



TEXAS TECH UNIVERSITY

National Wind Institute™

Friday, September 22nd

3:30 p.m.

Experimental Sciences Building, Rm. 120

Reception to follow.

The McDonald-Mehta Lecture Series Presents:

Fatality and Damage Predictions from Potential Tornado Outbreaks

Kevin M. Simmons, Ph.D.

Corrigan Chair and Professor of Economics
Austin College at Sherman, Texas

ABSTRACT:

Fatalities from violent tornadoes have decreased due to improvements in warning technology and delivery. Yet, high fatalities still occur, as so tragically occurred during 2011 and subsequently in Moore, OK in 2013. A project was pursued with the intent of creating a probabilistic estimate of potential fatalities and damage from an approaching storm.

The project combines the efforts of a university economist and scientists from National Severe Storms Laboratory, Storm Prediction Center and the National Center for Environmental Information with additional input from the Federal Emergency Management Agency. Fatality and damage models are created that are used to estimate the potential level of fatalities and damage from a specified tornado with population and socio-demographic data known to affect fatalities and damage. These models are combined and processed through a Monte Carlo simulation which uses 10,000 simulations to create a probability distribution of exposed population, fatalities and damage that may be expected.

This project undertaken during sabbatical leave outlines a path for future research for how vulnerabilities affect fatalities. Results from the model indicate that much is left to examine on the complex interplay between societal vulnerabilities, timing, warnings and meteorological factors.

BIOGRAPHY:

Dr. Simmons is known internationally for his work on the economics of natural hazards. His research has been highlighted by the *New York Times*, *CBS Evening News*, *Wall Street Journal*, *Fox Business*, *Bloomberg TV*, *Christian Science Monitor* and *USA Today* among others. He has published more than 70 articles which are widely cited and have appeared in academic journals from a variety of disciplines including engineering, sociology, law, meteorology as well as economics. Dr. Simmons books, *Economic and Societal Impacts of Tornadoes (2011)* and *Deadly Season: Analyzing the 2011 Tornado Outbreaks (2012)* are published by the American Meteorological Society.

Over the last 20 years he has presented papers at academic conferences in the US as well as in 12 different countries. He is the Social and Behavioral Science Editor for *Natural Hazards Review*, ASCE and Senior Research Fellow with the National Institute for Risk and Resilience at the University of Oklahoma. He serves on ALLIANCE, a research consortium for extreme environmental events and the National Advisory Committee for the Windstorm Impact Reduction Program.

Dr. Simmons earned his Ph.D. in Economics from Texas Tech University where he developed a research interest in the economics of natural hazards. Currently, he is a Professor of Economics at Austin College where he holds the endowed Clara R. and Leo F. Corrigan Chair of Economics.