

Journal

November 22, 2007

Greetings Fellow Travelers,

Happy Thanksgiving to you all! Here in McMurdo it is the day after Thanksgiving Day, but as I write it is now mid afternoon on Thanksgiving Day for most of you. Enjoy your day!

I have just returned from 9 fabulous days out in Granite Harbor, the site for the Mackay Sea Valley Site Survey. It was so wonderful to be out in the field, and to be surrounded by the raw, wild beauty of this continent. What a privilege it was to be a part of the survey – even if it was much shorter than I had hoped.

On Monday, November 12, I flew by helicopter from McMurdo to Granite Harbor. I was squished in the middle seat of the helicopter, so I couldn't see very well. But from what I could see, the views were amazing. We flew north around 100 miles, out over the frozen McMurdo Sound and Ross Sea. It was spectacular to see large icebergs frozen into the sea ice – standing high above the sea ice like sentinels, catching the ever changing light. I flew in with Ken, another ARISE teacher, and Thai, the mountaineer for the final portion of the field survey. As we flew, Thai we looking for ice cracks that were starting to develop – so that he could plan our route home to safely avoid the cracks.



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After an hour, we landed in Granite Harbor. You may be imagining a nice boat harbor with sailboats and yachts. But remember, this is Antarctica! There were no boats, no water even! Just sheer granite cliffs coming down to meet a vast frozen sea. The setting is beautiful with bright blue skies (the weather is infinitely better there than in McMurdo), blue ice covered with a thin dusting of snow, and pinkish granite cliffs. Just beyond the cliffs were the rugged Central Transantarctic Mountains with blue glaciers filling every valley. Quite a spectacle!

Camp consisted of 2 Rac Tents, which are comfortable buildings with a metal frame and canvas walls. They are spacious and heated and very comfortable. One tent was for cooking and eating, and the other tent was for science operations and drying out the science gear. Additionally, there were 7 Scott Tents, each of which slept 2 people, plus the Toilet tent. I had to pinch myself every now and then to remind myself that I was living on 2 meter thick sea ice, with a huge cold ocean just beneath. The concept was surreal in many ways, and the views, breathtaking.

The purpose of the field survey was to assess the subsurface geology of the area using sound waves which penetrate the layers of rock, and bounce back up to geophones which are laid out on the surface of the ice. The rock layers in this area are relatively young – only around 10,000 years (FAR younger than the rocks being drilled in the ANDRILL core)



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The survey was being done to determine if this is a suitable location for a future drill site to study recent climate change in this area of Antarctica, and the correlation between the information revealed in the rocks with the atmospheric conditions which are revealed by bubbles in the ice cores, collected nearby.

The field work involved drilling 13 inch diameter holes through the sea ice, down into the sea water below. Part of my job was to shovel the ground up ice away from the drill bit as it came up to the surface. An airgun was then lowered into the hole. At the appropriate time, the airgun set off a blast which sent sound waves down to the surface, and penetrated below the surface of the seafloor. A set of geophones was set out 1.5 kilometers behind the airgun and detected the soundwaves after they had reflected off the different subsurface layers, and recorded their 2-way travel time. Once processed, this collection of sound information reveals information about what the subsurface layers look like, and their relative densities. Among other things, we learn how thick the sediments are below the seafloor, which is important information for selecting a drill site.

When we weren't working, we had some time for exploration. I will try to attach some photos of some of these highlights. We traveled either by snowmobile and sled, or by Pisten Bully (another type of oversnow vehicle). The sights were magnificent! I saw blue ice standing on end,





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a result of pressure ridges caused by glaciers moving out into the sea ice. Weddell Seals, most of them mothers with newborn pups, were all over the sea ice – marking the cracks where they were able to come up from the water to rest on the ice with their babies. Their presence was helpful to us, as they let us know where there were cracks to avoid! We also had the thrill of seeing both Emperor and Adelie penguins meandering innocently across the ice surface. They are such wonderfully inquisitive animals! They would walk right up to us and check us out, absolutely fearless of us – since penguins have no natural predators on land. We also explored an ice cave, a bit too scary for me since we did not have appropriate footwear or ropes. But the enormous icicles, deep blue ice color inside of the crevasses, and huge snowflakes were truly spectacular.

The fieldwork was completed by Monday – which was earlier than anticipated. We were under pressure to finish early because the seismologists were needed at the main ANDRILL site. So we rushed to finish the work, and then packed up camp – which was a very large effort. At 11 am on Tuesday, we began the long traverse back to McMurdo. This was the reverse of the traverse that left the field party stranded for 2 days on the way out to Granite harbor. There was a helicopter flying out and I had the option to fly out with them, but there was NO WAY I was going to miss the traverse!

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The traverse was one of those profound events in life that are difficult at the time, but that you wouldn't miss for anything. I rode on the back of a snowmobile for 13 hours. The traverse party consisted of 2 snowmobiles, each with 2 persons, and two Pisten Bullys pulling laden-down sleds full of gear, and a total of 6 passengers. We left sunny Granite Harbor, and in less than a half hour, we were in overcast skies and moderate visibility. The ride on the snowmobile was cold and windy, but a great adventure. We rode past icebergs, nursing seals, big cracks in the sea ice. We plodded along slowly, with the Pisten Bullys being our limiting factor (maximum speed of perhaps 15 mph). But slowly the mountains and glaciers moved behind us, and Mount Erebus come closer into view. The snowmobiles stopped at the ANDRILL drill site for a brief bit of warmth and a tour, while the Pisten Bullys went on ahead. 45 minutes later, we took off from the drillsite at full throttle trying to catch up with the advance party of Pisten Bullys. It was a thrilling (and yes, scary!) ride – but one I would not have missed for the world! Partway there, 3 Adelie penguins came waddling across our path. With due humility, we silenced the engines and squatted low for them to come and check us out. When they were done, and slid off on their bellies, we ignited our engines and took off for the final stretch – to catch up with the Pisten Bullys and make it home in time for "midrats" (Midnight Rations – the midnight meal served in McMurdo). A windstorm picked up on our final stretch, and our last leg was though a blizzard. We followed the flags to circumnavigate the ice runway, and finally reached McMurdo just before midnight.

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Room keys were awaiting us at the housing office. We charged for the showers – and welcomed the chance to get clean – and then settled in for a hot meal and some much needed sleep.

I would have happily stayed out for another two weeks – but I am thrilled to have had the opportunity to get out into the deep field. Things are very busy here now, but as soon as possible, I will post some blogs and postcards about my experiences.

Meanwhile, back in the ANDRILL lab, we hit our target depth of 1,000 meters and the windows into climates past are continuing to captivate the science teams. After a brief pause to do some logging of the drill hole, we will continue drilling for another few days before calling it done. The ice is started to soften a bit, and they will need to haul the whole rig (90 tons) off the ice before it gets too warm.

Thank you all again for your thoughts, and for sharing this amazing journey with me. Check my blog in a day or so with some updates!

Warmest wishes from 77 degrees south,

Robin

