UNIVERSITY OF NORTH DAKOTA ATMOSPHERIC SCIENCES

# NORTHERN LIGHTS

Issue 11

## FALL 2023

## Letter from the Interim Chair, Matt Gilmore



Welcome to the Fall 2023 edition of our yearly newsletter. This has continued to be a positive year of changes with the development of new courses; obtaining research grants; and providing experiential learning opportunities to students in both the classroom and research realms. A focus of the coming year will be on recruitment of new faculty, a priority identified at the Aerospace Strategic Planning workshop in August. Another focus will be to review our undergraduate program.

First, I would like to announce that our beloved instructor, Prof. Fred Remer submitted notice to retire December 2024 -only 14 short months from now.

Last year was Dr. Jake Mulholland's first successful year as an assistant professor, teaching several undergraduate courses (one section of Extreme Weather and Climate) and a graduate course (Numerical Weather Prediction). He is preparing to teach Radar Meteorology this Spring 2024. He continues to work on a collaborative grant to study how the environment influences updraft and precipitation processes in thunderstorms.

This is also Dr. Montana Etten-Bohm's (or Dr. E-B, for short) second successful year teaching with us in person, where she has continued to refurbish, improve, and modernize the instrumentation with the ATSC-110 labs, in part with a generous grant from the Odegard School. Dr. E-B's classes continue to rank highly, which is not surprising given her attention and research expertise in teaching pedagogy. Also, Dr. E-B is taking the reins of the Undergraduate Program Director, an administrative position held for many years by Mr. Fred Remer. She will be overseeing an audit of our undergraduate courses and making sure they are the best they can be, given current trends in the field. Those interested in helping review the curriculum are welcome to contact Dr. E-B for more information.

This is Dr. Jared Marquis' third successful year as a teaching assistant professor, continuing to teach several graduate-level courses and upper-level undergraduate courses. In Spring 2023, he taught an entirely new yearly course called "Advanced Forecasting (ATSC-420)", in collaboration with Science and Operations Officer, Tommy Grafenauer, from the local NWS office in Grand Forks.

In closing, we thank the generous contributions of our friends, alumni, and industry partners who have continued to fund our student scholarships, including the Leon F. Osborne Science in Society Award, the Carlton Bjerkaas scholarship, Frank Bavendick Meteorology Scholarship, and the Science Engineering Associates Scholarship. For more information on how you can contribute to our program, please see the back page.

Matt



Wanda Seyler, Editor

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## **American Geophysical Union (AGU) Annual Meeting**

The Annual Meeting of the American Geophysical Union was held December 12-16, 2022 in Chicago. Post-doc **Marwa Majdi**, M.S. student **Kaela Lucke**, along with Ph.D. students **Christian Nairy**, **Blake Sorenson** and **Natalie Midzak** attended and presented at the conference.

A poster was presented by **Blake Sorenson**, titled "Observations of Smoke Aerosol Thermal Infrared Signals in the 2021 Dixie Fire Smoke Plume"; **Natalie Midzak**, gave an oral presentation titled "An Investigation of South American Biomass Burning Particle Sphericity using Lidar Data"; Kaela Lucke presented a poster titled "Agroclimatic Seasonal Limitations by 2100: North Dakota and the World"; Christian Nairy presented a poster titled "Chain Aggregate Particles in Upper-tropospheric Clouds"; Marwa Majdi presented two posters titled "Automatic Fog Detection and Visibility Determination from Camera Images using Deep Learning Features for Aviation Operations Involving Unmanned Aircraft Systems (UAS)" and "An Evaluation of a Convolutional Neural Network for Classifying Images from In-situ Cloud Probes"

## 103<sup>RD</sup> AMERICAN METEOROLOGICAL SOCIETY ANNUAL MEETING, STUDENT CONFERENCE AND CAREER FAIR

The 103<sup>rd</sup> Annual Meeting and Career Fair for the American Meteorological Society (AMS) was held January 7-13, 2023, in Denver, Colorado. Administrative Secretary, **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 10<sup>th</sup> at the Hyatt Regency Hotel. Many AtSc alum attended along with some current students and faculty.

Posters were presented by the following students: Blake Rafferty, BS Student, "A Comparison of Balloon-Borne and sUAS Observed Boundary Layer Winds"; Cassidy Holth, BS Student, "Testing a Compact Solid-State Cosmic Ray Neutron Detector for Field Scale Soil Moisture Sensing"; Trece Hopp, BS Student, "Science in Action: Evaluating the Application of CTP Skills and Knowledge to Decision Making"; **Taylor Dolan**, MS Student, "The role of ENSO on Atmospheric Patterns in the Great Plains of the United States in the CESM2 Large Ensemble"; **Talia Kurtz,** MS Student, "Detection of Meteorological Drivers of Blowing Snow Events Using Python Based MiniSom Package at the ARM North Slope Alaska Site"; **Devin Bissell**, MS Graduate, "How Well Does the HRRR Forecast Overshooting Convection? A Climatology from the Summer of 2021".

Oral presentations were given by the following: **Brian Horan**, MS Student, "Using a Convolutional Neural Network to Classify Snowflake Imagery from the Open Snowflake Camera for Research and Education (OSCRE)" and "Development of a Small Uncrewed Aerial Systems Open-Source Forecasting Application driven by the High-Resolution Rapid Refresh"; **Dr. Jake** 

## **AMS Annual Meeting continued**

Mulholland," The Role of Vertical Wind Shear in Hvdrometeor Displacement in Supercell Thunderstorms"; Lauren Vocke, MS Student, "A Climatology of Blowing Snow Events at Alaskan ARM Sites"; Aaron Scott, Ph.D. Student, "Using a Simple Numerical Model to Teach Numerical Weather Prediction Concepts"; Joe O'Brien, Ph.D. Student, "X-Band Precipitation Estimates for the Surface Atmosphere Integrated Field Laboratory (SAIL) Field Experiment"; Natalie Midzak, Ph.D. Student, "Exploring the Impacts of Non-Spherical Smoke on Lidar Retrievals"; Michael Willette, MS Student, "Design Concept and Feasibility Analysis of a Fog Abatement Project Using Unmanned Aircraft Vehicles"; Alec Sczepanski, Ph.D. Student, "Using a Machine Learning Algorithm to Identify Blowing Snow in Mid-latitude Lidar Data".

Post-docs Mounir Chrit & Marwa Majdi, cochaired a session "Micro-Weather Information (Observations, Forecasts, and Communications) for Advanced Air Mobility Operations"; Dr. Travis Toth, AtSc Ph.D. Alum & Natalie Midzak, Ph.D. Student, cochaired a session "Current and Future Satellite-Based Measurements of Aerosols, Clouds, Composition, and Winds: Part 1". **Dr. Cathy Finley** presented the keynote address at the 22<sup>nd</sup> Annual AMS Student Conference in the Closing Remarks and Keynote session on Sunday, January 8<sup>th</sup>, titled "*From Tornadoes to Turbines and Back Again: Lessons Learned from an Unconventional Career Path*".

Those in attendance from UND Atmospheric Sciences department were Faculty: Drs. Cathy Finley, Aaron Kennedy, Jared Marquis and Jake Mulholland; Staff: Wanda Seyler; Adjunct Professor, Dr. Gretchen Mullendore; Post-docs Mounir Chrit and Marwa Majdi; Ph.D. Graduate Students: Aaron Scott, Alec Sczepanski, Natalie Midzak and Joe O'Brien; M.S. Graduate Students: Taylor Dolan, Brian Horan, Talia Kurtz, Taylor McHone, Lauren Vocke, Ethan Weisberger, Michael Willette and Devin Bissell (Dec. 2022 grad); B.S. Students: Trece Hopp, Cassidy Holth, Lucas Castro, Blake Rafferty, Abbygail Wiekamp, Marisa Perez, Nick Camp, David Brannon, Mathew McLaughlin, Shelby Ebertowski, Bryson Vetch, Elan Azriel, Addison Espy and Lauren Larsen, UND Student Chapter of AMS President.

### "A Lifetime of Impact: Leon Osborne"

The Atmospheric Sciences Graduate Student Association in 2017 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



If you received a copy of this newsletter in the mail and would prefer to receive it via email, please drop Wanda an email at wanda.seyler@und.edu and she will get you added to the email list.

## 34<sup>th</sup> Annual Awards & Scholarship Banquet

The 34<sup>th</sup> Annual Atmospheric Sciences Awards & Scholarship Banquet was held on Friday, April 21, 2023. The speaker was **Steve Stock**, 1987 UND AtSc B.S. graduate, Delta Airlines Chief Meteorologist, retired.

These awards were presented to the following undergraduates by the faculty: Outstanding Freshman - Carson Turner and Samuel Halvorson; Outstanding Student Broadcaster -Ebertowski; Shelby Outstanding Undergraduate Teaching Assistant – Patricia (Trece) Hopp; Outstanding Graduate Teaching Assistant – Julia Poblotzki; Outstanding Undergraduate Student Researcher – Nicholas Camp and Blake Rafferty; Outstanding Sophomore – Yibo Chen; Outstanding Junior - Blake Rafferty; Bruce A. Smith Aerospace Bryson Vetch; John D. Scholarship -Odegard Aerospace Sciences Scholarship -Payton Belzer, Kassidy Kjos, Reese Wagner; Outstanding Graduating Senior – Lucas Castro; Outstanding Service to the Department Lauren Larsen; Science Engineering Associates Scholarship— Nicholas Camp and Blake Rafferty: Carlton Bjerkaas Atmospheric Sciences Scholarship –Nicholas Camp, Owen Meisner, Samuel Halvorson and Madyson **Bombard** (incoming Fall 2023 freshman) Frank Bavendick Meteorology Scholarship – Cassandra Taggart; Leon F. Osborne Science & Society Award – Blake Rafferty

The "*Faculty Award*" to the Outstanding Undergraduate was presented to B.S. senior **Trece Hopp** in December 2022. This included a scholarship to be used for their last undergraduate semester at UND. The ASGSA (AtSc Grad Student Association) gave out the following awards to graduate students: Department StackOverflow Award (for providing most coding help) - Aaron Scott (PhD) and Taylor McHone (MS); High Flyer Award (for most research flight miles) - Christian Nairy (PhD) and Jen Moore (MS); Sieve Award (for most UND team spirit) - Ethan Weisberger (MS); "Most Likely to Freeze When They Step Outside" Award (for an out-of-state grad student with the greatest enthusiasm for embracing ND winter) - Lynnlee Rosolino (MS) (from Florida); RAM Chewer Award (for most tabs open in an Internet browser for work and research) - Clay Wooton (MS); Isallobar Award (for accumulating the most IOUs at the Isobar) - Joseph Gufford (MS).

The UND AMS Student Chapter voted to give the following faculty awards: Best Freshman & Sophomore Professor - Montana Etten-Bohm: Best Junior & Senior Professor – Aaron Kennedy & Bruce Lee; Best Academic Advisor – Jake Mulholland: Golden Reamer Award – Aaron Kennedy & Bruce Lee; 7-Eleven / Most Available Professor – Aaron Scott, PhD Student; Night Owl Award—Fred Remer; Best Graduate TA— Clay Wooton; "Quick" Story Award - Jared Marquis; Department Powerhouse Award Sue McWilliams and Wanda Seyler.

The UND AMS Student Chapter held Photo Contests and the Award Winners were: Spring Break Contest - Blake Rafferty; Thanksgiving - Elan Azriel; Bodies of Water - Bryson Vetch; and Valentine's Day - Shelby Ebertowski.

**Congratulations to all!** 





L to R: Bryson Vetch, Julia McGee, Abbygail Wiekamp, Blake Rafferty, Dr. Jared Marquis, Shelby Ebertowski and Caroline Solseth



#### December 2022 M.S. Graduate

Devin Bissell Lance Wilson

#### May 2023 B.S. Graduates

Lucas Castro Nathan Dahlseng Cassidy Holth Patricia "*Trece*" Hopp Lauren Larsen Mathew McLaughlin

## May 2023 M.S. Combined Degree

<u>Graduates</u> Joshua Kern Joshua Nielsen

May 2023 M.S. Graduates Joseph Gufford IV Taylor Trask

August 2023 M.S. Graduates Brian Horan Ben Remington

August 2023 Ph.D. Graduate Joseph O'Brien



#### UND-AMS Officers 2023-2024

President - Blake Rafferty Vice President - Shelby Ebertowski Secretary - Julia McGee Treasurer - Bryson Vetch Historian - Caroline Solseth Student Liaison to Undergraduate Curriculum Committee - Abbygail Wiekamp Faculty Advisor—Dr. Jared Marquis



The Fall of 2023 we will have seven new graduate students working on their Master's. One graduating master's student will continue on for his Ph.D.

They are: Brady Adams, Champaign, Illinois, a 2023 B.S. graduate of the University of Illinois at Urbana-Champaign; Patrick Britt, Lansing, Michigan, a 2022 B.S. graduate of the University of Michigan-Ann Arbor; Emily Gosney, Louisville, Kentucky, a 2023 B.S. graduate of the University of Louisville; Deborah Hershey, Rochester, Minnesota, a 2019 B.S. Physics graduate of Winona State University, Winona, MN; Cole Hood, Flower Mound, Texas, a 2023 B.S. graduate of Texas A&M University—College Station; James Klinman, Granite Falls, Washington, a 2022 B.A in Physics-Astronomy, graduate of Whitman College in Walla Walla, WA; Levi Newell, Rio Hondo, Texas, a 2022 B.S. graduate of Texas A&M University-College Station.

**Joseph Gufford IV**, Port Saint Lucie, Florida, is a 2023 MS graduate of the University of North Dakota and is continuing on at UND for his Ph.D.

Welcome Students!

## BABY NEWS



Congratulations to Dr. Jake Mulholland, Assistant Professor and his wife, Bowen Pan, on the birth of their daughter, Amelia Summer Pan-Mulholland.

She arrived at 7:07 a.m. Wednesday, June 28, 2023. She weighed 7 lbs. and was 19" long.



# **Department** News

Christian Nairy, Ph.D. student and Jennifer Moore, MS student, had been operating the cloud probes on the NASA P-3 research aircraft for the 2023 IMPACTS (Investigation of Microphysics & Precip for Atlantic Coast-Threatening Snowstorms) field project that ran from January 3 – March 4, 2023 taking place in Wallops Island, Virginia.

The UND team was responsible for the acquisition and processing of data from the cloud microphysics probes (Cloud Droplet Probe, King Probe, Water Content Measurement Probe, Rosemount Icing Probes, 2D-S Probes, HVPS3 Probes, and Hawkeye probe), which are mounted on the NASA P-3 aircraft. The integration of these probes required technical work for establishing power and data connections, mounting of the probes on the under-wing pylons, buildup of the cabin instrument racks, and verifying operation of all instruments. Software is used to ensure proper instrument function once installed and to handle the P-3 data streams.

The UND team has operated the probes during the IMPACTS field campaigns, which includes cleaning, maintenance, conducting quality control checks, and troubleshooting the instruments. UND is responsible for delivering Level 2 data products to the project archive and conducts analysis of the cloud probe data in collaboration with other IMPACTS investigators.

**Aaron Scott,** Ph.D. student accepted a position for a tenure-track appointment as an Assistant Professor of Meteorology at the University of Tennessee Martin in northwest Tennessee that began in August 2023. He will head the meteorology program within the Department of Agriculture, Geosciences, and Natural Resources where he will teach and develop numerous courses, advise students, guide the meteorology curriculum, and develop research efforts involving undergraduate students. Aaron plans to complete his dissertation and graduate the Summer of 2024.

## Connect up with Atmospheric Sciences through Social Media



We invite you to keep in touch with the Atmospheric Sciences department by finding us on the following social media platforms:

https://www.facebook.com/UNDATSC

https://www.youtube.com/UNDAtmospheric Sciences

https://www.facebook.com/UNDATSC

https://twitter.com/UNDATSC/

https://www.instagram.com/undatmospheric sciences

Facebook: AtSc Atmospheric Sciences Alumni Website: https://aero.und.edu/atmos

### ALUMNI NEWS WANTED

We are looking for news about you to share with other alumni in our upcoming newsletters (information about your current position, significant achievements, family activities, etc.). Also if you could please send us your current e-mail address and address changes it would be appreciated. If you have any ideas or comments about the newsletter, please send them to Wanda at: wanda.seyler@und.edu.

## Janelle Hakala's Greenland Adventure

When UND last heard from Atmospheric Sciences graduate **Janelle Hakala** in November 2017, she was in the first weeks of a year-long stay at the geographic South Pole.

This summer (2023), she is deployed at Summit Station, Greenland working as a Science Technician. Her main role involves maintaining fourteen separate experiments collocated in a remote building dedicated to science. The suite of instruments she maintains are part of the Integrated Characterization of Energy, Clouds, Atmospheric State, and Precipitation at Summit (ICECAPS) project. Additional tasking involves launching weather balloons, taking accumulation surveys for NASA, and assisting with air samples for NOAA. Upon completion of her time in the Arctic at the end of October, she will be returning to the Denver/Boulder area where she has been located since 2019.

Janelle graduated from the Atmospheric Science program in May of 2017 with her B.S. degree.







Mobile Science Facility—she walks to it each day and completes her science rounds.



She also has "Bike to Work" day.

Big House where her office is, where they eat and hang out. We wonder where her next adventures will take her!

# **Department** News

#### Weather Modification Association Annual Meeting

Andy Detwiler chaired the annual meeting of the Weather Modification Association in Denver, Colorado in April. He completed his term as president of the association at the completion of the meeting. Andy is retired from the South Dakota School of Mines and Technology and moved to northern Minnesota and travels to Grand Forks where he is an Adjunct Professor with Atmospheric Sciences. He is involved with research and collaborations with AtSc faculty.

**Dr. David Delene**, Research Professor, **Andy Detwiler**, and **James Klinman**, MS student, attended the 40th Radar Meteorology Conference of the American Meteorological Society in Minneapolis in late August. They presented their results from their studies of radar signatures of hail.

Dr. David Delene and MS Student Michael Willette traveled to Saudi Arabia for 5 weeks this summer to assist in supporting the Saudi Aerosol-Cloud-Precipitation Enhancement Campaign (SARPEC) series of field projects, which aims to determine the effectiveness of operational cloud seeding techniques for rainfall augmentation within the arid climates of the Kingdom of Saudi Arabia. The first SARPEC intensive operational period (IOP) occurred in the late summer of 2023 coincident with the seasonal monsoon of the Asir mountains/escarpment of southwest Saudi Arabia. In-situ measurements of cloud microphysics properties are obtained using the North Dakota Citation Research Aircraft, which deployed cloud probes and airborne wind measurements systems. Twelve research flights were conducted during the summer of 2023, which included five cloud physics missions. Cloud penetrations were conducted at various levels (-10 °C, -15 °C, -20 °C) above cloud base to determine how liquid water content properties vary with vertical development and to observe the effects of ice crystal aggregation processes. A second SARPEC is planned for November of 2023.

The faculty received new gray ergonomic chairs and new gray slide chairs for their offices. These were to replace the orangish chairs that have been around since the building opened in 1992/93. The two conference rooms received chairs with wheels.

The AtSc 110 Lab has also gotten a new look. High top tables along with new stools were purchased and installed this summer to make it easier for students to stand and work. The tables can be adjusted to regular height tables to accommodate student needs.





## SPONSOR A Atmospheric Sciences Weather Balloon

We would like to highlight a new and fun opportunity for alumni to contribute to both our education and research efforts.

Through the Alumni Center, you may sponsor a weather balloon for \$250, which is about what it costs for the materials to release a single/standard -sized weather balloon: parachute, balloon, instrument package, not including helium.

For each \$250 that you contribute, you will receive a group photograph of faculty and students releasing the weather balloon. In the photo below, you can see one of the many launches conducted over this past year. Here is the link for the weather balloon donations:

#### https://undalumni.org/weather-balloon





AMERICAN METEOROLOGICAL SOCIETY 104TH ANNUAL MEETING 28 JANUARY-1 FEBRUARY 2024 BALTIMORE, MD & ONLINE

### AMS 2024—Baltimore

If you plan to attend AMS in Baltimore and would be interested in attending an UND AtSc alumni reception, please let Wanda know—wanda.seyler@und.edu.

## Atmospheric Sciences Grants received

Several faculty have received new grant funding over the past school year.

#### Dr. David Delene:

- Collaborative Research: Comparison between In -situ & Polarimetric Radar Hail Observations in Convective Storms
- Seed Grant-Delene/Chelmo ND NASA EP-SCoR-RID
- Investigating the Formation of Ice Crystal Aggregates-Atmos Science
- IMPACTS (Investigation of Microphysics & Precip for Atlantic Coast-Threatening Snow-storms)
- Summer and Fall 2023 Saudi Arabia Field Project and Analysis
- Research Seed Grant Fernandez-Tous/Delene

#### Dr. Matt Gilmore:

• Application of Mini-Dropsonde-Equipped HAB Targeted Observations of Extreme Weather

#### Dr. Aaron Kennedy:

- Collaborative Research: Diagnosing the impacts of blowing snow in the Northern Great Plains
- Temporal and Spatial Variability of Air Quality: Merging Research, Environmental Technology, and Education on the Standing Rock Sioux Reservation: Two Year Extension

#### Dr. Marwa Majdi, Post-doc Researcher:

- Forecast Simulations for Western North Dakota 2022-2023
- VPR ECSP: Real-Time Estimation of Cloud Ceiling (Majdi/Marquis/Delene)
- VPR ECSP: Collab in Engineering & Aerospace (Chelmo/Majdi/Delene)

#### Dr. Jared Marquis

• Nationwide Eclipse Ballooning Project

These are just a handful of the numerous grants received by professors within the department over the past year. Thank you and congratulations to these hard-working individuals!

# Internships & Other Activities

We had quite a number of AtSc students working on internships this past summer.

Ethan Weisberger, MS Student, was accepted into the Private Sector Meteorologist mentorship program. He was paired with a mentor who works in the private sector and they have monthly meetings to discuss professional career development, resume and interview tips, and other general information related to the opportunities or career paths in the private sector. This is through the AMS Board for Private Sector Meteorologists.

**Charles "Chuck" Richie II**, MS student, accepted a position as a forecaster at the National Weather Service in North Platte, Nebraska. He started in mid-July. Chuck is planning to graduate with his MS in 2024.

Taylor McHone, MS student, completed a 10-week internship at the Naval Research Laboratory in Monterey, California this past summer. For the internship, she began evaluating the performance of the Navy's global aerosol transport model during various smoke events over the U.S. East Coast in May and June, 2023. She compared modeled aerosol optical depth and vertical aerosol extinction with ground-based remote sensing observations from the Aerosol Robotic Network (AERONET) and the Micro-Pulse Lidar Network (MPLNET). They found that the models capture the overall timing of aerosol loading at both sites, but the magnitude of aerosol optical depth and the vertical distribution of smoke show important differences both between model runs and between model and observations.

## 2023 AMS ~ Denver, Colorado Atmospheric Sciences Alumni Reception



Back Row L to R: Jon Starr, Nick Carletta, Ethan Weisberger, Corey Amiot, Taylor McHone, Amy Stephens, Kurtis Pinkney, Kelly Kramlich Serr, Kathryn Crosby Newman, Andy Newman, Matt Tuftedal, Cathy Finley, Braxton Aldridge, Brian Horan, Devin Bissell, David Singewald, Harrison Rademacher, Blake Rafferty, Alec Sczepanski, Jake Mulholland, and Peng Wu.

*Middle Row L to R:* Jared Marquis, Ricardo Alfaro-Contreras, Nikki Carson-Marquis, Gretchen Mullendore, Wanda Seyler, Chelsea Augustine (fiancé of Matt Tuftedal), Kendell LaRoche, Cassidy Holth, Lauren Larson, Nick Gapp, Caitlyn Mensch, Nicole Stevens, Lauren Vocke, and Bowen Pan.

Kneeling L to R: Talia Kurtz, Taylor Dolan, Janelle Hakela, Aaron Kennedy and Kellen Peters

# Air Race Classic

For the first time in its 46-year history, the all-women annual Air Race Classic began its takeoff from the Grand Forks International Airport, an event hosted by **UND's John D. Odegard School of Aerospace Sciences** that included a UND racing team. The 2,684statute-mile competition across 12 states began at 8 a.m. Tuesday, June 20, with 42 teams and 100 racers taking off from the Grand Forks airport. The competition ended on Friday, June 23, when all air racers were expected to land at the Miami Homestead Airport in Florida.

Students from the John D Odegard School for Aerospace Sciences provided weather support for the UND team. A UND team consisting of a pilot, co-pilot and navigator flew a Piper Archer supplied by UND Aerospace in the race. The UND Atmospheric Sciences Department has been forecasting for the UND team, known as '*The Frozen Force*', since 2012.

The race is a handicapped race based upon the airplane's true airspeed. This year included eleven stops en route. Any advantage that the team can gain from a tailwind improves their ranking at the finish line.



Seventeen graduate and undergraduate students from the UND Atmospheric Sciences and Aviation programs supported the UND race team with weather briefings and updates. The forecasters determined the most favorable altitudes for tailwinds and also helped them avoid thunderstorms and hazardous weather.

In addition to providing weather support for the UND race team, a group of students and faculty organized by master's student **Talia Kurtz** participated in a Youth Event. Local middleschool students participated in the STEM event which included a radiosonde launch.

A group headed by **Fred Remer** provided weather briefings and additional support to the entire Air Race Classic fleet. Members of the group included **Dr. Jared Marquis**, **Dr. Montana Etten-Bohm** and **Joel Siegel**, a 2015 MS UND AtSc graduate.

#### North Dakota team for NASA's Nation-Wide Ballooning Project (NEBP)

The North Dakota team for NASA's Nation-Wide Ballooning (NEBP) project is being led by Dr. Jared Marquis and Dr. Montana Etten-Bohm and MS Student Taylor McHone with the assistance of the North Dakota Space Grant Consortium. The project involves traveling to the upcoming 14 October 2023 and 8 April 2024 Solar Eclipses and taking surface and upper air meteorological observations in search for eclipse induced atmospheric gravity waves. Joining the leadership team will be 10 UND students including both ATSC majors and minors of all classifications from Freshman to Seniors. In October, they will be traveling to Mancos Community College and teaming up with the Pueblo Community College Southwest students to perform 30 hourly weather balloon launches centered around the eclipse. These launches aim to reach altitudes of over 30-km and collect data every second! As part of the project, UND has received a new Lufft transportable weather station and 3 portable GRAW sounding systems.

The North Dakota team is one of nineteen teams in the NEBP Atmospheric Science track with an additional 34 NEBP engineering teams with a total of several hundred participants. More information is available on the project website (<u>https://eclipse.montana.edu</u>). The team also plans to have a video blog posted to social media - so make sure to check in on the UND AtSc Alumni Facebook page for future updates!

## Atmospheric Sciences 5th Anniversary of the Skycams

September 2023 marks the 5<sup>th</sup> anniversary of the Dept. of Atmospheric Sciences Skycams! The west camera was originally installed in 2018 and upgraded in 2021. The original camera was then repurposed to provide an eastward facing view in the same year. The cameras are streamed live to YouTube. Since the inception of the project, our YouTube channel has gathered 1.7 million views, and has been watched for over 265 thousand hours! The cameras are routinely featured in local media, the Weather Channel, and WeatherNation broadcasts. Various timelapse videos have been posted over the years featuring events such as blizzards, severe thunderstorms, aurora, and more! Make sure to subscribe to our channel to receive updates.

They can both be found at: youtube.com/undatmosphericsciences.

East:<u>https://www.youtube.com/watch?</u> <u>v=Jq6C162vNkg</u>

West:<u>https://www.youtube.com/watch?</u> v=mpcvRHLGBRw



## DEPARTMENT OF Atmospheric Sciences By Professor Emeritus Mike Poellot

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 we 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 Interim Chair Matt Gilmore or Jonathan Gehrke.

Matt Gilmore Atmospheric Sciences Department 701-777-3124 matthew.gilmore@UND.edu

Jonathan Gehrke Sr. Director of Development UND Alumni Association & Foundation 701-777-2633 jonathanG@undfoundation.org