Congratulations to Our 2016 - 2017 Atmospheric Sciences Award Winners & Graduates!

Award Winners
Alex Lukinbeal was awarded the Outstanding Senior Award for the 2016-2017 academic year. This award is given to an undergraduate who has excelled academically and been involved in the department at a high level. Alex will be joining our MS program as a member of Dr. Zhaoxia Pu’s research group in Fall 2017.

Alex Guzman was awarded the Whitman Mountain Meteorology Award for the 2016-17 academic year. This award is given to an undergraduate student for demonstrated interest and performance/scholarship in mountain meteorology.

Spencer Tangen was named as The College of Mines & Earth Sciences Valedictorian for the 2016-2017 academic year. Spencer was chosen for this honor because of his outstanding academic achievements.

McKenna Stanford was awarded the Dr. Norihiko Fukuta Award for Outstanding Graduate Student Publication. McKenna’s paper titled, “A ubiquitous ice size bias in simulations of tropical deep convection.”

PhD Degree Recipients
Awarded Fall 2016:
- Alex Jacques
- Melissa Maestas

Awarded Spring 2017:
- Quentin Coogan

Masters Degree Recipients
Awarded Summer 2016:
- Bowen Zhao

Awarded Fall 2016:
- Brian Blaylock
- Kati Chachere
- Wyndam Lewis
- McKenna Stanford
- Dian Wu
- Yifan Yu

Awarded Spring 2017:
- Ansley Long

Bachelors Degree Recipients
Awarded Fall 2016:
- Chandler Alston
- Byron Eng
- Karlie Ress
- Nasi Shih
- Logan Taylor

Awarded Spring 2017:
- Lucas Bohme
- Sean Heslin
- Alexander Lukinbeal
- Cameron Negrete
- Cole Osborne
- Spencer Tangen
- Alexander Weech

Minor Recipients
Awarded Spring 2017:
- Colter Brahmer
- Eric Loose

Wyndam Lewis was named as The College of Mines & Earth Sciences Salutatorian for the 2016-17 academic year. This award is given to an undergraduate student for demonstrated mountain meteorology.

Minor Recipients
Awarded Spring 2017:
- Colter Brahmer
- Eric Loose

A Decade of Change
By Department Chair, Dr. Kevin Perry
kevin.perry@utah.edu

The University of Utah is charged by the Board of Regents with the review of all undergraduate and graduate degree-granting programs on a periodic basis. The primary purpose of the review is to improve graduate and undergraduate education. As a result, the reviews are intended to result in actions that benefit departments and programs. As the Department prepares for our 7-year Graduate Council review this fall, I thought that it would be a good opportunity to reflect on the changes within the Department over the last decade.

Although students move through the program on a regular basis, faculty members often remain for decades. During the last 10 years we have had added three faculty members (Dr. Court Strong, Dr. John Lin, and Dr. Gannet Halturin) and have had one faculty member retire prior to his passing (Dr. Norihiko Fukuta). We now have a total of 12 tenured/tenure-track faculty members. On average, we have awarded 9 B.S., 6 M.S., and 3 Ph.D. degrees each year over the last decade. Although the number of undergraduate students fluctuates significantly from year to year, the number of graduate students is fairly stable. This is due to the fact that our research expenditures have remained near $4 million per year despite fluctuations in federal budget expenditures for research and development. Where we have grown the most is with career-line faculty members and post-doctoral researchers. The number of career-line faculty members doubled in the last decade increasing from 5 to 10. The career-line faculty members conduct research, supervise students, increase the visibility of our department, and sometimes teach classes; all without the stability of state-supported salaries. The number of post-doctoral researchers increased from 0 to 5 during this same time period. Other major changes include renaming the department, instituting a capstone requirement for all of our undergraduate students, creating an instrumentation laboratory, and establishing the Ute Weather Center. It has been a very exciting time to be a member of the faculty and I look forward to being a part of developments in the next decade(s) as well.

Upcoming Solar Eclipse
On Monday, August 21, 2017 a total solar eclipse will trace a 65-mile-wide path of totality from Oregon to South Carolina. This will be the first total eclipse of the sun visible in the contiguous U.S. since Feb. 26, 1979. The last time such an event occurred from coast to coast was June 8, 1918. Utahns experienced an annular eclipse on May 20, 2012. An annular eclipse is similar to a total eclipse in that the moon passes directly in front of the sun. However, during an annular eclipse the moon is too far from the Earth to completely block the sun. The result is a spectacular phenomenon known as the “Ring of Fire”. Eclipse2017.org has a very nice interactive google map to help you plan your viewing. Remember to protect your eyes with appropriate equipment and hope that the weather cooperates. If so, it should be an incredible experience.
Donor Recognition

The students, staff, and faculty of the Department of Atmospheric Sciences gratefully acknowledge the support of the following individuals. Large or small, your donations enhance the quality of our program and education of our students.

Friends and Alums

- Greg C. Holman
- Rebecca J. Tietz
- Crystal M. Tietz
- Lisa L. Verzella
- James W. Weber
- Zihan Wang
- Edward J. Ziper
- Josette W. Ziper
- Matt K. Ziper

Memorial Funds:

- Hazen H. Bedke Quasi Endowment for Atmospheric Sciences Awards Dinner
- Dell Vaughan and Harriet Rae McDonald Atmospheric Sciences Awards Banquet
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Memorial Fund Awards:

- The Outstanding Alumni for the 2016-2017 academic year was Dr. Ping Yang (PhD 1995, Meteorology).
- The students, staff, and faculty of the Department of Atmospheric Sciences gratefully acknowledge the support of the following individuals. Large or small, your donations enhance the quality of our program and education of our students.

This year’s Dell Vaughan and Harriet Rae McDonald Atmospheric Sciences Awards Banquet was one of the best ever. The event was held on Thursday, May 4th from 11:30-1:30 at The Falls Event Center at Trolley Square. A total of 115 people attended the event (highest yet), which featured a 20-minute poster session and social gathering complete with passed hors d'oeuvres prior to the luncheon and presentation. Posters represented each of our 12 research groups by highlighting current and recent research projects, papers, and presentations.

After all the guests were seated with their lunch, Dr. Kevin Perry began the formal presentation with an overview of department events and highlights from the past year. Immediately following the department overview, we transitioned to recognizing the outstanding contributions of our students. We recognized undergraduate scholarship winners as well as degree recipients (BS, MS, and PhD).

The Latino her roots in the Great Salt Lake (GSL) region, which is located in Utah, the Great Salt Lake (GSL) remains near historic low levels with more than 550 square miles of lakebed exposed (see the satellite image taken on 07/24/2017). The lake level has dropped significantly over the last decade due to a combination of water diversions for agriculture and less-average annual snowfall. A white paper describing the impacts that water development projects have had on the GSL was jointly published by scientists at Utah State University, the Utah Division of Water Resources, Salt Lake Community College, and the Utah Division of Wildlife Resources in February 2017. (https://igcr.usu.edu/pubs/publications/Great%20Salt%20Lake%20Water%20Level-Fall%202016.pdf) One of the biggest impacts of a low lake level is that the exposed lakebed has begun to act as a source of dust to the atmosphere. Dust plumes from the GSL can significantly reduce horizontal visibility and increase particulate matter (i.e. PM10 and PM2.5) concentrations to unhealthy levels for Wasatch Front residents living downwind of the GSL.

I am currently half way through a two-year study to identify the portions of the GSL lakebed that are active dust sources and determine if the PM10 mineral dust contains elevated concentrations of potentially dangerous heavy metals. I will also be collaborating with the Department of Geography to determine the elevation of each identified dust hot spot. This information will provide the Utah Department of Natural Resources with vital information on how fluctuating lake levels may impact future dust production.

To accomplish these goals, I am collecting soil samples from all 550 square miles of the exposed lakebed of the GSL. I am using a bicycle instead of an ATV to minimize damage to the fragile surface crust. Traveling at this slower pace also allows me to observe interesting surface features which could easily be overlooked by an ATV. My system that I am using for this study the Ute Dust Devil (see photo). To minimize selection bias, I map out a grid of GPS coordinates prior to each day’s sampling. At each sampling location, I document the surface crust characteristics and collect three soil samples (2 surface crust samples and 1 subsurface sample). I also sample the GSL lakebed (i.e., mineral dust collection by gravitational differences). I hope that it was important to collect all of the samples myself. Although it has been a physically challenging endeavor at times, it has been a fascinating experience. My preconceived notion that the exposed lakebed would be a var, featuresless, and somewhat uniform environment couldn’t be further from the truth.

Once the soil samples are returned to the lab, they are dried and sieved to measure the particle size distribution and determine the fraction of sand, clay, and silt. The clay and silt fractions are then placed into a resuspension chamber where they are aerosolized, passed through a PM10 impaction inlet, and then collected onto filters for subsequent chemical analysis by Inductively-Coupled Plasma Mass Spectrometry (ICP- MS) and Synchrotron X-Fluorescence (SXRF). Together, these analytical techniques provide quantitative measurements of 53 elements including most of the heavy metals.

To date, I have bicycled 749 miles and have completed sampling of 40% of the GSL lakebed. I have observed the surface crust characteristics at 1825 locations and have collected more than one ton of soil. If you are interested in following my progress on this project and learning more about the interesting things I have observed along the way you can follow me on Instagram at "GreatSaltLakeDust". I would also like to take this opportunity to kick off a fundraising campaign to support undergraduate scholarships and air quality research projects. I am seeking donors willing to pledge a certain amount of money for each mile I ride as part of this project. I estimate that the total mileage will be 2250 miles. Thus, a pledge of 10 cents per mile will add up to about $225. I hope that at the conclusion of the project (summer 2018). We will, of course, accept pledges no matter how large or small as all proceeds will be used for undergraduate scholarships and air quality research activities. To make a pledge please fill out the form on our website: http://www.atmos.utah.edu/alumni/2017-gsl-dust-study-pledge.php. The students and I thank you in advance for your support!

You can find more information about the project on our website: http://www.atmos.utah.edu/alumni/2017-gsl-dust-study-pledge.php. The students and I thank you in advance for your support!
**Dell Vaughn and Harriet Rae McDonald Atmospheric Sciences Awards Banquet**

**Friends and Alums**

- Glenn D. Almen
- Brenda J. Allen
- Dean A. Andrews
- Timothy Wayne Barker
- D. Michael Benton
- E. Benjamin Borden
- Christopher J. Brandwein
- David J. Brin
- Darrell R. Corkum
- Robert L. Decker
- Kyle T. Debtz
- Janelle D. Dickie
- Gordon R. Dayan
- Pamela J. Dion
- Todd R. Foulks
- Michael G. Franklin
- Kenneth Lime
- Mark V. Maria
- Michael O'Brien
- Fred P. Lewis
- Tony L. Li
- John L. Ling
- Nancy H. Livingston
- Deborah L. Manning
- Jacqueline C. Zipser
- Mosquekky J. Zipser
- fixed

**Endowments:**

- Dr. Norihiko Fukuta Endowed Memorial Fund
- Kyle Tietze Memorial Fund
- Jessie Albee Foundation
- The Stoddart Foundation
- The UTEP Foundation
- The University of Texas at Austin Foundation
- The University of Texas at San Antonio Foundation
- The University of Texas System Foundation

**Memorial Fund:**

- Dr. Norihiko Fukuta Endowed Memorial Fund
- Kyle Tietze Memorial Fund

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**Great Salt Lake Dust Plume Study**

**By Dr. Kevin Perry, Department Chair**

Despite the healthy snowpack in Utah this year, the Great Salt Lake (GSL) remains near historic low levels with more than 550 square miles of lakebed exposed (see the satellite image taken on 07/24/2017). The lake level has dropped significantly over the last decade due to a combination of water diversions for agriculture and less-than-average annual snowfall. A white paper describing the impacts that water development projects have had on the GSL was jointly published by scientists at Utah State University, the Utah Division of Water Resources, Salt Lake Community College, and the Utah Division of Wildlife Resources in February 2017 (https://gsr.cnas.usu.edu/pubs/publications/Great%20Salt%20Lake%20Water%20Level---Fall%202017.pdf). The decline in lake level is that the exposed lakebed has begun to act as a source of dust to the atmosphere. Dust plumes from the GSL can significantly reduce horizontal visibility and increase particulate matter (i.e. PM10 and PM2.5) concentrations to unhealthy levels for Wasatch Front residents living downwind of the GSL. 

I am currently half way through a two-year study to identify the portions of the GSL lakebed that are active dust sources and determine if the PM10 dust contains elevated concentrations of potentially dangerous heavy metals. I will also be collaborating with the Department of Geography to determine the elevation of each identified dust hot spot. This information will provide the Utah Department of Natural Resources with vital information on how fluctuating lake levels may impact future dust production.

To accomplish these goals, I am collecting soil samples from all 550 square miles of the exposed lakebed of the GSL. I am using a bicycle instead of an ATV to minimize damage to the fragile surface crust. Traveling at this slower pace also allows me to observe interesting surface features (e.g., curlicues) which could easily be missed by a vehicle. I am using this system for studying the Ute Dust Devil (see photo). To minimize selection bias, I map out a grid of GPS coordinates prior to each day’s sampling. At each sampling location, I document the surface crust characteristics and collect three soil samples (2 surface crust samples and 1 subsurface sample). To minimize information bias (i.e., misclassification due to observational differences), I estimate that it was important to collect all of the samples myself. Although it has been a physically challenging endeavor at times, it has been a fascinating experience. My preconceived notion that the exposed lakebed would be a vast, featureless, and somewhat uniform environment couldn’t be further from the truth.

Once the soil samples are returned to the lab, they are dried and sieved to measure the particle size distribution and determine the fraction of sand, clay, and silt. The clay and silt fractions are then placed into a resuspension chamber where they are aerosolized, passed through a PM10 impaction inlet, and then collected onto filters for subsequent chemical analysis by Inductively-Coupled Plasma Mass Spectrometry (ICP-MS) and Synchrotron X-Ray Fluorescence (SXRF). Together, these analytical techniques provide quantitative measurements of 53 elements including most of the heavy metals.

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McKenna Stanford was awarded the Dr. Norihiko Fukuta Award for Outstanding Graduate Student Publication. McKenna’s paper titled, ‘A ubiquitous ice size bias in simulations of tropical deep convection.” McKenna is currently a PhD candidate in Dr. Adam Varble’s research group.

Leah Campbell was awarded the Edward J. Zipser Award for Outstanding Graduate Student for the 2016-17 academic year. This was awarded to Leah based on her numerous publications, presentations, involvement in research projects, and multiple fellowships. Leah is also a Pathways Student Intern at the Colorado Basin River Forecast Center. Leah is currently a PhD candidate in Dr. Jim Steenburgh’s research group.

PhD Degree Recipients
Awarded Fall 2016:
- Alex Jacques
- Melissa Maestas
Awarded Spring 2017:
- Ansley Long

Bachelors Degree Recipients
Awarded Fall 2016:
- Chandler Alyson
- Byron Eng
- Kaitlin Rees
- Nari Shin
- Logan Taylor

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How to Contribute to the Department:
Contribute in one of the following ways to help our students learn, our department grow, and our research expand.

Contribute Time:
Are you a researcher or professor or expert in Atmospheric Sciences or a related topic? We’d love to have you give a seminar in your area of expertise. Please email atmos-info@lists.utah.edu if you’d like to sign up.

Are you an alumni whose company has job or internship opportunities for students from our department? Please let us know about these chances for our students to grow and learn from you. Please email atmos-info@lists.utah.edu if you have an opportunity for our students.

Contribute Experience:
What has your career been like since you left our program? Would you be willing to share information about it with our students?

Could your company give our juniors or seniors a tour of resources or equipment used in Atmospheric Sciences or a related field?

Contribute Financially:
Financial donations allow our department to purchase new equipment, computers, and resources for our students. They also help fund our student-run Ute Weather Center and scholarships given to our undergraduates.

Donations may be made online here: https://umarket.utah.edu/ugaive/index.php?fglt_id=107. If you would like your donation to go to a specific departmental fund or endowment, please note this in the “Special Instructions” box. Thank you for your generosity and support.

If you would prefer to mail your donation to our office, please send a check payable to The Department of Atmospheric Sciences to:

Atmospheric Sciences
University of Utah
135 S. 1460 E., Rm. 819
Salt Lake City, UT 84112

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By Department Chair, Dr. Kevin Perry
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