



TEXAS TECH UNIVERSITY
National Wind Institute™

All Things Wind at Texas Tech

November and December, 2017 Newsletter

Letter from the Past Interim Director



By this time, you probably have heard about my resignation as the interim director. This is my last time writing for NWI's newsletter.

The past three and half years have been the most rewarding experience in my academic career. Together we have accomplished so much: facilities are maintained, labs are upgraded, safety is improved, and participation from faculty reaches new highs.

This position has provided me with the opportunity that I wouldn't have otherwise and for it I feel very grateful. The trust you placed in me and the friendship we formed will always be treasured in my heart. It is easy to get discouraged about the state of society as many of biggest problems seem intractable. I'm not quite so pessimistic. I believe that positive changes are possible and coming.

In the coming spring, I will transition back to my home department of Civil, Environment, and Construction Engineering. More time will be devoted to formulating new research initiatives, preparing

graduate classes, mentoring students, and establishing partnership with industry and international institutions. I will reach out to many of you for advice, support, and collaboration.

At the same time, I must admit that the process is often fatiguing, draining, and demanding, taking away time from family and my own research. Most importantly, I feel that NWI deserves stronger leadership that can help realizing its full potential. It's my hope that my resignation offers a fresh start and adds momentum to the search for its permanent director.

Furthermore, many of our staff don't confine themselves to supporting roles. They are independent thinkers, fearless entrepreneurs, and creative builders. Rather than waiting for instructions, they bring up new ideas and innovative solutions. We all know that success doesn't occur in a vacuum. Hard work and self-motivation are important factors, but the people we choose to surround ourselves have profound impacts on the way we think, act and feel on a day-to-day basis. We like to be with people who push us to become better, not people who distract us from our goals.

What else can I say? *We are lucky and NWI is a special place* My response has always been *how did you find her (or him) and convince them to work for NWI?* The foundation of NWI is the people: faculty, students, and staff. I'm very proud of our current staff many of whom are recruited during my tenure. They are at the top of their game in delivering outstanding technical, administrative, and academic functions across our operations. As director, I was often asked:

It's not surprising that in FY17 NWI was credited for generating \$1m in overhead return through 60 plus projects, more than 10% of what the entire university generated. Once again, it luminates a critical role that NWI plays in support of the TTU's research enterprise and its broad missions. Its focus on and success in interdisciplinary programs continue being recognized and emulated by others nationally and internationally.

O, wind, if winter comes, can spring be far behind?

Go Raiders!

-Daan Liang, Interim Director (2014-2017)

TTU Hosted Delegates from Mexico

Texas Tech University recently hosted a delegation from the **State of Tamaulipas**, Mexico. Just across the border from Laredo, the State of Tamaulipas is known for its manufacturing, agriculture, and trade industries. Currently, the state is one of the largest producers of wind energy in Mexico and will soon feature the largest wind park in Latin America. During their visit to TTU, the delegation toured TTU's National Wind Institute research facility, the College of Engineering, College of Agricultural Sciences and Natural Resources, the Quaker Agricultural Farm, and the International Cultural Center (Office of International Affairs). The intent of the visit was to cultivate a collaboration between TTU and the State of Tamaulipas to offer degree programs. The **Secretary of Education, Dr. Hector Salazar** signed a letter of intent during his visit with **TTU President Schovanec**.

-Article from office of international Affairs. The link for their newsletter is included below.

<http://www.depts.ttu.edu/international/newsletter/fall-2017.html>

TTU Vice President for Research Toured NWI Facilities at Reese

"Shortly after joining Texas Tech University as Vice President for Research, Dr. Joseph Heppert took time to visit the National Wind Institute's facilities at Reese Technology Center on the afternoon of November 1, 2017. During the 1.5-hour tour, he was briefed by Dr. Daan Liang, Interim Director of NWI and Jeff Livingston, Assistant Director of Operations, on many exciting programs and unique capabilities that NWI researchers have developed over the past two decades. At the beginning, Wes Burgett demonstrated West Texas Mesonet and commented on its positive impact on farming, ranching, and emergency response in rural regions of Texas, New Mexico, and Colorado. Then Dr. Brian Hirth showcased the state-of-the art observational platforms including Ka-band mobile

radars, X-band radar, and Sticknets for both wind energy and wind hazard applications. Dr. Heppert expressed a great deal of interest in Dr. Eric Bruning's field research in lightning as well as his upcoming exhibition at Texas Tech Museum (Pictured below from L-R Dr. Daan Liang, Dr. Joseph Heppert, and Dr. Eric Bruning). Existing and improved capabilities of VorTECH tornado simulator was described by Dr. Delong Zuo. In addition, several teaching labs were visited in Building 250, including field measurement and instrumentation lab under Dr. John Schroeder and power simulation lab under Dr. Stephen Bayne.



The highlight of this tour was a live demonstration from the debris impact cannon by Larry Tanner with a 2x4 projectile shot at 100mph onto a reinforced concrete panel. Dr. Heppert asked several questions about research, outreach and service activities supported by the Debris Impact Facility and complimented its life-saving mission. The tour was concluded with a quick drive-through of testing facilities located on NWI's 67-acre field site including DOE/SNL's SWIFT, 200m Met Tower, DOE's X-band Radar, GLEAMM's Solar Array, among others.

Additional personnel who assisted the tour include Tammy Pitzer, Joseph B. Dannemiller, Subrina Noureen and Colton Scott. The contribution by NWI faculty, staff, and students are greatly appreciated."

-Dr. Daan Liang

National Wind Institute Awarded \$1.46-Million Research Contract



One of 24 StickNets deployed to measure a hurricane's winds and characteristics.

Texas Tech University's [National Wind Institute](#) (NWI) has been awarded a four-year research contract from [Risk Management Solutions](#) (RMS), a catastrophe risk modeling company, worth \$1.46 million. The award is part of a larger project to quantify wind and storm surge damage following a hurricane for cases where the damage levels are catastrophic and there is minimal information remaining on which to base the claims.

-Congratulations on this prestigious award! Below is the link to the entire article.

<http://today.ttu.edu/posts/2017/12/nwi-research-contract>

One of Our Own Battles With Severe Aplastic Anemia



Dr. Anna Thomas, was diagnosed with Severe Aplastic Anemia in 2007. Dr. Thomas is an alumni of Texas Tech receiving three degrees from Tech, and is now the Research Assistant Professor, and Associate Managing Director for Texas Tech's National Wind Institute. Dr. Thomas underwent her first marrow transplant in 2008 and her second in 2015. Included is a video of Thomas sharing her story, including how Texas Tech supported her throughout the process, and why others should consider becoming part of the bone marrow registry.

<http://today.ttu.edu/posts/2017/11/anna-thoma>

-Information from Texas Tech Today.

NWI Hosted External Advisory Board



The National Wind Institute recently hosted its Annual External Advisory Board meeting on Thursday, November 2, 2017. EAB Members that were in attendance included: C.P. “Case” van Dam, David Minster, Tim Reinhold, Gregory Kopp, and Robert Myer. TTU administrators (Dr. Michael Galyean, Dr. Brent Lindquist, Dr. Patrick Hughes, Dr. Joseph Heppert and others) also welcomed the Board and participated in discussions regarding recommendations for improving the Institute. We look forward to sharing the EAB report with our constituents and stakeholders in the upcoming weeks.



-Dr. Anna Thomas

Recent Publications by NWI Affiliates

(Reported by Web of Science)

Chen, Bo; Zhong, Pengpeng; Cheng, Weihua; **Chen, Xinzhong**; Yang, Qingshan (2017) Correlation and Combination Factors of Wind Forces on Cylindrical Roof Structures, INTERNATIONAL JOURNAL OF STRUCTURAL STABILITY AND DYNAMICS

Zhao, Jie; Abedi, Sajjad; **He, Miao**; Du, Pengwei; Sharma, Sandip; Blevins, Bill (2017) Quantifying Risk of Wind Power Ramps in ERCOT, IEEE TRANSACTIONS ON POWER SYSTEMS, 32 (6):4970-4971

Zhao, Naizhuo; **Cao, Guofeng** (2017) Quantifying and visualizing language diversity of Hong Kong using Twitter, ENVIRONMENT AND PLANNING A, 49 (12):2698-2701

Apergis, Nicholas; **Ewing, Bradley T.**; Payne, James E. (2017) Well service rigs, operating rigs, and commodity prices, ENERGY SOURCES PART B-ECONOMICS PLANNING AND POLICY, 12 (9):800-807

NWI Researchers Participated in 9th Asia-Pacific Conferences on Wind Engineering in Auckland, New Zealand

The Asia-Pacific Conferences on Wind Engineering (APCWE) are international events conducted every four years under the umbrella of the International Association for Wind Engineering (IAWE), in parallel to Americas Conference on Wind Engineering (ACWE), and European and African Conference on Wind Engineering (EACWE). They began with the First Asia-Pacific Symposium on Wind Engineering at Roorkee, India in 1985, and are held in the Asia-Pacific region mid-way between the four-yearly International Conferences on Wind Engineering (ICWE). The

APCWE conferences are international events regularly attended by 200 – 300 wind engineering researchers and practitioners from around the Asia-Pacific regions.

This year's 9th APCWE was organized by the University of Auckland, Auckland, New Zealand on 3-7 December 2017. The University of Auckland is New Zealand's pre-eminent research-led institution, and the Faculty of Engineering has been active in Wind Engineering research and testing since the 1970s. In 2015 it constructed a world-class Boundary Layer Wind Tunnel to further increase its capability in Wind Engineering research.

Texas Tech University had an impressive showing in participation, sending three faculty members (Xinzhong Chen, Delong Zuo, and Daan Liang) and two PhD students (Changda Feng and Pataya Scott) to present their latest work in wind engineering. At the conference, they also discussed future research collaboration and personnel exchange with their peers in China, Japan, Hong Kong, and other countries. Many conference attendees were familiar with Texas Tech's long-standing wind research program related to full-scale measurements and analytical methods. Some of them have been to Lubbock before when attended 2003 ICWE, graduated from Tech, or stayed as guest speakers, visiting students and scholars. It's quite evident that the program is well-respected, and its global impact continues to expand.



Daan Liang, as the Chair of the 2022 ACWE, was invited to attend the Regional Assembly of Asia and Oceania Region at which the new Regional coordinator and the host of next APCWE were decided.

West Texas: The Future of Texas Energy Resilience

Casey M. Williams, Research Assistant, M.Ed., Ph.D. Candidate, Educational Psychology at Texas Tech University was published in Texas Monthly for an article over CREZ lines and West Texas. We are so proud of Casey. Congratulations on this awesome accomplishment, and we wish you all the best in the future!



-Attached is a link to the article, be sure and check it out! <https://www.texasmonthly.com/energy/west-texas-future-texas-energy-resilience/>

Researchers Develop Method to Assess Damage from Natural Disasters

The team from the Debris Impact Facility can measure debris volume using drones, then develop an information-based model to determine the cost of cleanup.

Read the full article here: <http://today.ttu.edu/posts/2017/12/harvey-cleanup>

New Ph.D. Degree Program Brochure

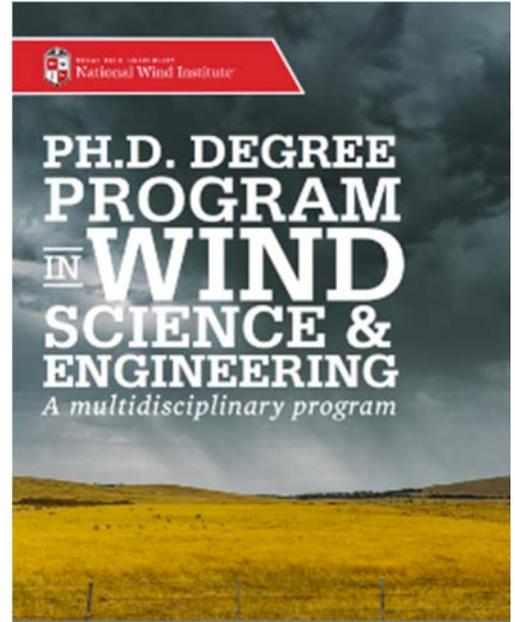
NWI is ecstatic to announce the new Ph.D program brochure for wind science and engineering.

The educational objectives of the Wind Science and Engineering (WiSE) Ph.D. program are to provide graduates with the broad education necessary to pursue studies and solve problems related to the detrimental effects of windstorms (hurricanes, tornadoes, thunderstorms, and others), and to take advantage of the wind's beneficial effects (wind power, natural ventilation, pollution dispersion, etc.).

We're focused on education, and committed to producing quality graduates with the potential to improve people's everyday lives.

-Attached is the link for the new brochure. Please check it out and see what the National Wind Institute has to offer!

https://www.depts.ttu.edu/nwi/education/PhD/PHD_Web_Brochure.pdf

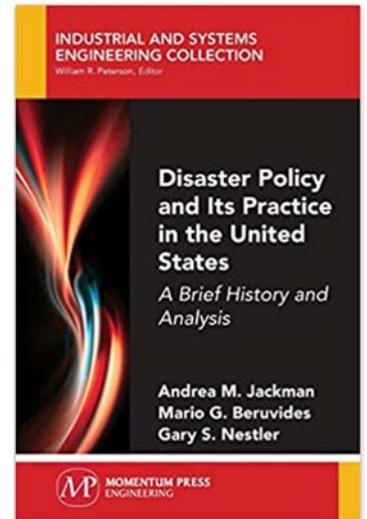


Alumni Spotlight

Andrea M. Jackman, an alumni of the WiSE Ph.D. Program has written a book, *Disaster Policy and Its Practice in the United States: A Brief History and Analysis*.

Andrea is also our alumni spotlight for this newsletter! The link is included below, along with a summary of the book.

-Congratulations on your accomplishments, and hard work!



"Emergency Management, as an industry and practice, is a relatively new field in the United States and abroad. As the threat of attack gradually declined in the second half of the 20th century, our modern system of emergency management began to take shape in the 1970s. With the passage of the Disaster Relief Act in 1974, the federal government introduced the first standardized process for granting financial assistance after a disaster. Around the same time, the National Governors Association released a report on the practice of emergency management, noting that there were four main phases: Mitigation, Preparedness, Response, and Recovery. As the Post-War United States turned its attention to building increasingly complicated societal systems dependent on technology, vulnerability to disasters of every kind also increased. New policies and practices were required to manage the impacts of disaster on modern society. Following the terrorist attack on September 11, 2001 and Hurricane Katrina in 2006, the US government has placed more requirements on local, state and federal agencies to be better prepared and better coordinated. Emergency management policy reflects the reactionary approach typical of the industry. A disaster occurs; a system or process fails leading lawmakers to ask what might be done different next time; a lesson is learned; policy is written. But does it work? Were any mandates more successful than others? To what extent are these laws followed or enforced? Practitioners Guide to US Disaster Policy will explore each explores each major piece of legislation and their implications. Unlike many other major industries, emergency management lacks an authoritative and unified voice for how federal lawmakers will impact the industry. As society grows more complex, populous, and dependent on technology, these are questions, which must be explored and revisited on a regular basis. Recommendations for short- and long-term policy needs are made, as well as new approaches for managing disasters in the United States."

-Andrea Jackman

-Here is the link to the book. <https://www.amazon.com/Disaster-Policy-Practice-United-States/dp/1606506994>

WiSE Ph.D. Student Lands Huge Opportunity

"Please join me in congratulating James Duncan on landing a position in the Wind Energy Program at ECN in the Netherlands! He competed with over 100 applicants and was the first choice for the position!

He will continue his work in the wind energy sector focused on offshore wind measurements, and help orchestrate a coming project ECN has to use lidar and offshore tower measurements to characterize the wind. He plans to start in the middle of February 2018.

James has already submitted one publication, and is working on the second and third that will form the basis for his Ph.D. at TTU. I asked him to make sure that the second was submitted and the third was in draft form before he departed Lubbock. Given James' work ethic, I am confident he will finish strong here at TTU. He intends to return to Lubbock in May 2018 to defend, and will graduate thereafter.

It's nice to see our students competing globally for highly respected and desired positions. James will be an outstanding representative for TTU, and I am very proud of his scientific maturation and this significant achievement. This is a big deal!"

-Dr. John Schroeder

Contracts and Awards

Investigator	Unit	Award Amount Credited	Title	Agency
November, 2017				
Schroeder, John L	Geosciences	\$1,099,500	NWI: Establishing a wind field of record in landfalling Hurricanes	Risk Management Solution
Hirth, Brian D	National Wind Institute (NWI)	\$366,500	NWI: Establishing a wind field of record in landfalling Hurricanes	Risk Management Solution

Schroeder, John L	Geosciences	\$20,686.50	Wind and Water Characteristic Extractions using Dual-Doppler Radar Measurements	Anonymous Sponsor - Industrial
Hirth, Brian D	National Wind Institute (NWI)	\$20,686.50	Wind and Water Characteristic Extractions using Dual-Doppler Radar Measurements	Anonymous Sponsor - Industrial
December, 2017				
Schroeder, John L	Geosciences	\$31,500	NWI: TTU/SNL Wind Farm 01/01/2017-12/31/17	DOE Sandia Ntl Laboratories
Liang, Daan	Civil, Env and Construction Engr	\$7,000	NWI: TTU/SNL Wind Farm 01/01/2017-12/31/17	DOE Sandia Ntl Laboratories
Thomas, Anna	National Wind Institute (NWI)	\$31,500	NWI: TTU/SNL Wind Farm 01/01/2017-12/31/17	DOE Sandia Ntl Laboratories

Keeping Up With All Things Wind

We want you to keep up with "All Things Wind." The links are included for the NWI Social Media at the very bottom of the newsletter! NWI would love for you to like and follow our pages, to help stay in touch with all the great things happening here!

Thank you all!



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