# Wavelets - *Geophysics Field Camp – A Student's Perspective*

*By Christopher L. Lovely*

After many sleepless nights and hours upon hours of preparing, studying, and taking geophysics, geology, math, and other difficult final exams, on May 20, 2015, 64 students, six professors, seven teaching assistants, and three staff members from the University of Houston ("UH") journeyed to the Texas A&M University, Galveston campus ("TAMUG") in Galveston, Texas for a week-long "mini-mester" course designed to give the students some real-world application of the geophysics principles that they had begun to master in the classroom.

Each summer, the Allied Geophysical Laboratories (AGL) and UH co-sponsor the University of Houston's "Geophysics Field Camp", a 3-credit required course for all undergraduate geophysics majors at UH. For the second straight year, Field Camp was held at TAMUG, though prior to that, camp was at Yellowstone Bighorn Research Association (YBRA), southwest of Billings, Montana. UH has one of the largest geophysics field camps in the world and is the only university in the United States (to our knowledge) that trains students in the acquisition and processing of both onshore and offshore data. Geophysics students at UH have a unique opportunity to get hands on experience in the field acquiring data and learning to use the equipment and gear used in the everyday life of a geophysicist. Up until Field Camp, most students have only experienced the theoretical and learned aspects that a classroom lecture provides. They know the formulas and techniques and have memorized the defined terms in their textbooks; however, like with most students, they do not have a solid grasp of how these formulas, techniques, terms, and pieces of equipment will be applied at their first job following graduation.

***Figure 1:*** Students taking first hand experience doing well logging and VSP. Photo by Christopher L. Lovely

***Figure 2:*** Dr. Shuhab Khan guiding students in the use of GPR at Quintana Beach, Freeport, Texas. Photo by Christopher L. Lovely

***Figure 3:*** Students work together to set up a source for near surface seismic using a wacker. Photo by Jyl Verner

Students are divided into six separate groups and attend a different geophysics specialty course each day related to practical applications and interpretational skills in the field of geophysics. The activities in this year's camp included:

- Well Logging, Vertical Seismic Profile (VSP), and Cross-Well
- Ground Penetrating Radar (GPR) and Electromagnetic Induction (EMI)
- Gravity, Magnetic, and Total Station
- Seismic Refraction and Vibe
- Marine Sonar, Seismic, and Magnetometer
- Global Positioning System (GPS) and Light Detection and Ranging (LiDAR)

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***Figure 4:*** Dr. Robert Stewart explaining to marine seismic students the purpose of what they are trying to acquire. Photo by Christopher L. Lovely

Students were guided by Dr. Robert Stewart (Field Camp Director) and other distinguished UH Geophysics faculty: Dr. Will Sager, Dr. Bob Wylie, Dr. Shuhab Khan, Dr. Bob Wang, and Dr. Stuart Hall. Locations varied based on each specialty. Key locations visited included the University of Houston Coastal Center (La Marque, Texas), Dickinson Salt Dome (Dickinson, Texas), Galveston Harbor, and near the mouth of the Brazos River (Freeport, Texas). Key to the Camp's success is the support that it receives from our community. Thank you SEG Foundation, Geometrics, and Seitel!

As a student who attended this year's Field Camp, I can attest to the rigorous daily schedule that each of my fellow students and I endured through the week. Mornings began early, having had breakfast and grabbed our daily box lunch prior to the morning meeting with everyone in the dorm lobby at 8 am. We loaded up in vans designated by each activity and headed out to the field and did not return back until 5 pm. After a shower and dinner, each activity wrapped up by a debriefing with the professor and the teaching assistants to recap the day's activity and analyze the data that we acquired. Following the meeting, we were required to assemble a 3-page power point slideshow that summarized the activity and process of collecting the data, the equipment that we used to collect the data, and a brief analysis of the data that we acquired. Assignments were due by 10:00pm for grading.

For me, Geophysics Field Camp gave real meaning to my future profession. Not only do I now feel confident in answering the questions of friends and family who ask what it means to be a geophysicist, but now, perhaps for the first time, I am truly confident in my decision to pursue geophysics as a career. I now have a much better understanding of all of the different directions that one can take within the field and I have at least a brief understanding of the types of daily activities one may have in each specialty. I was able to work as a team with my classmates and learned how each of the various pieces fit together, from how to use the equipment, to how the equipment collects the data, and how the data is processed following collection. While seven days was only a very brief period in comparison to the time that I have already spent learning the theoretical intricacies of my future profession, Field Camp provided me with that "aha" moment and arguably provided me with the best education that I have received as of yet.

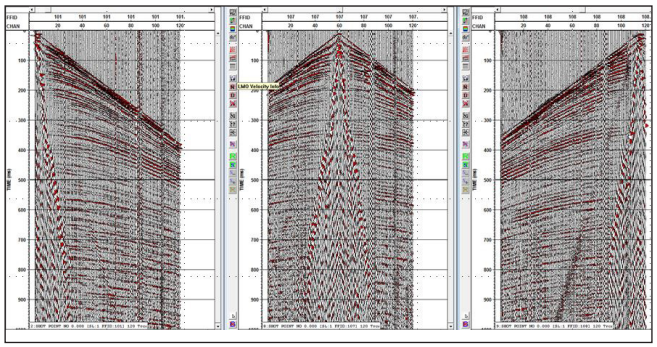

***Figure 5:*** Shot Gather data collected using Minivibe. Photo by Li Chang