



Letter from the Interim Director



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

In the first issue of the 2017 newsletter, I'd like to thank everyone for your contribution to NWI's mission and success. We together have accomplished a lot and overcome many challenges. There is no doubt in my mind that today the foundation of NWI is stronger and our research teams are more adept. At the same time, I'm calling on each of our researchers, staff, and instructors to come up with suggestions on how our operation can be more efficient and impactful.

The landscape of research funding is quickly changing, thanks to new administration taking office at both Federal and State levels. While no one can foretell the future, the status quo will be no longer an option. There will be fundamental change to how NWI supports research and funds operations. We have to think critically and strategically, making sure that NWI will continue transforming itself towards growth and excellence.

This year, Dr. **Delong Zuo** remains committed to organizing the WISE Wednesday Seminar Series with an impressive lineup of professors and students. They also include two MML speakers - Dr. Ellen Rathje of University of Texas at Austin and Dr. Sanjay Arwade of University of Massachusetts, Amherst. We appreciate Delong's time and would like others to take an active role in supporting him.

As you are aware, the University is in the process of developing its new strategic plan and seeking input from faculty and staff. A parallel discussion is taking place inside an ad-hoc working group about how we can make better contribution to Texas Tech's overarching inspirations. I'm hoping that a draft plan can be developed and presented to our entire faculty affiliates in the near future for feedback.

The DOE SWIFT Facility at Reese is geared toward commission and operation this March after a long delay. As a partner, we have been closely working with Sandia National Labs on the operation and maintenance of site and facilities, and are excited to see its coming transition to research applications. I expect that several of our researchers will be invited to conduct experiments with the facility before it opens up to a larger group. In the meantime, we are working to form a committee drafting a long-term research roadmap that will facilitate broad participation and coordination.

On January 26, NWI hosted the Faculty Research Club at Jones AT&T Stadium. **Kishor Mehta, Stephen Bayne, Delong Zuo** and I had the opportunity to give an overview of what NWI is about and what kind of cutting edge research we do. The event was well attended and after our presentations, we had great conversation with many participants.

I'd like to thank Dr. Patricia DeLucia and Dusty Delano of the Office of the Vice President for Research for inviting us and all of NWI staff and affiliates for attending.

NWI Interim Director's Letter *continued*

Safety is our No.1 priority. On January 9, **Jeff Livingston**, our Assistant Director of Operations, sent out a reminder on NWI 2017 safety training requirements. All of our affiliates using NWI facilities will take *Shop/Studio Safety Awareness, Safety Awareness/Chemical Hygiene Plan, Laser Safety, Hazardous Communications*, and if authorized by NWI, *Forklift Training* modules. Please forward the completed and signed Facilities Use Agreement as well as copies of your module completion certificates to jeff.livingston@ttu.edu and anna.t.young@ttu.edu.

Your cooperation will be greatly appreciated.

Go Raiders!

Daan Liang, Interim Director

McDonald-Mehta Lecture Series: Dr. Ellen Rathje



(Above) - Dr. Ellen Rathje (UT-Austin) who will be the first speaker for the McDonald-Mehta Lecture Series this Spring.

The prestigious McDonald-Mehta Lecture Series continues this semester with our invited presenter, Dr. Ellen M. Rathje, the Warren S. Bellows Centennial Professor in the Civil, Architectural and Environmental Engineering at the University of Texas (UT) at Austin, and Senior Research Scientist at the UT Bureau of Economic Geology.

Dr. Rathje's presentation, on February 17, is titled "DesignSafe Cyberinfrastructure: A Cloud-Based Environmental for Research in National Hazard Engineering." The event will be held in Experimental Sci 120 and will start at 3:30 p.m., with a reception to follow.

Dr. Rathje is a founding member and current Co-Chair of the Geotechnical Extreme Event Reconnaissance (GEER) Association, and she was a member of the Board of Directors of the Earthquake Engineering Research Institute (EERI) from 2010-2013.

She is the Principal Investigator for the DesignSafe-ci.org cyberinfrastructure for the NSF-funded Natural Hazards Engineering Research Infrastructure (NHERI), and co-PI for the Center for Integrated Seismicity Research (CISR) at the Bureau of Economic Geology.

Dr. Rathje has been honored with various research awards, including the Huber Research Prize from the American Society of Civil Engineering (ASCE) in 2010, the Hogentogler Award for an outstanding paper from the ASTM

Committee D18 in 2010, the Shamsheer Prakash Research Award in 2007, and the Shah Innovation Prize from EERI in 2006.

Dr. Rathje was named a Fellow of the American Society of Civil Engineers in 2016.

The next McDonald-Mehta Lecture Series event will be with Dr. Sanjay Arwade from the University of Massachusetts at Amherst. The event will be at 3:30 p.m. on Wednesday, April 19 in Experimental Sciences room 120.

Welcome to our new NWI Teaching Assistants...



(Above) - NWI welcomes our new Spring 2017 TAs (L-R): Josh Williams, Sean Sullivan, Wyatt Zalatoris, and Eric Piontek. Not pictured: Teresa Aguilar.

The new semester signals the arrival of Spring, and with that, we have some new TAs to introduce:

Sean Sullivan is from Houston, Texas, and will be teaching Grid Modelling and Design.

Wyatt Zalatoris is from Arlington, Texas, and will be teaching Social Impacts of Wind Energy, Renewable Energy and the Environment, and Independent Study in Wind Energy.

Eric Piontek is from Coppell, Texas, and is teaching classes in Wind Energy Law and Regulatory Issues.

Josh Williams and **Theresa Aguilar** are also new TA's to the program. Welcome aboard!

West Texas Mesonet Continues to Expand Across Region



Photo courtesy of Wes Burgett, West Texas Mesonet.

(Above) - The West Texas Mesonet McCamey station #101 in southwestern Upton County.

NWI is proud to announce that the burgeoning West Texas Mesonet network is now working on adding its 103rd station in the region. Number 101 opened near McCamey in Upton County, Texas, and Number 102 recently opened in Stamford.

Station #101 (McCamey) is a partnership with Upton County Emergency Management and is located in the southwestern part of the county, six miles north of the Pecos River. Special thanks go to Upton County Emergency Management, the Upton County Airport, and the National Weather Service teams in Midland and Lubbock.

Station #102 (Stamford) is a partnership with the Nauert Family, and is in northern Jones County, Texas. The station is five miles southeast of Stamford and 12 miles southwest of Lake Stamford. It's also about 30 miles north of Abilene. Special thanks to the Nauert Family and to the teams at the National Weather Service offices in both Lubbock and San Angelo.

Station #103 is in the construction process in Crowell, Texas, and will be on-line in the near future.

The WTM provides real-time data including wind speed and direction at different levels, air temperatures at different levels, humidity and dew point, solar radiation, rainfall, barometric pressure and climate histories. Agricultural data include soil temperature and moisture at different levels, leaf wetness and evapotranspiration.

The West Texas Mesonet network: 102 stations (almost 103!), 68 counties, three different states, and two different time zones.

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

Abedi, S., **M. He**, and **M. Giesselmann** (2016). "Graph Partitioning-Based Zonal Reserve Allocation for Congestion Management in Power Systems with Wind Resources." Denver, CO: 48th North American Power Symposium (NAPS). September 18-20. Proceedings.

Fan, T., C. Ma, Z. Gu, Q. Lv, J. Chen, D. Ye, J. Huangfu, Y. Sun, **C. Li**, and L. Ran (2016). "Wireless Hand Gesture Recognition Based on Continuous-Wave Doppler Radar Sensors." *IEEE Transactions On Microwave Theory and Techniques* 64(11): 4012-4020. SI 10.1109/TMTT.2016.2610427 2. November.

Feng, C., and **X. Chen** (2016). "Inelastic Responses Of Wind-Excited Tall Buildings With Bilinear Hysteretic Restoring Force Characteristics." *Fundamental Research in Structural Engineering: Retrospective and Prospective*, Vol. 1 and 2: 176-188.

Li, F., and **X. Chen** (2016). "Effectiveness Of Pod Technique For Reconstruction Of Wind Pressure Field And Modeling Of Equivalent Static Wind Load." *Fundamental Research in Structural Engineering: Retrospective and Prospective*, Vol. 1 and 2: 821-826.

Liu, Y., N. Zhao, **J. Vanos**, and **G. Cao** (2016). "Effects of Synoptic Weather on Ground-Level PM2.5 Concentrations in the United States." *Atmospheric Environment*, Vol. 148: 297-305. (In press.)

Roblin, P., **C. Li**, and L. Hayden (2016). Special Issue on Emerging RF Measurement Techniques and Applications. *IEEE Transactions On Microwave Theory and Techniques* 64(11): 3761-3763. SI 10.1109/TMTT.2016.2614741 2. November.

Wang, Y., **B. Ren**, and Q. C. Zhong (2016). "Robust Power Flow Control of Grid-Connected Inverters." *IEEE Transactions On Microwave Theory and Techniques* 63(11): 6887-6897. 10.1109/ TIE.2016. 2586439. November.

* *Bolded names are NWI faculty affiliates.*

VORTEX-2 Team Prepare for Phase 2 of Study

The TTU VORTEX-2 team is working hard to prepare for the 2017 field phase of VORTEX SE. Preparation includes mass testing of the Texas Tech Sticknet probes — essential for validation of the team's surface observations.

Sixteen probes will be positioned in northern Alabama for two and a half months to supplement the surface observing network while eight will be reserved for fine-scale deployments in advance of severe thunderstorms.

The team reports, "our goals are to observe fine-scale features that may enhance severe storms and the potential for tornadoes."



Photo credit: Aaron Hill (TTU ATMO graduate student)

(Above) The sixteen probes being tested at the Reese field site.

NWI Hosts Faculty Research Club

NWI recently hosted the January meeting of Texas Tech University's Faculty Research Club held on Thursday, January 26 at 4 p.m. at the Texas Tech Club.

Speakers included NWI Interim Director, Dr. **Daan Liang** (see photo below), WiSE co-founder Dr. **Kishor Mehta**, NWI faculty affiliates ECE Professor Dr. **Stephen Bayne**, and CE Professor Dr. **Delong Zuo**.

Presentations covered the history of the National Wind Institute, a selection of present research projects, and some of the proposed areas of focus for the future.

According to the website, the Faculty Research Club is intended to provide a social setting to stimulate interdisciplinary research collaborations, promote informal discussions about research, and distribute information about campus resources to faculty. To stimulate conversation, several faculty members provided a 5-minute summary of their research and opportunities for collaboration.

Sponsored by the Office of the Vice-President of Research (OVRP), club meetings are open to all faculty at Texas Tech and the Texas Tech University Health Sciences Center, and faculty are welcome to invite post-doctoral scholars to help them to develop research networks.



The event was well attended, and NWI would like to thank Dr. Pat DeLucia and Dusty Delano of the Office of the Vice President for Research for their help in making this event a success.

Thank you to all who attended.

(Left) - Dr. Daan Liang, Interim Director for the National Wind Institute, presents some of the research goals for the Institute for the remainder of 2017.



(Above) - Some of the audience who attended January's meeting of the Faculty Research Club.

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).

NWI GRANTS AND CONTRACTS — JANUARY 2017

Awarded:

TCU 411: NWI SWiFT—Environmental Assessment and Monitoring Study

DOE/Sandia National Laboratories

Boal, C. (Coop. Fish and Wildlife Research Unit/CASNR)

100%

\$49,948

NWI: National Mesonet Pilot Project: West Texas Mesonet

Earth Networks, Inc.

Schroeder, J. (Geosciences)

100%

\$178,500

NWI: Texas Tech University Support to GOES-R CLM Validation

National Aeronautics and Space Administration (NASA)

Bruning, E. (Geosciences)

100%

\$87,770

BSWE Students Recognized for Academic Excellence

More than 50 students in the BSWE undergraduate program have been selected for the President's List or the Dean's List for academic excellence. Students selected for the President's List maintain a 4.0 GPA while students selected for the Dean's List maintain a 3.5 GPA.

NWI is very proud of our undergraduate students who consistently strive for excellence. Congratulations to each of the students.



(Right) - BSWE student Jennifer Lizama shows off her certificate. Jennifer is one of several recognized for academic excellence and she is classified as a Junior here at TTU.

WiSE Wednesday: Dr. John Schroeder



Photo credit: Dr. Anna Thomas Young, TTU-NWI.

WiSE Wednesdays continue this semester, with Dr. **John Schroeder** (above), Professor in Geosciences, giving the first presentation.

The series continues on Wednesday, February 22, with Dr. Andy Swift, Associate Director of Education at NWI. All presentations occur at 3:30 p.m. in EXP SCI 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).