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Program News

Four Students Graduated This Spring 2016



Carolyn Barnett Core, Mark Alaniz, Payton Campbell, and Alex Johnston graduated in the TAMUK Spring 2016 Commencement. Mark Alaniz (Distinction), Payton Campbell, and Alex Johnston (Distinction) attended field camp in summer 2015 and won the Javelina Field Geologist award. Although all participants in this camp demonstrated high-levels of work, these students were consistently good in all aspects of geological work.

Carolyn Barnett Core started as a Freshman in our program. She graduated with a BS in Geology with an emphasis in Geosciences. Carolyn earned a GIS Certification along with the degree. We will miss Carolyn Core and efforts she put into our Geology Club and program success.

Mark Alaniz transferred in from TAMU College Station in his Junior year. Mark provided our program with excellent GIS lab teaching assistance. His summer field camp work was awarded the Javelina Field Geologist award with Distinction for his consistent quality field work. Mr. Alaniz is a GIS Certified specialist. Mark has demonstrated academic skills, work ethic, and writing skills that should pay dividends in his career. Great job Mark!

Payton Campbell transferred into TAMUK geology in his junior year from Del Mar College. Payton Campbell consistently ranked in the top 15% of his class while working full time and commuting from Corpus Christi. He was an excellent lab teaching assistant for the Petrology class. His summer field camp work was awarded the Javelina Field Geologist award for his quality field work. Mr. Campbell is a GIS Certified specialist. Payton has demonstrated academic skills, work ethic, and writing skills that should pay dividends in his career. Great job Payton!

Alex Johnston started as a freshman in our program. He graduated with a BS in Geology. His summer field camp work was awarded the Javelina Field Geologist award with Distinction for his consistent quality field work. Mr. Johnston was selected as our 2016 Field Camp Teaching Assistant this summer. Alex Johnston has demonstrated academic skills, work ethic, and writing skills that should pay dividends in his career. Great job Alex!

Cody Barker and Dr. Hedquist Published in the Southwestern Geographer



While working on his undergraduate geology degree at TAMUK Cody Barker was hired as a research assistant to help Dr. Hedquist on his study of global climate change effects on the Kingsville area. Cody was a high-achieving Honors College student that contributed as a teaching assistant, Geology Club officer, and research assistant. Cody Barker and Brent Hedquist were notified that their manuscript was accepted for publication. This is a great accomplishment for our program.

GIS Certification Ceremony

Several of our majors received their GIS Certificate this semester in a ceremony following student presentations of their work for the Advanced GIS class on May 5, 2016. These students did a great job in their presentations illustrating high quality work. Geosciences majors receiving the Certificate included **Mark Alaniz, Payton Campbell, Chad Delfino, Austin Johnson** and **Eric Villalba**. The recipients from other departments over the campus included Esinam Amegashitsi, Chisara Anoruo, Andrea Bruno, Hao-Po Chang, Ross Chavez, Lewis Haynes, Gregory Lujano, Andrea Meyer, and Alexander Rahmlow.



Geology Field Camp in Big Bend



Our Geology Field Camp in Big Bend began with advertisements going out to Texas Universities in January. Although many external applications were submitted only ten made the prerequisite requirements for our capstone writing intensive camp. **Jacob Byerly, Colton Coons (TAMU-CC), Monica Estrada, Scott Fenner, Eric Garza (TAMU-CC), Austin Johnson, Cody Lopez (TAMU-CC), Richard Lopez (TAMU-CC), Kasey Phelps, Jonathan Thomas** and field assistant **Alex Johnston** headed out to Big Bend with Drs. Thomas McGehee, Mark Ford and Veronica Sanchez on May 18. Both students and Faculty are engaged in an intensive learning experience for our profession.

Our field camp personnel selected a number of great projects this year that would provide mapping challenges and test their knowledge in the core areas of mineralogy, petrology, sedimentology/stratigraphy, field geology, and structural geology. The writing intensive component was added to help camp participants improve their science writing skills in a comprehensive report. We are very proud of these students' demonstrated work ethic and abilities to compete at a very high level in the future job market. Good job!

Two TAMUK Students Presented at the 2016 Javelina Symposium



Alex Johnston

Aaron Barron

Dr. Veronica Sanchez, **Alex Johnston** (undergraduate major), **Aaron Barron** (undergraduate major) and **Felipe Alarcon** (Post Baccalaureate) worked together on two major research projects. Dr. Sanchez and Aaron Barron worked on a "A Landslide Risk Map of the Rural Areas of Oaxaca, Mexico." Dr. Sanchez, Alex Johnston, and Felipe Alarcon went to the Christmas Mountains over spring break to study one of our field camp sites near Terlingua, Texas. The two abstracts presented in the poster presentation at the Javelina Symposium are listed below:

A Landslide Risk Map of the Rural Areas of Oaxaca, Mexico

Aaron Barron, Veronica Sanchez

Abstract

Through extensive research on Oaxaca, Mexico, scientists have been able to create hazard risk maps for this area; however, they have neglected the rural areas around it where much of the city's agriculture is produced. Some towns are built on steep slopes and show the potential risk of failure to the locals living there. The imagery I am analyzing includes Landsat, radar (SRTM), and SPOT. I use Google Earth to explore the region and gather data on the morphology and extent of the landslides. In order to figure out if the feature I am viewing is a landslide I examine the area around it for agricultural development and road construction. The landslide areas will appear patchy and sometimes have a noticeable escarpment. So far I have identified 16 potential sites for failure. I will analyze digital elevation models (DEMs), satellite imagery and aerial photographs in ArcGIS to help me classify types of landslides. The goals for this project will include a landslide risk map and a classification of the mass movements in correlation to seismicity and precipitation that will be kept in an ArcGIS geodatabase.

Paleostress Fields of the Christmas Mountains

Alex Johnston, Felipe Alarcon, Dr. Veronica Sanchez

Abstract

Preliminary research shows that the geology of the Christmas Mountain Range has been altered by multiple tectonic events. The changes in the stress field that affected the area may be the result of the Ouachita Orogeny, the Laramide Orogeny, Tertiary Volcanism, and Basin and Range tectonics. Preliminary mapping shows NW to SE strikes and NW trending shear zones that are supported by the observations done by Maxwell. The goal of this research is to identify and characterize the paleostress fields by mapping lineaments in the Christmas Mountains via GIS technology and in the field to identify principal stress directions. The fracture patterns will be used to differentiate between several models, including extension due to magmatic cooling; extension due to rifting (Basin and Range), or compression due to Laramide shortening. Some of the predictions that this research will investigate are: is it possibly a cooling laccolith that developed a radial fracture pattern? Are the patterns the result of Basin and Range rotation, or is the fracture pattern reflecting Laramide shortening? Results from this research will add to the previous knowledge of the paleostress field of the Trans – Pecos area. It will also expand the amount of research that is available for future students and professionals that will be studying the Christmas Mountains by giving them background information so that they can also expand the research further.



The Geoscience Program Brought in Quite a Slate of Speakers This Semester



Dr. Jaehyung Yu (3rd to the right)

Monday February 15, Dr. Jaehyung Yu from Chungnam National University in South Korea gave a talk titled “Drone Remote Sensing and its Applications in Geology.” Dr. Yu is a valued former faculty member and research collaborator. His talk provided his vision of finding additional mineral resources using remote sensing data collected from several small drones. There were 45 people in attendance at his talk.

Tuesday April 12 we had Dr. Joe Levy, one of the foremost experts in Arctic and Mars research from the Jackson School of Geoscience – University of Texas give a talk “Walking to Mars: Exploring the Red Planet in Antarctica and the Arctic.” Ninety people attended the talk.

On Thursday April 21 Dr. Roy Hyndman (2016 Olan Kruse Lecturer) that hails from the School of Earth and Ocean Sciences at the University of Victoria, British Columbia. He is also an Emeritus Research Scientist from the Pacific Geosciences Centre, Geological Survey of Canada. Dr. Hyndman is one of the giants in figuring out how Continental Crust is formed. The title of his talk was “The Origin of the North American Cordillera and Other Mountain Belts.” We had over 150 students in attendance.

Additionally, we hosted 3 “Earth and Space Science Nights” along with the Physics Program (the Levy talk was part of one of these) where TAMUK students and the general public could come in and attend a talk or watch a documentary movie (hosted by geoscience faculty), see some cool rock/mineral/meteorite displays and peer through the 16” telescope at objects in space, if the skies were clear.

Field Camp Scholarship Winners

5 students won “Field Camp Scholarships” from the Corpus Christi Geologic Society (CCGS) including: **Jacob Byerly, Monica Estrada, Kasey Phelps, James Quisenberry, and Kelsey Robinette.** Way to go students!

Six students were awarded Field Camp Scholarships from the TAMUK ExxonMobil Scholarship. **Jacob Byerly, Monica Estrada, Scott Fenner, Austin Johnson, Kasey Phelps, and Jonathan Thomas** won scholarship awards to the 2016 TAMUK Field Camp.

Sarah Dillon Won the “Best Paper Award” in Petrology



The “Best Paper Award” was advertised in February to be an award of writing excellence in the field of Petrology. Dr. McGehee offered a quality specimen of ‘tiger-eye’ valued at \$100 for the winner of this year’s winning paper. Sarah Dillon wrote the best paper titled, “Tectonic and Structural Study of the Llano Uplift: Examination Through Field Studies of Enchanted Rock and the Coal Creek Serpentinite” that clearly demonstrated her understanding of the topic. Congratulations to Sarah!

GEOINT Assistantships Awarded to Five Geology Majors

As part of the National Geospatial-Intelligence Agency grant Drs. Su & Hedquist received in the 2015, the Geosciences program awarded five GEOINT assistantships this May. Assistantships awardees included **Tomisin Alagbe, Noelia Arredondo, Aaron Barron, Daniel Morales and Kasey Phelps.** The selected students are committed to earn a minor in GIS and will receive \$1,000 per year for two years. Congratulations to these student awardees!

Presidents Summer Research Scholars (PURS)

Sarah Dillon has been involved with the PURS (President Undergraduate Research Scholars – formerly known as The President Undergraduate Research Program) since early April of 2016. Sarah writes, “This program is designed to not only get undergraduate students involved with research, but to prepare undergraduate students for graduate programs. The PURS program requires students to undergo 6 weeks of intensive research, with a minimum of 30 hours per week of work under the instruction of a faculty mentor. I began researching the mineralogy of a heterogeneous gabbro countertop known as Star Galaxy (or Black Galaxy). My research entails a detailed analysis of the rock using surface observations, thin section observations, and geochemical data collected with a pXRF (portable X-Ray Fluorescence spectrometer). I will be analyzing Star Galaxy to identify the most accurate sample preparation method when using a pXRF on a heterogeneous, mafic igneous rock. This research is far from complete, but large aspects of the project are completed. I will be presenting my research at the GCAGS-GCSSEPM (Gulf Coast Association of Geologic Societies) conference in September with my research partner Adolfo Enciso, and Dr. Ford, my faculty mentor. I will then present at the Javelina Research Symposium at Texas A&M Kingsville in October, and the Pathways Student Research Symposium at Texas A&M Prairie View in November. The PURS program has opened many doors, and provided many opportunities to further my education over all.”



Fieldtrip to Igneous Metamorphic Rocks Central Texas



During April 7-9 thirty-four geology majors (6 students from Del Mar College), Jim Chude, Vernon Kramer and four faculty [Mark Ford (fieldtrip leader), Veronica Sanchez (fieldtrip leader), Thomas McGehee, John Buckley,] conducted field exercises at Enchanted Rock and the Coal Creek Serpentinite to for students to gain field knowledge in Field Geology and Petrology. After recording their observations, students interpreted the data and wrote a paper on the topics as part of their course requirement.

Fieldtrip to Mike Maples Property

During April 14-16 thirty-two geology majors, Jim Chude, and 6 faculty [Veronica Sanchez (fieldtrip leader), Brent Hedquist (fieldtrip leader), Mark Ford, Dan Jackson, John Buckley, and Thomas McGehee] conducted field exercises at Mike Maples property and Inks Lake for students to gain field knowledge in Structural Geology, Field Geology, and Field Mapping and Cartography. After recording their observations, students interpreted the data and wrote a paper on the topics as part of their course requirement.

University GIS Center Development

The Geospatial Research and Teaching Lab was busy this past few months with various activities related to GIS education, research, and outreach. Dr. Hedquist is currently leading efforts to coordinate GIS activities campus-wide, with the goal of developing a University GIS Center to fulfill the GIS needs of the campus and South Texas community. An interdisciplinary GIS working group has been formed to coordinate future Center activities, as well as GIS curriculum needs.

Dr. Su Presented at AAG Meeting

Dr. Su presented research paper in April 2016 at the Annual Association of American Geographers (AAG) meeting in San Francisco, CA. His talk was entitled, "Incorporating Spatial Correlation for Improving the Prediction of Water Depth from Multi-Spectral Satellite Imagery".

Dr. Hedquist and GIS Graduate Teaching Assistant Present at Regional GIS Meeting

Dr. Hedquist and Mukti Subedi, lab manager and graduate teaching assistant in the Geospatial Research Lab, presented a poster at the South Central Arc User Group Meeting (SCAUG) in Corpus Christi on April 20th. The poster was titled, "Creating a Geographical Information System (GIS) Database for Documenting Historical Structures at Rancho La Union Ranch, Zapata County, Texas." The poster showcased work done to create a GIS database and online map for a historical ranch near Laredo and was funded by the Lillia and Guadalupe Martinez Foundation.

Faculty Publications Accepted

Dr. Su had a co-authored journal article accepted in June for publication in the *International Journal of Remote Sensing*, a high-impact journal in Remote Sensing. The article is entitled, "A Graph-Based Approach for Assessing Storm-Induced Coastal Changes." Dr. Hedquist had a co-authored journal article accepted in June to the top-ranked meteorology journal, *Atmospheric Environment*. The article is entitled, "Investigating ambient ozone formation regimes in neighboring cities of shale plays in the Northeast United States using photochemical modeling and satellite retrievals." The paper included authors from the Department of Environmental Engineering, as well as from NOAA. The article can be found at: DOI: 10.1016/j.atmosenv.2016.06.058.

International Work

Dr. Yelisetti was invited to present his research work at the UTRGV-Oil and Gas conference in Edinburg, Society of Independent Petroleum Earth Scientists (SIPES) meeting in Corpus Christi, and the Department of Mathematics at TAMUK. He also gave a talk at the 17th International Seismix Symposium in Scotland.

Dr. Yelisetti's research in Germany is going very well. He submitted one paper and is currently working on two more papers. Dr. Michael Riedel, research scientist at Geomar Helmholtz Center for Ocean Research Kiel, Germany provided Dr. Yelisetti with a major research seismic data set from the Arctic region that was collected in 2014, plus promised to provide another dataset from offshore Oregon.

Dr. Yelisetti was invited to visit the Indian Institute of Technology (IIT)-Kanpur from 5th August to 12th August before coming back to Texas. He will be giving a talk there and hopes to attract students for our proposed petrophysics program. Dr. Yelisetti should be back in town in time for our General Faculty meeting.



Photo Gallery: Field Trips & Summer Field Camp



