NOAA Teacher at Sea
Linda Armwood
Onboard NOAA Ship FAIRWEATHER
April 25 – May 5, 2005

Mission: Hydrography
Day 3: Thursday, April 27, 2006

Weather Data from Bridge

Visibility: 4 nautical miles (nm)
Wind direction: 120 °
Wind speed: 20 kt
Sea wave height: 1-2 ft.
Swell waves dir: 300
Swell waves height: 2 ft.
Sea level pressure: 1006.0mb
Present weather: Drizzle
Temperature: °C~ 7.6dry/7.1wet

Science and Technology Log

I attended the navigation meeting in preparation for today's departure from home port. The personnel responsible for conducting the navigation meeting and providing all of the essential information for exploration are junior officers who are trained in atmospheric science, oceanography, mathematics and navigation technology. Several charts were displayed to show the route of travel and the location of the intended areas for research. The first priority of the project is tide gauge installation. One particular area of the travel route (Snow Passage) will present a challenge because it is hard to go through during this time of year as a result of the currents in the narrow parts. One of the areas of research (Gulf of Esquibel) contains lots of navigational hazards such as rocks and low water levels near high water levels. The FAIRWEATHER only needs four fathoms of water to navigate, but generally stays in water deeper than ten fathoms due to the nature of the seafloor and the age of the charts.

An in-depth explanation of the survey tech procedures in data acquisition and processing was provided by a member of the survey tech team. Survey techs are given a charted sheet that represents their area of concentration. In order to do this, the tech first collects raw data, including depth information, with the Global Positioning System (GPS), the Shallow Water Multibeam (SWMB), and the Position and Orientation System for Marine Vessels (POS-MV) in operation at the same time. The POS-MV does the inertial motion of the vessel's roll, heave, pitch, and gyro positions. Next, the tech uses processing systems as a visual way to look at the surface of the water. The third and fourth steps are to apply motion corrections and tide corrections. The fifth step is to create the sound velocity profile based on water conductivity, temperature, and density. The next step is to combine each of the files into one file – a concatenated file. Following is the step involving computing total propagated error. This will result in the error value based on

error associated with sonar data. Step eight is for the tech to make a digital terrain model which is a basic grid from XYZ data. The final step is to view or look for errors caused by the system. These errors may indicate dangerous uncharted errors.

Personal Log
First time feeling the boat leave dock was a rush! The whale sighting was awesome! Too far from my cellular phone extended network coverage to call home and share with family.

Question of the Day
Environmental Science Students
Explain the importance of water conductivity, temperature and density to sound velocity.

Geospatial Semester Students
Using course software, produce a map that indicates the bodies of water associated with the Gulf of Esquibel. Identify those areas that have less than 30-40 fathoms.

Mrs. Armwood