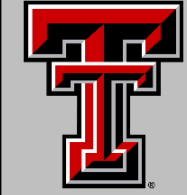




Wind Hazard and Infrastructure Performance

IUCRC: WHIP TTU Resources and Capabilities



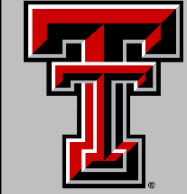


Wind Hazard and Infrastructure Performance

A Multidisciplinary Team of Faculty at TTU

- **Atmospheric Science:** Brian Ancell, John Schroeder, Chris Weiss
- **Civil Engineering:** Xinzhong Chen, Ting Lin, Kishor Mehta, Doug Smith, Delong Zuo
- **Mechanical Engineering:** Darryl James, James Yang
- **Computer Science:** Yong Chen
- **Economics:** Brad Ewing





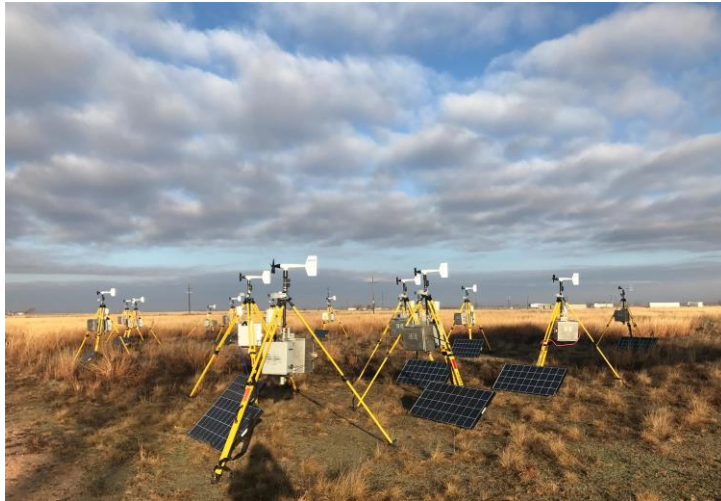
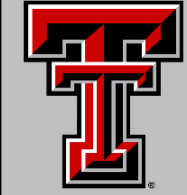
Wind Hazard and Infrastructure Performance



A Unique Ph.D. Program

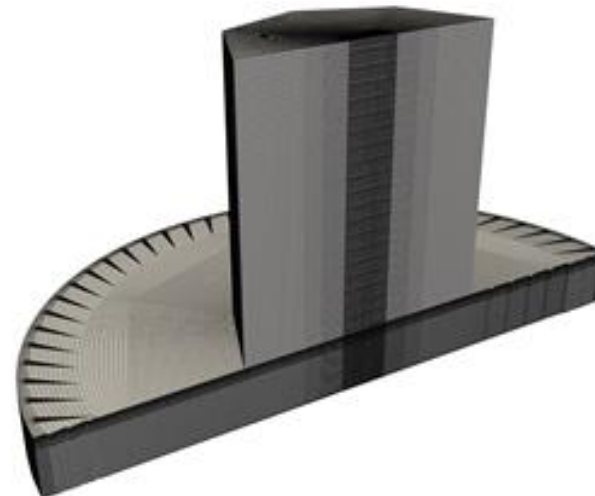
- Truly multidisciplinary
- Focus areas include:
 - wind engineering and hazard mitigation
 - wind measurement and prediction
 - energy systems
- One of a kind in the U.S.
- Established in 2007; 39 graduates to date

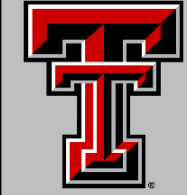




Research approaches

- Field measurement
- Laboratory experiments
- Numerical simulations
- Analytical formulations



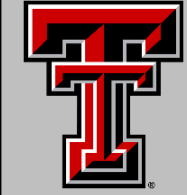


Wind Hazard and Infrastructure Performance

Representative Research Topics

- Wind field characterization
- Wind loading on low-rise buildings and other non-flexible structures
- Wind-induced vibration of flexible structures (buildings, towers, wind turbines etc.)
- Performance of structures in windstorms
- Effect of climate change on civil infrastructure
- Economic impact of wind hazards





Wind Hazard and Infrastructure Performance

Representative Research Projects

- “4-D Measurement and Modeling of Engineering-Relevant Windstorm Characteristics.” Sponsor: NIST; PI: John Schroeder
- “Assessing Probabilistic Extreme and Fatigue Responses of Wind-Excited Structures: Integration of both Uncertainty and Directionality with a System Perspective.” Sponsor: NSF; PI: Xinzhong Chen
- “Innovative Financing Strategies for Small Businesses in Hurricane Prone Regions.” Sponsor: Department of Commerce; PI: Bradley Ewing
- “Evaluating the Effectiveness of Vibration-Mitigation Devices for Structural Supports of Signs, Luminaires, and Traffic Signals.” Sponsor: NCHRP, PI: Delong Zuo

