



NOAA Teacher at Sea
Jim Jenkins
Onboard NOAA Ship MILLER FREEMAN
April 18 - 30, 2005

Day 3: April 20, 2005
Latitude: 54, 15, 60 N
Longitude: 163, 46, 35 W
Visibility: 10 Nautical Miles
Wind Direction: 076
Wind Speed: 12 Knots
Sea Wave Height: 1 Foot
Swell Wave Height: 1 Foot
Sea Water Temperature: 4.0 Degrees C
Sea Level Pressure: 1011.1
Cloud Cover: Partly
Cloudy/Cumulonimbus



The Bering Sea

Science and Technology Log:

You might want to begin by comparing yesterday's barometric pressure (1002.8 millibars) to today's pressure (1011.1 millibars). Knowing that a rising barometric pressure is an indication of good weather would give you an idea of the weather that we are enjoying right now. It is bright, sunny and warm for this part of the world. Last night, there was another indication that the weather today would be nice when I looked out the porthole to see a lot of pink in the sky just before I went to bed. Do you remember the saying, "Red sky at night, sailors delight?" Do you think this applies also to reddish shades of pink?

Tomorrow, the phrase, "Red sky in the morning, sailors take warning," may apply! Matt Faber, Ordinary Fisherman, on the Miller Freeman is sitting across from me reading the paper as I type. Matt advises that we are expecting a drop in the barometric pressure tomorrow of about 10 millibars to around 1000.00 millibars. What do you think this means about tomorrow's weather? If you predict that the weather will change dramatically you are correct. In fact, Matt notes that we are expecting high winds tomorrow. Winds are projected to come from the east at 35 knots per hour. Sea wave height will probably be 6 to 8 feet high. This is quite a change from today's one-foot sea wave height, isn't it?

I asked Matt about his experiences in rough weather at sea. He told me of a trip in February of this year when the sea wave height was in the 20-30 foot range. (This would make some waves higher than Mountain View School Elementary School!) Matt advises that the best strategy for these conditions is to "hang on," and "put up a rail on your bed so that you do not fall out of bed at night." I am taking his advice on these things as well as his advice to visit the ship's doctor to get some medicine to prevent seasickness!

Visiting the bridge to get the data needed to start my journals to you is becoming a great opportunity. Do you remember the story of seeing a killer whale on my first trip to the bridge to collect data? Well, today I got another surprise! The operations officer, Lt. Mark Miller, called me over to look at a volcano that was spewing smoke. The view through the binoculars was stupendous! Unfortunately, the distance and the conditions did not make it possible to get a good photograph. By the way, the name of the volcano is Shishalden. It is on Unimak Island. This may be a great topic for research for some of you. I am looking forward to having the time to research this myself when I return home.

Today, I have talked with Sarah Thornton, a scientist from the University of Alaska Fairbanks. Sarah is here to deploy an instrument that measures the nutrients in seawater that feed all ocean life. In the past, sampling involved traveling to a location, taking a water sample, and then taking it back to the lab for analysis. Sarah's instrument collects the data as it sits beneath the surface of the ocean. Sarah will come back in 6 months from the time she drops it off to pick it up. The instrument will then have 6 months of data which will be available to lots of people studying food chains in the sea.

Sarah's instrument will be placed below the large yellow doughnut centered mooring that I described on day one.

ISUS is the name for Sarah's instrument. The letters stand for In-Situ (Latin for "In Place) Spectrophotometric Underwater Sensor. The words are complicated, but the idea is not as complicated. Put simply, an ultraviolet light is sent through sea water. Different substances in the water absorb light at very specific frequencies. Nitrate, the primary food for phytoplankton, also absorbs light at a very specific wavelength. This enables data on nitrate level to be recorded. As noted earlier, Sarah will be able to take six months of nitrate level testing back to labs for analysis when she comes back to pick up her instrument next September or October. Scientists can then look at the nitrate levels to see how well fish populations will be fed in the future. Good nitrate levels mean that the fish will be well fed and plentiful. Lower nitrate levels may mean problems for fish and for fishermen.

I assumed that ISUS would be placed close to the surface where the sun's rays were able to penetrate to start photosynthesis. I was a little surprised to learn that the instruments are typically placed at a depth of only thirteen meters. Can you think of a reason for this depth? If you guessed that they placed at this depth to avoid problems with ice, boat traffic and weather, you are exactly right.

Light penetration in the Bering Sea may be common at 40 meter depths under some conditions. Sediment in the water or a lot of phytoplankton in the water may lessen light penetration, however. And there is measurable amount of light at 100 meters in some parts of the Bering Sea. Do you think the 13 meter depth of the instrument is logical in light of all you know?

Personal Log:

I am going to send a photo of my stateroom today. It occurs to me that you might find this interesting. The room is about 12 feet X 12 feet. It is divided diagonally into two smaller rooms. Each room has a bunk bed and two lockers. A shower and bathroom are in one corner of the room. I am lucky to have a good roommate.

Later today, I am going to go down to the gymnasium for a run. I have had little physical exercise since I got on the ship. I do not want to come home and have you guys run circles around me on our Tuesday runs.

Remember to let me know what you want to learn about, while I am on the ship. This is a great opportunity for you to impact your own education. Please take advantage of this. Question for the day: A major tsunami, or seismic wave, hit the coast of the United States more that forty years ago. Can you find the exact year and place?



Sarah Thornton sits beside the instrument used to measure nitrate levels in the ocean. (The cylindrical device in the lower right of the photo.)



Shooting into the sun tends to darken features in the foreground. I thought the background was excellent, however.



This is the operations officer Lt Miller. He knows a lot about marine geology. What are your questions about rocks, earthquakes, volcanoes, faults, trenches, tsunamis.....?

This is the library where most of the logs to you are typed. The computer is put away right now so that it does not fall off the table with rolls of the ship. I am writing from "Data Plot" where computers are bolted down.

