NJGS - Offshore Research Project 2007

The NJ Geological Survey seeks mature, conscientious, and self-motivated undergraduate students as candidates for the mentored Offshore Research Project.

Interested undergraduate students should promptly submit their qualifications and arrange an interview by contacting the NJGS intern coordinator at intern@dep.state.nj.us or (609) 984-6587

Program Description

The New Jersey Geological Survey (NJGS) is developing a geologic framework of the inner continental shelf with the aim of identifying the controls on distribution of Miocene–Holocene offshore sediments.

During the summer internship period for 2007 we will be collecting an additional 300+ line miles of shallow marine seismic data, both analog and digital over a period of 15 to 25 days in June 2007. This survey is the sixth in a series of offshore seismic studies conducted by NJGS since 1994 to identify and characterize offshore sand features as potential sources of sand for beach nourishment. The survey will target areas off of Cape May.

The student will be an integral part of a geophysical survey team, including the mentors, other NJGS staff. Each student will be taught the basics of marine geophysics, including data collection and interpretation. Each student will be assigned to a separate acquisition team and post analysis to assure independent work and experience. Both students will experience collaborative work by the mentors.

Fieldwork will also include the collection of 20 to 40 marine vibracore during the late summer. After acquisition of the core interns will be directly involved in the preparation, geologic description, and sample preparation and analysis. Each intern will learn and be involved with correlating the cores to the seismic data.

Field Techniques

As a member of the team, each student will be trained in:
• deployment and operation of the analog and digital seismic equipment
• monitoring of the equipment during data collection
• real-time interpretation for on board decisions regarding track line geometries
• navigation links to data acquisition
• record keeping, archiving of data
• monitoring marine vibracoring collected by a sub-contractor
• preparation, description and analysis of vibracore
• correlation of vibracore and seismic data (ground truth)

Other Tasks related to field mapping or field research

The student(s) will start work at NJGS two weeks prior to the start of the survey to assist with preparations, including:
• mobilization
• tank testing the components of the system
• navigational planning and seismic equipment operation
• instruction in general seismic theory as it applies to seismic subbottom profiling and core analysis
Post-survey, the student(s) will participate in the demobilization, including:
• compilation of data, initial processing
• reconnaissance-level analysis for determining vibracore locations
• preparation of data for computer outputs, links to GIS
• preparation of survey report to client(s) (NJ Dept. of Environmental Protection[NJDEP], US Army Corps of Engineers[USACOE], Minerals Management Service [MMS])
• preparation of results for annual NJGS Coastal Task Force meeting with NJDEP, MMS, and USACOE
Duration of mentoring experience - approximately 8 weeks

• Length of field experience (3-5 weeks) – each student will be a member of one of the two alternating field teams assigned to the offshore survey. The student(s) will work a 5-day stretch of 12-hour days, including over weekends, alternating with office time or time off to complete the calendar week. Each alternating team will work 2 multi-day legs for a total of 25 survey days. With some accounting for bad weather, the 25-day survey will run for approximately 4 weeks. Downtime will be spent describing and analyzing vibracore.
• Length of office-centered experience (3 weeks) – the student(s) will have approximately 1-2 weeks to contribute to the survey design, navigational planning and mobilization. During this time they will be given short primers on marine seismic and coastal geology. A 1-2 week period after the survey will be devoted to the correlation of seismic data and vibracore interpretations.