UNIVERSITY OF NORTH DAKOTA ATMOSPHERIC SCIENCES

NORTHERN LIGHTS

Issue 9

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Gretchen Mullendore chosen to lead NCAR's Mesoscale & Microscale Meteorology Laboratory



Gretchen Mullendore has been selected to lead the Mesoscale & Microscale Meteorology Laboratory (MMM) at the National Center for Atmospheric Research (NCAR). Mullendore, who currently serves as a professor and chair of the atmospheric sciences department at the University of North Dakota (UND), will join NCAR January 18, 2021.

"We are pleased to welcome Gretchen to NCAR. She is a stellar scientist and her scientific vision for MMM, combined with her leadership experience, passion for mentoring, and commitment to supporting scientists from a diverse range of backgrounds, will position the lab for success under the new NCAR Strategic Plan and beyond," said NCAR Director Everette Joseph. "In particular, I welcome her academic experience serving the educational and pedagogical needs of rising scientists in non-R1 schools, which we hope to employ in strengthening NCAR's partnerships with often underserved institutions, such as minority-serving institutions and colleges focused on undergraduate education. I look forward to the continued scientific excellence of MMM under her leadership."

Mullendore has taught atmospheric science at UND since 2007 and became chair of the atmospheric sciences department on July 1, 2020. She is an expert in the dynamics of deep convection and numerical weather prediction. In particular, her research focuses on connecting the dynamics of storms to observational data by linking thermodynamic theory to the representation in the weather models and using observations in novel ways to validate those models.

Mullendore has collaborated frequently with NCAR scientists on research projects. She currently serves on the scientific advisory boards for the Developmental Testbed Center and for Unidata, a program at the University Corporation for Atmospheric Research. She has also served as chair or co-chair for several committees, including the American Meteorological Society Committee on Mesoscale Processes, which organizes a conference on this topic. Mullendore earned her Ph.D. in atmospheric science from the University of Washington.

More information about her new position can be found at https://www.mmm.ucar.edu/news.

Congratulations and Best Wishes Gretchen!



Wanda Seyler, Editor

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Department News

Introducing the AtSc Interim Chair Matt Gilmore



Matt Gilmore, Ph.D., Associate Professor, has been chosen as Interim Chair for the Atmospheric Sciences department. Matt was hired at UND July 2008 as Assistant Professor and was promoted to Associate Professor in May 2013. He came to UND from the University of Illinois

at Urbana-Champaign where he had worked as a Research Scientist and Visiting Post-Doctoral Fellow. He also was a Research Scientist at the University of Oklahoma and a Visiting Scientist for three years with MMM at NCAR.

He received his B.S. in 1992 from the University of Oklahoma, his M.S. and Ph.D. in 1996 and 2000, respectively, both from Texas A&M University.

Matt's research expertise is in the representation of precipitation in weather models and understanding how environmental conditions affect severe weather, such as tornados, hurricanes, and lightning. He has also participated in a team reanalysis of the infamous Tri-State Tornado of 18 March 1925—analyzing the environmental conditions enabling the longest-tracked tornado in US History.

In addition to his regular academic efforts Matt has led a number of other significant student-oriented activities. One was the SNOwD UNDER snowfall measurement study in 2010. This project included involvement of UND undergraduate and graduate students along with K-12 students from the Grand Forks area. A highlight of the study was the deployment of the DOW (Doppler On Wheels) radar to UND.

Another hands-on opportunity developed by Matt is the Thunderstorm Field Experience course. Since May 2014, Matt has been taking students on stormchasing trips across the plains to learn about severe storm forecasting and observation.

One other activity of note is the Three Minute Thesis (3MT) competition for graduate students. Matt established UND's participation in this national competition four years ago and helps train graduate students across campus in how to present their graduate research work to a lay audience.

AtSc Department Chair Steps Down

Mike Poellot, who is a Chester Fritz Distinguished Professor, stepped down July 1, 2020, after more than 20 years as chair of the Atmospheric Sciences department. He is proud of the work that his department has accomplished over the past 20 years and



was ready to turn over the leadership to Dr. Gretchen Mullendore.

He's looking forward to spending more time in the classroom and being around students in the fall, even with the coming changes due to the COVID-19 pandemic.

Mullendore said Mike is passionate about his department and the university as a whole and wants to see everyone succeed. She said Mike is an inclusive leader who seeks input from everyone on various topics.

"He cares about the other faculty and the students and UND," she said. "He just works so hard to make sure that everybody is successful."

Under Mike's leadership, the atmospheric sciences department has received more than \$31 million in external research grants in the past 21 years.

Additionally, the doctoral degree in atmospheric sciences were established during Mike's time as leader of the department. In his time, more than 300 degrees have been awarded in atmospheric sciences.

Mike was also "instrumental" in establishing one of the longest running internships in the college, with Fargo based Weather Modification Inc.

"He's just a terrific leader and a great mentor," Mullendore said.

Mike will resume a regular faculty role with the department.

Thanks Mike!

New AtSc Graduate Program Director Aaron Kennedy, Ph.D.



We are pleased to announce effective July 1, 2020 Aaron Kennedy will assume the position of Atmospheric Sciences graduate director. Aaron brings his passion for graduate research and teaching to the role.

As a child, Aaron tracked tropical storms in South Carolina to severe thunderstorms in northern Illinois. In response to this interest, he sought a meteorology degree at the U. of Oklahoma. His experiences there led him to pursue a career in research. Storm chasing cemented in his mind the importance of field work and direct observations of our atmosphere.

After finishing his B.S. (2004), and M.S. (2006), Aaron left Oklahoma to seek his Ph.D. at UND. Instead of focusing on severe storms and tornadoes, he conducted climate research, ironically using data collected at the Atmospheric Radiation Measurement Southern Great Plains Site in Lamont, Oklahoma. As the first AtSc Ph.D. graduate in 2011, he continued on at UND in a post-doc position before being hired as an Assistant Professor in 2013. He was promoted to Associate Professor in 2019

During his time here, Aaron fell in love with winter and his current research program spans topics ranging from winter weather, thunderstorms, landatmosphere interactions, and climate. He focuses on synergistic studies that use combinations of models/observations/reanalyses to advance our knowledge of these topics.

When Aaron is not working, he loves to hang out with his family including his amazing wife and three daughters (9,5,1yo). He loves adventures, and enjoys doing multi-day bike trips. Aaron is known for biking to school year-round. He loves to experience the atmosphere first-hand, and chases storms as time allows. Finally, he is an avid photographer and loves to document his various adventures.

Congratulations Aaron!

New Faculty Hire ~ Assistant Professor Bruce Lee, PhD

Bruce Lee grew up in the Minneapolis – St. Paul, Minnesota area. He received his Bachelor of Aerospace Engineering and Mechanics, 1982 from the Institute of Technology – University of Minnesota; a M.S. in Meteorology, 1990 from the South Dakota School of Mines and Tech-



nology and his Ph.D. in Atmospheric Sciences, 1995 from the University of Illinois at Urbana-Champaign.

Bruce was a Project Engineer – Performance Engineering with the Flight Operations Division, Northwest Airlines, Inc. for five years; Assistant and Associate Professor (Tenured) – Dept. of Earth Sciences at the University of Northern Colorado for six years; was the Senior Atmospheric Scientist for WindLogics, Inc. for 12 years and the President of High-Impact Weather Research & Consulting, LLC for 3¹/₂ years before coming to UND in November 2019 as an Assistant Research Professor in the Department of Atmospheric Sciences.

Bruce lives with his significant other, Dr. Cathy Finley, and their four cats, Nimbus, Simba, Cricket, and Tiger, whose life goals include minimizing the chances we ever get a good-night's sleep. His hobbies include Storms! Ever since he was a young child he has had a fascination with intense storms. Some of his first enduring memories are of watching big thunderstorms. He has seen 125 tornadoes since he began to seek them out in earnest during graduate school. Bruce also enjoys biking, cross-country skiing, hiking, canoeing – especially in the beautiful forest and lake country of northern Minnesota. Lake Superior agate hunting (a quest to find excellent specimens of Lake Superior agates, but generally not looking for them in Lake Superior).

Bruce's primary research interests are tornado development, maintenance and decay; factors controlling tornado track changes; research-to-operations initiatives – transfer knowledge acquired from observational and high-resolution modeling research on tornadic supercells to the operational forecast community.

Welcome Bruce!

American Geophysical Union (AGU) Annual Meeting

The Annual Meeting of the American Geophysical Union was held December 9 13, 2019 in San Francisco. Associate Professor Dr. Aaron Kennedy, Assistant Professor Dr. Cathy Finley along with M.S. students Nicole Loeb, Kaela Lucke, Nikki Carson, Jon Starr and Ph.D. student Joe O'Brien attended and presented at the conference.

Posters that were presented were "From Instrumentation to Outreach: Applications of 3D Printing to Promote Education in the Atmospheric Sciences" and "Identification of Blowing Snow Events over the Northern Great Plains with GOES-16" by Dr. Kennedy; "Feasibility of Downscaling NAAPS Aerosol Fields for Incorporating More Realistic Aerosol Direct Effects in WRF-Chem Simulations" by Nikki Carson; "An investigation into the impacts of crop type and acreage changes on surface albedo" by Jon Starr and "Characteristics of Blowing Snow During the AWARE Field Campaign" by Nicole Loeb.

Oral presentations were given titled "Investigating the Impact of Land Cover Change on the Northern Great Plains" by Kaela Lucke; "New Insights on the Role of the Forward-Flank Downdraft in Tornado Evolution from Very High-Resolution Simulations" by Dr. Cathy Finley and "Observations of Marine Stratocumulus Cloud and Precipitation Properties from ORACLES: Comparison of multi-frequency radar and in-situ instrumentation" by Joe O'Brien.

100THAMERICAN METEOROLOGICAL SOCIETY ANNUAL MEETING, STUDENT CONFERENCE AND CAREER FAIR

The 100th Annual Meeting and Career Fair for the American Meteorological Society (AMS) was held January 12 – 16, in Boston, Massachusetts. Faculty members Dr. Gretchen Mullendore, Dr. David Delene, Dr. Jianglong Zhang, Dr. Cathy Finley, Dr. Bruce Lee, Dr. Andy Detwiler along with Administrative Secretary Wanda Seyler attended the conference. Wanda Seyler, various faculty and graduate students covered the UND Atmospheric Sciences table at the Career Fair during the Student Conference visiting with prospective graduate students from all over the U.S. and Canada.

An AtSc Alumni Reception was held on Tuesday, January 14th at the Westin Waterfront Hotel. Special guests in attendance were Jeff and Kathy Stith (Jeff was a former AtSc department chair) and Carleton and Linda Bjerkaas (Carleton is an AtSc Scholarship donor). Many other AtSc alumni attended along with current students. Posters were presented by the following current students: "Biological Particles (Bacteria and Fungi) in Thunderstorms" by Harrison Rademacher; Exploration of Model-Resolution Dependence of Forecasted Wind Hazards for Small Unmanned Aircraft System Operations" by Lucas Reilly; "An Estimation of Crop Planting Dates through the Use of Remotely Sensed Data" by Jacob Zanker, "Investigating the Impact of Land Cover Change on the Northern Great Plains" by Kaela Lucke. "Uncertainty of Backscatter Coefficients from In Situ Cloud Probe Measurements in Cirrus Clouds" by Shawn Wagner and "Concurrent Radar and Aircraft Measurements of Florida Thunderstorm Cirrus Clouds" by Nick Gapp, and "Precipitation Evaluation of the North Dakota Cloud Modification Project" by Matt Tuftedal, recent M.S. AtSc graduates.

Oral presentations were given by the following: "Classification of Cirrus Ice Crystal Habits with Combined Lidar and Polarimeter Data" by Natalie Midzak; "A Development of an OMI Assimilation System for Aerosol Analysis and Forecasts over the Saharan Desert and the Arctic Region" by Jianglong Zhang; "Advances and Limitations of Nighttime Dust Aerosol Optical Depth Retrieval Using VIIRS Day–Night Band" by Jared Marquis and "Determining Best Practices for Archiving and Reproducibility of Model Data" by Gretchen Mullendore.

Those in attendance from UND Atmospheric Sciences department were <u>Faculty</u>: Gretchen Mullendore, Cathy Finley, Bruce Lee, David Delene, Jianglong Zhang, and Andy Detwiler; <u>Staff</u>: Wanda Seyler and Chris Theisen, (Northern Plains Unmanned Aircraft Systems Test Site); <u>Ph.D.</u> <u>Graduate Students</u>: Jared Marquis and Blake Sorenson; <u>M.S. Graduate Students</u>: Braxton Aldridge, Nikki Carson, Kaela Lucke, Natalie Midzak, Christian Nairy, Lucas Reilly, Elizabeth Sims, Lance Wilson, and recent graduates Nick Gapp and Shawn Wagner. <u>B.S. Students</u> attending were: Emily Archer, Devin Bissell, Gabe Benson, Caitlin Connell, Bobby Fleming, Julianna Glinskas, Caleb Hess, Alec Hetherington, Ben Remington, Evan Rys, Brandon Sperling, Jared Swanson, Justin Storm, Cecilia Wang, Jacob Zanker and Harrison Rademacher, UND Student Chapter of AMS President.

Atmospheric Science Alumni Reception—Boston



Back row: Jared Swanson, Dr. Andy Detwiler, Alex Zarnowski, Dr. David Delene, Dr. Bruce Lee, Dr. Cathy Finley, Josh Markel, Matt Tuftedal, Ron Stenz, Julianna Glinskas, Blake Sorenson, Shawn Wagner, Lucas Reilly, Jeff Nordeen, Braxton Aldridge, Derek Blestrud, Caleb Hess, Chris Theisen, Gabe Benson, Adam Theisen, Jamie Wolff, Tara Jensen, Corey Wolff, Andy Newman, Adam Caskey, Tara Jensen, Nick Anderson, Carlton Bjerkaas, Dr. Roelof Burger, Ryan Knutsvig

<u>Middle row</u>: Jared Marquis, Nikki Carson, Wenjun Cui, Julia Simonson, Lance Wilson, Jacob Zanker, Brandon Sperling, Ben Remington, Justin Storm, Kathryn Newman, Dr. Paul Kucera, Dr. Paul Bieringer, Linda Bjerkaas

<u>Front row</u>: Wanda Seyler, Kaela Lucke, Harrison Rademacher, Grant Gutierrez, Nick Gapp, Gretchen Mullendore

31st Annual Awards & Scholarship Banquet

The 31st Annual Atmospheric Sciences Awards & Scholarship Banquet was to be held on April 17, 2020 but was canceled due to COVID19. The following awards were to be given by the Atmospheric Sciences Faculty and the UND Student Chapter of the American Meteorological Society.

The following awards were presented to the following undergraduates:

Outstanding Freshman – Nathan Dahlseng and Patricia Hopp; Outstanding Student Broadcaster – Justin Storm; Outstanding Undergraduate Teaching Assistant – Ben Remington; Outstanding Undergraduate Student Researcher – David Singewald; Outstanding Sophomore - Bruce A. Smith Aerospace Scholarship – Dillon Vogt; Outstanding Junior – John D. Odegard Aerospace Sciences Scholarship – Evan Rys; Outstanding Graduating Senior – Devin Bissell and Jacob Zanker; Outstanding Service to the Department – Harrison Rademacher; Carlton Bjerkaas Atmospheric Sciences Scholarship -Cassidy Holth, Bobbie Fleming, Josh Kern, Dylan Myrvik; Frank Bavendick Meteorology Scholarship - Madeline Cruff; Leon F. Osborne Scholarship - Justin Storm.

The "Faculty Award" to the Outstanding Undergraduate was presented to B.S. senior Harrison Rademacher at the AtSc end of semester potluck in December 2019. This included a scholarship to be used for his last undergraduate semester at UND. The UND AMS Student Chapter voted to give the following faculty awards: Best Freshman & Sophomore Professor – Fred Remer; Best Junior & Senior Professor – Gretchen Mullendore; Best Academic Advisor – Jianglong Zhang; Golden Reamer Award – Aaron Kennedy; 7-Eleven / Most Available Professor – Alan Borho; Department Powerhouse Award – Sue McWilliams and Wanda Seyler.

The UND AMS Student Chapter held Photo Contests and the Award Winners were: Sept 2019 Photo Contest Award – Cassandra Taggart; Oct 2019 Photo Contest Award – Harrison Rademacher; Jan 2020 Photo Contest Award – Elizabeth Sims.

Forecasting Feud was the AMS new forecasting competition. The organization divided into teams (5 total) and partook in weekly to bi-weekly forecasting challenges for Grand Forks (precipitation, temperature, and wind). The scores were measured based on the % error to their forecast. The top two teams with the lowest cumulative errors got to play the forecasting feud game (based on family feud). Then the winner was the team that first made it to 300 points.

The Champion Award goes to the team of: Devin Bissell, Dillon Vogt, Evan Rys, Marisa Perez and Caitlin Connell.

Certificates were presented to the students and faculty at a later date.

Congratulations to all!

UND-AMS Officers 2020-2021

President - Evan Rys Vice President - Dillon Vogt Secretary - Emily Archer Treasurer - Natalie Odier Historians - Caitlin Connell & Lauren Larsen Student Liaison to Undergraduate Curriculum Committee - Alec Hetherington



Dr. Aaron Kennedy, associate professor of atmospheric sciences led a National Science Foundation funded field campaign titled BLOWN-UNDER, (Blowing Snow Observations at the University of North Dakota: Education through Research) that took place in Grand Forks from January 20 – February 12, 2020. Designed to test strategies of observing blowing and falling snow, the project brought together a number of instruments including a snowflake imaging system developed by Kennedy, a laser ceilometer loaned to the group from OTT Hydromet, a North Dakota Agricultural Weather Network (NDAWN) mesonet site, a balloonborne Particle Size, Imaging, and Velocity Probe (PASIV), and a deployment of a Doppler on Wheels (DOW) from the Center for Severe Weather Research (CSWR), a Boulder, Colo.-based nonprofit largely funded by the National Science Foundation.

The last time the DOW was at UND was 10 years ago, when Kennedy was an AtSc Ph.D. graduate student and served as the radar lead for this earlier project. Coming full circle, Kennedy designed the project to be student-centric, allowing graduate students to lead five teams who coordinated activities during the campaign. Over two dozen graduate and undergraduate students were involved with BLOWN-UNDER's science and outreach objectives. Outreach objectives of the project included hands-on demos with 3-D printed snowflakes and a blizzard simulator in an aquarium. Combined with tours of the DOW, the project impacted over 900 individuals over the winter during events at schools, tribal colleges, and during the Aerospace college's community day.

The inspiration for the project is quite simple: North Dakota's Red River Valley is the blowing snow capital of the country. Beyond a few flurries, though, the weather was quiet for the first few weeks of the campaign. Fortunately, the DOW was able to stay several extra days, and the field campaign observed a classic ground blizzard when an intense Arctic cold front with 50+mph winds swept through the region on February 12th. The observations collected by this project make this best observed ground blizzard in history! Details on the project are currently being prepared for an article in the Bulletin of the American Meteorological Society (BAMS) to be submitted later this year.



The February 12th 2020 ground blizzard seen from ground above), and a false-color image from the NASA TERRA satellite (below). Like many events in this region, blizzard conditions were primarily confined to the Red River Valley.



Composite images of snowflakes taken by the camera system developed by Kennedy.



Inflation crew preparing to launch the PASIV on February 6, 2020.



During outreach activities with students who toured the DOW at Discovery Elementary School.

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ATMOSPHERIC SCIENCES FIELD CAMPAIGN ~ NASA IMPACTS



A research team at the NASA Wallops Island Flight Facility participated in the NASA IM-IMPACTS PACTS project, which is a study of winter snowstorms over the northeastern United States. The first of 3 field campaigns was conducted from January 15 to February 28, 2020. The 2nd campaign is scheduled for the same time frame in 2021.

The team included Ph.D. student Joe O'Brien, M.S. students Kendra Sand and Greg Sova, and faculty members Mike Poellot and Dave Delene. UND's role was to install and operate a suite of 12 instruments and sensors on the NASA P-3 aircraft in order to measure the properties of clouds and precipitation. In addition to operating the instruments during the research flights, team members processed the data and were involved in the scientific analysis as well.

The second campaign is scheduled to take place between mid-January and the end of February 2021. The P-3 flight operations can be followed in real time at NASA's mission tracker web site: https://airbornescence.nasa.gov/tracker/#!/status/list?zoom=6&lat=37.9329&lng=-75.4704



Obituary ~ Pat Hurley

Patrick A. Hurley, 86, of Grand Forks, ND passed away August 19, 2020 in Altru Hospital, Grand Forks. A Memorial Mass was held on August 28 at Holy Family Catholic Church, Grand Forks. Pat is survived by his wife, Louise.

Some memories from Tony Grainger: My first memories of Pat go back to the mid-seventies, when I was working under contract with the Bureau of Reclamation on the Kansas HIPLEX program. He visited the site in Goodland on several occasions, although he wasn't our (ERT) contract monitor. He did have contact with John Odegard during this period and was instrumental in UND getting a contract with the Bureau for processing HIPLEX radar data. That contract continued for a number of years, largely with Pat's assistance. Pat was very knowledgeable about the manner in which federal budgets were put together and saw to it that the wording in funding bills was such that UND would continue to receive funding.

Of course, John Odegard wasn't all that interested in computers or weather radars; his interest was in aircraft. Again, with Pat's assistance, there was an effort to acquire a jet aircraft for UND. The first effort fell a bit short of the jet that John wanted, but was enough to get a Cheyenne II turboprop. It should be noted that there was not enough money to buy the aircraft outright, but it could be leased with an option to buy at the end of the lease period. This meant that the contracts had to be renewed each year or the aircraft would be lost. All of this was done under the Bureau's weather modification program.

Around 1987 Pat retired from the Bureau and shortly thereafter came to work at UND. While he was here, he taught the introductory meteorology course. There were a couple of things that were memorable in my mind during his affiliation with our department. One was that Pat was an elk hunter. Every year he would go hunting for about 2 weeks in Colorado. This was not just a minor thing. There was a company of about half a dozen that participated in this outing. They would set up a base camp with sizeable tents, horses, food, and cooking facilities. I took his classes a couple of times and I'm sure that others must have, as well.

Another thing that Pat was renowned for while here was food. Any time some department would have a potluck or any sort of lunch that was open to the public, Pat would be there. Whether it was out at the airport or some other department (or college), Pat was almost certain to be there.

Pat was hired at UND in 1988 and was instrumental in the formation of the Atmospheric Sciences department along with John D. Odegard. He retired from the AtSc Department in the Spring of 2003.

NORTHERN LIGHTS



December 2019 B.S. Graduate

Matt Weingartz Max Mueller

December 2019 M.S. Graduate Shawn Wagner

May 2020 B.S. Graduate

Devin Bissell Tyler Middleton Brett Muscha Harrison Rademacher Ben Remington Brandon Sperling Jacob Zanker

May 2020 M.S. Graduate

Xiao Ma Natalie Midzak

August 2020 M.S. Graduate

Nikki Carson Lucas Reilly Jon Starr



"A Lifetime of Impact: Leon Osborne"

The Atmospheric Sciences Graduate Student Association have put together a hard copy version of the book titled "*A Lifetime of Impact: Leon Osborne*". To view this product follow the link to Shutterfly and set up an account. From Shutterfly you will be able to purchase a copy of this book.

https://share.shutterfly.com/action/welcome? sid=sAbOWrhy2as2Lyw&cid=SM-PBAPP

Incoming Graduate Students

The Fall of 2020 we will have nine new graduate students working on their Master's.

They are:

Devin Bissell, Bemidji, Minnesota, received his B.S. from UND Atmospheric Sciences Department in May 2020;

Taylor Dolan, Middleburgh, New York, received her B.S. from SUNY-Oneonta, Oneonta, NY in May 2020;

Ben Remington, Pine River, Minnesota, received his B.S. from UND Atmospheric Sciences Department in May 2020;

Amy Stephens, St. Cloud, Minnesota, received her B.S. from St Cloud State University in May 2020;

Logan Twohey, Middletown, Kentucky, received his B.S. from the University of Louisville, in December 2019;

Lauren Vocke, Huntington Station, New York, received her B.S. from SUNY College at Oswego in May 2020;

Michael Willette, Plano, Texas, received a B.S. in Geology from Colorado State University in May 2014 and a B.S. in Meteorology from the University of Northern Colorado, Greeley, in December 2016;

Jacob Zanker, Apple Valley, Minnesota, received his B.S. from UND Atmospheric Sciences Department in May 2020.

Welcome Students!

Follow the Atmospheric Sciences SkyCam from the roof of Clifford Hall on YouTube!

youtube.com/undatmosphericsciences

Alumni News

Derek Blestrud, grew up on the family farm outside of Tioga, North Dakota, where he spent many hours on the tractor watching thunderstorms roll across northwest ND.



After high school he attended and graduated (1999) from the Association Free Lutheran Bible School (AFLBS) in Plymouth, MN with a certificate of graduation in General Bible Studies. After graduating from AFLBS he attended undergraduate school at the University of North Dakota and graduated with a B.S. in Atmospheric Sciences in 2003. Derek also attended (his thesis short of graduating) graduate school in the AtSc department at UND.

Derek's career in meteorology began with the North Dakota Atmospheric Resource Board as a Project Meteorologist for the North Dakota Weather Modification Program. This led him to working as a full time meteorologist with Weather Modification International (Weather Modification Inc. when I was employed) on projects in India, Alberta, and Wyoming. His time working on these different cloud seeding projects ultimately let him to the Idaho Power Company to help run their wintertime orographic cloud seeding project. As the need to inte-

Chris Theisen grew up on a small dairy farm outside of Upsala, MN. After high school graduation, Chris attended 2 years at Southwest State University (now Southwest Minnesota State University) in Marshall, MN with a focus in Chemistry. He transferred to UND in the fall of 2000 to study Atmospheric Sciences and graduated with his Bachelors in 2003. He went on to graduate school at UND and obtained his Masters in Atmospheric Sciences in 2006.

During his undergraduate studies, Chris became an intern weather forecaster at Meridian Environmental Technology, Inc and was hired on as a part time weather forecaster throughout his graduate schooling. During graduate school, Chris was also a Graduate Research Assistant focusing his studies in weather radar and cloud microphysics. After graduation, he was hired on as a temporary lecturer at UND grate weather into the electric utility, he has been able to work on projects that include cloud seeding, renewable energy, horological forecasting, energy trading, high performance numerical weather modeling, and numerous other projects.

While Derek is single and does not have any children, he gets to play the worlds greatest uncle roll to his niece, Siri, and nephews, Soren and Jorgen, who live in Grafton, North Dakota. While they are getting older and he may not be quite as cool as he once was, he does enjoy hearing about all of their adventures!

He loves traveling and exploring the world, backpacking, hiking, skiing, paddle boarding, and pretty much anything outside. He also enjoys being involved with his local church here in Idaho.

Derek really enjoys the research that they do that is based off of Idaho Power's cloud seeding project. He had the privilege to work on the Seeded and Natural Orographic Wintertime clouds - the Idaho Experiment (SNOWIE) project. This was a jointly funded project between the National Science Foundation and Idaho Power Company taking a detailed look at the microphysics of wintertime storms and how cloud seeding changes the structure of these storms.

in the Atmospheric Science department instructing Radar 1 and Radar 2 course material. In 2007, Chris was hired on as a Radar Research Meteorologist with the Regional Weather Information Center at UND where he worked on a wide variety of research projects until November 2018. It was in this position that Chris supported key research projects in unmanned aircraft systems (UAS). This experience allowed him to participate with state and key individuals from North Dakota universities to obtain a designation of a Federal Aviation Administration UAS Test Site in December 2013. The State of North Dakota is one of now seven UAS Test Sites across the nation supporting the integration of UAS into the National Airspace System (NAS). The Northern Plains UAS Test Site (NPUASTS; http:// www.npuasts.com/ is an entity of the North Dakota Department of Commerce and is housed at UND. Shortly after designation as a UAS Test Site,

Alumni News

Chris was asked to support the NPUASTS as the Director of Research and Development where he split time between his research staff position at UND and the Director of R&D with the UAS Test Site. In December 2018, he took on the role of Director of R&D with the NPUASTS in full capacity. He works closely with federal, state and industry clients interested in utilizing the test site to perform UAS research. He leads many research projects across all aspects of UAS. He performs research in areas of UAS infrastructure, detect and avoid, command and control, beyond-visual-line-of-sight UAS operations, UAS traffic management, and UAS detection systems. He also ensures research done at the NPUASTS addresses FAA goals and objectives to safely integrate UAS into the NAS. These efforts conducted by the NPUASTS focus on the current challenges that prevent routine use of UAS. Enabling complex UAS operations helps to commercialize UAS which is an economic focus area within the state of North Dakota. He leads a team of project managers to make sure that goals and objectives of NPUASTS clients are performed successfully and delivered on time.

Julie Theisen grew up on a farm near Hayti, South Dakota where her fascination of weather began. In high school, Julie did a few Science Fair projects and won a trip to participate in the International Science Fair her senior year in high school. Her project focusing on particulate concentration during snow storms across South Dakota was awarded Honorable Mention from the American Meteorological Society.

Julie graduated from Hamlin High School and attended UND to major in Atmospheric Sciences. She graduated with her Bachelors in 2003 and her Masters in Atmospheric Sciences is 2005 where she focused her studies on climatology and radiation.

Julie interned at Meridian Environmental Technology, Inc during her undergraduate studies, and continued as a part-time forecaster during graduate school. After graduation, Julie became a full-time forecaster at Meridian focusing on road weather forecasting for Departments of Transportation. In 2006, Julie became the Director of Advanced Traveler Information Systems (ATIS) overseeing and managing 10 states' traveler information 511 systems including phone, web and mobile applications. In 2010, Meridian was acquired by Iteris, Inc and Julie became Associate Vice President of ATIS. In 2014, Julie started as the Director of Business and Program Management for the Northern Plains UAS Test Site, one of 7 FAA designated UAS Test Sites. She is responsible for contracting, client and program budgets and invoicing.



marketing, office management, and department human resources.

Chris and Julie met in college at UND while taking classes in Atmospheric Sciences. They began dating in 2001 and were married in 2005. They have two beautiful children Emma (9) and Evan (5) and live outside of Thompson, ND.

Chris likes to spending time outside and enjoys hunting, fishing and spending time with his family. In Julie's spare time, she enjoys golfing, gardening and traveling.

Danny Burtch grew up in Amherstview, Ontario, Canada on Lake Ontario. He received his Bachelor of Engineering - Aerospace from Carleton University, Ottawa, Canada and his Master of Science degree in 2014. Danny



worked for Dr. Gretchen Mullendore after his graduation and in 2016 was hired at DNV GL in San Diego, CA as a Wind Energy Analyst.

Danny and his husband, Charlie, were married in October 2019 and have one cat, Fitzy and a dog, Fendi. His hobbies include softball, running and traveling. Page 12

100th AMS Annual Meeting



Current UND Undergraduates attending AMS

L to R: Harrison Rademacher, Julianna Glinskas, Julia Simonson (B.S. alum), Jacob Zanker, Bobby Fleming, Evan Rys, Alec Hetherington, Justin Storm, Caleb Hess, Gabe Benson, Christian Nairy (Grad Student), Devin Bissell, Jared Swanson, Ben Remington, Caitlin Connell



Welcome marquee at the Boston Convention Center for the 100th Annual Meeting of the American Meteorological Society! Carlton Bjerkaas with Jacob Zanker, a 2018 recipient (left), and Harrison Rademacher, a 2019 recipient of the Carlton Bjerkaas Atmospheric Sciences Scholarship





Atmospheric Sciences Alumni Reception









DEPARTMENT OF ATMOSPHERIC SCIENCES

As you can see in this newsletter there is a lot going on in the Department of Atmospheric Sciences and we have been able to celebrate many successes. We would not have been able to accomplish much of what we do without the support we have enjoyed from the University and from the Dean's Office in the Odegard School. Still, we have ongoing needs to further help our students and programs thrive. To improve the educational opportunities for our students, we have determined two specific priorities that would greatly benefit from additional funding support: student scholarships and academic equipment.

At this time, we are asking friends, colleagues and former students of Leon Osborne to join in cementing his legacy by contributing to a scholarship endowment in his honor. The Leon F. Osborne Science and Society Award endowment is providing scholarships to students enrolled in Atmospheric Sciences within the Odegard School. The Award targets students who have demonstrated an understanding of the importance of atmospheric science to society and who are pursuing a career that would provide a direct benefit to the needs of society by promoting enhanced applications of the atmospheric sciences to address societal issues.

The other goal I would like to highlight is to upgrade several hardware and software components of our Doppler weather radar. This system, dubbed the "NorthPol" radar, was last upgraded in 2004 so some parts are at the end of their useful life. Students use NorthPol in their weather radar coursework and for collecting data for Senior Project research. We want our students to have the opportunity to work with state-of-the-art tools to adequately prepare them for entry into the work force.

If you are able to help with these priorities, please contact myself or Jonathan Gehrke. Our contact information is listed below. Your support is greatly appreciated.

Mike Poellot Atmospheric Sciences Department 701-777-3180 poellot@atmos.und.edu Jonathan Gehrke, Sr. Director of Development UND Alumni Association & Foundation 701-777-2633 jonathanG@undfoundation.org

Atmospheric Sciences Skycam

September 17, 2020 marks the two-year anniversary of the UND Department of Atmospheric Sciences Skycam. The current camera has provided students, the department, UND and numerous others with great views of the Grand Forks skyline and weather phenomena. It has been featured nationally on the Weather Channel and WeatherNation.



New and better technology is needed to update the Skycam to capture the best skyscape possible. As part of the anniversary celebration, the UND Department of Atmospheric Sciences is asking for your help to make that upgrade happen.

The new camera will more than double the resolution of the old model while increasing the field of view to allow for more sky to be captured. It will also provide better low-light performance and improve stabilization of the image in windy conditions.

Reaching a goal of \$2,100 will allow the purchase and installation of the new camera. However, with your help today, we hope to exceed that goal and reach \$5,000. This extra support will allow us to reinstall the current camera in a different location for an additional view of the UND campus and Grand Forks community!

https://undalumni.org/skycam?erid=9620844&trid=fbd817e7-ddf9-4153-a429-4f0f87cbc1d0