



Letter from the Interim Director



Daan Liang, Ph.D., P.E., Interim Director, NWI.

September marks the beginning of a new academic year and is greeted with exciting news of promotions and tenure of our faculty affiliates – **Eric Bruning** and **Brian Ancell**. Both of them are recipients of prestigious NSF CAREER awards and have been contributing significantly to NWI and Texas Tech. I'm proud of them for reaching a major milestone in their careers and would like to offer them my biggest congratulations.

Last month, I had the opportunity to visit several leading research universities in China (including Tongji in Shanghai and University of Science and Technology of China in Hefei). What impressed me the most were the level of improvements to physical infrastructures made since my time as a student in the late '90s. Brand-new buildings are springing up everywhere across campuses with state-of-the-art laboratories and classrooms. Even more impressive was the quality of their students and the young faculty who all expressed a strong desire in pursuing cutting edge and impactful research. Supported heavily by the government, these universities are making a name for themselves on a global stage.

In the latest World University Rankings, four Chinese universities make the top 200: Peking University at 29th (up from 42nd last year), Tsinghua University at 35th (up from joint 47th), the University of Science and Technology of China at 153rd and Fudan University at 155th. During my visit, I saw ample opportunities for future partnerships in the

areas of wind engineering and renewable energy. NWI, with an expanding alumni basis in China, could very well serve as a bridge to a sustainable relationship with our Chinese counterparts through student recruitment, faculty exchange, and facility sharing.

In July, the Purdue University led team was officially named as the recipient of the Network Coordination Office (NCO) for the National Science Foundation sponsored Natural Hazards Engineering Research Infrastructure (NHERI). The Natural Hazards Engineering Research Infrastructure (NHERI) will be a distributed, multi-user national facility that will provide the natural hazards research community with access to research infrastructure. NWI faculty affiliate **Delong Zuo**, an Associate Professor of Civil Engineering and an expert in structural dynamics and wind loads on structures, will serve as a co-PI for this Purdue-led center that will play an important role in mitigating the impact of future earthquakes and windstorms (and related hazards such as tsunamis and storm surge) on our nation's physical civil infrastructure. Job well done, Delong!

SmartWind Technologies, a start-up company founded by **John Schroeder** (Professor of Geosciences and former NWI Director), **Brian Hirth** (NWI Research Faculty) and **Jerry Guynes** (NWI Research Faculty) is making headlines for their advanced radar system deployed on the Westernmost Rough Offshore Wind Farm, situated off England's east coast, the first of its kind in the world. BEACon radar system, as it's called, is collecting three-dimensional data on the wind flow for DONG Energy and represents a paradigm shift in wind measurements. This accomplishment is the culmination of years of research and development effort at NWI, and is a perfect example of the marriage between scholarly work and commercial success. We will continue our support to this great team and encourage others to think more entrepreneurially.

(Continued on next page.)

NWI Interim Director's Letter *Cont'd*

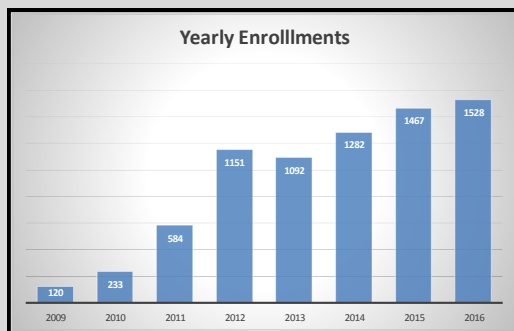
On September 14, I had the pleasure of kicking off our NWI Wednesday Seminar Series by giving a *State of the Institute* presentation to our staff, affiliates, and students. Tremendous progress was made in the 2015-2016 academic year with record enrollment in the Bachelor's degree program in wind energy, quality recruits to the Ph.D. program in wind science and engineering, and steady growth in NWI-supported research. Based on our 5-year strategic plan and feedback gathered from our faculty affiliates, I proposed a number of priorities for the coming year, including laboratory safety, facility use & data access, student recruitment and retention, developing a clear vision for wind hazard, and industry and international partnerships. We also plan to revamp the two-year old Discovery Program to catalyze growth in federal, competitive grants and pivot towards cost matching, course buyout, and facility upgrades. The copy of slides are available on NWI website for your viewing.

A week later, NWI welcomed the first speaker for the McDonald-Mehta Lecture this year – Dr. Andrew Whittaker from University of Buffalo (UB). This was quite special for me as UB is my alma mater and Dr. Whittaker was my old professor (although I didn't take any classes from him). We had a great time and appreciate Delong for organizing the lecture, and Dr. McDonald and Dr. Mehta for their generous endowment. I'm looking forward to the two upcoming lectures – one by Dr. Tim Doggett in October and one by Dr. Emory in November.

Go Raiders!

Daan Liang, Interim Director

BSWE Program Continues Growth



NWI's Bachelor's degree in Wind Energy continues to grow from year to year. Nineteen students graduated in August 2016 which brings the program's total number of graduates to 118 since it started in 2009.

Austin Fincher was the graduate with the highest Grade Point Average and was recognized with a plaque from the TTU Alumni Association for his achievements.

NWI congratulates all the Summer 2016 graduates.

NextEra Visits TTU Campus

NextEra Energy, a leading clean energy company with approximately 14,300 employees in 27 states and Canada, recently visited campus to engage in personal interviews with some of the students in the BSWE program.

Thank you to all who were involved in making this a smooth visit for all concerned.

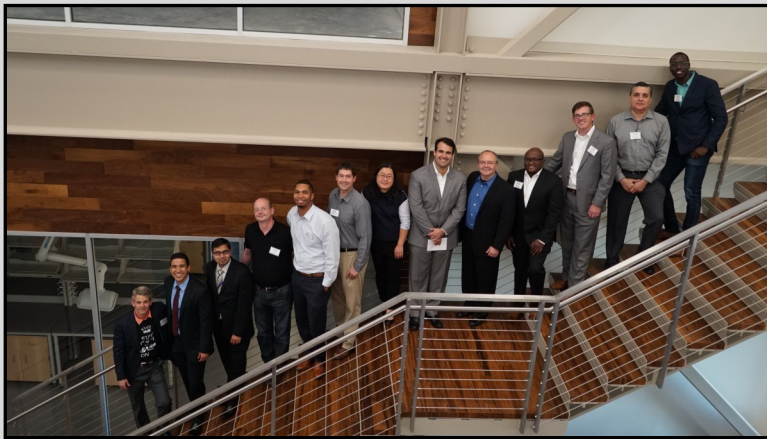


(Above) - Some of the NextEra team stand with students from the BSWE program. (Photo credit: Maggie Gilchrest, TTU-NWI.)

Wind Technology Team Receive GLEAMM Recognition

A TTU research team including Dr. **Carsten Westergaard**, Dr. **Suhas Pol** and graduate student **Ricardo Castillo** was recently selected by the Spark Fund Board as a recipient of the GLEAMM Challenge Spark in its commercialization track. The program, aimed at facilitating innovators to commercialize their technology, will be the platform to help the team meet the milestones of their project.

The project title is “Professional and Advanced Testing Capabilities for Innovative Wind Technologies at Reese Technology Center.”



(Left) - Each member of the teams who were selected by the Spark Fund Board to receive GLEAMM Challenge Spark funding.

(Photo credit: Jason Canon, Office of the Vice-President for Research (OVPR).

TTU Climate Science Center Video features Wind Ph.D. Student James Duncan



(Above) - James Duncan, Ph.D. student.

James Duncan (top image on left), a Ph.D. student researching wind energy, was recently featured in the TTU Climate Science Center's (CSC) "[Video of the Week](#)".

The CSC reports, "With his main focus on smart wind farms, James looks at the challenges and the underperformance of current wind farms and uses mobile Doppler radar systems to document and analyze the change in wind 'flow fields' between the turbines. James also investigates the solutions that wind farms can implement to mitigate their efficiency problems."

Aaron Hill (bottom image on left), a Research Graduate Assistant in Atmospheric Sciences, was also featured in one of the TTU CSC's education video concerning his work with NWI faculty affiliate Dr. **Brian Ancell** and the VORTEX-SE project last Spring.

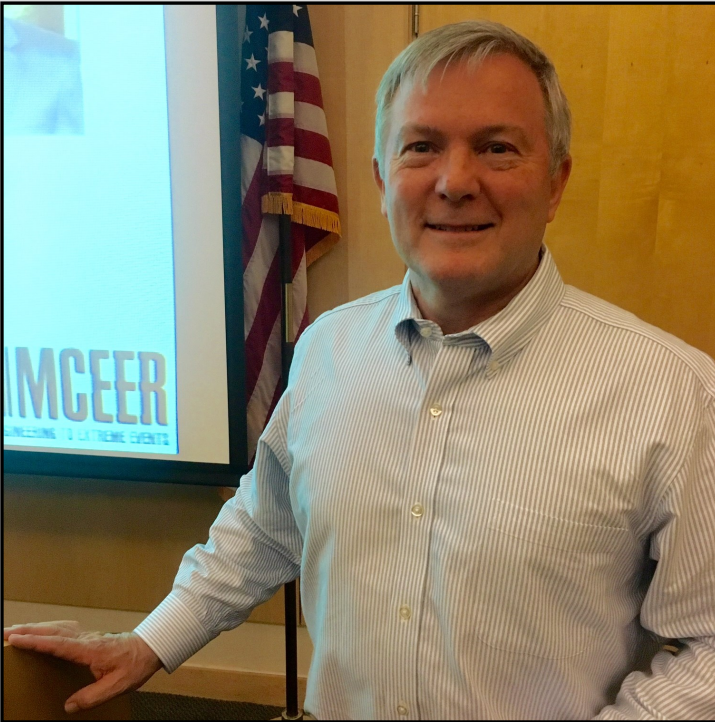
The Climate Science Center conducts interdisciplinary research to address the interactive effects of climate variability across the full array of landscapes within the South Central U.S. It is part of a network of eight regional CSCs created to provide science and tools that managers and other parties interested in land, water, wildlife, and cultural resources can use to plan for and respond to climate change.

Its current focus is on recruiting and training graduate students, conducting climate change and impacts research, and developing climate science and climate change educational programs.



(Above) - Aaron Hill, Ph.D. student.

McDonald-Mehta Lecture Series: Dr. Andrew Whittaker (University at Buffalo)



The National Wind Institute (NWI) kicked off the Fall 2016 semester with the first in the McDonald-Mehta Lecture Series hosting **Dr. Andrew Whittaker**, Professor, Department of Civil, Structural and Environmental Engineering at the University at Buffalo in New York.

Titled, "Seismic Isolation of Structures, Components, and Systems in Safety-Related Nuclear Facilities," the lecture was well attended with plenty of questions at the end of the talk.

The next McDonald-Mehta Lecture will be Dr. Tim Doggett from Berkshire Hathaway Specialty Insurance who will be speaking at 3:30 p.m. on Wednesday, October 26, in room 120 in the Experimental Sciences Building on campus.

(Left) - Dr. Andrew Whittaker, Professor at University of Buffalo and McDonald-Mehta Lecture invited speaker.

WiSE Wednesday: Dr. Daan Liang, NWI Interim Director

NWI Interim Director, Dr. **Daan Liang**, recently gave a "State of the Institute" lecture to kick off the semester-long series, WiSE Wednesdays.

Intended as an overview of the progress of the National Wind Institute towards the goals of the Five-Year Strategic Plan, the presentation included updates on the education programs (both undergraduate, certificate and Ph.D. programs) along with the numerous research projects being studied with our numerous NWI faculty affiliates and other partners.

The FY 2017 priorities were updated as the following:

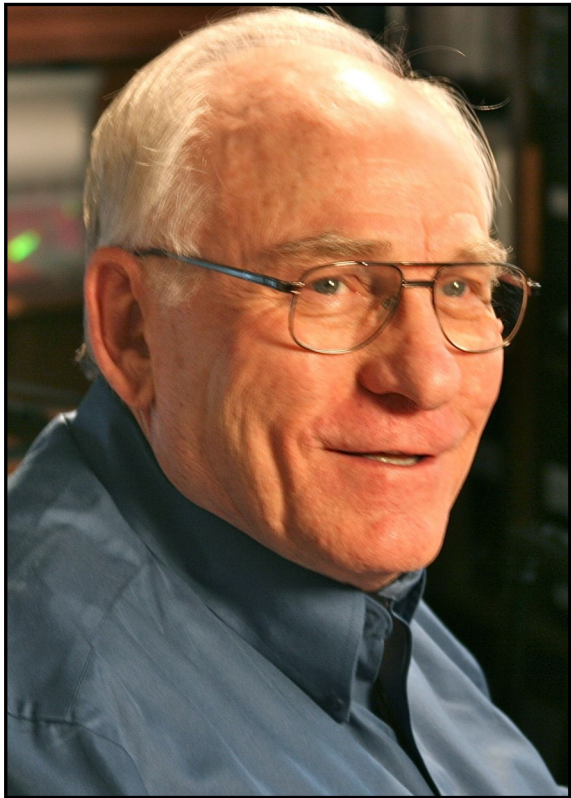
- **Facilities and Operation** (improve lab safety, maximize facility use and data access, align NWI operation with faculty needs, and improve communication)
- **Education** (recruitment, retention, and funding)
- **Research** (develop a clear vision for wind hazard, enhance industry and international partnerships, and building NWI capability in capturing large, complex funding opportunities).

For more information, please check out the [NWI website](#).



(Above) Dr. Daan Liang, NWI Interim Director.

NSSA Executive Director Leading OK Storm Shelter Workshops



(Above) - Dr. Ernest Kiesling, Executive Director, National Storm Shelter Association.

The National Storm Shelter Association (NSSA) is presenting two six-hour workshops for building inspectors in Oklahoma. The workshops, one in Yukon on September 28, and another in Ada on October 19, are sanctioned by the International Code Council, and offer Professional Development Hours to the participants to help meet industry requirements. Building inspectors are now required to be registered in Oklahoma, and the NSSA is expecting approximately 120 inspectors to attend the workshops.

Dr. **Ernst Kiesling**, Professional Member and Executive Director of NSSA, is leading the workshops, assisted by other Professional Members of NSSA, including Dr. Daan Liang of the National Wind Institute of Texas Tech, Randy Shackelford of Simpson Strong-Tie, Jim Bell of ASSI Abloy, and Russell Curtis, principal of KFC Engineering in Oklahoma City.

Revised standards for storm shelters, including the NSSA/ICC- 500 Standard, place and increased emphasis on inspection of storm shelters, especially those built schools and first responder facilities such as police stations and emergency management centers.

The NSSA’s mission is to ensure that its members produce the highest quality of residential, commercial, and community safe rooms for protecting people from injury or loss of life from the effects of tornadoes and other wind-related events.

NWI GRANTS AND CONTRACTS — SEPTEMBER 2016

Awarded:

<i>NWI VORTEX-SE: The Role and Predictability of Baroclinic and Terrain Influences in Southeastern U.S. Tornado Environments</i>			
Ntl Oceanic & Atmospheric Administration			10/01/2016 - 09/30/2018
Bruning, Eric C.	33.00%	09/14/2016	\$82,445
<i>NWI VORTEX-SE: The Role and Predictability of Baroclinic and Terrain Influences in Southeastern U.S. Tornado Environments</i>			
Ntl Oceanic & Atmospheric Administration			10/01/2016 - 09/30/2018
Weiss, Christopher C.	34.00%	09/14/2016	\$84,943
<i>NWI VORTEX-SE: The Role and Predictability of Baroclinic and Terrain Influences in Southeastern U.S. Tornado Environments</i>			
Ntl Oceanic & Atmospheric Administration			10/01/2016 - 09/30/2018
Dahl, Johannes	33.00%	09/14/2016	\$82,446

RECENT PUBLICATIONS and PROCEEDINGS (as reported by Web of Science)

- Apergis, N., **B. T. Ewing**, and J. E. Payne (2016). "Persistence in New-Well Oil Production per Rig Across US Regions: Evidence from Modified Panel Ratio Tests." *Energy Sources Part A - Recovery Utilization and Environmental Effects*, 38 (14):2058-2064; 10.1080/15567036.2015.1034384.
- Chmielewski, V. C., and **E. C. Bruning** (2016). "Lightning Mapping Array Flash Detection Performance with Variable Receiver Thresholds." *Journal of Geophysical Research: Atmospheres*, 121 (14), 8600-8614.
- Fuchs, B. R., **E. C. Bruning**, S. A. Rutledge, L. D. Carey, P. R. Krehbiel, and W. Rison (2016). "Climatological Analyses of LMA Data with an Open-Source Lightning Flash-Clustering Algorithm." *Journal of Geophysical Research: Atmospheres*, 121 (14), 8625-8648.
- Hong, H., H. Zhao, Z. Peng, H. Li, C. Gu, **C. Li**, and X. Zhu (2016). "Time-Varying Vocal Folds Vibration Detection Using a 24 GHz Portable Auditory Radar." *Sensors*, 16 (8). 10.3390/s16081181.
- Munoz-Ferreras, J., Z. Peng, R. Gomez-Garcia, and **C. Li** (2016). "Random Body Movement Mitigation for FMCW-Radar-Based Vital-Sign Monitoring." Austin, TX: 2016 IEEE Topical Conference on Biomedical Wireless Technologies, Networks, and Sensing Systems (BioWireless). January 24-26. 22-24. Proceedings.
- Meng, Q., K. Xu, F. Shen, B. Zhang, D. Ye, J. Huangfu, **C. Li**, and L. Ran (2016). "Microwave Imaging under Oblique Illumination." *Sensors*, 16 (7), 1046.
- Peng, Z., Y. Tang, and **C. Li** (2016). "Portable Coherent Frequency-Modulated Continuous-Wave Radar for Indoor Human Tracking." Austin, TX: 2016 IEEE Topical Conference on Biomedical Wireless Technologies, Networks, and Sensing Systems (BioWireless). January 24-26. 36-38. Proceedings.
- Ramabhotla, S., S. B. Bayne**, and **M. Giesselmann** (2016). "Reliability Optimization Using Fault Tree Analysis in the Grid Connected Mode of Microgrid." Kansas City, MO: 8th Annual IEEE Green Technologies Conference (GREENTECH 2016). 136-141; 10.1109/GreenTech.2016.32. Proceedings.
- Ramabhotla, S., S. B. Bayne**, and **M. Giesselmann** (2016). "Operation and Maintenance Cost Optimization in the Grid Connected Mode of Microgrid." Kansas City, MO: 8th Annual IEEE Green Technologies Conference (GREENTECH 2016). 56-61; 10.1109/GreenTech.2016.18. Proceedings.
- Subburaj, A. S.**, N. Shamim, and **S. B. Bayne** (2016). "Battery Connected DFIG Wind System Analysis for Strong/Weak Grid Scenarios." Kansas City, MO: 8th Annual IEEE Green Technologies Conference (GREENTECH 2016). 112-117; 10.1109/GreenTech.2016.28. Proceedings.
- Zhang, J., **X. Chen**, D. Liu, and X. Li (2016). "Analysis of Bridge Response to Barge Collision: Refined Impact Force Models and Some New Insights." *Advances in Structural Engineering*, 19 (8):1224-1244; 10.1177/1369433216634533.

NWI Policies and Procedures Now Up On-Line

As the National Wind Institute continues to evolve and to grow, please note that the smooth implementation of administrative tasks is dependent upon everyone involved having a familiarity with the policies and procedures linked with important areas such as financial management, marketing and communications, advising, and others.

To provide some answers to the most commonly asked questions, NWI staffers have compiled a list of policies and procedures (along with the required forms), and these are now available on-line at the [NWI website](#) (under the "About" tab).

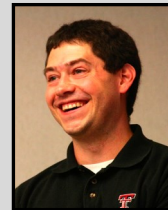
Please take a second to familiarize yourself with this document so that we can continue to provide you with the most efficient customer service possible within the TTU system. If you should have any questions, please do not hesitate to let us know. We are happy to help.

NWI MOVERS & SHAKERS

- Congratulations to NWI Interim Director Dr. **Daan Liang**, and to Drs. **Brian Ancell** and **Eric Bruning** for their recent promotions. Drs. Ancell and Bruning were promoted to Associate Professors, and Dr. Liang was promoted to full Professor.
- Congratulations also go to Dr. **Siva Parameswarn**, Professor (ME), NWI faculty affiliate, and Director of the CFD Lab, who was recently elected as an ASME Fellow. The ASME Fellow title is recognition of a member's "outstanding engineering achievements" and each is nominated by ASME members and Fellows across the world.



Dr. Daan Liang
Professor



Dr. Brian Ancell
Associate Professor



Dr. Eric Bruning
Associate Professor

- Wind Science and Engineering Ph.D. student **Yeqin Wang** has been invited to write a guest post about his research on the Texas Instruments' official blog. Yeqin utilizes TI equipment in his work on the Hyper Accelerated Wind Farm Kinematic-Control Simulator (or HAWKS) project, a platform with multiple functional and programmable wind turbines being built at NWI which can produce complex wind profiles. NWI faculty affiliates Dr. **Carsten Westergaard** and Dr. **Beibei Ren** are the academic supervisors on the project.
- There are some big changes on the horizon with regard to the new Federal Fair Labor Standards Act (FLSA). Please check with your supervisor to see how you may be affected in your current position. If you're not certain how (or if) you may be impacted, there are Town Hall meetings scheduled to address concerns or you may contact [TTU Human Resources and their FAQ page](#).

⇒ **Wednesday, October 12 from 10:30 a.m. to 11:30 a.m. in Doak Conference Center Room 156.**



- (Left) The 2016-2017 Wind Energy Student Association officers are now in place. (L-R Front): **Wyatt Zalatoris** (President), **Anna Lee Haag** (Treasurer), **DeBari Gbaanador** (SORC Rep.). (L-R Back): **Eric Garcia** (Secretary) and **Sean Curran** (Vice-President).
- Dr. **Kishor Mehta**, NWI co-founder and Horn Professor, traveled to Rensselaer Polytechnic Institute (RPI) to present a seminar on "Natural Hazards Research at the National Science Foundation" on September 21. (RPI is the oldest civil engineering department in the country and awarded its first CE degree before the Civil War.) Dr. Mehta met with RPI's Dean of Engineering, Dr. Shekhar Garde and several faculty members during his visit.
- NWI Ph.D. student **James Duncan** was recently featured in a video about the underperformance of current wind farms that he and advisor Dr. **John Schroeder** are studying. Part of TTU's Climate Science Center *Videos for Science* project, the video can be seen at [here](#). **Aaron Hill**, a Graduate Research Assistant working under Dr. **Chris Weiss**, has also been featured in the series for his work as part of the VORTEX SE severe weather team last Spring.
- BSWI Instructor **Andrew Buchok** recently attended the *Solar Power International* 2016 from September 12-15 in Las Vegas, NV. Solar Power International is the largest solar trade show in North America.
- **Ricardo Castillo**, a Ph.D. student working under the guidance of Dr. Carsten Westergaard, will be presenting at *The Science of Making Torque from Wind* (TORQUE 2016), a leading international scientific wind energy conference to be held from October 5-7 in Munich, Germany. His presentation is titled: "PIV Measurements in a Real Time Controlled Model Wind Turbine Wake Simulator."

2016 STORM SHELTER CONFERENCE

Sponsored by



November 9 & 10, 2016

Conference Agenda Details & Registration Form(s) at www.nssa.cc

Ph.: 877-700-NSSA (6772)

Workshop and Conference Location:

Embassy Suites Nashville Airport

10 Century Blvd.

Nashville, Tennessee 37214

Save the Date!

October 19, 2016	WiSE Wednesday Lecture Dr. Chris Weiss, Associate Professor, Geosciences	4:00 p.m.	EXP 120
October 26, 2016	McDonald-Mehta Lecture Series Dr. Tim Doggett (Berkshire Hathaway Speciality Insurance)	3:30 p.m.	EXP 120
November 02, 2016	WiSE Wednesday Lecture Dr. Brandon Ennis, Wind Energy Technologies, Sandia National Labs	4:00 p.m.	EXP 120
November 09, 2016	WiSE Wednesday Lecture Dr. John Schroder, Professor, Geosciences	4:00 p.m.	EXP 120
November 16, 2016	McDonald-Mehta Lecture Series Dr. Amber E. Emory (NASA Goddard Space Flight Center)	3:30 p.m.	EXP 120



If you are interested in having your latest scholarly endeavors featured in the next NWI newsletter, please forward your information (publications, proceedings, conference/workshop attendance, or other news etc.) to Liz Inskip-Paulk (email: Elizabeth.paulk@ttu.edu). Go Red Raiders!