

UNDERGRADUATE SEISMOLOGY INTERNSHIPS



Opportunities for physics, math and geoscience majors to conduct applied research for 10 weeks in the summer.



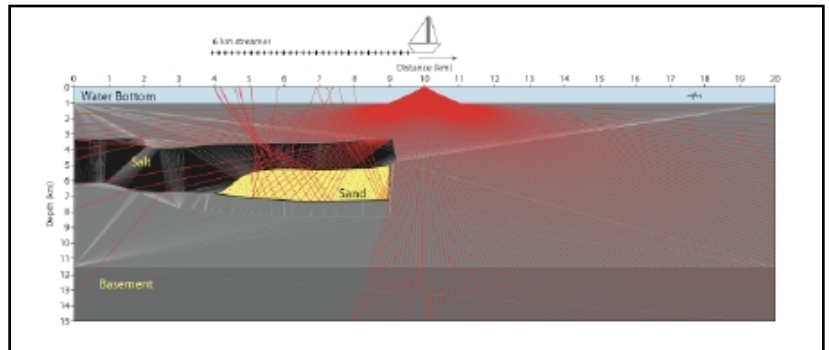
2012-13 Recruiting Speaker - Sandra Saldaña


Program Alumnus and Geophysicist, Noble Energy

Have you ever considered being a seismologist?

As a Math major I loved the beauty of high level Mathematics but struggled to see the application. In Physics I found a relevant and tangible application to the beauty of Mathematics. However, I wanted to apply my new craft to a field that would affect people's day to day lives. When I stumbled across exploration seismology as an undergraduate student, it satisfied the 'relevant and tangible' criteria with an added bonus: the opportunity to blow stuff up. Now working as a professional Geophysicist, I sometimes miss the dusty days in the field. However, the science has become more challenging and the application of Physics more crucial. In some ways the Earth has itself become the ultimate non-linear problem, where fundamental wave theory is key to hydrocarbon exploration and drilling safety.


The American Petroleum Institute estimates that The Gulf of Mexico accounts for 30 percent of domestic oil production. However, this region also presents unique challenges for Geophysicists due to the pervasive presence of salt. Basic seismic reflection theory assumes a normal incidence ray path from source to receiver. However, salt, in addition to having a much higher acoustic velocity than sediment, deforms plastically into pillow-like structures in the subsurface. This combination of high acoustic velocity contrast and irregular deformation geometry causes seismic energy to be diffracted away from receivers, creating areas of poor seismic illumination called "shadow zones". The application of basic wave theory is crucial to understanding where shadow zones occur and in determining the robustness of a seismic reflection interpretation. A robust seismic reflection interpretation facilitates an accurate Earth model which becomes the basis for well design and planning. In the end, it's the understanding of fundamental Physics that makes it possible to find and safely extract the hydrocarbons we rely on every day.



 **2013 IRIS Undergraduate Internship Program**
<http://www.iris.edu/internship>

Conduct seismological research with state of the art geophysical data and leading researchers of the IRIS Consortium. Research projects (10 weeks) may involve the deployment of seismic instruments in the field (within the US or internationally), and/or analyses of seismic data in a lab setting with the ultimate goal of producing results to be presented at a national scientific meeting.



 **2013 Research Experience in Solid Earth Science for Students** - <http://resess.unavco.org/>

Engage in cutting edge research in geology and geophysics through RESESS. The RESESS program is a 10 week per summer, multi-year, paid research internship for undergraduates that are interested in conducting research in the solid Earth geosciences. The main goal of RESESS is increasing diversity in the geosciences.