Off of Isla Estados, S. America

In other parts of the world, they name this type of weather. We started off with a quiet crossing of the Drake, but this morning I was awakened by my airborne lifejacket and safety suit, my ping-pong wastebasket, and other sundry falling from shelves, bunks, and rattling around in cabinets. The seas were rocking and rolling. Briefly sustained winds of over 70 knots in squalls, steady winds over 45 knots all day – this would have been a strong tropical storm to a minimal hurricane at a different latitude. And it would have had a name – put this in New York or New Jersey, and we’re talking about Frankenstorm’s sister! The bridge is about 15 meters above the sea surface and I watched waves pour over it this morning! No land near us, no reason to factor in tides or land’s wave-building effects; we still had constant waves of 10 meters broadsiding the top-heavy ship all day. Rolling side to side is worse the pitching back and forth, for sure. From the bridge, I watched the inclinometer as we swept from 25° port side to 31° starboard side – that is 56° of full angle in one roll! My bunk is oriented perpendicular to the axis of the ship, so one roll I’d have blood rushing to my head, and the next roll I’d have trouble holding my head to the pillow. There are 44 people on this ship; I saw 6 at breakfast. I’ve also learned a new Antarctic/Southern Ocean lesson – don’t try to put your pants on while standing. I’m lucky I don’t have a broken nose or concussion as the ship pitched when my feet couldn’t keep up with my downward momentum towards an open bathroom doorway with relatively unforgiving steel trim – luckily my hands were able to transition from the pants task and perform a quick face-saving maneuver.

Today, with the ship moving so much, I spent the morning trying to secure some things in the labs that had not been up to the 10m wave task, then the rest of the day reading. I was not going to bury myself in crunching data or writing with this type of movement. That would have been a bad choice, I think. Unfortunately, the pictures I took are not able to capture the magnitude of the seas we faced. Some in the bridge put this in their top 10 or top 5 crossings in terms of bad weather. I took some blame – although I said early on that I was going to touch the foot at the Magellan statue in the town square of Punta Arenas, I never got around to it before we left. The superstitious amongst us all agree that this is the evident reason for a rough crossing.
The inclinometer in the bridge (where the captain controls the ship) ranged between 25° and 31° in a single roll from side to side. Notice the angle here (my wife will be proud that I kept the horizon straight for once!).

The weather was full of squalls separated by sun, but never sparing us the wind. During this squall, I saw a gust up to 68kts, sustained around 60kts for the remainder.

LARISSA Cruise LMG12-11
Brad Rosenheim
26 October 2012
64.11203°S, 61.37808°W
Forward Speed: 5.7 kts
SST: 0.143°C
SSS: 33.912‰

Hughes Bay, Antarctic Peninsula

In the past 24 hours, we’ve continued to sample both sediment and water, skipping sleep and dodging icebergs. In this part of the peninsula, we are looking for small sediment basins and doing surface sample grabs. We have also been tracking the Circumpolar Deep Water (formed in part in the N. Atlantic) using the Conductivity-Temperature-Depth apparatus (CTD) with attached Niskin bottles. Our muddy footprints and clothes are present in all of the labs, into the mess and our berths, but we are sampling water too! Today we will sample one kasten core and get the pedal to the metal in calm seas to start our crossing of the Drake.

Everyone on the ship has started focusing on the Drake Passage again. We’re starting to hear stories of the “zero gravity” berth near the berth of the ship where each downward pitch throws one in the air. We’ve heard of crossings so smooth people claimed to be on the Drake Lake. There is a spectrum of crossings that are possible – but this time of the cruise it moves to the forefront of peoples’ thoughts. There is the anticipation of potentially being seasick or generally uncomfortable, but the crossing is more than that. For many on the ship, they have been away from home even longer than the scientific crew. Crossing the Drake is the last part of the cruise before one can get to the Punta Arenas airport and start a long journey back home to the U.S.A. At this point, almost everyone on board the ship starts to think about the home port – some of us were here for the science and some for the paycheck, but the ship is not home. So as we push to finish our last sites and measurements, a bit of empathy goes a long way.

So we will push today, but not too hard. We have great conditions for about anything today – temperature almost 0°C, barely any wind, flat calm seas. But we don’t have enough time for a installation trip to Spring Point nor another jumbo piston core. We are on the clock to finish science operations at noon today, and we currently sit at our last site, wishing it were easier to get here, or that there was never any pack ice to contend with, or that we didn’t spend 3 hours anchored by a jumbo piston core the other night due to winch malfunctions. Hindsight is 20/20, though, and when it is all over we have a lot of sediment recording deglaciation from a dynamic setting. In other words, we have our hands full of valuable samples from which we will learn a lot about the Earth’s natural history. Yes, it could have gone more smoothly, but it will be worth the challenges in the end.
We are almost finished with the science portion of the cruise. We have 34 m of sediment core aboard the ship, likely spanning a history of deglaciation in the area extending back to 16,000 years before present. It is a respectable haul considering the challenges that the “little” Antarctic research ship and its crew face during this expedition. While part of the scientific party will be on land for the Spring Point GPS installation, part of our team will remain onboard to conduct some surface sediment sampling in small pocket basins at different depths in the area.

I’ve learned several things about working in Antarctica during this cruise, and I’ve had several past lessons reinforced. First, spending a long time on a ship tends to make one’s pants buttons spontaneously pop. Second, having a core anchoring us to the bottom while icebergs drift by only meters from the ship is frightening and riveting at the same time, amplified when the winch breaks for 4 hours in the night. The ship crew did masterfully with that challenge last night. Third, 20 foot seas covered with sea ice and ice growlers is not conducive for a smooth ride, but the swell is absolutely beautiful as it is smoothed itself by the presence of ice. Fourth, water masses come and go – we wanted to sample the Circumpolar Deep Water, a warm middle layer originating in the N. Atlantic, but we were too far north this early in the season to observe it. Finally, it is hard to keep up on a blog when I am not sleeping for several days!

We’ve had both successes and challenges in the last few days. We had a series of kasten cores fall sideways along the armored mud in the Gerlache Strait. It took us three attempts to get a wonderful and valuable core to accompany our jumbo piston core from the same site. This core wouldn’t have been so valuable without a masterful job of collecting a long piston core prior to that. We had a technically sound and complex plan to sample the Circumpolar Deep Water, however the CTD needed replacement of many sensors and a cable that shorted out after sitting in a
relatively cold room during our time trapped at Palmer Station. In the end, when we got the CTD fixed, we didn’t observe the Circumpolar Deep Water. And, despite trying to organize ourselves in 2 12 hour watches, the pace of work as our clock ticked down to 0 was frantic and we seldom slept.

Today’s installation of the GPS at Spring Point has officially been cancelled due to high winds (45 kts now). So we will be doing surface sediment grabs instead. Another challenge met by a quick solution. By tomorrow afternoon (26 October) we will be beginning our crossing of the Drake for our return to S. America.

Hamilton College student Katy Smith is “christened” by her adviser, Chief Scientist Eugene Domack, with glacial mud from the core catcher after our first jumbo piston core comes aboard in driving snow.

USF scientist Amelia Shevenell is literally glued to the window of Aft Controls waiting for the Jumbo Piston Core to emerge from the deep.

Erik (left) the Marine Project Coordinator, and Marine Technician Krista (right, staning down the barrel of a retrieved piston core) among the ET’s and other MT’s were crucial to the success of our cruise. Thank you!

LARISSA Cruise LMG12-11
Brad Rosenheim
22 October 2012
64.22712°S, 63.93983°W
Forward Speed: 5.0 kts
SST: -0.988oC
SSS: 33.526psu

Off NW Anvers Island, in 30-50 kt gail, dodging ice growlers with manual steer all night long.
We have finally conducted marine geologic science during this cruise! Right as my watch ended yesterday, we were on station for our first core. I stayed up past my watch taking photos and documenting a huge relief for our efforts. We aimed to cross the boundary between pelagic drape sediment (formed after deglaciation of this area) and glacial diamict (formed from sedimentation underneath the grounding line of past glaciers) so that we could date the contact and reconstruct the complex deglaciation of this area after the last glacial maximum. We anxiously waited as the core was slowly and carefully pulled up to the surface and then tugged horizontal onto the aft deck. Chief Scientist Gene Domack (Hamilton College) ran to the core cutter nose, the deepest penetration of the core, as soon as it was secure. The gray color and the chunky feeling of sand and pebbles in an otherwise fine mud were the telltale sign of glacial mud. We had what we had wanted! Amelia Shevenell (U. of S. Florida) carefully capped the core liner after cutting out the cutter nose and core catcher, labeled it, and we all transported it into lab for magnetic susceptibility tests.

I had been awake for a good while at that point, so I went to bed to prepare for my next watch starting at 12 noon (also yesterday, technically). As I went to bed, the sun was rising over distant glaciers at 3:30 AM! We were steaming toward Hugo Island for a GPS put-in and some more coring. I was awakened by the bow thrusters trying to hold position. At 11:25 AM, another jumbo core was deployed in time for my next watch, but the winds were in the processing of kicking up to 40 knots. By the time my watch started, I learned that the Hugo Island put-in was canceled due to ice and we were coring the northern Hugo Island Trough. The goal consisted of both a jumbo gravity core and a kasten core to retrieve an intact sediment-water interface. We had to cancel the kasten core; were were in a full gail by the time the gravity core came aboard. As beautiful as it was to see swell develop under pack ice, the work conditions on deck quickly became dangerous and all of the loose items that started to gather during our period in pack ice needed to be quickly lashed inside the boat. We had forgotten what it was like to be at sea!

Now we are steaming nose into the winds (and ice) to the passage between Anvers Island and Brabant Island. Gusts have reached 72 knots, and half of our science team is seasick. It will be a long steam, and the next watch will have little to do but to get used to the motion of the ocean again.
On Sunday, shortly before lunchtime, we received 2 ice images due to nearly 24 hours of clear skies. The images showed clearing ice conditions, and there was still little wind – absolutely perfect for work on the outer shelf at Hugo Island Trough. By 1:30, we were underway, and by 2:30 in the afternoon, we had made more way than in 10 hours of crushing ice a few days ago! It was wonderful to see Palmer Station disappear behind Pointe Bonaparte as we made way to the southeast on our way to deeper water. Goodbye Palmer station – our unexpected sojourn there was a blast, but we have work to cram into the next 2.5 days!

It makes sense to recapitulate the weekend’s events, even though we were not able to conduct much science. Friday’s pizza dinner was indeed prepared by the scientific crew, but we made it a “cross-town” dinner and prepared it in the more spacious kitchen of Palmer station. I must say we did an excellent job! After dinner, I hiked the glacier with Eugene Domack (Hamilton College, chief scientist), Amelia Shevenell (University of South Florida), and Deanna (student from Hamilton). We had wonderful views as the sun went down and only a few low clouds were visible. We reveled at the Palmer Station lounge afterwards. The following day involved getting some work done, more laboratory cleaning and decontamination, dinner on the ship, and a solo ski to the top of the glacier and down again. It has been years since I donned Nordic skis, and I noticed that there was a pair of telemark skis with fuzzy bottoms called climbing skins. These worked like a charm to ski uphill, but it was certainly a strong workout. The wind was 35 kts, and the temperature was -15°C, meaning a windchill around -38°C! The wind was coming straight down the glacier adding to the workout going up. The top of the glacier was incredibly clear and the view was excellent in all directions – making the work well worth it. Coming down, I kept the climbing skins on because my boots didn’t quite fit, my sunglasses were fogged up and iced over (you still needed them at 9PM!), and the snow conditions alternated between powder and ice. Antarctica is not the place to test one’s limits, especially when one hasn’t donned skis in a long time! Afterwards, there was more revelry in the lounge and a trip to the hot tub to heal my aching and seldom-used skiing muscles.

Currently we are aiming for our first coring site of the entire trip, on a day when, according to the original cruise plan, we should have been heading back with a bounty of sediment and water samples towards Palmer Station to pick up the scientific crew. However, we will have extra days due to omission of this diversion back to Palmer Station from the revised cruise plan. A few scientists did not have enough time to finish up their experiments in time to leave with the boat this morning; as a result, they will have to stay on Palmer Station for approximately 1 month longer than originally planned. That means that emergency phone calls via satellite telephone had to be placed yesterday to several families assuming that their loved ones would be back home in 10 days or so. It underscores the tremendous commitment and coordination that is needed to work in Antarctica.
Why we were stuck in the ice – the real reason

Observation of larger-than-normal ice floes in one season is a weather observation; it may have something to do with climate variability, but it is not a climate observation until it has been observed for several years. Therefore no one can rightfully say our delay was the result of climate change.

There is an easier reason for our plight. The United States, despite its prominence in global scientific research, has no active icebreaker ship that serves the southern polar regions. Currently, as we try to make way with the smaller of the two Antarctic ships (we are on the Laurence M. Gould, or the LMG), the Nathaniel B. Palmer (NBP) sits at dock in Punta Arenas, Chile. The NBP is not technically an ice breaking ship, either (due in part to a difference in the ships construction by Chouest shipbuilders in Galliano, Louisiana, and the level of hull reinforcement ordered by the NSF and paid for by the American taxpayer). Instead, both ships are simply ice-reinforced and can slowly prod through the ice rather than breaking it – the NBP being more powerful and faster, but still not a bona fide icebreaker. The NBP is awaiting a Russian ice breaker to guide it further south to McMurdo Station in the Ross Sea – it cannot get that far south by itself. So while it waits, until the end of this year or the beginning of this year, we know that we would not have been held up at Palmer Station had we used that boat. Sure, it is more expensive to operate, but it doesn’t pay to keep at dock.

Is the U.S.A. leading the world in basic research? It seems like we have been in this position for several decades now, but as the Koreans come down here next year with a brand new ice breaker, as the Chinese construct 2 new ice breakers, and as the Office of Polar Programs of the National Science Foundation brings plans for a new scientific ice breaker to Congress, rest assured that any plans for a new ship will surely become a political football as no corporations that support our two main parties will have any interest in the protected Antarctic continent, and other countries will surpass us. That, to me, is more disappointing than not currently having any mud to analyze!

Update – As I post this entry, we have collected our first core! We have marine mud on top of glacial diamict, meaning we can constrain the timing of deglaciation of this trough. We will core other areas along the trough to piece together the complexity of this event. However, I spare you the details until tomorrow’s post – I’ve got to get some sleep before my next 12 hour shift. Rest assured – we are underway, science is happening, and we are no longer stuck in the ice!
Wait a second – is that, um, science going on on that ship? Is that sediment we have here?

LARISSA Cruise LMG12-11
Brad Rosenheim
18 October 2012
64.77475°S, 64.05517°W
Forward Speed: stationary (at Palmer Station, Anvers Island, Antarctica)
SST: -1.29oC
SSS: 32.70psu

Palmer Station (still...)

What to do when stuck in the ice? We are lucky, as ice pressure built, we were within range of Palmer Station and we were able to get back into port. Being stuck in the vast ocean is much different than being stuck at a research station with a fresh supply of food (from our ship), internet, and an outdoor jacuzzi (for medical purposes).

Yesterday, I hiked the glacier with snowshoes and the company of Dr. Amelia Shevenell and three students from Hamilton College – Garrett, Deanna, and Katie. From there we could see beautiful scenery, but miles after miles of sea ice packed in against the island. Beautiful and depressing at the same time.

Originally, our stop at Palmer Station was supposed to be short, and we were going to come back to pick people and equipment up before our crossing to S. America. Now, due to the enormous consumption of fuel that breaking through this ice will involve, we are waiting not only the ice but also the scientists that are supposed to come back with us. If they can finish their preparations early by 2-3 days, then we won’t have to come back to Palmer. That will still give us 4 science days for shipboard work that turns into 8 because our small group will work 12 hour watches. We should be quite productive working 24 hours straight for a few days on end. And it is apparent that the scientists coming back with the Gould are sympathetic to our plight and trying to get out of here early.

Today, we are doing more rigging for the coring, we are touring a new laboratory at Palmer Station, and the science crew is cooking pizzas for the ship crew for dinner. I am also working on some manuscript while we have internet and I can potentially submit them. I brought a lot of work with me for the crossings, and that is turning out to be a fortuitous decision.
We never made it to Hugo Island. We didn’t get much further than 2.8 nautical miles away from the station after 10 hours of pushing ice around. The ice pressure is greater than yesterday, with ridges forming between plates of ice and ice rapidly closing in behind the wash of the enormous propellers of this ship. We are ice bound until this ice is moved away by another storm. We will live on the ship docked at Palmer Station while we wait for a change in the wind direction, and when that happens we hope to have enough time to get some bottom sediment.

So, why is there so much ice this time of year, in the face of global climate change? Well, on the simplest level, scientists are simultaneously observing the lowest recorded levels of sea ice at the end of the Arctic summer and the highest amount of sea ice at the end of the Antarctic winter. Both seasons were simultaneous extreme. Many models hold that we will observe extreme weather – weather than cannot be explained within the averages that define our climate. This year is a very good high-latitude corroboration of those models.

But, at a more complex level, we have observed a feedback during our cruise (at least anecdotally). In the picture below, taken two days ago as we came through the Bransfield Strait, you can see many horizontal line in the center of the base of the Malpighi Glacier emptying into Kayak Bay. These are crevasses. Also, you can see shiny lines up near the top of the glacier, where it is smoother. According to Chief Scientist Eugene Domack (Hamilton College), there are meltwater rivulets formed by increasing insolation as the sun gets stronger in the spring. However, Domack has been researching and traveling the Antarctic for parts of the last 4 decades, and has never seen these features in October. This is early to see melt. Furthermore, these freshwater streams can empty into the sea through the increased crevassing and freshen...
the waters. Freshened surface waters this time of year means that the freezing point of the seawater is raised a bit, and this could account for a small spring-time spike in ice cover. October is early in the Antarctic season to travel by marine routes south of Palmer Station, but we are trapped at the station not south of it. Is this part of the reason that we are currently ice-bound? Unfortunately, our brief observations are not enough to disprove or support any hypothesis, not even with the vast experience in this region of someone like Eugene Domack. This is more a job of modelers (to understand how this can be plausible) and satellite observations (to get a regional to global scale idea of these phenomena. We hope our work on sediment records can relate models and present observations to the past – we just have to get to the sediment first.

The Gould leaves a conspicuous brown trail as it turns over ice chunks to expose undersides covered with diatoms and other ice-bound plankton. If your eyes are sharp, you can see Palmer Station in the background (specks of black, top center, in front of blue face of glacier) and our sinuous trail of turned ice. We had traveled 6 hours at this point. We were still in internet range of the station when this photograph was taken!

The Malpighi Glacier emptying into Kayak Bay on the Bransfield Strait shows signs of early crevassing and high-altitude stream melting. Is this related to the current ice-bound state of the Gould?

Ice, ice, everywhere. We can see the high peaks of nearby islands, but no open ocean...

LARISSA Cruise LMG12-11
Brad Rosenheim
16 October 2012
64.77475°S, 64.05517°W
Forward Speed: stationary (at Palmer Station, Anvers Island, Antarctica)
SST: -0.26oC
SSS: 28.77psu
Palmer Station
The big southerly winds we hit a few days ago around King George Island packed dense pack ice
against the southern coast of Anvers Island, which is where Palmer Station is located. After shooting seismics on Monday night, I expected to wake up at Palmer Station dock as we were only 4 hours away by full steam. When I woke up, there was intense white light pouring in through the porthole to my berth – ice. We were surrounded, and the first time I looked through the porthole (well, the second time – I had to get my sunglasses to see anything) we were actually moving backwards.

In ice, a captain has to constantly back the ship up and then lurch forward to break some of the ice. It was only about 1-2 m thick, but the Gould is not technically an ice breaker – one of those would have a thicker hull, about 10x the horsepower, and would actually ride up on top of the ice and let the weight of the ship shear through the ice. So we were averaging about 0.6kt forward speed! We could see Palmer station with the naked eye for 3 hours before we arrived – and we could see the bow of the ship on the Palmer Station web cam using their wireless signal which was available on the ship as we got close. It was tedious! And the majority of people on the ship were anxious to get off and begin their experimentation at Palmer Station. We had to use the bow of the ship to break ice all the way to the dock, and then the captain had to turn around and back the ship into port. They did an incredibly good job getting the ship there safely. We finally arrived at Palmer, and most of us went to the store. I picked up some sweatshirts, hats, and postal stamps to send postcards. I noted that Burt’s Bees lip balm in Antarctica is twice as cheap as at the Tulane University bookstore (why I always recommend Amazon.com!)! A lot of people were buying liquor and beer to have an arrival party in the Palmer lounge afterwards. People remaining on the ship ate dinner at the ship’s mess, and then we all watched Dr. Amelia Shevenell give a science presentation in the Palmer Lounge on her work using TEX86 paleotemperature proxies in Palmer Deep sediments cored from just south of here – this was recently published in Nature. Then we convened in the lounge for the party and everyone was glad to have a night off. We are shoving off around 10:45 this morning, but it will be slow-going toward Hugo Island as we push through more ice.
Most importantly, despite delays yesterday and a completely iced-in GPS site that was inaccessible today, we were able to perform our first science objectives of the cruise. We measured depths to the seismic reflectors associated with the grounding line of a paleo-glacier that once filled the Gerlache Pass. A large portion of this has been covered with sediment since the glacier retreated and sea level rose, and we are interested in determining where we can core through the pelagic drape sediments to access this boundary. We will then date the very bottom of the pelagic drape sediments to ascertain a pull-back history of the glaciers after the last glacial maximum and approaching the middle of the Holocene Period. Tomorrow, we will be unloading the majority of personnel and equipment aboard the ship at Palmer Station, Antarctica, and we will then commence for more concentrated scientific objectives in the days that follow.

Above: Brash ice has slowed our forward progress today, but we were able to conduct the first scientific goals of our cruise by measuring the sub-surface reflection of sediment layers in areas we will later core. Despite the ice building up around and on the ship, we were all taking in the beauty of the Bransfield Straits.

Above: Bergy bits are small ice chunks that float with larger proportions under the sea surface. Although we are aboard an icebreaker, we try to avoid these when cruising at high forward speeds (over 6 knots). Ice breaking uses the ship’s mass rather than speed to break through ice; hitting one of these could inflict localized damage to the hull.

LARISSA Cruise LMG12-11
Brad Rosenheim
14 October 2012
62.43413°S, 58.64983°W
Forward Speed: 9.5 kt (into the wind and waves)
SST: -1.605°C
SSS: 34.030 psu

Well, I didn’t post anything this weekend, so I’ll break this into two parts – The Crossing, and Prince George Island.

The Crossing

Any long transit is a test of wills – we have comforts such as television (for movies), a work-out room, an open mess hall, and plenty of books, but live does get monotonous. Between meals, I busied myself working on re-correcting isotope data from my laboratory for an upcoming publication. We heard a talk about the history of dangerous crossings in the Drake Passage from Chief Scientist Eugene Domack. And we watched the temperature drop in both the air and the water. We saw seals, dolphins, and many albatross and gulls. Luckily, the forecast held true and we were only...
confronted with 5-10 foot waves, with the occasional 15 footer – a relatively gentle crossing for the Drake Passage. Still, those waves were across the beam, and the ship constantly rolled from side to side. We saw a maximum tilt of 21° on the ships inclinometer. And every meal, fewer people showed up to eat due to the turning of their stomachs with the constantly movement of the ship. I could no longer use the treadmill, and resorted to morning shoulder exercises. I did not use motion sickness medication, and I was fine for the crossing. That doesn’t mean I’m immune and I won’t get sick tomorrow – one just never knows.

The crossing did not produce large waves, just as forecast, however we were taking the waves to the beam the whole way. This means that the ship was rolling from side to side. Waves reached about 4.5m at the tallest, but mainly stayed in the range of 2.5-3.5 m. This picture shows a wave wash under the ship as viewed through my berth’s porthole. It traveled across the ship, and was moving away from the ship as I shot these photos.

King George Island

Saturday evening had us in view of the South Shetland Islands and quite a few icebergs. The water and air temperature had dropped rapidly in the PM – reaching a wind chill temperature of -20°C with constant 30 kt winds. By Sunday morning the ship was still, but there was a lot of noise. We were in a sheltered area with King George Island surrounding use on 3 sides, but from my berth near the bow of the ship I could hear the intermittent rush of the bow thrusters keeping us in position. We were scheduled to help unload personnel and gear at the Copacabana Penguin Research station using the zodiacs (small boats launchable from the ships), but were held back by the constant and still present 30 kt winds.

Not until 14:00 did the winds die down to 20 kt. The operation commenced. First, the grantees went across the approximate 1km of water to the icy beach. Next, a boat load of “surfers,” scientists and students dressed in orange survival suits so that they could stand in the water and offload boxes of food and equipment from the zodiacs that would be coming ashore. The third boatload had a bunch of “sherpas,” haulers of equipment from the surfers to the Copacabana research station. I was Sherpa in a subsequent load, and I had a box of 10 empty bottles for my water samples to be collected from the zodiac. When I landed, the tide was rapidly coming in and large swell was crashing against a wall of rocks and ice. The “surfers” had waves breaking over their heads, and I took two waves over my head as well.

The station is well-situated for its purpose. It was surrounded by penguins, trying to scale the snowy inclines to find rocks and to start nesting early in the season. We were not allowed to approach the penguins, but they did get quite close to us. By the time we left, we also had seen a seal looking for a penguin snack. We succeeded in getting the researchers’ satellite phone working, but not their internet link up. They received all of their food, propane, fire extinguishers, personal gear, research gear, and other amenities, and the cold and wet surfers were the last to leave for the ship. They were back after dinner, but the cook had left them nice big plates with fried chicken, French fries, soup, potatoes, and vegetables. They had earned it more than any of us!

It was a hard day’s work, especially for the surfers, however we all welcomed the opportunity to get off of the ship and see penguins, all while touching solid land.

Our next point is going to be Duthiere’s Point. We are slowly heading into a sharp headwind, with lots of blowing snow. Tomorrow promises to be even more scenic. For the most up-to-date location of our ship, search for the “Gould” on www.sailwx.com
If you follow the coordinates, we are on the water, but not very far from the hotel yesterday. We are waiting about 12 extra hours for a scientist that was delayed in Dallas and again in Santiago (over 60 hours traveling). The

The Copacabana field station (left) was small, two bunkrooms, an office, and a kitchen, with a storage shed and an outhouse on the perimeter. At least they had a sense of humor to paint a palm tree on the station. Would you want to spend 6 months here? Within the next month, it will actually be sitting on a green, wet meadow after the snow melts! And there is good reason to build a penguin research station here (right).

The work of the “surfers.” Standing in knee-deep water with swells up to their wastes, the “surfers” awaited the zodiacs to tend them and offload the boxes to the “Sherpa.” The zodiacs dropped an anchor line, and let the swell push them ashore, tightening down on the anchor line when the distance was right. Waves push in and out, so a few of the “Sherpa” had to man a stern line on the snow. As you see, both the waves and the ice berm were above the heads of the “surfers” – not the ideal nice to be!
majority of the scientists on board this ship for this cruise are being left at Palmer Station for months of experiments on everything from ocean chemistry to penguin biology. One day extra in port is small compared to the time they will spend at Palmer Station, but the delay in waiting for the next supply ship or research ship would be significant.

For the LARISSA team members, this will eat into our time spent coring sediments and taking water samples. However, the much larger variable is the weather. We have a maximum of 5 science days on the water on this cruise. We are aware that weather could eat into this total, and we are going to be working 24h shifts with a team of 6. Those 5 days will be very long ones. Currently, we are planning to hand sample surface water at King George Island during the off-loading of the Copacabana station personnel and gear, we will sample water using the CTD and rosette sampler while off of Spring Point during a GPS installation, and we will then move to Palmer Station for the major off loading. After that, the LARISSA team will have the boat for a few more science days before transiting back to Chile.

So, for the rest of today, I will be setting up labs, cinching down equipment for the Drake Passage crossing (10-15’ waves forecast – if true, it will be a very calm crossing!), and I will venture into town to touch the foot of the Magellan statue in the Punta Arenas town square – that last item is very important for a good crossing of the Drake!

9 October 2012
15.1607°S, 70.9120°W
After over 24 hours of travel, including 10 hours in the Santiago airport yesterday, I finally have a full night’s rest from a real bed in a hotel. This will be the last night in the hotel; we set sail tomorrow in the wee hours of the morning, so we will sleep aboard the Laurence M. Gould tonight.

Today, I and cohorts will be fitted with cold weather gear at 10:30. A van will pick us up at our respective hotels at 14:30, with all of our personal and scientific gear, and we will proceed to load the ship, set up our living accommodations.

After tomorrow, moving through the fjords around Tierra del Fuego, we will enter the Southern Ocean. Waves here are generally among the largest in the world. A good resource for wave forecasts can be found at http://www.oceanweather.com/data/. Here you can click on the box containing South America.

2 October 2012
29.93691°N, 90.12120°W
I am at my office desk (note the coordinates, still a N latitude) getting ready mentally for a cruise to the Antarctic Peninsula. Having just received travel documents last Thursday and leaving this coming Sunday makes for a busy 10 days.

I will travel on Sunday night to Santiago, Chile, on Monday morning. From there I (and likely some of my cruise colleagues) will fly through Puerto Montt, Chile, to Punta Arenas, Chile. That is where we will board the Laurence M. Gould, an ice breaker for U.S. NSF Polar Programs research (photo). The Gould will be our operations platform, and we will deliver supplies to the Palmer field station (photo). During the transit, we will have several shipboard scientific days and other researchers will be making excursions to the Antarctic Peninsula to change batteries on GPS units and download the data they’ve been recording for the duration of the long austral winter. The shipboard science operations will involve water sampling, particulate sampling, and gathering of sediment cores from strategic locations to gain knowledge about climate change and ice shelf history of the peninsula.

I will update this page as frequently as possible from the ship to inform you of our undertakings, as well as life on a ship in the Antarctic. My next post will be from the Southern Hemisphere!
L.M. Gould at Palmer Station, Antarctic Peninsula.

Photo courtesy of NSF

Albatross

Ice on the bridge