



**NOAA Teacher at Sea**  
**Eric Heltzel**  
**Onboard NOAA Ship RONALD H. BROWN**  
**September 26 – October 22, 2005**

**Log 15**

**NOAA Teacher at Sea:** Eric Heltzel  
NOAA Ship RONALD H. BROWN  
Mission: Stratus 6  
Friday, October 14, 2005

**Weather Data from Bridge, 07:00**

Temperature: 19 degrees C  
Sea level Atmospheric pressure: 1016 mb  
Relative Humidity: 70%  
Clouds cover: 8/8, stratocumulus  
Visibility: 12 nm  
Wind direction: 120 degrees  
Wind speed: 16kts.  
Wave height: 3 – 4'  
Swell wave height: 4 - 5'  
Swell direction: 120 degrees  
Seawater Temperature: 18.3 degrees C  
Salinity: 35 parts per thousand  
Ocean depth: 4364 meters

**Science and Technology Log**

A big day today! We managed to deploy the Stratus 5 buoy. It was basically the reverse of our retrieval. The buoy was tipped up 45 degrees and the top 35 meters of instruments were hooked together. Next the mooring was attached to the buoy and it was placed in the water with a crane. This phase was done off of the portside of the fantail. We held the wire that was attached to the buoy and let it swing out behind the ship. Then using a large winch we would play out more of the cable, stop, secure the line, and then attach the next instrument. Consider the fact that if we were to lose hold of the mooring we could lose the whole works into 4000 + meters of ocean water. It's not like working on land where if you drop something, you say whoops and pick it up again. If that happens on the ship the thing you drop may well go over the side. Serious Whoops!

Once all of the instruments were attached we started paying out nylon and polypropylene line. This was accomplished by using an H-bit to run the line through. The line was in 4' x 4' x 4' boxes and trailed out into the ocean as the ship moved forward at just over one knot. When we got to the end of the line it was time to attach the new acoustic releases so that this buoy can be recovered next year. Then it was time for the big splash. The mooring was attached to the anchor which was made up of three iron disks, twelve inches thick and three feet in diameter. The anchor's weight is 9000

pounds. The anchor was sitting on a steel plate and the stern of the fantail. A crane picked up the forward edge of the plate and tipped the anchor into the ocean. The splash from the six-foot drop to the water went twenty feet in the air. The anchor started the trip to the bottom dragging all of the mooring and the buoy. The falling anchor pulled the buoy at about four knots towards the anchor location. Excited cheers went up on the fantail. The Stratus 5 buoy had been successfully deployed!

### **Instruments deployed (top 450 meters)**

Deployed on the mooring line beneath the buoy:

MICRO CAT	temperature, salinity
SEA CAT	temperature, salinity
Brancker	temperature, salinity
VMCM	direction, velocity of water flow
NORTEK	acoustic Doppler current profiler
T-POD	temperature logging device
SONTEK	acoustic Doppler current meter
RDI ADCP	acoustic Doppler current profiler (125 m)
SDE 39	temperature logging device

Acoustic release just above the anchor

On the buoy: (this information is transmitted 4 times a day)

Atmospheric pressure  
Air temperature  
Wind speed and direction  
Relative humidity  
Precipitation  
Long wave radiation  
Short wave radiation  
Sea surface temperature and salinity

You may notice that many of the instruments on the mooring measure the same thing. This redundancy is intentional guaranteeing verifiable data. There are two complete meteorological systems on the buoy.

### **Response to student questions**

Does the stratus layer extend to the land?

After questioning the senior scientists about this the answer is yes. We are at about 20 degrees south. Here there is a daily fluctuation in the cloud cover. It often dissipates during the afternoon as a result of warming by the sun. Apparently the coast of northern Chile often has a cloud layer that also dissipates during the day. This can be low-lying enough to be fog. As you travel a few miles inland and up in elevation you are no longer under the stratus layer.

Does the stratus layer affect El Nino?

Ocean and atmosphere constantly influence each other. I have to do more inquiry to give a solid answer to this question.

**Note:**

There is some confusion about the labels being used for the buoy and the cruise. This is the sixth Stratus Project cruise which is deploying the fifth Stratus buoy. Hence, the Stratus 6 cruise is recovering the Straus 4 buoy and deploying the Stratus 5 buoy.