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**G**reetings! As Chairperson, I wanted to take this opportunity to share with you some exciting updates from the Department. We now offer an M.S. (previously M.A.) degree in Geoscience as well as a B.S. to M.S. accelerated degree, where students can complete both degrees in five years. We've also constructed a new graduate course ESS 602 (Directed Research) that gives graduate students dedicated time toward completing their research project.

Two of our Gen. Ed. courses -- ESS 170 (Our Atmosphere) and ESS 101 (Intro to Geology) -- are now available in both hybrid and online formats for WCU students. In addition, the Department offered for the first time in nearly 20 years ESS 435/535 (Remote Sensing), team taught by Drs. Gagne and Kim, who both bring expertise in data, instrumentation, and imagery analysis. The course will again be offered Spring 2020.

A new and exciting research area -- drone meteorology -- has emerged the last couple of years. Spurred by donations by Dr. Sandie Mather, we now have 3 drones including the Matrice 200. Drs. Nikitina and Helmke have used the drone in their geomorphology and hydrology research, and I've had majors collect high-resolution weather data.

We've also expanded our dual-enrollment (DE) geoscience Gen. Ed. courses to the West Chester Area School District (WCASD) this past year. This process has involved Drs. Schwarz, Gagne, Roemmele, Kim, and myself mentoring ESS-certified high school instructors so they can be confident teaching these college-level courses. Nearly 100 WCASD high school students enrolled last year in the premier offering of these courses, which will promote disciplines not universally found in high school curricula.

In this newsletter, we showcase a few pictures from a public event, organized by Planetarium Director, Dr. Karen Schwarz, that took place on campus July 13<sup>th</sup> to mark the 50<sup>th</sup> anniversary of the Apollo missions to the Moon. We also have teaching and research updates from faculty, including our newest member, Dr. Christopher Roemmele, who also serves as our science educator. A few alumni share their latest news, and SGE provides some words as well.

And when you get a moment, visit our webpage for additional 'goings-on' in the Department at: <https://www.wcupa.edu/sciences-mathematics/earthSpaceSciences/>

Thank you all for your support, and have a safe and restful rest of the summer!

*Joby Hilliker*

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# APOLLO 50<sup>th</sup> ANNIVERSARY EVENT PHOTOS





# FACULTY UPDATES



**Karen Schwarz** - Dr. Schwarz is working on a project with the Astronomical Society of the Pacific to increase learning outcomes for young students. They have received a National Science Foundation grant and written two storybooks for first and third graders. The instructional sequence would begin with reading the book and performing the associated activity, then students would take a trip to the planetarium, and finally finish back in the classroom. Dr. Schwarz would also like to mention that the planetarium is open to the public every Friday night for tours of the night sky and astronomy-themed movies.

**Christopher Roemmele** - This past year, Dr. Roemmele pilot tested a learning program with ESS 101 students involving demonstration videos and virtual field trips. He created three demonstration videos on geologic principles and processes and paired them with virtual reality field trips for students to utilize in class. He hopes to determine if visuals and graphics aid conceptual understanding. Additionally, he is currently working on writing an e-textbook for introduction to geology courses.



**LeeAnn Srogi** - As you might have heard, Dr. Srogi retired this summer after a consequential career that has spanned nearly three decades in the Department! However, we are fortunate she will remain with us to exclusively focus on research. I would like to express my gratitude for Dr. Srogi's lifelong dedication to the Department of Earth and Space Sciences. We wish her continued success – with some well-deserved leisure – as she transitions into a new role.

**Ron Sloto** - Over the last year, Ron has 4 publications to his credit including a book, "The Mines and Minerals of Montgomery Co." He's expanded the WCU Mineral Collection accepting several donations. The total number of mineral specimens cataloged is now 6,155! In addition, he's conducted SEM-EDS and XRD analyses of samples from various quarries and assisted with the mineral collection at the Chester County Historical Society.



**Daria Nikitina** - Dr. Nikitina has continued her study of sea level changes along the Delaware Bay coast. Currently her research focuses on impacts of rising sea level and storms on coastal environments and cultural resources. She is working with a number of students on paleo-reconstruction of coastal landscapes and prediction of future changes under the different sea-level rise scenarios. The team is performing field work and analyzing data this summer, and then presenting their work at the International Convention in Dublin and GSA Fall meeting in Phoenix. Dr. Nikitina also remarks that her new volcanic geomorphology course is going well!

**Sandy Maxwell** - Sandy's work for the department is centered on teaching "Science Methods for Grades PK-4," a course focused on helping teachers to weave science instruction into the flow of everyday elementary curriculum. As someone who spent 34 years as an elementary teacher, this is exciting work! Sandy's mission is to help teachers to instill the sense of wonder and stewardship that is found with the sciences promoting science careers and active informed citizenship. He says he is thrilled with the highly motivated and exceptional teachers that will soon be making their mark in classrooms!



**YongHoon Kim** - Dr. Kim, who joined the Department in 2016 as our oceanographer, recently launched a new research program applying an Artificial Intelligence (A.I.) modeling approach and Machine Learning techniques to predict the water quality variability in coastal and ocean environments. He presented preliminary results at the first A.I. workshop sponsored by NOAA at College Park, MD in April. He has also continued to research on the microplastics transport and the application of remote sensing in marine science.



**Timothy Lutz** - Dr. Lutz is currently acting as advisor to a former ESS student (now a master's student in applied statistics) on "how systems remember." In addition, he is working with Dr. Nikitina and former ESS student, Alan Geyer, on images of ponds in coastal areas, defining the relationship between small/big ponds and how they are systematically different. Dr. Lutz gave a presentation with Dr. LeeAnn Srogi at the American Geophysical Union on systems thinking and analysis. This summer, he will give a presentation at the International Union of Geodesy and Geophysics in Montreal.

**Cynthia Hall** - Dr. Hall has been working with students and collaborators at Virginia Tech to characterize lead in Philadelphia soils. In June, she went on a second expedition with a STEMSEAS research vessel. She will be changing careers to focus full-time on her family farm and the educational community programs she and her husband offer to youth in Philadelphia; however, we are pleased she will remain with us as an adjunct professor. Dr. Hall's role has been indispensable, unique, and far-reaching. We appreciate the impact she has had on our majors, education students, and the community.



**Marc Gagne** - is working on the second edition of his textbook- Gravity: An Activity-Based Introduction to Galaxies and Cosmology. He has continued his research on exoplanets, referencing data from NASA's two satellites Kepler and TESS. Additionally, he is creating simulations on mass loss for massive stars and their material funneling towards the magnetic equator. Eventually he will be generating full 3-D simulations.

**Martin Helmke** - Dr. Helmke is currently serving as President of the PA Council of Professional Geologists. Eight of his research students earned their MS Geoscience and/or BS Geoscience degrees this year, conducting research on groundwater flow modeling, sinkholes, PFAS transport, saprolite hydrogeology, and applications of drones to geology. Their research was showcased on the nationally-syndicated TV show *Xploration Awesome Planet*. He hosted several internationally-attended professional development courses on campus that included well-drilling techniques, aquifer test analysis, and soil classification.



**Richard Busch** - Dr. Busch has been very busy teaching Historical Geology, Paleontology, and Sed/Strat. Students continue to curate his Ordovician fossil collection from Swatara Gap, PA, for donation to the State Museum. He also has a student analyzing her own collection of vertebrate fossils to determine which ones are radioactive and why they are radioactive. This summer he is teaching ESS101, finishing up some field and lab work on biostratigraphy that includes contributions by Ben Pfahler and Zack Schagrin and prospecting in central PA for some new field trip stops.

**Drew Anderson** - This past year, Drew's meteorology students got to learn about sustainability on campus first-hand through an app on their phones. The app is called *Metaverse*, and when students get to a location on campus on their map, a little video he created or a website unlocks so they can learn more.



**Howell Bosbyshell** - Hal's been busily teaching Field Geology, Structural Geology and Geophysics. His research on the metamorphism of the rocks in SE PA, and the tectonics behind that metamorphism, continues. He's recently obtained some exciting new geochronological results which show that the garnet isograd in the Peters Creek Schist developed during the Devonian-aged Acadian orogeny – and not the Ordovician Taconic orogeny as was originally thought. Hal just returned from Washington, D.C., where he attended a symposium marking the 100<sup>th</sup> anniversary of the Mineralogical Society of America!



# ALUMNI SPOTLIGHT



**Courtney, Kevin, and Ella Rae Smith**

**Kevin Smith** (left) graduated with an M.A. in Geoscience in 2011, after which he worked for ARM Group as a Project Geologist. Projects included environmental assessments and those related to water resources. In 2015, he moved to Sunoco Logistics Partners (which later merged with Energy Transfer) to work as an Environmental Compliance Specialist at the Marcus Hook Industrial Complex, the former Sunoco Refinery. The refinery was redeveloped into a liquids terminal and is the takeaway point for the Mariner East Pipelines. Kevin is responsible, in part, for maintaining compliance with the facility's environmental permits. He is pictured with his wife, Courtney, (also WCU alum!) and new daughter, Ella Rae.

**Jim Gosser** (right) earned his B.S. Ed. Earth and Space Science degree in 2001 and has been a teacher at Neshaminy High School in Langhorne ever since! He taught Earth & Space Science as well as 9th grade Physical Science. He then furthered his career with a Masters in Instructional Technology from Wilkes Univ. and a Masters in Educational Administration through Gwynedd Mercy Univ. He is also the Instructional Technology Coach (K-12) for the Neshaminy School District.



**Jim Gosser**



**Dr. Arthur Smith – Professor Emeritus Award**

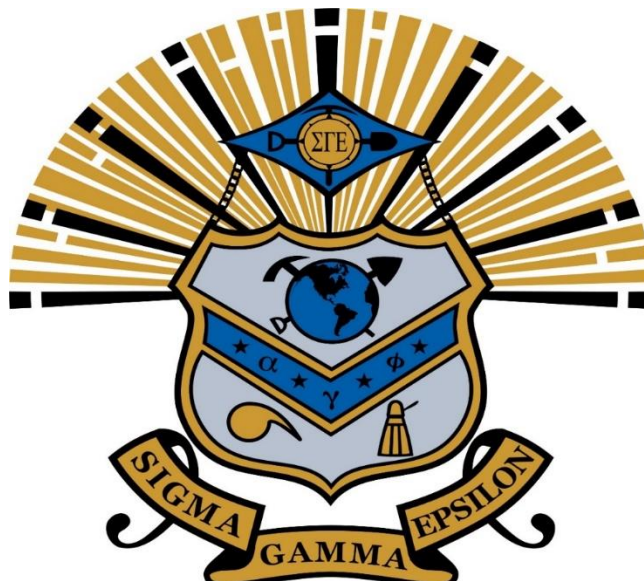
After more than three decades of serving as a science educator in the Department, **Dr. Art Smith** retired in 2017 and was awarded Professor Emeritus status in 2018. He shared that, *"somehow the PA Department of Education has figured out that I have some extra time. Last year they assigned me to their Certification Program assessment team, and I reviewed and assessed four university undergraduate and grad programs. This year so far, I have done six. My wife, Jo, and I will spend the summer at the beach, and this summer my youngest is getting married. That should keep us busy."*



**Laura Mazzagatti**

**Laura Mazzagatti** is in her ninth year teaching Secondary Science with the West Chester Area School District. She's said, *"I'm really having fun in my profession. I'm happy to walk in the doors each day - to help positively influence my students, to support my fellow teachers, to build relationships, and to grow as a professional. I am still pleasantly surprised by how challenging yet rewarding being an educator is!"*

# SGE UPDATE



SGE is proud to announce that the 2018-2019 semester has been quite a success! Furthermore, the club would like to extend congratulations to new inductees:

**Mary Loughlin, Amy Rittenhouse, and Cameron Knight**

as well as the executive board members for 2019-20:

- **Ellie Johnston (President)**
- **Aileen Wallace (Vice President)**
- **Madison Gooding (Secretary)**
- **Robert Cote (Treasurer)**

We are excited about the new inductees, and will no doubt carry on the SGE tradition moving forward.

Moreover, SGE is proud to announce – for the second consecutive year – we sent multiple members to the Geological Society of America (GSA) regional conference in Portland, ME, in March 2019 using club funding. Everyone who attended took a lot from the opportunity and were happy to share the tremendous networking they were able to do.

SGE is also proud to say we've provided voluntary department tutors this year when called upon, truly embodying what the club stands for. In addition, the club also threw department parties (sometimes teaming up with the astronomy club) as well as participated in a few extracurricular activities.

Overall, SGE is enthusiastic about its members and wishes the best of luck to those in the department who graduated this past year!



# SCHOLARSHIPS

*Did you know the Department has distributed nearly **\$50,000** in scholarships, since 2005, to dozens of B.S. and M.S. geoscience students?*

Our scholarships -- offered each semester -- include the:

- The Sandra Pritchard Mather Scholarship
- The Herbert Beller Geology Scholarship
- The Geology and Astronomy Alumni Scholarship

And, this past year we were able to offer the **P. Travis Schiable Field Geology Award** to recent B.S. Geoscience graduate **Lukas Berry**, who will use the funds for this summer's Northwest Parks course. This award was created in memory of Travis, a 1997 department alumnus, to provide students the opportunity to explore geological principles via field camps, courses, and trips. This award was the result of years of fundraising by Travis's good friend, Tripp Fischer, and family.

**The Department thanks our donors for supporting our students!**

**If you would like to donate to the  
Department of Earth and Space Sciences, please go to:**

**<https://www.wcufoundation.org/search-for-gift>**

Under "FUND NUMBER", type:

- "2130-900FN" if you'd like to give to our general "**Earth and Space Sciences**" fund to help students with field trips, research materials, conference travel, and the like.
- "2130-953FN" if you'd like to give to the "**P. Travis Schaible Field Geology**" prize to assist with our annual field geology award to a major.
- "2130-603" if you'd like to donate to the "**Beller Geology Scholarship**," which is another great way to help students with tuition!





# DEPARTMENT PHOTOS



Earth and Space Science Faculty & Students



WCU Geoscience students, alumni, and geologists across North America collaborate during a sonic well drilling demo on South Campus Fall 2018.  
(Special thanks to Midwest Geosciences Group and Cascade Drilling!)