble, J. A., Wood, R. L., Smith, D. A., & Mohammadi, M. E. (2017). **Reality Capture for Tornado Damage to Structures**. ASCE/SEI Structures Congress 2017, Denver, CO (paper and presentation)

10. Womble, J. A., Schultz, L. A., & Kingfield, D. (2017, February). **Eyes in the Sky: Detecting Tornadoes from Outer Space**. National Tornado Summit (2017), Oklahoma City, Oklahoma. (presentation)
11. Womble, J. A. & Wood, R. L. (2017, February). **Preserving the Evidence: Multi-Platform 3D Reality Captures for Tornado Damage**. National Tornado Summit (2017), Oklahoma City, Oklahoma. (presentation)
12. Leitch, K. R., Butler, E., Howell, N., & Womble, J. A. (2017). **The Journey to Initial Accreditation of a Civil Engineering Program.** 2017 ASEE Annual Conference & Exposition. (paper)
13. Womble, J. A., Leitch, K. R., & Patriani-Cardoso, V. (2017). **Photogrammetry for Rapid, Low-Cost Tornado Damage Assessment and Wind Load Estimation**. Cornette Library Faculty Research Poster Session, Canyon, Texas. (poster presentation)
14. LaDue, J. G., Levitan, M. L., Karstens, C., Lombardo, F. T., MacAloney, B. W., T.M. Brown-Giammanco, W.L. Coulbourne, J.A. Womble, J.P. Camp (2017). **Progress of the ASCE Wind Speed Estimation Standards Committee**. American Meteorological Society Annual Conference, Seattle, Washington. (poster presentation)
15. Womble, J. A., Leitch, K. R., & Patriani-Cardoso, V. (2017). **Photogrammetry for Detailed, Low-Cost Tornado Damage Assessment and Wind Load Estimation**. ASCE/SEI Structures Congress 2017, Denver, Colorado. (presentation)
16. Womble, J. A., Levitan, M. L., LaDue, J. G., Coulbourne, B., Kopp, G., Frank Lombardo (Univ. Illinois), Joshua Wurman (Center for Severe Weather Research) (2017, April). **Panel Discussion: New ASCE/SEI Standard for Estimation of Tornado Wind Speed**s. ASCE/SEI Structures Congress 2017, Denver, Colorado. (presentation)
17. Mohammadi, M. E., Wood, R. L., Womble, J. A., Smith, D. A., & Louden, E. I. (2017, May). **Tornado Damage Preservation via 3D Reality Capture**. 13th Americas Conference on Wind Engineering, Gainesville, Florida (presentation)
18. Womble, J. A., Wood, R. L., Mohammadi, M. E., Eguchi, R. T., & Ghosh, S. (2017). **Recent Advances in Remote-Sensing Assessments of Wind Damage**. 13th Americas Conf. on Wind Engineering, Gainesville, FL.
19. Womble, J. A., Leitch, K. R., & Patriani-Cardoso, V. (2017). **Photogrammetry for Rapid and Low-Cost Wind Damage Documentation**. 13th Americas Conference on Wind Engineering, Gainesville, FL (poster presentation)
20. Womble, J. A. & Patriani-Cardoso, V. (2017). **Remote Sensing Image Feature Extraction for Automated Wind Damage Assessment**. 13th Americas Conference on Wind Engineering, Gainesville, FL (poster presentation)
21. Womble, J. A. & Patriani-Cardoso, V. (2016). **Remote Sensing of Tornado Damage to Structures (A New Research Emphasis at WTAMU).** Cornette Library Faculty Research Poster Session, Canyon, Texas. (poster presentation)
22. LaDue, J. G. & Womble, J. A. (2016). **Advances in Understanding Winds in Tornadoes, Here and Abroad.** National Tornado Summit, Oklahoma City, Oklahoma. (presentation)
23. Womble, J. A., Wood, R. L., Eguchi, R. T., Ghosh, S., & Mohammadi, M. E. (2016). **Current Methods and Future Advances for Rapid, Remote-Sensing-Based Wind Damage Assessment**. 5th International Natural Disaster Mitigation Specialty Conference; Canadian Society for Civil Engineering (NDM-506), London, Ontario, Canada: Canadian Society for Civil Engineering, 1-11. (paper and presentation)
24. Womble, J. A., Wood, R. L., Louden, E. I., Mohammadi, M. E., Smith, D. A., Kenneth R. Leitch (2016). **Multi-Platform Tornado Damage Scene Preservation.** 5th International Natural Disaster Mitigation Specialty Conference; Canadian Society for Civil Engineering (NDM-504), London, Ontario, Canada: Canadian Society for Civil Engineering. (paper and presentation)
25. Womble, J. A., LaDue, J. G., Levitan, M. L., Brown-Giammanco, T. M., Kopp, G., Frank T. Lombardo (2016). **Development of the ASCE/SEI Standard for the Estimation of Tornado Wind Speeds**. 5th International Natural Disaster Mitigation Specialty Conference; Canadian Society for Civil Engineering (NDM-505), London, Ontario, Canada: Canadian Society for Civil Engineering, (presentation)
26. Womble, J. A., Wood, R. L. , Smith, D. A. , Louden, E. I. , Mohammadi, M. E., K.R. Leitch (2016). **Reality Capture for Tornado Damage to Structures.** J. of Structural Engineers Assoc. of Texas (June 2016)
27. Brown, T.M., D. Liang, J.A. Womble (2012), "**Predicting Ground-Based Damage States from Remote-Sensing Imagery,**" *Journal of Wind and Structures*, 15(5), September 2012, pp 369-383 (publication).
28. "**Automation in Windstorm Damage Assessment**," K.C. Mehta and J.A. Womble, ASCE Structures/SEI Congress, Las Vegas, NV, April 14, 2011 (presentation).
29. "**The Future of the EF Scale**," F.T. Lombardo, T.M. Brown, J.A. Womble, J.G. LaDue, American Assoc. for Wind Engineering Workshop, Marco Island, FL, August 2010 (publication and presentation).
30. "**Wind or Water – A Guide for Determining the Cause of Tropical Cyclone Damage**," B. Coulbourne, J. A. Womble, White Paper for ASCE Technical Council on Wind Engineering, June 2010 (publication).

31. "**Role of Remote Sensing in Refining the Enhanced Fujita Scale**," J.A. Womble, Presentation to EF Scale Stakeholders Meeting, March 2-3, 2010, Norman, OK, (presentation).
32. INVITED ADDRESS - Alumni Career Highlights, 40th Anniversary Conference, Texas Tech University Wind Science and Engineering Research Center, May 2010 (presentation).
33. "**Imagery-Based Wind Damage Functions**," J.A. Womble, D.A. Smith, J.L. Schroeder, D. Liang, T.M. Brown, and K.C. Mehta, Proceedings of the ASCE/SEI Structures Congress, Orlando, FL, May 2010, p. 1099-1108 (publication and presentation).
34. **INVITED PLENARY ADDRESS "Forensic Wind Engineering: Tools and Myths**," J.A. Womble, American Society of Civil Engineers 5th Congress on Forensic Engineering, Washington, DC, November 12, 2009 (presentation).
35. "**The Enhanced Fujita Scale: For Use beyond Tornadoes**?" J.A. Womble, D.A. Smith, K.C. Mehta, and J.R. McDonald, Proceedings, 5th Congress on Forensic Engineering, Washington, DC, November 10-15, 2009, pp. 699-708 (publication and presentation).
36. "The Enhanced Fujita Scale: Development and Implementation," J.R. McDonald, K.C. Mehta, D.A. Smith, and J.A. Womble, Proceedings, 5th Congress on Forensic Engineering, Washington, DC, November 10-15, 2009, pp. 719-728 (publication and presentation).
37. **"Image-Based Wind Damage Functions,"** J.A. Womble, D.A. Smith, J.L. Schroeder, D. Liang, T.M. Brown, and K.C. Mehta, 7th International Workshop on Remote Sensing for Disaster Management Applications, University of Texas, Austin, TX, October 22-23, 2009 (publication and presentation).
38. **"Development of a Statistical Relationship between Ground-Based and Remotely-Sensed Damage in Windstorms,"** T.M. Brown, D. Liang, J.A. Womble, 7th International Workshop on Remote Sensing for Disaster Management Applications, University of Texas, Austin, TX, October 22-23, 2009 (presentation, co-author).
39. "**Intended Use and Potential Misuse of the EF Scale**" J.A. Womble and D.A. Smith, K.C. Mehta, and J.R. McDonald ,11th Americas Conference on Wind Engineering, San Juan, Puerto Rico, June 22-26, 2009 (publication and presentation).
40. "**MythBusters for Wind versus Water Damage**" J.A. Womble and D.A. Smith, 11th Americas Conference on Wind Engineering, San Juan, Puerto Rico, June 22-26, 2009 (publication and presentation).
41. "**Bringing Wind Research to Practice," Expert Panel Discussion**, 11th Americas Conference on Wind Engineering, San Juan, PR, June 2009, convened by Applied Technology Council (Invited Panelist).
42. "**Development of a Statistical Relationship between Ground-Based and Remotely-Sensed Damage in Windstorms**," T.M. Brown, D. Liang, J.A. Womble, 11th Americas Conference on Wind Engineering, San Juan, Puerto Rico, June 22-26, 2009.
43. "**Common Misconceptions in Determining Wind/Water Damage Causation**," J.A. Womble and D.A. Smith, ASCE/SEI Structures Congress, Austin, TX, April 30-May 2, 2009, pp. 1307-1316 (publication and presentation).
44. "**Aerial and Satellite Imagery for Hurricane Damage Assessment**," J.A. Womble, Digital Hurricane Symposium: Constructing a Digital Hurricane, Digital Hurricane Consortium, Louisiana State University, Baton Rouge, LA, January 5-6, 2009 (presentation).
45. **Remote Sensing for Resilient Multi-Hazard Disaster Response, Volume V: Integration of Remote Sensing Imagery and VIEWS Field Data for Post-Hurricane Charley Building Damage Assessment**, J.A. Womble, K. Mehta, B.J. Adams, Report MCEER-08-0024, Multidisciplinary Center for Extreme Event Research, University of Buffalo.
46. "**February 2008 Super Tuesday Tornado Outbreak Damage Assessment**," A. E. Reynolds, R. Krupar, T. Brown, A. McMillan, B.J. Adams, D. Liang, and J.A. Womble, 6th International Workshop on Remote Sensing for Disaster Management Applications, Pavia, Italy, September 11-12, 2008 (publication).
47. "**Remote Sensing of Hurricane Damage – Part 1: Toward Automated Damage Assessment**," J.A. Womble, K.C. Mehta, and B.J. Adams, American Association for Wind Engineering 2008 Workshop, Vail, CO, Aug. 21-22, 2008 (publication and presentation).
48. "**Remote Sensing of Hurricane Damage – Part 2: Identification of Neighborhood Wind/Water Damage Patterns**," J.A. Womble, D.A. Smith, and B.J. Adams, American Association for Wind Engineering 2008 Workshop, Vail, CO, Aug. 21-22, 2008 (publication and presentation).
49. "**Defending the Wind – Part 1: Constructing Probable Wind and Water Damage Timelines,"** D.A. Smith, J.A. Womble, and F.T. Lombardo, American Association for Wind Engineering 2008 Workshop, Vail, CO, Aug. 21-22, 2008 (publication and presentation).
50. "**Defending the Wind – Part 2: MythBusters for the Wind/Water Debate,"** J.A. Womble and D.A. Smith, American Association for Wind Engineering 2008 Workshop, Vail, CO, Aug. 21-22, 2008 (publication and presentation).

51. "**February 2008 'Super Tuesday' Tornado Outbreak Damage Assessment**," A. E. Reynolds, T. Brown, A. McMillan, D. Liang, and J.A. Womble, Natural Hazards Workshop, Univ. of Colorado, Boulder, July 2008 (poster presentation).
52. "**Development of a Windstorm Damage Assessment System with Hyperspectral Imaging Technology**," D. Liang, K.C. Mehta, B. Nutter, and J.A. Womble, 4th International Conference on Advances in Wind and Structures AWAS 2008, May 29-31, Jeju, Korea.
53. Mehta, K.C., Womble, J. Arn, Liang, D. (2007). **"Use of Satellite Images to Document Windstorm Damage: A Future Trend?"** *Journal of Wind & Engineering*, v5, No.1, pp. 1-7.
54. "**Use of Satellite Images to Document Windstorm Damage: A Future Trend?" Mehta**, K.C., Womble, J. A., Liang, D., 4th National Conference on Wind Engineering, Indian Society for Wind Engineering, Chennai, India, Oct. 31-Nov. 1, 2007 (publication and presentation).
55. "**Use of Emerging Remote-Sensing Technologies to Determine Neighborhood Wind/Water Damage Patterns**," Womble, J. A., Adams, Beverley J., and Smith, Douglas A., ASCE/SEI Structures Congress, Vancouver, BC, April 24-26, 2008 (publication and presentation).
56. "**Remote Sensing and Field Reconnaissance for Rapid Damage Detection in Hurricane Katrina**," Womble, J. Arn, Adams, Beverley J., Ghosh, Shubharoop, and Friedland, Carol J., ASCE/SEI Structures Congress, Vancouver, BC, April 24-26, 2008 (publication and presentation).
57. "**Constructing Probable Wind and Water Damage Sequences from Timelines - the Technical Perspective**," Smith, Douglas A., Womble, J. Arn, and Lombardo, Franklin T., ASCE/SEI Structures Congress, Vancouver, BC, April 24-26, 2008 (publication and presentation).
58. "**Advanced technology for rapid tornado damage assessment following the 'Super Tuesday' tornado outbreak of February 2008**," McMillan, A., B. J. Adams, A. Reynolds, T. Brown, D. Liang, and J. A. Womble, Special Report MCEER-08-SP01 (2008), available from http://mceer.buffalo.edu/research/Reconnaissance/tornado02-08/08-SP01.pdf.
59. "**Remote-Sensing Assessment of Wind Damage**," Womble, J. Arn, Adams, Beverley J., and Mehta, Kishor C., Fifth International Workshop on Remote-Sensing for Disaster Response, Washington, DC, September 2007 (publication and presentation).
60. "**Remote Sensing of Windstorm Damage**," Invited guest lecture to Texas Tech University graduate class: Wind Damage Assessment, August 2007.
61. "**Wind or Water Damage? (Meeting the Post-Katrina Legal Challenge),**" Womble, J. Arn, Smith, Douglas A., and Lombardo, Franklin T., Poster presentation for 32nd Natural Hazards Research & Applications Workshop, Natural Hazards Center, University of Colorado-Boulder, July 2007.
62. "**Automated Building Damage Assessment Using Remote-Sensing Imagery**," Womble, J.A, Adams, B.J., and Mehta, K.C., Proc. of the ASCE Structures Congress, May 16-19, 2007, Long Beach, CA
63. "**Future Opportunities for Remote Sensing of Wind Damage**," invited presentation to TTU Wind Science and Engineering Brown-Bag Lecture Series, October 25, 2006.
64. "**Deployment of Remote Sensing Technology for Multi-Hazard Post-Katrina Damage Assessment**," Ghosh, Shubharoop, Beverley J. Adams, J. Arn Womble, Carol Friedland, and Ronald T. Eguchi, 2nd Int. Conf. on Urban Disaster Reduction, Taipei, Taiwan, Nov. 27-29, 2007.
65. "**Deployment of Remote Sensing Technology for Multi-hazard Post-Katrina Damage Assessment within a Spatially-Tiered Reconnaissance Framework**," Adams. Beverley J., Womble, J. Arn, Ghosh, Shubharoop, and Friedland, Carol, Fourth International Workshop on Remote-Sensing for Disaster Response, Cambridge, UK, September 2006.
66. "**Eyes in the Sky: Remote Sensing of Hurricane Damage**," Womble, J. Arn, Mehta, Kishor C., and Adams, Beverley J., feature article in The Wind Engineer, Newsletter of the American Association for Wind Engineering, June 2006, www.aawe.org.
67. "**Remote Sensing of Windstorm Damage**," Invited gust lecture to Texas Tech University graduate class: Wind Damage Assessment, August 2006.
68. "**Challenging the Odds of Hurricane Damage Data Collection: A Detailed Account from a First Responder**," Adams, B.J, & Womble, J.A., feature in Imaging Notes, Vol. 21, No. 2, Summer 2006.
69. **Hurricane Katrina – Advanced Damage Detection: Integrating Remote-Sensing Images with VIEWS Field Reconnaissance**, Womble, J.A., Ghosh, S., Friedland, C.J., and Adams, B.J., Report of the Multidisciplinary Center for Earthquake Engineering Research, University at Buffalo (primary author), June 2006.
70. "**Rapid Damage Mapping for Hurricane Katrina: Remote Sensing for Insurance and Emergency Management**,"

Poster presentation for 31st Annual Natural Hazards Research and Applications Workshop, Natural Hazards Center. University of Colorado-Boulder, July 2006.

71. "**Commercial Applications of Wind-Tunnel Modeling**," invited presentation to TTU Wind Science and Engineering Brown-Bag Lecture Series, May 3, 2006.
72. "**Collection of Remote Sensing Imagery and Building Damage Information in the Aftermath of Hurricane Charley,**" with Beverley J. Adams and Kishor C. Mehta, Final Report for SGER Research Grant, for the National Science Foundation (April 2006).
73. **Remote Sensing: Correlating Satellite Images with In-field Observations for Advanced Damage Detection**, Ghosh, S., Adams, B.J., and Womble, J.A., Multidisciplinary Center for Earthquake Engineering Research, University at Buffalo, presentation and archived webcast, November 2005.
74. "**Use of Satellite Imageries for Windstorm Damage Documentation**," Mehta, K. C., and Womble, J.A, Sixth Asia-Pacific Conference on Wind Engineering, Korea, September 2005 (publication).
75. **Quick-Response Report #168: Collection of Satellite-referenced Building Damage Information in the Aftermath of Hurricane Charley**, Beverley J. Adams, Michael Z. Mio, J. Arn Womble, and Kishor C. Mehta, Natural Hazards Center, University of Colorado-Boulder, August 2005.
76. "**Remote Sensing of Windstorm Damage**," Invited gust lecture to Texas Tech University graduate class: Wind Damage Assessment, July 2005.
77. "**Windstorm Damage Surveys Using High-Resolution Satellite Images**," Poster presentation for 30th Annual Natural Hazards Research and Applications Workshop, Natural Hazards Center. Univ Colorado-Boulder, 2005.
78. "**Remote Sensing of Windstorm Damage to Buildings**," Visual media presentation for NSF-IGERT PI Meeting, Washington, D.C., May 2005.
79. "**Windstorm Damage Surveys Using High-Resolution Satellite Images**," Womble, J.A., Adams, B.J., and Mehta, K.C., Tenth Americas Conference on Wind Engineering, Baton Rouge, LA, May-June 2005 (publication and presentation).
80. "**Windstorm Damage Surveys Using High-Resolution Satellite Images**," Womble, J.A., Presentation to TTU Wind Science and Engineering IGERT Advisory Council, May 2005.
81. "**Some Engineering Lessons from the 2004 US Hurricane Season**," Letchford, C.W., Mehta, K.C., Womble, J.A., and Tanner, L.J., in Research Report on Wind Induced Disasters in 2004, Japan Assoc. of Wind Engineering, Tokyo Polytechnic University, Japan (2005).
82. "**Analysis and Statistical Characterization of Windstorm Damage Using Aerial Images**," Sampath, L.V., Womble, J.A., Nutter, B.S., and Mehta, K.C., American Mathematical Society Spring Central Section Meeting, Lubbock, TX, April 2005 (presentation).
83. "**Assessment of Windstorm Damage in the United States**," Womble, J. Arn, and Mehta, Kishor C., Second Intl. Workshop on Remote-Sensing for Disaster Response, Newport Beach, CA, 2004 (invited paper / presentation).
84. "**Wind Effects on Structures**," Invited presentation to ImageCat, Inc., Long Beach, CA, October 2004.
85. "**Streamlining Post-Disaster Data Collection and Damage Assessment, Using VIEWS (Visualizing Impacts of Earthquakes With Satellites) and VRS (Virtual Reconnaissance System),"** Adams, B.J., Huyck, C.K., Mio, M.Z., Cho, S., Eguchi, R.T., Womble, J. A., and Mehta, K.C., Second International Workshop on Remote-Sensing for Disaster Response, Newport Beach, California, October 2004 (invited paper and presentation).
86. **Field Report: Collection of Satellite–Referenced Building Damage Information in the Aftermath of Hurricane Charley**, Adams, B.J., Womble, J.A., Mio, M.Z., Turner, J.B., Mehta, K.C., and Ghosh, S., MCEER Response, 2004.
87. "**Commercial Applications of Wind-Tunnel Modeling**," Womble, J. Arn, Lecture presented to Civil Engineering Graduate Seminar, Texas Tech University, February 2002.
88. "**Miller Park Crane Collapse (Wind Tunnel Investigations),"** Womble, J. Arn, Invited presentation to Civil Engineering Graduate Seminar, Texas Tech University, February 2001.
89. **"Use of Boundary-Layer Wind Tunnels for Engineering Design,"** Womble, J. Arn, Invited presentation to Texas Tech Univ. Wind Engineering Program 30th Anniversary Conf., May 2000.
90. **"Wind-Tunnel Testing (Designs Beyond the Wind Code),"** Womble, J. Arn, Lecture presented to Texas Tech University Short Course Engineering for Extreme Winds, February 2000.
91. **"Wind-Tunnel Testing (Designs Beyond the Wind Code),"** Womble, J. Arn, Lecture presented to Texas Tech University Short Course Engineering for Extreme Winds, February 1999.
92. **"Wind-Tunnel Testing (Designs Beyond the Wind Code),"** Womble, J. Arn, Lecture presented to Texas Tech University Short Course Engineering for Extreme Winds, February 1998.
93. **"Internal Wind-Pressure Contributions to Building Loads,"** Womble, J. Arn, Beste, F., and Cermak, Jack E.,

Proc. of First Structural Engineers World Congress, San Francisco, 1998 (publication and presentation).

94. **"Wind-Induced Internal Pressures for a Full-Scale and Model Building,"** Womble, J. A., Cermak, J.E., Mehta, K.C., Proc. 8th U.S. Natl. Conf. on Wind Engineering, Johns Hopkins Univ. June 1997.
95. **"Internal Wind-Pressure Comparisons for a Full-Scale and Model Building,"** Womble, J. Arn, Cermak, Jack E., and Mehta, Kishor C., ASCE Structures Congress, Portland, Oregon, April 1997.
96. **"Windstorm Damage to Structures,"** Womble, J. Arn, Invited presentation to graduate Wind Engineering class, Colorado State University, November 1996.
97. **"Wind Effects on Structures,"** Womble, J. Arn, Invited presentation to graduate engineering design class, University of Texas-Arlington, April 1996.
98. **"Internal Wind Pressures in a Full- and Small-Scale Building,"** Womble, James A., Yeatts, Byron B., Cermak, Jack E., and Mehta, Kishor C., Proceedings of the Ninth International Conference on Wind Engineering, New Delhi, India, January 1995 (publication).
99. **"Internal Pressures for Low-Rise Buildings: Comparison of Full-Scale and Model Data,"** Yeatts, B.B., Womble, J.A., Cermak, J.E., and Mehta, K.C., 2nd UK Conference on Wind Engineering, University of Warwick, 1994.
100. **Corrector Magnets: Combined Analysis of Collider Order-Wind Dipole Structures (Finite Element Analysis of Magnet Support Structures),** Womble, James Arn, Report #AMC-6090001, Superconducting SuperCollider Laboratory, Dallas, Texas, June 1992.

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- Kijewski-Correa, Tracy; Gong, Jie; Womble, Arn; Kennedy, Andrew; Cai, Steve C.S.; Cleary, John; Dao, Thang; Leite, Fernanda; Liang, Daan; Peterman, Kara; Starek, Michael; Sun, Chao; Taflanidis, Alexandros; Wood, Richard, (2017), "**Hurricane Harvey (Texas) Supplement -- Collaborative Research: Geotechnical Extreme Events Reconnaissance (GEER) Association: Turning Disaster into Knowledge**" , DesignSafe-CI [publisher], Dataset, doi:10.17603/DS2Q38J.
- Womble, Arn; Smith, Douglas; Wood, Richard; Mohammadi, Mohammad Ebrahim, (2018), "**RAPID: Tornado Damage to Steel Structures, Pampa, TX (November 2015),"** DesignSafe-CI [publisher], Dataset, doi:10.17603/DS2HX23
- Womble, J. Arn; DeOtte, R.D., Wood, Richard (2018), "**Tornado Damage to Steel Structures Along the Texas Coast from Hurricane Harvey**" DesignSafe-CI [publisher], (*in progress*).