



### Program News

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### Four students graduated in December 13, 2014 Ceremony



**Stephanie Garza** from Mission, Texas, graduated with a Bachelor of Science degree in Geology. She has been with the Physics and Geosciences Department as a geology student since Fall 2012. She was a transfer student from the University of Texas Pan American. While attending Texas A&M University-Kingsville she was vice president of the geosciences club during this last semester. Now, she is in the process of applying and interviewing for employment. Her goal is to get experience and eventually go back to school for a masters. We are very proud of Stephanie's accomplishments in our program.

Second Lieutenant **Andrew Willias** from Corpus Christi, Texas graduated Suma Cum Laude with a Bachelor of Science double degree in Geology and Military Science. He was one of the top cadets and a trainer for the TAMUK ROTC program 2009-2012. He received the highest grades in all three component field camps (8 hrs training) and is the strongest field person we are graduating this year. Mr. Willias has a 3.86 overall average in all course work at TAMUK. He was selected for Who's Who in Colleges and Universities in America. Lt. Col. Richard P. Spainhour representing the A&M-Kingsville ROTC commissioned Andrew Norman Willias as a second lieutenant in the United States Army at the 4 p.m. ceremony. Our Department also nominated Andrew for the Distinguished Student Award for the College of Arts and Sciences. Andrew is now in the United States Army. We are very proud of Andrew's accomplishments in our program.

**Daniel Rios Jr.** from Kingsville, Texas graduated with a Bachelor of Science degree in Geology. Daniel was part of a team that won the top field award in Spring 2012. Daniel also participated in geosciences club events. Daniel accepted a job with the Gisler Brothers Logging Company. We are very proud of Daniel's accomplishments in our program.

**Lauren O'Connell** from Portland, Texas graduated with a Bachelor of Science degree in Geology. Lauren worked in an internship for 1 year with Jay McGovern. Lauren O'Connell accepted a job with the Gisler Brothers Mud Logging Company. We are very proud of Lauren's accomplishments in our program.

### Winter Intersession Field Camp

Our Winter Intersession field camp was well attended with 17 geology majors. Sarah Beers, Juan R. Cavazos, William D. Crutcher, John M. Dabney, Adrian N. Dancer, Jeffrey A. Elsworth, Jacob A. Gomez, Andrew M. Hancock, Antonio A. Hernandez, Dakota R. Kubiak, Veronica B. Nieto, Gloria J. Salinas, Robert L. Schoen, William S. Sundland, Evan J. Taylor, Charles C. Winn, and David J. Wood completed the third installment of our field camp, which is now in our second year.

Dennis Moore (Baker Atlas) opened the field camp with a training exercise in well log interpretation. Randy Bissell (geologist at Heddington Oil) presented a short-course in sequence stratigraphy and then mentored the students through a seismic interpretation exercise. Dan Jackson and Vernon Kramer (Professor at Del Mar College) presented an "Introduction to Petroleum Prospecting" followed by an exercise in petroleum prospecting at the Log Library in Corpus Christi. We traveled to Ingleside, Texas and met three crew boats that took us on a tour of the "Big Foot" tension leg rig construction site. We then went to a CCGS meeting at the Petroleum Club. Later that afternoon we met Frank Cornish, CEO of Imagine Resources to discuss the use of "3D Seismic" in petroleum exploration. We traveled to Runge, Texas to meet the Gisler Brothers Mudlogging Company to learn how perform this job. We also observed the activities at a fracking operation near Runge. Vernon Kramer presented an "Introduction to Fracking" and "Uranium Mining in South Texas." This was followed by several subsurface log-interpretation exercises in defining uranium roll-fronts.

This Field Camp was the trial run for our first of the three-course writing intensive field camps. These courses require the student to prepare professional papers centered on the theme of the field camp. The papers are first edited and corrected for their scientific content. This is followed by a grammar edit from Amber Conner.

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### Geosciences Program welcomes three new Majors



Michael



Luis



Stacy

**Michael Garcia** is a Junior-status transfer student from Coastal Bend College in Beeville.

**Luis Sanchez** is a freshman transfer student from South Texas College (STC).

**Stacy Henrion** is a transfer student from Environmental Engineering at TAMUK.

### Six TAMUK students received the future bright GIS certificate



On Dec. 13th, six students received their GIS Certification. Three undergraduate geology majors **Andrew Willias, Stephanie Garza, and Zachary Hull** completed all four courses (Introductory GIS, Field Mapping and Cartography, Advanced GIS, and Remote Sensing). Three Graduate students **Ali Dortaj, Chih-Yuan Chang, and Oluwatosin Oyelakin** completed the three required classes (Introductory GIS, Advanced GIS, and Remote Sensing). Congratulations to the students and GIS faculty for all your efforts.

### Undergraduate Research Projects



Daniella Herrera & Jacob Byerly

**Daniella Herrera, Jacob Byerly, Dr. Haibin Su and Dr. Brent Hedquist**, are working this semester on “**Remote sensing image-based analysis of the relationship between urban heat island and land use/cover changes in San Antonio, Texas**”. This project is funded by a University Research Award (URA). They have a goal of having some good results by early summer, which can then be used for a paper, as well as for further study through an external research proposal. Great job!



Sarah Beers & Katelyn Wallace

**Casey Mibb, Dan Jackson, and Frank Cornish** (CEO of Imagine Resources) are working on a research project/internship “**Using Kingdom 3D Seismic software in Oil and Gas Exploration**.” Frank Cornish has been preparing graduate students to enter major jobs in the oil industry the past 10 years. Casey has accepted a two year internship to work with Frank Cornish after graduation.



John, Jake & David

**John Dabney, Jake Ewing, David Wood, and Dr. Thomas McGehee** are working on the “**Chemostratigraphy of the Eagle Ford Shale**”. The team will be using the pXRF (handheld X-ray Fluorescence spectrometer) and other methods to correlate three boreholes in the Eagle Ford Shale play.



Casey Mibb

**Brent Winborne, Justin Mauck, and Dr. Mark Ford** are using the pXRF (handheld X-ray Fluorescence spectrometer) and other methods to correlate the South Rim Formation volcanic tuffs in Big Bend National Park with other, better characterized tuffs. Understanding these tuff units will further help us understand volcanism and the geologic history of the Big Bend area. The title of the project is “**Using pXRF to Map and Correlate Tuffs in the Big Bend National Park**”.

**Sarah Beers and Dr. Ford** are also working on a project titled “**Searching for the Oldest Black Shale in Texas**”, where they will be testing five working hypothesis that may prove an organic rich shale was present in Texas a billion years ago. This work involves geochemical modeling, hand sample and thin section petrography, and some field work with the goal of developing an analytical plan and writing a grant to fund this plan.

Additionally, **Katelyn Wallace and Dr. Ford** are working on the “**mineral chemistry of the Badu Hill Pegmatite**”. They will produce some concentrated mineral separates and analyze them with the pXRF and will also produce a SOP (standard operating procedure) document for the instrument.



Brent Winborne & Justin Mauck

Finally, **Jonathan Tuck and Dr. Ford** are working on an honors project to petrographically examine some of the various granites located in the Llano region. They will be doing some field work to collect samples and make their own petrographic thin sections for this project.



## Seven Students and Three Faculty receive BRUKER Radiation Safety Certification and pXRF Operator Training



David Wood, Katelyn Wallace, Brent Winborne, Justin Mauck, Sarah Beers, Bree Gonzalez, Dr. Mark Ford, Dr. Tom McGehee, Juan Garza were certified by BRUKER instructor Raymond Lindeen in XRF Analyzer Operator Training and XRF Safety Training in December. In February John Dabney, Jake Ewing, and the above XRF team received the training again to ensure success with our future projects. John Dabney and Jake Ewing completed their certification. Our presenter stated that our pXRF can quantitatively measure most elements above aluminum in geologic materials. Each sample type needs to be calibrated to achieve quantitative results. This means our instrument is ideally suited for chemostratigraphy and volcanic deposits. With the vacuum system our unit can detect elements as light as magnesium.

## Geosciences has Eight Majors working as Lab Assistants for our courses

We believe that part of the educational process for our majors should involve their involvement in teaching other students what they have learned. Accordingly, many of our introductory labs are taught by undergraduate students under faculty supervision. We are proud of those listed below who are currently teaching labs as well as those who have performed that task so well previously.

**Sarah Beers** is a geology major currently working as the TA for Physical Geology and Historical Geology. Sarah has previously taught the Nature of Earth and Universe lab for elementary education majors.

**Jacob Byerly** is a sophomore geoscience major and is teaching labs for Meteorology courses this semester.

**Daniella Herrera**, also a senior geology major, is teaching an Advanced GIS lab this semester and has previously taught Introduction to GIS and Advanced GIS labs.

**Zachary Hull**, a senior geology major, is teaching two sections of Earth Science labs as well as Nature of Earth and Universe, a course designed for elementary education majors. This is his third semester to teach Earth Science labs.

**Justin Mauck**, a graduating senior, is teaching labs for two courses, GIS Field Mapping and Geological Field Methods.

**Casey Mibb** is a senior who is teaching a dual enrollment Earth Science lab in Calallen this semester. Previously Casey has taught Earth Science and Physical Geology labs on campus

**Scott Sundland** is a graduating senior and is teaching three Earth Science labs this semester. This is Scott's third semester as a TA.

**Katelyn Wallace** is another senior geology major teaching Earth Science labs this semester. She has taught several labs for us in the past including Physical Geology and Earth Science both on campus and for the dual enrollment course in Calallen. Additionally she taught a summer Upward Bound Earth Science lab in the summer of 2013.

## AAPG Student Chapter (President - Justin Mauck) and Geosciences Club (President - Casey Mibb) - Highlights 2012-2013



Justin Mark



Casey Mibb

Last year was a very good year for the Geosciences Club! We had a great showing at the 2013 TAMUK Fall Carnival, selling fine rock and mineral specimens, as well as many beautiful pieces of handmade jewelry donated by Lauren Hall. Also in the fall semester, the Geosciences Club helped Dr. Brent Hedquist plant trees to mitigate heat effects in Kingsville. Further volunteer tree planting events in Kingsville will take place in February and March. The future of the Geosciences Club is looking up, with a fresh new crop of excited officers right around the corner and a membership list that is steadily expanding. Many thanks also go to our local chapter of the AAPG, who the Geosciences Club has been happily working with,

and will continue to work alongside to help people understand more about geosciences.

Morgan Pope, John Dabney and Brent Windborne assisted with the Geosciences booth at the Javelina Preview Days on February 15th. Our students were able to give prospective students an idea of what it is like to be a major in the department.

Katelyn Wallace, lecturer Bree Gonzalez, and Dr. Thomas McGehee worked with the Connor Museum Director, Jonathan Plant, to identify a number of mineral samples that were donated to the museum. Samples included crystal quartz, adamite, and barite.



## Our Program is leading two fieldtrips to Central Texas

The Coal Creek Serpentinite (Petrology and Field Geology March 20-22 three-day field trip exercise) covers the rudiments of measuring and preparing cross-sections through a Precambrian sequence that has been interpreted to be an incomplete ophiolite. Also, we will be examining igneous plutons and dikes to understand the intrusive history of Central Texas. The overarching goals of this project are for our majors to interpret metamorphic protoliths and to identify spatial tectonic elements.

The Pedernales Creek area mapping project (Field Geology, Field Mapping Cartography, and Geomorphology April 3-5 three-day field trip exercise) is a team contest to determine the level of our students' field skills. Their skills in pace and compass, rock descriptions, field book note taking, and reading a topographic map will be tested. The overarching goals of this fieldtrip are to determine our students' field readiness for the coming field camps and to start correcting weaknesses.

## Summer Field Camp at Big Bend National Park

We will again be conducting a 2-week field course centered in Big Bend National Park in early May. This course focuses on the spectacular igneous geology within the park area with several mapping exercises. Additional exercises will target tectonic events of the late Pennsylvanian Ouachita Orogeny, the late Cretaceous Laramide Orogeny and the Cenozoic Basin and Range extensional tectonics. The field experiences will culminate in a written report in which students will weave the details of geology learned from each exercise into a comprehensive report fitting these details into the plate tectonic story.

## Speaker invited from the National Weather Service to speak on Severe Weather



**John Metz**, the Warning Coordination Meteorologist and acting Director of the Corpus Christi National Weather Service Office, was invited to speak to our students on "Severe Weather Safety," on February 19<sup>th</sup>. John has spoken on several occasions previously at the University and his talks are always well-received and enjoyed by those in attendance.

## Dr. Hedquist publishes article in leading international building science journal

Dr. Brent Hedquist and his former PhD advisor, Dr. Anthony Brazel at Arizona State University, published an article online recently in the scientific journal *Building and Environment* titled, "Seasonal variability of temperatures and outdoor human comfort in Phoenix, Arizona, USA." Dr. Hedquist plans to incorporate similar modeling techniques used in this study here in South Texas in research involving undergraduate students.

## Geosciences Receive Title V PPOHA Grant Award

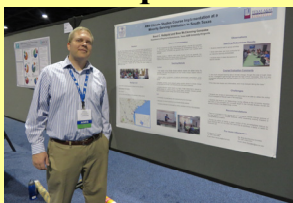
Drs. Hedquist and Su received a \$25,000 award from the University to upgrade Geospatial Research Lab computers in Kleberg Hall, as well as purchase 15 new Trimble GPS units. This will greatly enhance student research and classroom projects within the GIS certificate and minor program, as well as Geology field trips and field camps.

## Geosciences Obtain Differential GPS



A great addition to the department arrived late in the fall semester with a Trimble GeXH GPS, which will allow very precise location measurements down to centimeter-level. This unit will strongly support our students' fieldtrip and field camp activities as well as provide new technologies for our geography labs. The GPS unit was previously awarded to Drs. Hedquist and Su as part of a \$15,000 Title V PPOHA grant in 2013.

## Dr. Hedquist and Professor Gonzalez Co-Author an Invited Poster



Dr. Brent Hedquist and Professor Bree Gonzalez co-authored an invited poster at the American Meteorological Society (AMS) Education Symposium in Atlanta, Georgia on Feb. 1-4<sup>th</sup>. The poster was titled, "AMS Climate Studies Course Implementation at a Minority Serving Institution in South Texas." The poster highlighted the benefits and challenges to students utilizing course material from the AMS in the Climate Studies course since being implemented in fall 2012 within our department.



TAMUK Winter Intersession Geology Field Camp 2013 Gallery

