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Program News

Six Undergraduates Graduated in the Spring Semester



Please help us congratulate **Monica Estrada, Chad Delfino, Sarah Dillon, Scott Fenner, Kasey Phelps,** and **Jim Quisenberry** for completing all requirements and graduating in the Spring Commencement.

Monica Estrada graduated with a Baccalaureate of Sciences degree in Geology Summa Cum Laude from the Honors College in the Spring Commencement. Monica Estrada transferred from Del Mar College with an Associate's degree in mathematics in 2015. She completed an Honor's poster and oral presentation entitled "Post-mineralization in limestones in the Hye,

Texas area shows early diagenesis of the upper Cap Mountain Member" She also published a GCAGS abstract with Scott Fenner and Dr. Ford entitled "Using pXRF to Assess Heterogeneous Sample Preparation Methods: Applications to Coarse-Grained Felsic Rocks" She was a lab teaching assistant for the hydrogeology class this spring. She completed her field courses at TAMUK in 2016 field camps.

Chad Delfino graduated with a BS degree with a concentration in Geosciences in the Spring Commencement. Chad was a Javelina Student Ambassador for three years and active in many campus clubs.

Sarah Dillon graduated with a Baccalaureate of Sciences degree in Geology Summa Cum Laude in the Spring Commencement. She completed a research project with Adolfo Enciso and Dr. Mark Ford and presented the research entitled "Using pXRF to Assess Heterogeneous Sample Preparation Methods: Applications to Coarse-Grained Felsic Rocks" at the 2016 GCAGS. She also won a "best petrology paper" award in Spring 2016 and tutored geology and chemistry classes on campus. She completed her summer field camp at New Mexico Tech in 2017.

Scott Fenner graduated with a Baccalaureate of Sciences degree in Geology in the Spring Commencement. Scott Fenner was the president of the geology club in 2015-2016. He was a lab teaching assistant for the sedimentology and stratigraphy class in 2015 and 2016. He prepared 20 thin-sections to help a graduate student in Natural Gas Engineering complete part of his research. He completed his field courses at TAMUK in the 2016 field camps and won the Javelina Field Award.

Kasey Phelps graduated with a Baccalaureate of Sciences degree in Geology in the Spring Commencement. She completed her field courses at TAMUK in the 2016 field camps. She was an active lab teaching assistant and also helped Dr. Sanchez manage the field equipment and storeroom. She was also active in the Geosciences club and was on the executive board.

Jim Quisenberry graduated with a Baccalaureate of Sciences degree in Geology Cum Laude. He transferred from Del Mar College in 2015. He completed a research project with **Felipe Alarcon** and Dr. Sanchez entitled "Predicting Paleostress Orientations from Fracture Patterns in the Christmas Mountains" and presented poster presentations at the Javelina Symposium and the GSA in San Antonio. He completed his summer field camp through the University of Houston in 2016.

New Concentration in Geophysics

The Department of Physics and Geosciences will be offering a BS degree in Geology with an emphasis in Geophysics starting this Fall. We also received approval to offer a minor in Geophysics and Certification in Geophysics starting Fall, 2017. Drs. Subbarao Yeliseti and Robert Schneider worked through the details with the campus curriculum committees so that we could offer this concentration to our students this Fall. We added this new concentration at the request of local industry. We are the only Department in South Texas that offers a degree concentration in geophysics. Also a master's degree program in Petrophysics is currently under review with the TAMUS System in College Station. Amazing job!

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Sarah Dillon has Accepted a Research Assistantship at Arizona State University



Sarah Dillon was on a quest to be accepted into a Tier I graduate school to study geochemistry. She was contacted in January by Dr. Richard Hervig's with an offer to join his lab in the School of Earth and Space Exploration as a Research Assistant. Dr. Hervig is the Director of the internationally recognized isotope geochemistry laboratory. Sarah is expected to start classes at ASU in September. Good job Sarah!

Students Present at Geological Society of America (GSA) Meeting in San Antonio



We had five students and three faculty members travel on March 13 and 14 to the GSA conference in San Antonio. All the students presented posters on their current research. Titles are given below and full abstracts can be found by searching for "2017 GSA San Antonio." Student hotel rooms and registrations were sponsored by the Geosciences Club and by the AAPG Student Chapter.

Analysis of Fold Thrust Geometry in the Zagros Mountains: **Tomisin Alagbe** and Dr. Veronica Sanchez

Structural Analyses of Lineaments in the Christmas Mountain Range and the Extent of the Tascotal Mesa Fault, Texas: **Felipe Alarcon-Cantu, Jim Quisenberry**, Dr. Veronica Sanchez

Testing the Geochemical Accuracy of Analytical Optical Mineralogy: **Sarah Marie Dillon**, Dr. Mark T. Ford and Dr. Jingbo Louise Liu (Chemistry)

Tectonic Geomorphology Analysis of South-Central Tibet Rifts Using Remote Sensing and Geographic Information Systems: **Adolfo Enciso** and Dr. Veronica Sanchez

Predicting Paleostress Orientations from Fracture Patterns in the Christmas Mountains: **Jim Quisenberry, Felipe Alarcon-Canto**, Dr. Veronica Sanchez

Additionally, Drs. Ford and Sanchez presented on trace element modeling in a central Texas pegmatite and the tectonic geomorphology of Tibet respectively.

Two Tutors Hired Through the PAAC for Geosciences



Adolfo



Sarah

Adolfo Enciso and **Sarah Dillon** are helping all students (majors and non-majors) get extra help in learning geosciences. They are working several hours per day for 3-4 days per week both in the PAAC (Pathways Academic Assistance Center) in the library and in the department. These students can provide excellent help for both majors and non-majors in a more relaxed but still structured environment.

Spring Break Field Work – Christmas Mountains, West Texas



Josh Krnavek, Jim Quisenberry, Aaron Barron, Felipe Alarcon and Dr. Veronica Sanchez headed to west Texas to work on research projects shortly after presenting at the GSA meeting. They continue to focus on field mapping to understand relationships of structures related to Rio Grande Rifting. Their task was to map geologic structures and contacts in the northern portion of the Christmas Mountains, north of Big Bend National Park.

GEOINT Assistantships Awarded to Four Undergraduates



Margarita



Joshua

As part of the National Geospatial-Intelligence Agency grant Drs. Su and Hedquist received in the 2015, the Geosciences program awarded four GEOINT assistantships this May. Assistantships awardees included **Margarita W. Wilhelm** (Geology major), **Joshua J. Krnavek** (Geology major), Michael T. Page (Wildlife Science major) and Jonah E. Trevino (Agriculture major). Each selected student receives \$2,000 and is committed to earn a minor in GIS. Congratulations to these student awardees!



Our Teaching Assistants Performed Well in Lab This Semester

Please pass along congratulations to your friends and colleagues that are accomplished lab teaching assistants! This is an important accomplishment and not that common for undergraduates to assist professors in teaching laboratories. All of their work and efforts are particularly impressive!

Kasey Phelps is the teaching assistant for the Field Mapping and Cartography class assisting Dr. Su. She is also assisting Dr. Sanchez in the Field Geology Lab and in managing the geosciences storeroom.

Monica Estrada is the teaching assistant for Structural Geology assisting Dr. Sanchez. She is also assisting Dr. McGehee in the Hydrogeology Lab.

Adolfo Enciso is the teaching assistant for Petrology assisting Dr. Mark Ford.

Leonora Perkins is the lab teaching assistant in Physical Geology assisting Dr. Robert Schneider.

Tomisin Alagbe is the lab teaching assistant for the Earth Science I assisting Dr. Mark Ford.

Jeffery Tuck is the lab teaching assistant for the Earth Science I assisting Richard Parker.

Amanda Rodriguez is the lab teaching assistant for Applied Geology assisting Dr. Robert Schneider.

Josh Krnavek is the lab teaching assistant for Nature of the Earth and Universe assisting Richard Parker.

Jesus Lemus is the lab teaching assistant for two sections of Introduction to Geographic Information Systems Lab assisting Dr. Brent Hedquist.

Geosciences Program Completes 6 Field Trips

We encourage all majors to attend as many fieldtrips as will fit in their scheduled activities. However we require (mandatory) attendance from participants taking coursework that has an experiential-learning field component as part of the degree requirement. We are wrapping up our field work this year in preparation for student success in our summer field camp classes.

The field training this season is off to a great start with another great fieldtrip to ABACO operating Inc. in San Antonio Texas sponsored by Erik Hanson. Our Applied Geology class attended a February 23-25 workshop presented by professionals at Lumina Exploration. Richard Koseluk and Yasser Metwally with Lumina Exploration presented a workshop on "Basics of Petrophysical Analysis for the Petroleum Geologist" that demonstrates the importance of core data, log data, and seismic data used in the petrophysical analysis (characterization and interpretation) of potential subsurface petroleum reservoirs. The workshop was attended by Bob Schneider, Tom McGehee and 13 students that are in the Applied Geology class. The following day we visited several Cretaceous outcrops in Medina County.

Seven geology majors and Dr. McGehee from the hydrogeology class attended a workshop on "Recharge Enhancement and Multiport Well Monitoring of the Barton Springs Segment of the Edwards Aquifer" that provided insights into projects accomplished by hydrogeologists in the Hill Country. Bryan Hunt, Senior Hydrogeologist with the Barton Springs Edwards Aquifer Conservation District, led the morning workshop session that was coupled with an excellent fieldtrip around the Barton Springs watershed. The next day Ron Fieseler, General Manager at Blanco-Pedernales Groundwater Conservation District, logged a local water well and showed us how to correlate the well to Blanco County wells. This was a great experiential learning opportunity for students to see how their course work leads to solving water resource issues.

Dr. Veronica Sanchez, Dr. Thomas McGehee, Richard Parker and 14 geology majors traveled on March 30-April 1 to Mike Maples property on the Pedernales River and to Inks Lake State Park. On Thursday March 30 students from the mapping classes (Field Geology, Structural Geology, Petrology, and Historical Geology traveled to Austin, Texas to look at a fault that is part of the Balcones Fault in the Barton Springs area. We continued to Inks Lake State Park where students mapped contacts between different metamorphic rock units and the deformation of this Precambrian crust on a topographic base map. On March 31 students traveled to Mike Maples property on the Pedernales River to map a major unconformity between the Pennsylvanian-age Marble Falls Formation and the overlying Lower Cretaceous Trinity Group. Students learn to identify the subtle variations in rock types in the exposed Trinity Group rocks and the Marble Falls Formation, determine an unconformity boundary, and map the contact.

On April 6-8, Drs. Mark Ford, Veronica Sanchez, Bob Schneider and 26 geology majors from Petrology, Structural Geology, and the field classes traveled to Joy Smith's property to study and map a piece of deformed ophiolite (oceanic crust) on Joy Smith's property along Coal Creek. They learned how to identify rocks and measure the deformation of crust along a traverse, and prepared a cross-section of their findings.

On April 28, Dr. Thomas McGehee, Richard Parker and 8 geology majors from Physical and Historical Geology classes traveled from Alice to Freer to study the "Geology and economic resources of south Texas." We looked at outcrops along road cuts to understand the key formations that contain oil, gas, water, uranium, lignite, and gypsum. Students from these freshman classes also learn how to use field equipment and record data in a permanent record book.

On April 29, Dr. Thomas McGehee and Richard Parker and 21 non-majors traveled to the Houston Museum of Natural



Sciences. Students from our introductory classes in Physical Geology, Historical Geology, and Earth Sciences toured the museum to look at the Morian Hall of Paleontology, Cullen Hall of Gems and Minerals, Lester and Sue Smith Gem Vault, and Wiess Energy Hall. These are world-class exhibits that connect with our course materials and key into other disciplines with exhibits for Anthropology, Biology, Chemistry, Natural Gas Engineering, Environmental Engineering, and Civil Engineering.

Dr. Haibin Su Granted Tenure and Promotion in Our Department

Please join me in congratulating Associate Professor Haibin Su. He received word on May 11 from our provost Dr. Heidi Anderson that he was promoted to Associate Professor and granted tenure which will go into effect September 1. Thank you for all you do for our Department!

Dr. Veronica Sanchez Wins the Dean's Award for Outstanding Teaching

Dr. Veronica Sanchez has been with the Geosciences Program just two years and she received word that she is recognized by the Dean for the Outstanding Teaching Award for 2016-2017. Dr. Sanchez is an exceptional instructor that inspires students to achieve their highest potential in this demanding profession. She is an exceptional teacher in field training, classroom teaching, laboratory instruction, and grooming our students to become professionals. I have seen measurable increases in our students' abilities in field camp in the areas she teaches. She has inspired our undergraduate students to complete major research projects and present them at major geosciences conventions. Great job Dr. Sanchez!

Dr. Brent Hedquist Receives a Service Learning Grant Award

Dr. Brent Hedquist was awarded a \$9,000 service learning grant in early May to work with undergraduate and high school students in creating a digital database of historical buildings in Duvall County, Texas. The grant is a collaboration with Architecture & Civil Engineering, and History Departments at TAMUK and will involve the use of GIS and UAV drones to collect imagery, map, and create a database of key historical sites, principally in the city of San Diego, Texas during the fall and spring semesters this next academic year.

Drs. Su and Hedquist Presented at AAG Meeting

Dr. Su presented a research paper in April 2017 at the Annual Association of American Geographers (AAG) meeting in Boston, MA. His talk was entitled "Bathymetry Mapping with Multispectral Imagery - Comparison between Collocated Cokriging and Regression Kriging methods". Dr. Hedquist and Mr. Subedi presented a poster entitled "Creating a GIS Database for Documentation and Preservation of Historical Structures at Rancho La Union, Zapata County, Texas".

Dr. Su Published an Article in International Peer-Reviewed Journal

Dr. Su had a co-authored journal article accepted for publication in the Remote Sensing, a high impact journal in Remote Sensing. The article is entitled, "Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations". The article can be found at: DOI: 10.3390/rs9060538.

Dr. Yelisetti Published Two Papers in International Peer-Reviewed Journals

- 1) Subbarao Yelisetti, Spence, G.D., Scherwath, M., Riedel, M., and Klaeschen, D.; Dual-vergence structure from multiple migration of widely spaced OBSs from northern Cascadia margin. *Tectonophysics*, 2017, doi: 10.1016/j.tecto.2017.04.005.
- 2) Anastasia G. Yanchilina, Subbarao Yelisetti, Monica Wolfson-Schwehr, Nicholas Voss, Thomas B. Kelly, Jennifer Brizzolara, Kristin L. Brown, Megan Fung, Melania Guerra, John M. Zayac, Bernard Coakley, Robert Pockalny; Exploring methane gas seepage in the California Borderlands, *EOS transactions*, American Geophysical Union, 2017, accepted.

Dr. Yelisetti Presents Lecture at Coastal Bend Mathematics and Statistics Symposium

Dr. Subbarao Yelisetti gave an invited lecture entitled "Seismic full waveform inversion" at the 2nd Coastal Bend Mathematics and Statistics Symposium, Kingsville, TX, 1 Apr, 2017.

Drs. Yelisetti and Schneider Take Leadership Roles in Coastal Bend Geophysical Society

Dr. Subbarao Yelisetti is the President of the Coastal Bend Geophysical Society (CBGS). Both Drs Yelisetti and Schneider are Board Members of the Society for 2017-2018. Dr. Yelisetti proposed to provide scholarships to TAMUK geophysics students through CBGS funds.

Dr. Yelisetti is an Editor for *Oceanography* Journal

Dr. Subbarao Yelisetti is the Guest Editor of the *Oceanography* Journal for 2017-2018.



Earth and Space Science Night



In conjunction with the Physics Program, the Geoscience Program sponsored Earth and Space Science Night. Students and folks from the community looked at the sun (using special filters), enjoyed a movie from the “*How the Earth Was Made*” series and looked at both physics demonstrations and rock, mineral and fossil displays. The Geosciences Club, AAPG Student Chapter and Physics Clubs all participated and over 20 students attended. Thanks to Drs. Ford, McGehee, Yelisetti and Professor Parker for their help. These events are open to the public and the next one is scheduled for April 27th.

Dr. Beatrice Magnani Presents the GEOPRISMS Distinguished Lecture



Tuesday February 28, Dr. Beatrice Magnani from Southern Methodist University presented a lecture titled “The legacy of ancient plate boundaries in continental intraplate deformation”. The public lecture attracted over 170 participants. The lecture was arranged by Dr. Subbarao Yelisetti and supported by GeoPRISMS Distinguished Lectureship Program. Dr. Beatrice Magnani is a seismologist whose overarching research theme is the formation, evolution of continents, and continental dynamics. Dr. Magnani employs controlled-source seismology to image continents at a wide range of scales and resolutions, from the lithosphere to the near surface. Her research interests include induced seismicity, the Eastern North American passive margin structure and evolution (ENAM Community Seismic Experiment Project), seismic oceanography, and glacial isostatic adjustment (GIA) investigations in the Patagonian Andes.

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Photo Gallery

