

Report from the Bering Sea

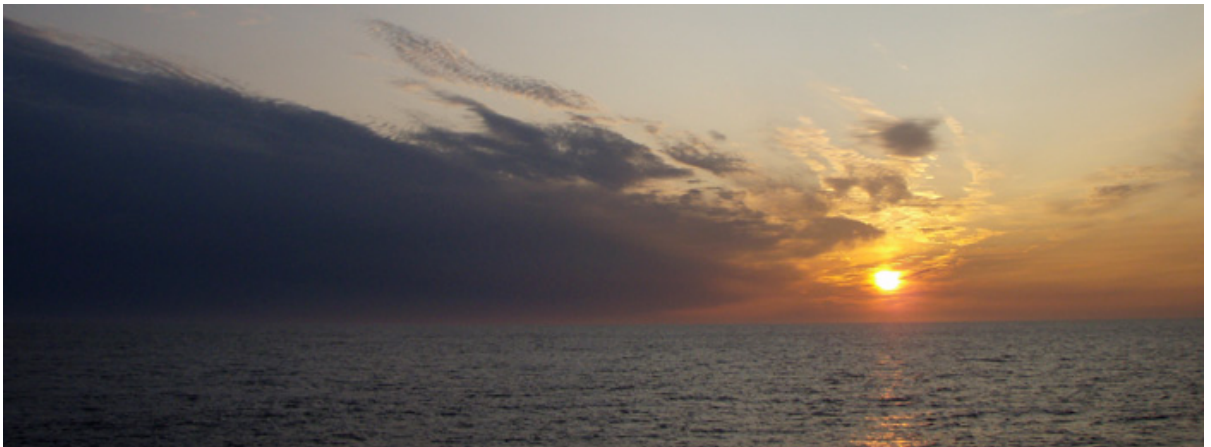
Bonjour à tous!

I am currently on board the *Joides Resolution* serving as a sedimentologist on this expedition to the Bering Sea in this summer of 2009.

Living on board

This is my second time on the JR and it is nice to come back and see that part of the crew remembers you. I sailed previously in the North Atlantic and the Labrador Sea during the Expedition 303 in 2004. Since this last time, the JR received a face lift during the long and intense renovations in Singapore. The bridge is now much larger and occupies the whole deck on the third floor. The first few days onboard, I got lost again. Everything is re-arranged and I always went down to the gym while I was looking for the galley. The galley now has windows and it is not as gloomy as it was before.

The accommodations are much improved, especially concerning the noise reduction. Although, I know of some technicians complaining about hearing “Core on deck! Cooore on deck!” in the middle of their night. It might have been a nightmare as I never heard such thing. There are no four-person-cabins anymore, only two-person-cabins. And as we work in shifts from 12h00 to 00h00 or from 00h00 to 12h00, I get the cabin for myself during the night while my roommate is working during the day. Since I am on the day shift, it is now six weeks since I saw a sunrise. However I have beautiful photos of sunsets.



Wild life

We set sail from Victoria, Canada, and we will disembark in Yokohama, Japan, at the beginning of September. Leaving from the harbor in Victoria, we saw some killer whales in the rising sun on a flat sea. Everything was so quiet and so beautiful, I forgot about the fact that I might get sea sick.

We entered the Bering Sea via the Umnak Pass and we were told that we would be able to see some land as we crossed the pass. So when somebody called out that we could see a lighthouse, we ran outside on the deck. It was pitch black! All we could

see was a faint light shining from far away. So much for the beautiful landscapes we were hoping for.

The next day we arrived on our first site on the Umnak Plateau we were outside enjoying coffee, suddenly, somebody screamed. A sea lion had just appeared from the water, as surprised as us, to meet us there so far from the coast. We took a picture and it shyly rubbed its flippers against its face and disappeared.

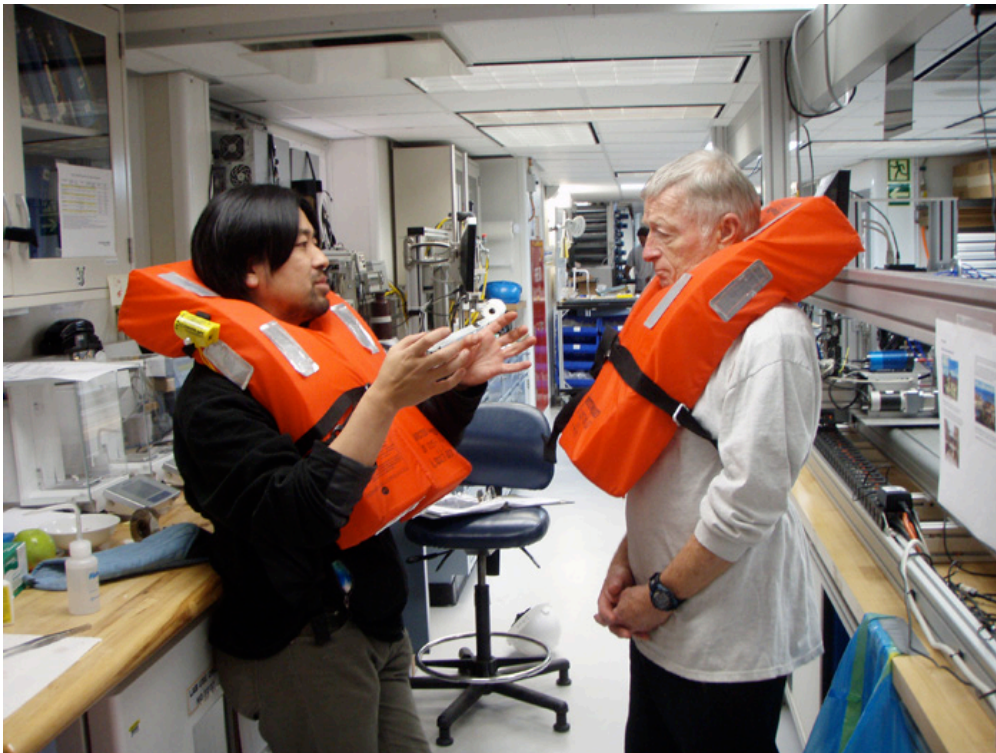
Later on, porpoises visited us. I was feeling so lucky to be here watching for this pod of dolphins swimming between the waves like torpedos ... until I tried to take a picture. They are so fast, I did not manage and was very frustrated. Eventually somebody was able to make a movie.

www.youtube.com/watch?v=82wclN5ojp4

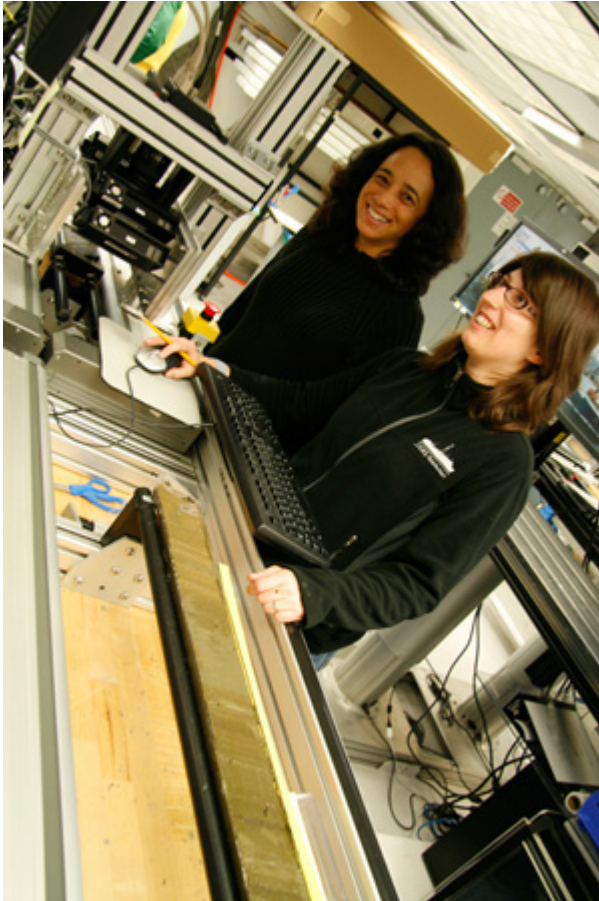
Drilling and science

The last IODP expedition to the Bering Sea was in 1971, when IODP was then DSDP (Deep Sea Drilling Project) and the ship was then the *Glomar Challenger*. We were lucky to have a participant from this expedition, David Scholl, with us onboard.

Check our science prospectus at http://publications.iodp.org/scientific_prospectus/323/index.html



I am sailing as sedimentologist, which means that I help describing the cores as we open them, taking pictures, and scanning them to measure the color reflectance. We also take smear slides of sediment that we look under the microscope to determine the amount of clays, silt, sand and biogenic components.



The labs are much smaller than prior to the renovations but better organized and full of new technologies. As a sedimentologist, I had to familiarize myself with a number of new softwares. One of these is DeckLogik, a software that allows us to describe cores directly on a computer screen, so that the data are entered in a database immediately ... that is, when it is working (hum!).

APC coring record

There are various methods for coring. One of them is APC (Advanced Piston Coring). It is the less harmful for the sediment, which means that the cores are relatively undisturbed by the coring process. So we try to use this method as long as possible until the sediment becomes too hard and we have to switch to XCB (Extended Core Barrel) coring. XCB coring rotates the sediment inside the core barrel and gives a biscuit aspect to the cores.

On July 30th, while drilling the Bowers Ridge, just before lunch time a rumor started to go around the ship: “we may break the APC coring record” set by the preceding PEAT Expedition to 414.6 meters deep. Our staff scientist for this cruise, Carlos Zarikian, made a event of this, saying that we will all go on the drill floor and together, scientist and technicians, hold the 12-m core barrel, and take a photo for posterity. The tension was building in the labs and people started to set out for helmets and steel-toed boots to be allowed on the drill floor. Once the “Core on deck” was announced, we rushed outside waiting for the core, which appeared to be about 1 meter long. We needed 1 meter and 10 cm to break the record. Finally after a careful measurement, the total length of this core was 1 meter 30 cm (including the

core catcher), which allowed us to break the record by 20 cm! A little bit disappointed we still got to step on the drill floor for the photo, which is normally forbidden because it is one of the most dangerous area onboard. At least we were really excited about this. After this core we continued drilling and set a new APC coring record to 458.4 meters.



Bowers Ridge basement

While we were drilling the next site still on Bowers Ridge, our co-chief, Christina Ravelo, came back from the catwalk: “We hit the basement!”. That is we reach the end of the sediment sequence and hit the hard ground, and this, 20 m above what was actually predicted. After some discussions it was decided to retrieve some hard rock samples to be able to date the bottom of Bowers Ridge. Why is this so important? First, because we don’t know when the JR will be able to come back to the Bering Sea. Second, nobody knows how Bowers Ridge was formed. Two hypotheses are currently proposed, according to David Scholl: either the Bowers Ridge is a Cretaceous Basalt from Hawaii rafted into the Bering Sea or it was formed in the Bering Sea during the formation of the Aleutian Ridge during the Eocene. After recovering those basalts from the seafloor we may be able to date them and to confirm one of the two hypotheses.

So when the pieces of basalt and volcanoclastic hard rock samples arrived on the description table, I had to face a new challenge: describing hard rocks. None of us was prepared but we still manage to fulfill our obligation towards IODP.



While we are drilling the Bering Slope in the first days of August, the sun is shining above us and we go on the deck for lunch. It is almost too warm but so nice after weeks of fog. Too bad the ice cream machine does not work. Also the galley ran out of coffee, and my supply of chocolate is getting dangerously low. It is time to go home!

From the Bering Sea,
Gretta Bartoli

PS: check more information about IODP on the Consortium for Ocean Leadership website <http://www.oceanleadership.org/> and search for Joides Resolution on Facebook.

Photo credit: Bill Crawford, Gretta Bartoli, Carlos Zarikian.