

# DEPARTMENT OF EARTH SCIENCES

## 2016 newsletter



PROVIDING A LEARNING EXPERIENCE IN THE EARTH SCIENCES THAT IS SECOND TO NONE

### DES Welcomes Dr. Talor Walsh, Assistant Professor of Geology

Dr. Talor Walsh is the newest member of the Department of Earth Sciences, arriving in August 2015 as a tenure-track assistant professor of Geology. Dr. Walsh earned his M.S. and Ph.D. degrees from the University of Rochester where he studied the effects of stratigraphy, burial history, and maximum burial depth on natural fracturing in the Appalachian basin; examined the effect of thrust faults on the Marcellus shale; and used the trace



metal concentrations of veins to determine the migration pathways of ancient geologic fluids. Dr. Walsh is interested in studying geology in the field, and with the other geology faculty he has resurrected the *Geological Field Mapping* course. Ongoing research interests include the tectonics of the Appalachian Mountains, natural fracturing, and fluid flow in the crust. Dr. Walsh returns the full-time geology faculty complement to three. His teaching responsibility includes *Structural Geology* and *Sedimentation and Stratigraphy*, and the introductory geology courses for both majors and non-majors.

### DES Welcomes Dr. Brian Billings, Temporary Assistant Professor of Meteorology

Dr. Brian Billings was a sabbatical-leave fixed-term assistant professor of meteorology during the last academic year. His primary research interest is in mountain meteorology using field or operational observations and subsequent numerical or physical modeling. He has a Ph.D. in atmospheric science from the University of Nevada-Reno ('09) and is a member of the American Meteorological Society and National Weather Association. His previous funding has gone to two educational visits from NCAR's Integrated Sounding System group (BaSE CaMP I and II), development of meteorological applications for



a state-of-the-art collaborative classroom and stereo visualization laboratory, and traveling with students to Monterey CA to work with developers of the Navy's mesoscale model and New Zealand to participate in the DEEPWAVE project. His future plans include extending the Navy work to include hydrologic and idealized modeling and improving turbulence forecasts for various firefighting aircraft. Dr. Billings will be staying on at MU for the fall 2016 semester to teach courses for the M.S. in Integrated Scientific Applications program.

### Dr. Clark Takes a Sabbatical

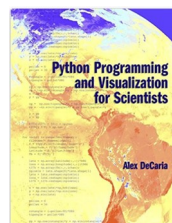
Dr. Richard D. Clark spent his sabbatical on research activities that span the past, present, and future. Drs. Clark and Sikora and 15 meteorology students traveled to Ellis, Kansas in summer 2015 to participate in the NSF-funded, multi-institutional study, Plains Elevated Convection At Night (PECAN). Millersville's scientific objective was to attain a better understanding of the Great Plains low-level jet, but they also supported the objectives of other investigators, which included Mesoscale Convective Systems, undular bores, and nighttime convective initiation. Following the PECAN field project, upon return to campus Clark supervised eight students in data processing, QA/QC, analysis, and archiving. In addition, Clark returned to the Ontario Winter Lake-effect Systems (OWLeS, 2013-14) project and oversaw a series of back trajectory analyses. Clark co-authored seven papers that are in various stages of publication, including three being reviewed for publication in the *Bulletin of the American Meteorological Society*. Looking forward, Clark produced two research proposals, one in particular which hopes to provide innovative, module-based instruction in the instruments course. He will culminate his sabbatical with two additional proposals to NSF: one to carry on PECAN research and the other to study valley breezes with balloons and a drone.



### Faculty Achievements

Dr. Sepideh Yalda received the 2016 Millersville University "Educator of the Year" Award.

The Educator of the Year Award is given annually to one faculty/staff member in recognition of sustained outstanding teaching, counseling, mentoring, and advising. Dr. Yalda joined the DES in 1997 and has worked tirelessly on behalf of the students. In addition to her association with the meteorology program, Dr. Yalda serves as Director of CDRE and coordinator of the MSEM program (see page 3) and liaison to the BSE in Earth Sciences program. Dr. Yalda advises over 100 students.



Dr. DeCaria had his second book, "*Python Programming and Visualization for Scientists*," published by Sundog Publishing. This 270-page book is aimed at those beginners wanting to learn to use the Python programming language for scientific data analysis and visualization. This is Dr. DeCaria's second book published by Sundog Publishing. His first book, "*A First Course in Atmospheric Numerical Modeling*," with co-author G. Van Knowe was published in 2014.

## Student Accolades

### 2015-2016 Awardees

**Benjamin Woods**, The William Malcolm Jordan Earth Sciences Scholarship

**Donald Little**, Rettew Associates Scholarship in Geology, and Students of Academic Distinction

**Melinda Hatt**, Earth Science Award for Academic Excellence

**Alexander Kaltenbaugh**, Paul H. Nichols Scholarship

**Christopher Barlow**, The Clark-Yalda Scholarship in Atmospheric Sciences

**Jillian Weitkamp**, Dr. William B. McIlwaine Scholarship in Earth Sciences

**Amber Liggett and Alyssa Cannistraci**, NOAA Hollings Scholarships

**Amber Liggett**, University Corporation for Atmospheric Research Significant Opportunities in Atmospheric Research and Science program

**Christian Boyer**, Accepted to both the NCAR Undergraduate Leadership Workshop and Nat'l Weather Center-REU; he selected the latter.

Read the Alumni spotlight? <http://www.millersville.edu/esci/meteorology/alumni-spotlight.php>

### 2015-2016 Student Research Presenters

#### 15<sup>th</sup> Annual Student Conference, 96<sup>th</sup> Annual Meeting of the American Meteorological Society, 10-14 January 2016, New Orleans, LA:

The Correlation between Mercury, Ions, and Weather Conditions at PA-47. *Ashley Orehek, A. Yarosh, P. Lueng, and R. Clark*

Gust Front Detection Using Neuro-Fuzzy Algorithm with Polarimetric WSR 88D. *Amber J. Liggett, and T. Y. Yu*

Examining the Nocturnal Stable Boundary Layer and Low-Level Jet during PECAN. *Natalie Midzak, M. McAuliffe, D. Bludis, C. Dearth, K. Fisher, M. Green, J. Hane, V. Hower, K. Morganti, E. Ntonados, A. Orehek, K. Piarulli, K. Pozsonyi, C. Prestine, N. Strickland, R. Clark, and T. Sikora*

A Comparison of Cloud and Aerosol Measurements between OCO-2 and CALIPSO. *Emily Rosenthal, C. W. O'Dell, R. Nelson, and H. Q. Cronk*

Reassessing the BATSE Catalogue of Terrestrial Gamma-ray Flashes. *Amanda Sleinkofer*

Risk Assessment of Outdoor Airport Workers Exposed to Lightning. *Melinda Hatt, M. Steiner, W. Deierling, and K. Ikeda*

#### Space Weather Workshop 2016, 26-29 April 2016, Broomfield, CO

Comparison of the GOES X-ray data with EUVI brightness of the source regions of the CME. *Ashley Orehek, Jessica Fink, Kara Piarulli, Christina Prestine, and Curtis Silverwood*

Dependency of Magnetic Field of the CME on Other Physical Quantities on the Sun. *Matthew Green, Melinda Hatt, Megan McAuliffe, Natalie Midzak, and Kristen Pozsonyi*

#### American Geophysical Union Fall Meeting, 14-18 December 2015, San Francisco, CA

Reassessing the BATSE Catalogue of Terrestrial Gamma-ray Flashes. *Amanda Sleinkofer, Michael S. Briggs and Valerie Connaughton*

#### Ocean Sciences Meeting, 21-26 February 2016, New Orleans, LA

Validation and Analysis of MW\_IR OI SST product over the Indian Ocean 2016. *Angela L. Ditri, Nathan Murry, Kyle Morganti, Cara L. Geiger and Ajoy Kumar*

Coastal Bays and Sea Level Rise: A long term analysis of Chincoteague Bay Barrier Island System, 2016. *Ajoy Kumar and Nathan Murry*

## Undergraduate Student Research

A hallmark of the Department of Earth Sciences is the opportunity for students to conduct undergraduate field research. Over the past two decades, about 200 undergraduate students have participated in field research funded by federal agencies, such as NASA, NOAA, NSF, DOD-DARPA, EPA, and state agencies, such as the PA Department of Environmental Protection and the PA Department of Conservation and Natural Resources. Since 2011 alone, about 100 Millersville students have participated in several major multi-institutional field experiments, including the NASA-funded Deriving Information on Surface conditions from Column and Vertically Resolved Observations Relevant to Air Quality (DISCOVER-AQ) project (<http://discover-aq.larc.nasa.gov/>), the NSF-AGS-funded Ontario Winter Lake-effect Systems (OWLeS) project ([https://www.eol.ucar.edu/field\\_projects/owles](https://www.eol.ucar.edu/field_projects/owles)), the NOAA-funded West Atlantic Climate Study ([http://saga.pmel.noaa.gov/field\\_wacs2012](http://saga.pmel.noaa.gov/field_wacs2012)), and, most recently in summer 2015, the NSF-AGS-funded Plains Elevated Convection at Night (PECAN) project ([https://www.eol.ucar.edu/field\\_projects/pecan](https://www.eol.ucar.edu/field_projects/pecan)).

Not only did these funding opportunities enable the development and expansion of department equipment, such as the Millersville [University] Atmospheric Research and Aerostat Facility (MARAF, right), a \$2 million portable facility filling a critical niche in boundary layer and air quality research, but they opened opportunities for several to many research students per field campaign to travel and engage in observational science from the Atlantic to the Mojave Desert, Texas to the Tug Hill (NY) Plateau, and during winter and summer.





Center for Disaster Research & Education

Visit CDRE/MSEM at <http://www.millersville.edu/cdre/>

CDRE and MSEM (M.S. in Emergency Management) Program Proudly Announces the Official Partnership between Millersville University and University of Reading, U.K. — Dr. Sepi Yalda (Meteorology) and Dr. Kirsten Bookmiller (Govt. & Political Affairs) through the CDRE worked closely with Dr. Katja Samuel from the University of Reading School of Law to establish an agreement, which is based on the collaboration and coordination between the new Master of Law in Global Crisis Conflict and Disaster Management and the Master of Science in Emergency Management program at Millersville University. The overall agreement between the two universities will enable academic, scientific and cultural collaboration between the institutions.

CDRE to Host the 2<sup>nd</sup> Annual Central PA Integrated Weather Impacts Team (IWIT) Meeting in Collaboration with the National Weather Service — CDRE will be hosting the 2<sup>nd</sup> Annual Central Pennsylvania Integrated Weather Impacts Team (IWIT) Meeting and Workshop on June 21, 2016 on the campus of Millersville University. The IWIT is a group of representatives involved in the preparedness and response to significant hazardous weather events. An overarching goal of IWIT is to enable all users to better exploit weather forecast information in order to enhance their decision-making capability. The June 21<sup>st</sup> meeting will allow members to collectively chart the path forward in communicating the impacts of hazardous weather across the Commonwealth. The efforts of IWIT will help mitigate and prevent future weather-related impacts across Pennsylvania. The Central PA IWIT is a part of the National Oceanic and Atmospheric Administration’s (NOAA) mission to build a Weather-Ready Nation.

New Emergency and Disaster Management Graduate Certificate — Millersville University’s CDRE will begin offering a fully online 15-credit Emergency and Disaster Management (EDM) Graduate Certificate in the fall of 2016. Those students who successfully complete the certificate courses will have the option to apply the earned 15 credits toward the Master of Science in Emergency Management degree.

Jeff Jumper (MSEM, ‘16) was selected as PA’s first state meteorologist — Jeff Jumper was selected as Pennsylvania’s first state meteorologist as a result of a nation-wide competitive search. Jeff serves as the subject matter expert in meteorology for the Commonwealth. His primary role is to forecast for state agencies and other stakeholders in the emergency management community and to provide onsite meteorological support in PEMA’s emergency operations center during an emergency. Jeff has a decade of professional experience as a broadcast meteorologist and eighteen years of experience as a first responder. He credits the MSEM program with helping him transition into the emergency management field. *“I needed to bridge the gap between disciplines [meteorology and emergency management] and that’s exactly what the MSEM program has done.”*



Dr. Duane Hagelgans was awarded Student Ally of the Year at the 63rd annual International Association of Emergency Managers (IAEM) conference on Nov 18, held in Nevada. Hagelgans, who was nominated by one of his students, received the award in recognition of being a trusted and dedicated student adviser, educator and community member since joining the University in 2007.



### M.S. in Integrated Scientific Applications

The MSISA program continues to see slow but steady growth and curriculum development. The academic diversity of the graduate students is broadening as the program extends its reach through marketing efforts, primarily at career fairs at professional conferences. We have participated in career fairs at the Geological Society of America’s regional meeting, the annual meeting of the American Meteorological Society (AMS), and the 2016 AMS Washington Forum (see photo right). Five new graduate students will join the program in fall 2016 bringing the total enrollment to 15 students. Six students graduated this year and were hired by reinsurance firms, environmental companies, state or regional agencies, or NOAA contractors. For more information on the program and its specializations, please visit [mville.us/msisa](http://mville.us/msisa).



## **"400 in 4"**

*Many of our alumni fondly remember attending the annual meeting of the American Meteorological Society or the Geological Society of America meeting, or the annual meeting of the Ocean Sciences. I hope that you also remember that this trip, which included a full week in*



*such great locations as Phoenix, Seattle, New Orleans, or Denver, with lodging at a major hotel, ended up costing each student very little out-of-pocket expense relative to what the actual costs were. In fact, there*

*were some years when it cost the student nothing. As our programs continue to expand while the university budget shrinks, we have had to ask students to contribute more and more. The cost of attending a meeting should never get in the way of a student's opportunity to participate in this capstone event. Professional conferences and annual meetings offer career fairs and chances to present research posters, glean appreciation for the size and diversity of your professional community, and most importantly, provide the opportunity to network. These are priceless for career building and creating pathways for success.*

*To address this growing need, a small group of Earth Sciences alumni got together at an AGU meeting in 2014 and asked what they can do to help students attend professional conferences as they did while they were students at the Ville. Angela Rowe, John Yorks, Tom Renkevans, Jim Kurdzo, Melissa Burt and others fondly reminisced on how important this experience was to their careers. Working with MU Development, we have established a goal of building an endowment of \$400,000 in 4 years. With this principal, we estimate an annual spendable amount of \$20,000 that can be directed to help offset the costs of conference attendance. Currently the cost of attending a professional conference for a week is about \$1000/student. To put what we are asking of you into context, \$400,000 in 4 years is based on the notion that if we could get 50% of our alums (about 400 Earth Sciences alumni) to gift \$250 per year for four (4) years, a total of \$1000, we will accomplish our goal; and \$250/year is less than \$0.70/day. Obviously, we would be most grateful to those alumni who could donate more, as have those alums who initiated the idea.*

*If we are going to realize this goal, we need your help. After a year of activity, we have only reached 6% of our goal. Please consider giving to this important initiative and help future students reap the benefits of attending professional conferences that you so enjoyed as a Millersville student.*

*Please, take a moment, go to <https://secure.ggiv.com/event/802907/> and make that commitment of \$250/year or more for four years. Let's rally around this appeal and achieve this goal together.*

*Only you can make this happen!. Thank you for your support.*