

## KATHLEEN GILLIAM

Research Associate, Wind Engineering Research Center  
Instructor, Department of Mathematics and Statistics  
Member of the Graduate Faculty  
Texas Tech University

Dr. Gilliam has an active research program in modeling and analysis of random time series and fields. Much of her research relates to modeling of coherent phenomena in time series and fields through using wavelets and modern signal processing techniques. As a statistician, she brings an expertise in parametric and non-parametric analysis to the study of wind fields and principle component analysis of pressure fields.

### EDUCATION

Ph.D. in Mathematics, Texas Tech University	1998
M.S. in Mathematics, Texas Tech University	1992
Master of Education, Wayland Baptist University	1990

### PROFESSIONAL EXPERIENCE

Research Associate, Wind Engineering Research Center Instructor, Department of Mathematics and Statistics Texas Tech University	June 1998-present
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Research Assistant Wind Engineering Research Center, Texas Tech University	1996-May 1998
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Teaching Assistant Mathematics Department, Texas Tech University	1990-1995
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### PUBLICATIONS (Since 2000):

1. He, H., Ruan, D., Mehta, K., Gilliam, X., Wu, F. "Nonparametric independent component analysis for detecting pressure fluctuation induced by roof corner vortex" Accepted for publication in *J. Wind engineering and Industrial Aerodynamics*.
2. Gilliam, X., Basu, S. (2006). "Identifying intermittent structures in the stable boundary layer flows," *Proceedings of the 17<sup>th</sup> Symposium on boundary Layers and Turbulence*, May 22-26, San Diego.
3. Gilliam, X., Smith, D. (2005). "A physical interpretation of the dominant POD mode for full-scale pressure fields," *Proceeding of the 10<sup>th</sup> Americas Conference on Wind Engineering*, Louisiana, May 30-June 2.
4. Gilliam, X., Nagle, S., Smith, D. (2005). "The effects of La Nina and El Nino on Tornado outbreaks," *Proceeding of the 10<sup>th</sup> Americas Conference on Wind Engineering*, Louisiana, May 30-June 2.
5. Long, F., Smith, D., Zhu, H. and Gilliam, X. (2005). "Uncertainties associated with the full-scale to wind tunnel pressure coefficient extrapolation," *Proceeding of the 10<sup>th</sup> Americas Conference on Wind Engineering*, Louisiana, May 30-June 2.

6. Gilliam, X., Dunyak, J., Smith, D. and Wu, F. (2004). "Using projection pursuit and proper orthogonal decomposition to identify independent flow mechanisms," *J. Wind engineering and Industrial Aerodynamics*, 92, 53-69.
7. Gilliam, X., Dunyak, J., Smith, D. (2003). "Characterizing coherent phenomenon in atmospheric boundary layer using wavelet," *Proceedings of the Eleventh International Conference on Wind Engineering*, Lubbock, TX, June 2-5, 2003-2044.
8. Doggett, A. Gilliam, X., Manross, K. Gamel, M. (2002). "Visualization of radar data in three-dimensions," *The processing of the 21<sup>st</sup> Conference on Severe Local Storms*, San Antonio, TX, Aug. 12-16.
9. Dunyak, J., Gilliam, X., Doggett, A. (2001). "Locally stationary spectral modeling of wind fields," *Proceeding of the Americas Conference on Wind Engineering*, Clemson, June 3-6, 2001.
10. Gilliam, X., Dunyak, J., Doggett A., and Smith D. (2000). "Coherent structure detection using wavelet analysis in long time-series," *J. Wind engineering and Industrial Aerodynamics*, 88, 183-195.
11. Dunyak, J., Doggett, A., Gilliam, X. and Smith, D. (2000). "Characterizing turbulence in non-stationary winds," *Proceeding of the 14th Symposium on Boundary Layer and Turbulence*, Aug. 7-11, 2000, Aspen, Colorado, 38-41.
12. Gilliam, X., Dunyak, J., Wu, F. and Smith, D. (2000). "Locally stationary modeling of full-scale pressure fields," *Proceeding of the 8th ASCE Special Conference on Probabilistic Mechanics and Structural Reliability*, July 24-26, University of Notre Dame, South Bend, Indiana.
13. Dunyak, J., Gilliam, X., Smith, D. and Doggett, A. (2000). "Parametric spectral estimation for full-scale wind time-series," *Proceeding of the 8th ASCE Special Conference on Probabilistic Mechanics and Structural Reliability*, July 24-26, University of Notre Dame, South Bend, Indiana.
14. Fagan, R., Dunyak, J., Gilliam, X., and Smith, D. (2000). "System identification of wind loads on low-rise buildings," *Proceeding of the 14th Engineering Mechanics Conference*, ASCE, May 21-24, 2000, Austin Texas.

## FUNDING

1. "Characterization and simulation of turbulence in stably stratified atmospheric boundary layers," Texas Higher Education Coordinating Board Advanced Research Program, 2006, (PI: S. Basu, Co-PI: X. Gilliam), Amount: \$86,000.
2. "Windstorm Mitigation," National Institute of Standards and Technology, 1998-2005, (PD: K. Mehta, Co-PIs: X. Gilliam). Amount: \$301,550 (4% of \$7,538,750).
3. "IGERT: Multidisciplinary Program in Wind Science and Engineering", NSF, 2002- 2007, (PD: Mehta, Co-PIs: X. Gilliam). Amount: \$2,258,557.
4. "Machine Learning: A Multidisciplinary Graduate Computer Engineering Program." NSF, 2001-2004, (PI: S. Mitra, Co-PI: L. Pyeatt, X. Gilliam). Amount: \$493,762.
5. "Characterizing turbulence during extreme wind events," Texas Higher Education Coordinating Board Advanced Research Program, 2000, (PI: R. Peterson, Co-PI: X. Gilliam), Amount: \$68,757.