

Beyond the abyss



Alan Jamieson



Toyonobu Fujii



Debbie Crockard



Laura Burns

NERC-funded researchers have travelled to the Pacific to search for life in the deepest parts of the ocean, known as the Hadal zone.

Day 1

Alan Jamieson

No going back

The big day today: sailing at 2pm, no going back, if we've forgotten anything then that's it. In the morning we bought pretty much all the cup noodles, crisps, chocolate, beer and plum wine we could fit into our bags and went for our last lunch on land. Everyone seems to be a bit apprehensive about seasickness but the weathers looking good so hopefully they're all ok (last time we went straight into a typhoon!). We visited the Tokyo fish market to pick up the mackerel bait for the landers. The fish market is fascinating but we got what we needed and headed back to Harumi harbour and eventually set sail. We sailed south out of Tokyo bay and swung east towards the Japan Trench were the guys from the Earthquake Research Institute began an airgun seismic transect, BOOM, every 60 seconds for the next few days...

Our target depth is 7000m in the southern sector of the Japan Trench.

There are a lot of peculiar things about this vessel that I have forgotten about. For example, the water cooler sings to you when the tap is on, the showers are communal and you have to sit down, when it's meal time they sound chimes (oh boy do the Japanese love their chimes) and the pillows are full of small plastic tubes?! Smell is a funny thing, as soon as I stepped on board the smell just brings back the feeling of the boredom and hunger of last year. Stepping into the mess and smelling the food actually made me feel sick. Toyo was struggling also and he's Japanese so I don't feel too bad about not liking it.

We weren't allowed on deck today as they were setting up the airguns so there really wasn't much to do except sit around but generally spirits are high within the group. These experiences are what you make them I guess. I also have with me a book of teach yourself card tricks, an

iPod full of The Wildhearts, my trusty overalls, little bendy, my buddy Toyo, the coolest lander ever built and a superhuman ability to kill time doing absolutely nothing, so what can possibly go wrong?

We only got one deployment of the video lander last time but it was probably the best data we have got yet.

Despite sounding a bit negative here I am very excited about the science we're doing. I think this Hadal stuff is really fascinating and worth putting yourself in a not-so-nice place for a while. We only got one deployment of the video lander last time but it was probably the best data we have got yet. This time it looks like we are getting all three landers in the water; the video lander, the stills lander and the fish trap (if I ever finish building it). Our target depth is 7000m in the southern sector of the Japan Trench. We were told this morning that we will not be deploying until the 1st of October, which is fine with me, I suppose it gives us a lot of time to prepare things. Unfortunately, due to the ship schedule we will not recover them until early morning October 5th, one day before docking in Shiogama, this will really put the pressure on to get everything downloaded/backed-up, pack-up the lab and strip down the landers, but hey, I'm confident we can do it; Japaneasy peasy.

Alan's Hadal 'fact of the day'

Back in the day, the Hadal-Zone used to be called 'Ultra-Abyssal' but given how unique it appears it isn't an extension of the hadal-zone and later changed to Hadal. Hadal is derived from Hades, the 'kingdom of the dead', or 'underworld' from ancient Greek. Hades is both the name of this place and the God who looked after it. Although I might be wrong here, I believe Hades and Hell were two different places and both get a mention in properly translated Bibles. Hades was actually on Earth but very close to the centre of the Earth, which is, what I guess inspired them to name the trenches so. I read somewhere that some Russians placed a microphone down to the bottom of the deepest mine shaft in Russia and actually recorded the screams of the lost souls in Hades. Crickey, all we got was a bunch of amphipods and some mud but then we didn't have a microphone.

Toyonobu Fujii

Setting off from Tokyo

Today we left Tokyo Harumi port for Japan Trench for our deep-sea research cruise on the RV Hakuho maru.

We left our hotel in Shinjuku around 08:00 hrs to get to the port, but with so much baggage with us, it was challenging travelling from one side of Tokyo to the other by tube in the rush hour.

We got to the ship at 09:20 hrs and went through the registration processes and then checked into our cabins. However, we had important tasks to do before the ship actually set off at 14:00

hrs so headed to a large fish market called Tsukiji for some mackerel to be use as bait in our lander and fish trap experiment.

Tsukiji is one of the largest fish markets in the world and we didn't have any difficulty finding six large mackerel suitable for our experiment. We then shopped for snacks and drinks for the cruise and went back to the ship at around 12:30 hrs.

The ship left the port at 14:00 hrs sharp and I spent the entire afternoon in my cabin to settle myself down. Maybe because of jet lag or a tablet I'd taken to avoid sea-sickness, I was extremely drowsy for the rest of the day, so except for dinner and the induction meeting in the evening, I did nothing but wrap myself up in a blanket and slept in my cabin bed. If the weather's not bad, sleeping in a ship cabin feels like sleeping in a cradle!

Debbie Crockard

Noodles, more noodles, and birthday greeting!

We left Shinjuku quite early and headed to the harbour by train and bus which was an experience all in its self. At rush hour the train was packed beyond capacity and four people carrying backpacks, rucksacks and a two-metre aluminium flag pole were an unwelcome addition to the masses trying to get to work. On the train everything was a free for all and nobody seemed prepared to wait for the next train, I've never felt more like a sardine! The bus was a very similar experience though there were less people travelling to the harbour so we at least managed to get a seat.

After dropping our bags and things at the Hakuho Maru we headed straight back out for supplies and lunch. Firstly hitting the fish market which on the hot day that it was smelled delightful. There is no way to describe how much fish there was in the market, the stalls seemed to go on forever and sold every type of fish you can imagine and many more that you couldn't. It was hard to imagine how a harvest of this size for bait could be sustained every day but the area was thriving. We picked up 6 mackerel for bait, leaving us £50 out of pocket and left the market to grab a morning coffee.

Having been forewarned about the food on board we stocked up on an extremely healthy diet of cup noodles, crisps, chocolate and coffee. After lunch at Jonathans we had free time on the ship until 6 o'clock, and so made the most of the days sun by topping up our tans on the deck.

Dinner was...interesting...

Cup noodles for supper!

After dinner we went to the safety meeting, which was unfortunately entirely in Japanese so as far as I can tell everything is as safe as houses.

Our first day was a hectic one with an early start so after the meeting we decided to call it a night. The relatively calm weather has been a blessing and luckily has let us get our sea legs under us so no sea sickness yet!

Looking forward to tomorrow, another early start, breakfast is served prompt at 7.20, and then to work on the landers.

Laura Burns

On purchasing the 'world's best mackerel'

The day had arrived to leave Tokyo onboard Hakuho Maru bound for the Japan Trench. The early start meant having to endure the mayhem of Tokyo's rush hour with our cumbersome bags and a two-metre long flagpole in tow. We got more than a few furious looks and angry mutterings from the fraught Japanese commuters.

To minimise annoyance we decided it best to off load our bags onto the ship before purchasing the last minute bits and pieces for the looming cruise. We had to make a crucial run to Tokyo's bustling fish market to buy bait for the landers. ¥12,000 and we were the proud owners of six of the 'world's best mackerel.'

En route to lunch we stopped by a supermarket to pick up some necessities - cup noodles, chocolate, crisps, fizzy drinks and coffee. Only 2 days into the trip I am beginning to understand why they are described as necessities rather than luxuries. We dined at 'Jonathans' for lunch and despite it being an up-market MacDonald's I ate the yummiest macaroni cheese I have ever tasted.

Back onboard as we steamed out of Tokyo harbour Debbie and I admired the skyscraper-dominated skyline and talked candidly of our hopes for the trip. Both of us were extremely excited by the prospect of sampling at hadal depths.

The afternoon was relaxed with free until dinnertime so we spent it acquainting ourselves with the cabins and layout of the ship- home for the next 2 weeks.

Dinnertime is announced by a series of melodic chimes so we all descend down to the mess where we were greeted by a pungent smell fish. From a caterer deep in the galley you are shoved a tray of food partitioned into separate dishes and compartments. The meal in front of me looked like sushi but nothing that resembled the delicate, attractive looking sushi we had sampled in Tokyo. Hunks of fish scales and all accompanied by a bowl of fish soup and a stodgy mess - rice.

I couldn't bring myself to eat it in fear of the repercussions so made do with the green tea. It then dawned on me why our supermarket goods were deemed necessary - I have never been so glad to eat a pot noodle.

Post dinner entertainment was in the form of a safety talk and a brief introduction to the other scientific work happening onboard. I'm sure it must have been interesting but the meeting didn't cater for the English-speaking contingent of the cruise as it was all in Japanese. I was there in person but my mind wandered. Bed followed shortly after - everyone was tired after the buzz of Tokyo.

As my head hit the pillow I was greeted by a rustling of plastic - no feathers here, just hundreds of plastic tubes piled high in the pillowcase. I knew a crick in my neck would quickly ensue so I exchanged the plastic for the small cushion that I 'acquired' on the flight over. I slept with the light on in fear of any sea monsters skulking in the unused top bunk.

Day 2

Alan Jamieson

Surreal humour crosses the language barrier

Today was much more productive and generally a very enjoyable day. I replaced all the ballast rigging with nice new yellow stuff we bought from Tokyu-Hands. I set about doing some construction work on the two big landers. I fitted the new water samplers and cocked them to the release yoke so that when the ballast drops the water bottle closes bringing 2 litres of bottom water to the surface.

I also made a few new brackets to fit the new CTDs, that took a while but I got to visit the engineers in the engine room for a while. While brandishing a piece of aluminium angle and making sawing and drilling motions I managed to communicate what I was asking them to do. It all worked well and the landers are looking good.

I fitted some new 'eyes' to the lander. The 'eyes' have become a thorn in my side over the last few months. Last time we were here the crew did not want to speak to me about how to deploy the lander and subsequently gave it a right good smack off the stern. They decided afterwards that it was my fault to not having 'eyes' on the lander that a rope could be fitted through. In reality it was the small army of cadets who didn't know that a bracing tag line has to be kept taught to prevent it swinging and if they haven't learnt this by now these eyes would make no difference anyway.

Bizarrely, they wanted me to put wheels on each lander, which I think is actually crazy.

So they have pestered me for them and I had no choice but to fit them, I suppose it's no big deal but the last 300 or so lander deployments on all sorts of ships, big and small, in rough and calm weather, all over the world haven't needed them.

Bizarrely, they wanted me to put wheels on each lander, which I think is actually crazy. Normally the landers are moved using a crane so at least they are stable when self-standing.

They requested wheels to move them around deck easily but a 250kg three-metre-high tripod on wheels in rough sea isn't safe in my opinion, especially if the cadets don't hold the ropes tight. But hey, who am I to say what's right or wrong on a Japanese vessel, it's my job to do as they please and the landers now appear to conform to these strange and slightly odd requests. It was good to get out on deck all afternoon and get stuck in.

While I was doing all that Toyo had the girls chopping up the mackerel bait and sorting it into what lander needs what. A bit of a dirty job but someone has to do it. Toyo broke out the new video camera and started filming HADEEP: the movie, it will be a fascinating watch I am sure.

Rumour has it another Typhoon is currently blowing up.

Over all today was productive and enjoyable, we got a lot of the jobs done that we wanted and had a laugh at the same time. No seasickness in the ranks yet and we're still enthusiastic so we're all good. Toyo's sense of humour is sometimes so surreal it has me sniggering for ages after, which keeps spirits high.

I was told that there would be little chance of being allowed outside tomorrow and that bad weather is on its way, so lets see what happens. Also, just before we arrived in Tokyo the latest Typhoon had just headed north and blew out. Rumour has it another Typhoon is currently blowing up in the mid Pacific so everyone is watching the weather to see if it heads this way. Fingers crossed it doesn't.

Alan's Hadal 'fact of the day'

The hadal zone comprises mostly of deep trenches that are formed when a heavy Oceanic tectonic plate is forced downwards while a lighter continental plate is forced upwards. The V-shape gouge in between is the trench. This geological feature results in the trenches being extremely seismically active and as most of them are found around the perimeter of the Pacific Ocean, the Pacific Rim is often dubbed 'the Ring of Fire'.

Toyonobu Fujii

Settling into life onboard the ship

A chime, which tells us our every meal time, went off at 07:20 hours.

Today's breakfast consisted of rice, miso-soup, grilled fish and another garnish - a typical breakfast in Japan. A unique e-mail address has been allocated to everybody on board and we can now send and receive e-mails every hour up to the size of 1MB. Just before lunch, we started to do some preparation work for the lander deployment. We'd brought new equipment with us to be attached to the existing two landers - a water bottle sampler and underwater salinity, temperature and pressure sensor.

Soon after lunch - rice, soup, chicken cutlet, green salad etc - there was a fire drill to make sure that everybody knows what to do in the case of emergency. After this, my main task was to get

the equipment ready for trapping amphipods - shrimp-like crustaceans. The traps will be attached to each foot of the lander.

The traps are made out of a plastic cylinder (10cm in diameter x 30cm in length) with two funnels attached to both ends so that the creatures can get into the trap but can't get out. The inside the trap will have some bait to attract the amphipods, but if the bait isn't protected in some way, this can be eaten by hundreds of different types of amphipods within a matter of hours.

So for each trap, the bait - pieces of the chopped mackerel we'd got from the Tokyo market - was wrapped in a fine mesh bag and sealed carefully to give off an odour that attracts animals, but isn't eaten by them for a long time. We keep all the traps - with bait - in the lab freezer ready to deploy.

Our dinner today was typically Japanese - rice, miso-soup, braised-fish, tofu, pork dumplings and some other garnishes.

Debbie Crockard

Raw fish may whet the appetite on land, but not at sea

Breakfast was announced (much like everything in Japan) by a melody which sounded like someone was playing the xylophone down a loudspeaker, it was all rather 80's! Everything over here seems to have a ring tone attached to it from the traffic lights and the bus stop button to the water cooler on the ship, which serenades you as you fill the kettle.

We got stuck into work today reviewing previous results and images on Alan's computer, the pictures are amazingly clear and I can't wait to see what we manage to capture on this trip. We spent time to day adding handles and grabs to the landers, the fitments for the CDT, which will take a number of readings while it is submerged and will give us an idea of any tidal cycles which may occur. We also attached the flash for the stills camera on to the as yet unnamed lander B. Lander A is affectionately known as Alfie and has been fitted with the video camera. It's pretty much ready to roll, bar a few pieces which need to be attached or calibrated.

After lunch (a tasty crisp sandwich) we had an emergency training session where everything got a little Arthur Dent as apparently a towel wrapped around your neck is essential for sea survival. We got started on the traps for the invertebrates after Toyo hacked up some fish heads and tails and sewed them into mesh pouches to use as bait in the trips. The mesh size is small enough that nothing can get into the mackerel but the scent of the mackerel should lure them in. the traps were set up and put in the freezer to keep them fresh.

We actually ate dinner tonight, which may be a rare occurrence as sashimi (raw fish) may look appetising on land but on a boat it turns stomachs - even the Japanese seemed to be avoiding it.

We spent the evening in Toyo's cabin practicing with the new video camera as all the instructions are in Japanese though at least the on/off button is obvious!

Laura Burns

Who is Benjamin and what is he doing beyond the abyss?

Today started early - the breakfast chimes sounded at 7.20am. I was extremely glad to be able to eat toast rather than the fish option.

We spent the morning setting up email accounts and looking through some of Toyo and Alan's previous cruise data - a credit to their ability and experience in the hadal field. Lunch is some four hours after breakfast and thankfully there is a choice of bread or fish.

A lifeboat drill followed lunch so we had to kit ourselves out in emergency gear - long sleeved top, gloves, safety shoes, life jacket and a towel. The latter is wrapped and folded neatly into your top to keep your neck warm and dry apparently. I couldn't help laughing at this rather ridiculous idea of using a towel to shield your neck from the elements! I felt there was a definite niche in the Japanese market for scarfs.

Again the briefing was in Japanese so even if I didn't know the nitty gritty of the emergency lifeboat drill, I was safe in the knowledge that I had been assigned a lifeboat and I knew its location. In the afternoon we were allocated precious deck-time so we tinkered with the landers attaching cameras and clamps to hold the CDT's.

Alot of this assemblage work was new to me so I found myself standing astride Lander A (affectionately known as Alfie) just observing and learning. Alan seemed to be in his element wearing his Jallatte boots surrounded by nuts, bolts, drill bits and his drill. Toyo, Debbie and I left the engineer to it and embarked on making up amphipods [shrimp-like creatures] traps. Debbie and I were soon to learn that the particular amphipod that we hoped to catch had a frightful unpronounceable Latin name so from here on in they are described as 'Benjamin's'.

We set about sewing up mesh pockets in which to fill with bait. Toyo unleashed his sharp knife and began carefully cutting up two mackerel, lopping off the heads and tails. These were further butchered, placed in the newly manufactured bait pockets and frozen until deployment day. Before we knew it, it was dinnertime again. After last night I was reluctant to go to dinner - I couldn't stomach the raw fish!! As we entered the mess the familiar aroma of fish again greeted us! Not a promising start.

Apprehensively I collect my tray of food and surveyed its contents. After an exploratory probe I realised the fish tonight had been cooked so pronounced it edible despite it being stone cold.

Toyo urged us to eat the cold side dish which looked a best, unappetising. Noticing our pained looks he nuked them in a microwave for us. Indeed he was right - they were tasty and not dissimilar to the taste of a prawn spring roll. We whiled the evening hours away in Toyo's cabin

practising with the new video camera and working out the different fancy functions. I wondered if Benny would like it too? It had been a good productive day and this night I felt brave enough to sleep with the light off.

Day 3

Alan Jamieson

The fruit, nut and vegetable situation

We are not allowed on deck to do any work, the ship is just slowly meandering east running the airguns and ship is so silent (except for the BOOM every minute), you wouldn't have thought anyone was here except Debbie overheard one of the Japanese girls puking in the toilets last night, so at least someone still on board, albeit a little seasick.

We got the email running at last. What happens on a Japanese Vessel is that you pick a name from a list of animals, vegetables and minerals and that's your user ID. The email is buffered and transmitted every hour. Also, as we are 8 hours ahead of the UK, there won't be a lot of conversation over cyberspace. So last time I was the Potato, Toyo was the Peanut. Noble names you'll agree. This time after a lot of debate I decided to once again be the potato but Toyo went for something a little fruitier, the Orange. Laura took the Giraffe and Debbie stepped into Toyos old shoes as the Peanut. In the absence of laptops it looks like the Giraffe and the Peanut will have to pretend to be Potatoes from the next two weeks. Now there's a sentence I never thought I'd write.

Good news and bad news today. The good news that we are 1) allowed to work outside tomorrow and 2) lunch was actually very nice, it makes such a difference just eating a meal and not rationing junk food. The bad news is that weather outside and the weather inside has gotten worse. Outside it is humid and clammy, very overcast and starting to rain, the swell is picking up too.

The Giraffe and the Peanut will have to pretend to be Potatoes from the next two weeks.

The atmosphere inside isn't any better, the air conditioning keeps randomly pumping hot air in the cabins making it quite uncomfortable. We can go in the lab where it's cooler but there are no seats so it's not too comfortable either. I'm sure it'll get better. I saw a crew member sticking a mercury thermometer into one of the AC ducts earlier so maybe they are on to it, although I could swear he was sticking the wrong end in and was actually taking the temperature between his thumb and forefinger. Didn't like to say mind. Later on I saw the same guy on his security check with a torch...inside with the lights on?

All in all a very, very slow day. The airguns stopped at 9pm which was nice.

Alan's Hadal 'fact of the day'

The deepest place in the World is in the Northern Hemisphere called Challenger Deep situated in the Marianas Trench at 10,989m deep. The second deepest place is in the Southern Hemisphere called Horizon Deep situated in the Tonga Trench at 10,800m. Challenger Deep is named after the British Vessel *Challenger* and the Horizon Deep takes its name from the American Vessel *Horizon*.

The sea's getting rough

The chime went off at 07:20 hrs as usual. I didn't sleep well last night, probably because of the still-lingering jet lag.

We weren't allowed to work outside on the deck today, so we decided to do some desk work in cabin instead. We've brought digital video cameras to record our activity during the cruise, and today my task was to figure out how to use the camera as well as how to edit the video clips.

Today's lunch and dinner were good and I got to bed early tonight to make up for last night's shortage. The ship seems to be moving fast in rather rough weather conditions.

Catching up with domesticities

We had a quiet day today, the weather was quite rough and the geologists are still busy on the deck firing off the air guns so we were generally restricted to indoor activities.

Lunch was our typical crisp sandwich, but the chef obviously felt a bit sorry for us and brought out some soup and burgers as well as knives and forks; and I thought I was getting pretty good with the old chopsticks. We did our first clothes wash and it went quite well: nothing shrunk and we are all smelling a bit fresher for it. I also found out what the numerous stools in the shower were for, apparently in Japan you are supposed to sit down in the shower not stand up, which is definitely a lot safer on the ship.

Dinner was also another day of cup noodles and sweet bread we had stowed on board. The Japanese girl at the end of our table took photos of her dinner before tipping it unceremoniously into the bin. We were also informed that the sachets we thought were herbal tea were in fact fish sprinkles. I don't think I'll be having a mug of that before bed!

With the lack of work to be done we went in search of something to fill the time and were introduced to the entertainment cupboard, which was definitely entertaining. The room was full of extremely practical games for on board a ship, like archery, badminton and baseball to name a few. There were also cupboards and cupboards of manga which Toyo tells us is extremely popular in.

With the rough weather I thought it best to make tonight an early night and hit the hay. Lots to do tomorrow when we have deck time and the deployment day is getting closer so we will be checking and double checking that everything is in tip top condition!

Getting used to Japanese food

The day started in the usual way - down to the mess where the air is thick and heavy with fishy smells to savour buttered toast and green tea. We then gather in the lab to sup some post-breakfast coffee which helps to kick start the day.

Today we had been allocated no deck-time whatsoever so there was little practical work to do. I retired to my cabin to start my cruise diary. I had a lot to write as two days had already lapsed and I hadn't written anything. After a productive hour writing, my bed was tempting me so I took the chance for a quick nap before lunch.

At exactly 11:20 hrs when the lunch chimes sound we assemble in the mess, same seats as always. Why are humans such creatures of habit? Crisps sandwiches again - plain crisps today with a little mayo. I am under strict instructions not to eat the remaining crisps left in the bag after the sandwiches are made - they are a finite resource apparently.

As we tucked in, a chef appeared with trays of food. We all flashed looks of disbelief at each other - table service in the mess? And then the chef reappeared with sets of cutlery. A welcome addition for the soup, but I had prided myself in soldiering on with the chopsticks despite the slimy food.

To my utter amazement there is no fish component to the meal, just a single squid ring. There is a cold burger topped with cheese - and what I presume is BBQ sauce, luke-warm soup with meat floaters and a little cold carbonara spaghetti - an interesting mix of western and Japanese food. I push aside the crisp butty to sample what lay before me. The burger was edible and the soup, well I'm still undecided if I liked it. Alan certainly did - he had it eaten in minutes.

After lunch Debbie and I collected our laundry from the tumble dryer - clean smalls at last. The afternoon was a dozy haze of naps and reading. I tried a crossword to inject a little variety into my leisure hours but with the roll of the ship and the amount of concentration required, it brought a headache on.

It's dinnertime again and the prospect of another let down. Tonight's delightful food was cold salmon, cold tofu and some horrible looking and smelling side salad. Alan announced how much he would love a steak and ale pie. I picked at the meal, not really enjoying it, so we all decided that tonight a cup noodle would be needed to bridge the gap between hungry and mildly satisfied.

I reached for some colourful sachets that lay on the table and asked Toyo what flavours of herbal tea they were. Instant laughter arose from Toyo as they were in fact not herbal tea bags, but different variety of fishy flavoured sprinkles for rice. My heart sank. With the noodles rehydrated we keenly tucked in and were glad of the hot meal. In the evening we became acquainted with the entertainment room.

The room is small with lots of closed cupboards containing a variety of Japanese books, comics and DVDs. Toyo is happy, as there are endless Manga cartoon book. Towards the back of the

room we came across some sports equipment - baseball bats, hockey and kendo sticks, badminton rackets and a snorkel and mask set. None of them I feel could, with any seriousness, be played whilst out at sea.

We decide against a game of badminton so instead Debbie and I potter around on Alan's laptop sending emails to respective family and friends.

Although today has been quiet, Alan explained that tomorrow will be busy as we have the whole day to spend on deck beavering away setting up the fish trap and testing various bits of equipment. I'm looking forward to it. (And the buttered toast.) The day drew to a close and before I knew it, I was back in my bunk for a little reading then lights out.

Day 4

Alan Jamieson

A stressful day fixing equipment

Hadal science is like a plate of sushi; you never know what you're going to get. You can quote me on that.

Today was quite productive yet seemed to be dead against us all day. We did our best work when the conditions were terrible and had a right old disaster when the sun finally came out and the seas calmed. In the morning I started work on finishing the fish trap. All I had to do was drill eight holes, attach two clamps and fit another four of those stupid 'eyes'.

Whilst doing this, the swell was big, an occasional wave would take us by surprise and the wind was relentless. But wind burn and the occasional soaking aside we got all that done in the morning as planned. I did however slice a nasty little cut across my index finger.

After lunch the conditions outside were great, very enjoyable actually. I decided it was calm enough to spend just 15 minutes outside showing the girls how to fire the acoustic releases. Those 15 minutes turned into an epic.

To fire the releases we have to use what is called a deck unit that transmits an acoustic code unique to every release unit. As I got the deck unit out, our Japanese contact on the ship mentioned she had already tested the releases. I asked her if they fired, but she said she hadn't tried that. So what did she do? Why was she playing with the deck unit and releases?

So I opened the box and found a very specific tool used for opening up the releases themselves which I never keep in the deck unit box. In fact each one should be in the release box. This much I know as I am the only one who works on these releases.

I fired the first release. This went fine. Then I tried the back up one and got nothing. I moved to the other lander and both were fine. Now, the one that didn't work seemed weird, I got nothing out of it, not even a spurious reply.

I asked the Japanese girl again if she had used or serviced or fired this release. She said no, but she had tested the communications. Ok, some answers. She sent it a slant range command in the institute last week and it worked fine. I asked why there was a set of release tools in the deck unit, but she had no idea.

After trying repeatedly to get them to work with no success, Toyo and I had to admit defeat and take the darned thing off the lander again. We took it to the lab and opened it up and found that all 18 D-cell batteries were dead, totally dead, there were loose silicon gel balls inside of it and the lower section had at some point been full of battery acid that had since dried out.

It was all very stressful as they should never have been in this state. After an hour of cleaning it up, inspecting each component and trying to get to the bottom of it, I put some new batteries in and fired it. Alas it was working again, but there may be some problems with the motor counter in that the motor is turning way too much, but seems to be getting better the more we try.

So it seems we have salvaged what might have been a disaster, but I don't understand what just happened. How could a communication with it have been made a few days ago if all batteries were dead? If all the batteries died after that, even with the random silicon gel in it, how could it have dried in such a short space of time in an airtight tube, and how did all the silicon get into it, it should have been in a perforated bag, the remains of which were nowhere to be seen. Anyway disaster averted and everything seemed fine if a bit odd.

So after dinner when it got dark we decided to test both camera systems on the landers and as per usual nothing ever goes to plan, but there's good and bad news.

I fired up the stills camera and it worked first time although I must remember to stop staring at the flash when waiting for it take a photo, my retinas can't take many more of those flashes. The bad bit, especially after the acoustic release debacle of this afternoon was testing the video camera.

I have a kind of love/hate relationship with this camera. It's quirky and temperamental but hasn't ever let me down. Tonight, true to form, the damn thing wouldn't start. The video camera is controlled and logged autonomously meaning that there is an entire PC in a massive stainless steel housing that I have to connect with using VNC as if networking in the office.

Just as I thought I couldn't despair anymore, I had network issues, IP conflicts, lost servers, you name it. After about 40 minutes and a bit of chin scratching from Toyo we managed to get it started and in my excitement sent the wrong test program to it causing it to stream constant video onto my laptop eventually causing it to crash.

We got it working in the end, so all is well, cameras work, releases work, no work tomorrow again, off to Toyo's for a wee party after a stressful day.

Toyonobu Fujii

A good breakfast and then on to fixing things

Unlike yesterday, this morning I woke up rather nicely having had a reasonable amount of sleep.

In fact, I got up around 06:00 hrs, well before the chime normally goes! The ship was still rocky and the weather seemed windy and rough out there. Nevertheless, I had a nice breakfast with rice, miso-soup, grilled fish and some cod-roe. Such typical Japanese breakfast really suits me, and I really appreciate the salty and warm miso-soup at the beginning of the day.

We had to do some work on the fish trap this morning. Some parts of net had been torn apart which needed to be sewn up so that we can catch large animals attracted into the fish trap. For this kind of job, man's hands are not very trustworthy, so Debbie and Laura played a significant role in this aspect of work.

After, we had beef steak for lunch and then we tested if the acoustic releases attached to each lander worked. It turned out one of our releases wouldn't work. So, Alan decided to take the release off the lander and open it to examine the inside.

Well, we found some leakage inside the release and some electrical parts were covered with dirt and seemed slightly corroded. Alan cleaned the dirty parts thoroughly and the release has come to life again! Although we need to test this release again and again before we decide to use it, the recovery of the release was a real relief to us.

Debbie Crockard

A different take on the broken gear

The day started with the now traditional butter and jam on toast and a few cups of green tea, which is now starting to grow on me. We had a busy day scheduled, full of fish trap mending, grapple testing and camera configuring which was a nice change to the relaxed days previous.

The fish trap was in need of some TLC so we got our fishwife gear on (hard hat, sexy safety shoes, life jacket and numerous tools) and started to mend the nets. The traps were a bit damaged from transport but all in all were looking good. Alan started on fixing the holder for the grapple while we mended the nets, doing a pretty sharp job if I do say so myself. We even managed not to sew up the hole to put the bait in.

Lunch was a welcome change from fish. We had steak sandwiches to compliment our usual crisp butties and bananas. Then we headed back on deck to test the acoustic releases for the grapples, this was one task that didn't go quite as planned. Firstly naming no names but pointing elbows at our engineering genius, someone forgot the password for the acoustic releases but luckily he had an epiphany and we got it to work. The first release went off without a problem; it was even better than we thought it would be.

The second failed miserably. Even using the correct password the grapple refused to release so we had to take it down and have a poke about. Feeling a little like a member of MI5 we took apart the grapple and were horribly disappointed to see the inside, which looked a lot worse than they ended up being.

It appeared that the batteries had leaked and shorted the rest of them meaning that the mechanics weren't working properly. With a little love and a few cotton buds Alan managed to clean it up and with some coaxing the grapple came back to life. Score one to ocean lab!

After dinner we tested the cameras. The stills camera was working like a dream, flashing its little heart out every minute. The software for the video camera had a mind of its own but it gave in eventually and we managed to align the camera with the bait.

We spent the evening relaxing listening to music in Toyo's room. All in all, a good day.

Still getting used to Japanese food

After a few hours of sleep I got violently awoken by the roll of the ship forcing me out of my bunk. As I stumbled to my feet reaching for the light, I flew across the cabin towards the porthole, which was, in essence handy if a little dangerous, as I wanted to survey the waves outside. By my reckoning they were big.

I made a dash back to my bunk immediately adopting some sort of brace position to avoid any recurrences of falling out of bed. Through the night as the swell raged outside I could hear items flying off my desk and my Coca Cola bottles rolling around in the fridge.

Despite the rough night I was pleased I didn't feel too sick to eat my much-loved buttered toast. After breakfast we all clambered into our working gear - hard hats, life jacket and safety shoes, all deemed essential whilst working on deck.

We had some trouble with the fish trap. Alan assumed the job of chief driller, punching holes into the frame to fit the release clamps and the eyes. By eyes I mean handles. Debbie, Toyo and I set about mending any holes in the netting - losing any potential catch to a hole in the net would be unforgivable.

As I sat mending a hole Debbie commented that I would make a good fishwife mending the creel pots - not something I was aspiring to but I was proud that my masterful sewing technique had been acknowledged. We had hoped to check over all the floats today but it was deemed too rough to scatter the orange buoys all over the deck.

Time for a quick coffee before lunch and day four of the crisp sandwich - chicken flavoured lattices today. Quite tasty. Toyo had been given a giant steak so he shared it with Alan who was glad of a little red meat.

The afternoon was intense. We had to test the acoustic releases. These are programmed to bring the landers back up from the deep depths of the ocean - if these don't work then we say goodbye to hundreds and thousands of pounds worth of equipment. Alan produced a James Bond like briefcase which houses the testing gadget. First up Alfie - one fired but the other didn't.

Alan and Toyo looked a little anxious after a few repeated tests and still no joy. Lander B's release worked like a dream which brought some relief to the group. In order to solve the problem of the miss-firing release on Alfie, it had to be taken off the lander and taken apart.

I was amazed at the electrical intricacy of the acoustic releaser. I imagined this must be what a bomb looks like. We set about changing the batteries and cleaning parts of it that were covered in silica gel. Alan and Toyo were dubious that it would work again but had nothing to lose by trying it again. Eureka! It worked, even if a little inconsistently. It was put back into its holding box for the time being. Everybody agreed it was time to have a little nap before dinner.

The anticipation of the evening meal filled me with dread. As I collected my tray a whole fish lay dominating the plate. It was long and thin with glazed over eyes and short sharp teeth. I decided, out of respect, to lay a napkin over its face. I don't much like being stared at when I ate. Not that I ate much.

The side dishes were slimy, smelly and cold as usual so that left the soup that I supped up reluctantly. Alan made reference again to steak and ale pie which he so longed for. My tray made a quick exit to the scraps bowl. I hate the scraps bowl - it turns my stomach every time I go near it as it honks of rancid fish. No time for cup noodles tonight - jobs to be done.

We needed the darkness of nightfall to test the video and stills camera flash. The latter worked perfectly - bright and regular. The video camera got linked to the laptop but there seemed to be a technical hitch. I took a backseat at this point, because I had no knowledge or helpful suggestions to bring to the table and I could see Alan and Toyo becoming a little irritated and disheartened. This was the second problem to hit Alfie today and it looked like just maybe, Alfie wouldn't be fit for deployment.

Thankfully they managed to get it working - I have a lot of respect for these two boys. With a little teamwork and troubleshooting they always pull something out of the bag.

With high spirits we gathered in Alan's cabin to have some celebratory pistachio nuts. Like a bunch of hungry squirrels we devoured the whole 400g. Finally back in bed I wondered if I would have to resume the brace position again this night.

Day 5

Alan Jamieson

Fish trap frustration

Today was yet another day of good and bad. The bad news is that the fish trap has been cancelled. I am not entirely sure why, it doesn't make any sense and it is extremely frustrating. Let's just leave that issue there. It appears that the Typhoon is still massive but has slowed somewhat, which brings me to the good news; we are deploying tomorrow afternoon, both landers, then recovering the next day before the mad dash for cover.

So today I spent the morning chucking big heavy weights about trying to make the ballast weights in torrential rain. Toyo and the girls had probably the worse job of checking all the floatation spheres; this basically involves scrambling around on your hands and knees inspecting big spheres for inner dust or cracks and putting them back together again. I thought my back hurt after making the ballast weights, but a morning in rain bent over seems to have really hurt Toyo.

At some point in the afternoon I visited the bridge to discuss the exact location of the lander deployment sites. Provisionally (subject to weather and progress) we had a position on the 7000m contours of the western slope of the Japan Trench. Ideally we want to go a bit deeper; we did 7000m last year. After discussions with the 1st officer he was eventually (arm bent up his back) convinced not to slow down before reaching that site. This means that during the deployment and manoeuvring the depth will increase and if we make a meal of it we can maybe push another 500m out of it. There is still a chance that El Capitano might agree to go for a 7500m site though as long as our Japanese contact slips him a wee sake.

The other big news today is that Laura's boyfriend has made contact. We have been teasing her for the last 6 days as he hasn't responded to any emails. To pass the time we wind her up thinking of all sorts of reasons why he wouldn't email. Turns out, and get this, he was playing lacrosse in Stirling with a dislocated knee. Yip, right. That's the best excuse I've ever heard - the guy's a genius, except that nobody has actually played lacrosse since the 1930's. Do they?

The other thing that happened over the last few days was a major discovery. I think I might have stumbled across time travel technology albeit in its infancy and only in one direction. Having completed the assembly of both landers I have come across many problems, a lot of which I have encountered before, last year. Unbeknown to me, whilst up to my ears in problems, I kept happening upon notes and reminders of how to solve them. These notes etc were actually written by me, or Past-Alan, about a year ago.

I guess I thought I should write a note to the then Future-Alan, which is actually now the Present-Alan to help him (me, us?) on our way. What a fantastic idea. If I write stuff down and keep it, I can use that information again in the future rather than relying on troubleshooting and

bodging the same issue time after time. So what I have done this trip, as Present-Alan, is write down what went wrong and put it in a place where future-Alan will find it. As I say, this passing of information through time, and I suppose space, is still in its infancy because I can't work out how to get Future-Alan to solve the problems of Present-Alan. Still a one-way street there, but working on it. The mind boggles as to how the time travelling properties of just writing stuff down has taken this long to be discovered, and by a Scottish bloke on Japanese ship of all places. I wonder if any other engineers write stuff down or just go straight for the bodge.

Toyonobu Fujii

The typhoon approaches

The chime for breakfast went off at 7.20am as usual. I had a typical Japanese breakfast as usual. Weather forecast says a large typhoon is approaching towards Japan and for this reason all the schedules have been changed around... Yes, our lander deployment is taking place tomorrow!

It was raining heavily this morning, but we needed to do a lot of work to prepare for the deployment. My main task today was to check all the glass spheres (floats) with Debbie and Laura. The glass spheres are secured in orange plastic covers and we had to open them and check the inside glass one by one very carefully to see if any cracks or signs of worn out were visible. If a glass sphere is damaged (even slightly), it could burst under a high hydrostatic pressure in deep-sea environment and we cannot be too careful in this respect. In fact, Debbie spotted one glass sphere which was little bit too worn-out, so we replaced the old one with a new sphere.

Lunch time came with the second chime and we went down to the mess room and had chicken dish with soup and green salad. The lunch helped warm us up and we continued working outside in the heavy rain. By the time when we finished the work in the afternoon, everybody got soaked quite a lot. Hot shower and a long dip in a hot bath were really invaluable after a long work in the cold rain like today.

Today's dinner consisted of cream stew, grilled fish, rice and some garnishments. Either fish or some other kind of sea food come up to our dinning table almost every meal time and I can see why Japan is often described as 'fish and rice eating country'. It seems even my British colleagues are getting used to such sea-food oriented daily Japanese meals. Or are they not?

Anyway, the lander deployment is scheduled tomorrow afternoon and it is not a bad idea to get to an early bed after a little bit of beer tonight...

Debbie Crockard

Very heavy floats

My back is going to be sore tomorrow, we were checking all the floats today to make sure none needed replacing and when I think of floats I don't tend to think of 26kilo reinforced glass spheres! They are very cool, but really heavy, especially when between three of us we had to shift over 20 of them.

Alan was tinkering with some last minute adjustments to the landers, drilling holes for the CDT and the other sensors which we were adding, while we dismantled and checked over the floats checking for cracks and powder in the vacuum centre, the powder means that the two halves of the sphere have been rubbing and could potentially no longer be completely sealed. This would be bad. Of all the floats we checked only one needed replaced which was good news for all involved!

We have still not seen any sign of the typhoon and the weather has been pretty calm all round, with the exception of the time we spent on the deck when it poured it down with rain, sod's law.

Today has been busy but repetitive and I'm very ready for my bed, D-day tomorrow; can't wait to get them over the side and see what we find.

Laura Burns

D-day tomorrow

I woke up to find my Ipod earphones wrapped almost lethally tight around my neck! Maybe best not to sleep with earphones in again! I wasn't going to be beaten by a typhoon so certainly not by two thin wires!

There was orange marmalade on offer for breakfast - I couldn't have thought of a better accompaniment to lovely toast!

In the morning we set about checking all the floats that would be attached to the landers. Inside the bright orange outer case was a perfectly formed glass sphere in which there was a vacuum to provide the positive buoyancy. The floats were heavy (26kg) although they don't look it! We were checking for any cracks in the glass or accumulation of powder in the bottom of the sphere. We didn't let the torrential rain dampen our spirits - we beavered on and only found one float that needed replacing.

After a busy morning we were all ready for some lunch. Today's soup was good but I couldn't decide if it was spicy hot or just extremely salty - either way it went down the hatch! The main dish was a chicken leg and some horrible half cooked egg and spinach dish!

In the afternoon we organised the mooring ropes for the lander - thick ropes attached intermittently with metal shackles. As our deck time drew to a close we all headed back to our

cabins and for me a chance to read and sleep. In that order! Dinnertime again - another cold, whole fish and some mountain potato to accompany it. The mountain potato is long white strips - nothing which resembles our humble tasty potato of home! No dinner for me!

After dinner as we were all still hungry so we tucked into crisps and Ritz biscuits which went down a treat! Well for me at least! We all had an early night - it was D-day tomorrow - Deployment day and our time to shine!

Day 7

Alan Jamieson

Launch day

It seems odd. With all this talk of typhoons the weather isn't half getting calmer. Got lander weather today which is just as well, as it's lander day. So this morning we spent the day doing all the last minute checks, staring aimlessly at the lander, scratching chins, rubbing heads and going through mental checklists of what needs to be done. We were given a time, 4pm, so I programmed the new hadal-rated CTD sensors and set everything with a time to start at 4.

Time is a funny thing. Normally on a cruise like this there are obviously time constraints as ship are expensive and everybody wants to do their work and of course everybody's science is more important than everybody else's science. But saying that, normally if you want to deploy two landers, the two landers will get deployed. Here, however, we are being timed. Not only are we being timed in everything we do, all we have been given in terms of ship-time is 6 hours including the ascent.

After yet another argument with my Japanese contact it does appear that we have 6 hours and by that I mean 360 minutes or let's be honest, we have 21600 seconds to deploy them both, release them, wait for them to surface and recover both. We do not have 6 and a half hours, or even 361 minutes or even 21601 seconds, no Sir. So to test the water so to speak, I asked what would happen if the first recovery took too long and as the 6th hour chimes with the second floating on the surface, do we just leave it? The answer was yes. Wow. I have never felt so unwelcome on board a vessel in my life.

Anyway, whilst the rest of my team were getting down to some serious power-napping I though I cheer them up by putting something a little special into two old temperature sensor housings on the landers. They kept asking what they were but it's a surprise.

Anyway, the time came to deploy. Hadal-Lander B first, stills camera started first pop, good stuff. The deployment went really well, swift you might say. Once the flag was down and location marked we moved a kilometre away to the second site. Hadal-lander A did exactly what it was told (which is unusual) and the deployment was smooth.

Last year on this vessel they seemed to put about 25 guys on the deployments that was very frustrating, too many cooks and all that, it was chaos. This time is very professional. In lander deployment less is more; two boys up the business end, a lad on the A-frame, two boys passing up the floats and everybody else well clear, so much better.

Still very anxious though. I was talking to Toyo about this earlier. Why is deploying these Hadal-landers so much more stressful than other landers? Because, let's face it, landers can get lost on 1000m of water, it is very rarely depth that matters but rather bottom type or systems failure. Deploying to 7500 isn't even close to its maximum, taking a 6000m rated lander to 5000m is surely more dangerous. I don't know what it is, it just seems like there's more riding on these than other landers. It doesn't help having an online update every day documenting our progress - pressures on.

Anyway, I'm pleased they went well, landers launched, early start tomorrow; let's see what we get. The landers are officially deployed to:

Hadal-Lander B (stills)

Latitude: 36 14.96 N
Longitude: 142 49.01 E
Sounding Depth: 7524m

Hadal-Lander A (video)

Latitude: 36 14.75 N
Longitude: 142 49.74 E
Sounding Depth: 7587m

Finally, a reader has asked what kind of pressures the HADEEP submersible will experience.

Generally speaking for every 1000m of water depth, the pressure increases by about 100bar, so on this deployment the lander should be experiencing pressures of over 700bar, which is roughly about 700kg per square centimetre. The total depth rating of the lander is actually 11000m (1100bar) however the more sensitive parts or shall we say, the parts we felt would be most likely to fail, are designed to a much higher safety factor. For example, the viewport on the video camera is our own design and is made of optical grade sapphire and has been tested to 1400bar for 24 hours, so it's good to 14,000m (although there isn't anywhere that deep!).

Toyonobu Fujii

Attaching the bait

I had a larger breakfast than usual this morning. A lot of energy is required today because we are going to deploy our two hadal (deep-sea deeper than 6,000m) landers to the bottom of the Japan trench this afternoon. Our target depth is a region of around 7,500m.

After the breakfast, we made some finishing touch to the landers. Basically, the lander looks like a giant aluminium tripod (2.5m high) which secures some scientific payload within the pyramid-like frame. Centre of the lander has got either a video or stills camera positioned one metre above the seafloor looking vertically down to the bottom. In order to image the activities of benthic scavenging fauna, we use mackerel to attract them to the observational arena. Thus the bait (fresh mackerel) had to be attached to a horizontal metal bar, which will be in contact with seafloor, so that the bait was positioned in the centre of the field of view. Three amphipod traps (baited invertebrate funnel traps) were also attached to the footpads of the lander to collect any benthic scavenging organisms attracted into the traps. The cameras and other scientific equipments attached to the landers also needed to be pre-programmed so that they can take measurements at certain time intervals specific to each component. Finally, polystyrene containers of 'cup noodles' were experimentally attached to the lander to see how much they can shrink as a result of very high hydrostatic pressure in the hadal (> 6000m) environment (just for fun!).

The ship arrived at our target depth point at 4.40pm and our first lander was deployed. It took around 10 minutes to deliver the lander system from the deck of the vessel into the sea. After another 10 minutes of transit, we reached the other target point, and our second lander was also deployed successfully. The landers need to travel from the surface to the seafloor at the depth of approximately 7.5km, which probably takes over the duration of 3.5 hours. The landers are expected to spend on the seafloor over night (9-10 hours) and acoustic command is scheduled to be sent to them early tomorrow morning to recover them. Well, I hope they have a wonderful and fruitful journey in the Japan Trench!

Debbie Crockard

Legendary precision

D-day is finally here. We have been told that deployment will be around 4 o'clock this afternoon and that the landers will be brought up tomorrow morning. The morning has been nice and calm making sure everything is where it should be getting all the very last things attached to the lander including the amphipod traps and the bait for the cameras. The dodgy release is exchanged for a brand new one and checked over to make sure everything is still in working order.

At about 2 the air canons that the geologists have been using are brought in and we started to set up our floats and get the landers in place so that when the time comes it will be literally a case of just chucking them over the side.

With their legendary precision the Japanese crew begin to deploy the floats, the flag and marker floats go over first and are followed closely by the pairs of floats and the lander itself which has been waited down. We wait with bated breath as lander B sunk below the surf and the flag followed a few seconds later.

We trundled 1 km further along the trench and deployed lander A (Alfie). Nothing to do now but wait; the landers themselves won't reach the bottom for another 3.5 hours so they should be there by about 8.30 tonight.

We missed dinner so it is a cup noodle night tonight might push the boat out and go for a gourmet one...very fancy!

Very excited about tomorrow, we are up early to send the acoustic signal so early bed and fingers crossed.

Laura Burns

A waiting game

The day started as always - breakfast and therefore time for toast! The melodic chimes for breakfast are never late and I am thankful for that this morning as I am hungry!

There is an air of excitement within the team today as Alfie and Lander B were being deployed later in the day! This gave us ample time to crack on with the last minute pre-deployment jobs. Due to various factors we weren't able to deploy the fish trap which was a bit of a blow - we thought this cruise it would make its maiden voyage to the bottom but it wasn't to be!

Toyo set about attaching a mackerel to each of the landers to entice whatever was at the bottom of the ocean to come for a photo! The fish had to be hacked up a little so the bright scales didn't reflect too much when the camera went off - Toyo looked to be enjoying knifing in a crosshatched pattern. Looked like a very satisfying job! We put the release that was meant for the fish trap onto Alfie to replace the dodgy one! It was tested and it worked perfectly - comforting, as it was brand new out of the box!

Lunch came and went - cold prawn tempura! Soggy battered prawns to you and I! I thieved two slices of bread and quickly packed them into a sandwich bag for an afternoon snack - stocks were running low so on this occasion I could live with being a thief!

The deployment time was 5pm so after the final tightening of all the nuts and bolts and last checks of the equipment we were playing a waiting game! Just before 5pm we made the very final additions to the landers! Alan attached two small capsules and when we asked what they were for he cheekily replied - 'a secret'! One, which we were lead to believe, would be revealed the next day!

Things including lucky underpants, 'fresher' pants, silver cups and polystyrene cup noodles were also attached. Each had a sentimental significance to the owner (but I wont name names here!) Finally 5pm and 7500m of ocean beneath us! The ships crew, many of whom I'd not seen before descended on the landers like bees to pollen. They carefully bustled away sending the floats, flagpole, more floats and finally the landers overboard! We weren't going to see them again until tomorrow so a long, anxious wait lay ahead of us!

Day 8

Alan Jamieson

Triumph or disaster?

Big day today, today is what it's all about. This was a long day. Started at 4am or something silly like that. Toyo and I bust out the deck unit and started interrogating the first lander. I don't know if it was caffeine induced but I swear I had a heart attack there and then; couldn't get the lander to come off the bottom. I tried for 30 minutes and gave up. Just between Toyo and we declared it lost and moved to the second lander. Same thing. I couldn't believe it. I'm not sure how much of the intense staring between Toyo and I was translating the seriousness of this to the others around.

I can honestly say for a fact that I was absolutely 100% positive for an hour and a half that we had in fact lost both landers. I am not saying that to make this more exciting, I honestly thought we had. After even more chin scratching, head rubbing and clawing around in my head for every bit of acoustics know-how (which isn't much), I thought that maybe something odd was going on.

To cut a long story short I decided to wait for a while, giving the landers (if they were ascending) to rise out of the trench and clear the 6000m mark by 1000m or so. Then we try again and we should get something. Right enough, I think I was picking up some kind of echo or anomaly that I've never seen before. The more they ascended the less of the seafloor I seemed to be sounding. Thank the lucky stars. The intense staring between Toyo and I became cheeky schoolgirl giggles and my heart started beating again. Oh, what a feeling.

Anyway, hadal-lander B surfaced bang on time and just about 10 metres off the starboard side. The recovery went well until my heart stopped again when I saw what had happened. Again, to cut a long story short, the lander was descending and at about 3000m there must have been a breach in the power cable causing the cable between the battery and camera to melt, yip, it actually melted underwater at about 5 degrees Celsius. Couldn't believe it, total failure. I am sure that lander is jinxed, the lander absolutely stank, like a barbeque.

Anyway, I went back up to the bridge feeling really deflated. To make matters worse Hadal-lander A was a nerve racking 25 minutes late (remember 6 hours, no more, no less). We had just 40 minutes to pick it up. What was weird was that again it surfaced just off the starboard side. I guess it was relief to see it given that a few hours ago I thought it was a goner.

So, the recovery also went well, and within time! While we were bringing it in, somebody shouts to tell me there's a fish in Toyo's 'giant amphipod trap'. No, surely not?! Right enough. We secured the lander down and cut the traps from the feet and sure enough, not one but three endemic hadal liparid fish called *Psuedoliparis amblystomopsis*, the fish we were after.

Now I have been ribbing Toyo about his trap for a year. He made it from an old sewage pipe and chicken wire. He was convinced he'll catch giant amphipods in it but to date it has caught nothing, nothing at all. I even had a bet on him that there would be nothing there and lo and behold he catches three liparids and whelk, two tanaids, TWO giant amphipods, a rag-worm and a small holothurian. I ate my words. Hand shakes and the occasional cheesy high-5 quickly replaced the chin scratching and head rubbing. Result.

At this point Toyo and I go our separate ways; Toyo deals with anything 'biological' and I do the downloading. As it had started to rain I had Laura and Debbie sheltering me and the laptop under two very attractive umbrellas whilst I fired up the big guy. What a sight, 120 1 minute sequences of video sat there waiting to be down loaded. Just for fun I played one directly from the lander and with all eyes under the umbrellas we witnessed a sight I never thought we'd see - loads of liparids, and I mean about 10. 10 liparids on just one random sequence I happened to open. What a moment.

Anyway we got it all downloaded and went into the lab to see how Toyo was getting on. For some reason the rest of the ship who up until now haven't even looked me in the eye let alone speak to me all suddenly turned up wanting to see the fish. One of them even asked if they were edible! The specimens were photographed and preserved and all the hydrography data was downloaded and backed up. After watching all the video we found up to 17, yes, SEVENTEEN liparids in one sequence. Truly beautiful footage.

To see all this stuff going on so deep was amazing. We quickly corrected the pressure data to depth and found that the official depth was actually 7703m. Happy days. Toyo and I had a wee moment out on the deck once all the excitement died down. Seems we did good job after all the topsy turvy events of the morning. Once all the work was down and lab was tidied up and took off the secret housings and revealed to the team that I had just sent 4 cups worth of Nescafe Gold blend to 7700m and back. Hadal-Coffee for all. I once sent my coffee cup to 10,000m and back to bag the first hadal rated mug, now I could drink hadal-coffee from the hadal-mug. Sweet.

Speaking of drinking, the water samplers worked well but we were just testing those for a later date and actually have nothing we could do with the water. Toyo and I drank some just to say we drank 7700m water - it tastes like seawater by the way. So after another round of backing up, securing the samples and finishing up, we drank all our remaining Asahi and plum wine and went to bed with a little grin.

There's so much more to add but I'll save that for the following days.

The amphipod trap comes good

We met up at 5.35am in the morning. It was raining heavily and a little bit windy outside, but regardless of the weather condition, we have to recover the two landers which were deployed to the bottom of the Japan Trench yesterday. At 6.00am, the ship reached the point where the first lander was deployed, and the acoustic command was sent to the lander to release its steel ballast weights, which allows the lander system to ascend to the surface by positive buoyancy generated by floatation modules of glass spheres.

For some time, we were not able to confirm if the lander had actually initiated its ascent, but as time went by, signals returned from the lander showed that it was ascending to the surface steadily. Similar problem also occurred to the second lander for some reasons, but again, it turned out that both landers were ascending OK as expected, which was a great relief to us.

The first lander (stills camera) hit the surface at 9.40am and was recovered on to the vessel successfully. However, we immediately found out that the cable which connects between battery and the stills camera was totally burnt and destroyed ... It seems some kind of short circuit in the cable occurred during the deployment, and thus the system failed to take stills images on the sea floor of the Japan Trench.

The remains of the bait mackerel indicated that some scavenging activities were definitely going on during the lander deployment, so it was really a pity that we could not obtain stills images of such activities. The cable needs to be examined and improved to avoid such kind of failure in future deployments. With respect to the 'polystyrene container' experiment, the cup noodle containers became around 4 times as small as the original size!

The second lander (video camera) hit the surface at 10.20am and was recovered successfully as well. In contrast to the huge disappointment brought by the first lander, however, the second lander brought back some over-riding excitements to all of us from the bottom of Japan Trench! Data from the pressure sensor and a correction algorithm indicated that the lander went down to the seafloor at the depth of 7,703m in the southern part of the trench.

Video recordings showed that the seafloor consisted of deep muddy soft sediment. After the touchdown of the lander, the video successfully recorded a series of amazing activities of benthic fauna attracted to the bait (e.g. amphipods, tanaids, isopods and fish). The number of animals and the levels of activities we witnessed in the video recordings were just overwhelming and I expect these results will raise a lot of intriguing questions in terms of deep-sea hadal ecology.

The amphipod traps attached to the lander also brought back further excitement to us. These traps collected specimens of not only amphipods and some other crustaceans (e.g. tanaids) but also whelks, polychaeta and fish (liparid)!!! A lot of analysis and work will need to be done to

put our findings into the context, but for tonight, we have got to have a party in front of a PC screen which plays back the beautiful recordings of benthic fauna which was just brought to the surface from the depth of 7,703m in the Japan Trench!

Debbie Crockard

What a day!

Ok early start, 5.40am but we're buzzing with nervous excitement. Time for an early coffee as we wait for the captain to tell us that we are at the site for lander B. 20 minutes later and the James Bond equipment is out; we wait patiently for the acoustic signal to come back with fingers crossed and baited breath...8698m, the reading is the distance from the ship to the lander and isn't a true depth. The second signal is sent out again and the reading comes back 8698m. Everything is looking good, we decide to wait for 5 minutes take another reading and see how the lander is getting on. The first signal is sent again ...8698m... ...the second signal is sent again... ...8698m... The depth isn't changing which means the lander isn't moving; everyone's hearts hit their stomachs. We wait another 10 minutes and the readings come back pretty constant about one in 4 aren't 8698m but the rest are within 2m of each other. We don't want to admit it but we've lost lander B the group is silent probably for the first time since coming on board.

We decide to head to Alfie and see if he has fared any better, the acoustic release is sent and we watch the screen 8698m... there is a lot of swearing on board. Something about the results just don't seem right, they are very constant which usually means a strong result but these results are almost to perfect. After a lot of consideration Alan comes up for a theory, a very optimistic theory. The 8698m reading is the bounce back from the trench not the reading from the lander, the anomalous results that keep showing up are the real results... we don't know if he's right but it seems like a good theory and we need all the hope we can scrape together.

The plan of action is to wait it out and check again when the lander should have cleared the trench. The next hour and a half are horrible and tense and when it comes time to check again I don't want to look... 3000m everyone is grinning we haven't lost them they are coming up! Alan's theory was right... brilliant!

Lander B surfaces and we bring it on board still bouncing off the walls that it has made it and that we didn't lose it. Then we get the first sight of the camera and we hit another low. The cable from the battery to the camera has blown the smell of burning is still strong, we are gutted, we won't know if it has taken any stills until we get the camera open. The mackerel has been eaten so we know that there is something there we just don't know if we have the evidence.

We are now on the look out for lander A, all our hopes are on Alfie, when we pull him on board there is a sigh of relief, everything is intact. Then Laura lets out a shout... we've got a fish!

Scrap that we've caught 3 fish and giant amphipods and a mollusc and tanaids. We got the mother lode of samples!

Everything else today seems irrelevant we got samples and video footage of liparids in huge numbers, in some sequences there are up to 19 fish all feeding and swimming within the camera range. We also see a decapod swim past the screen, the deepest example of a decapod ever recorded.

The atmosphere in the lab that night is in complete contrast to how we were feeling this morning, the footage is amazing and the samples are fantastic the trip has been a complete success, tomorrow we will worry about the stills camera and the battery but until then we are a bunch of very happy bunnies and tonight is a night to celebrate!

Laura Burns

Result!

As we had to release the landers at 5.30am it meant an early start but I was excited so I didn't struggle to get out of my bed! In fact, we released at 6am so it took the landers just over 3 hours to surface. Alan and Toyo, once again, opened up the fancy briefcase and set about the release. It wasn't a promising start; Alan was worried that the landers had got stuck and wouldn't surface.

It was a tense time with lots of audible cursing! I sucked on a boiled lemon sweet and the bitter lemon flavour filled my mouth and felt as sour as the atmosphere. Finally things looked up and it looked like after all the landers would surface. Phew! Boy was I ready for my toast at 7.20am. I was so thankful that the landers were on their way up - everyone seemed upbeat now and we were soon on our way up to the bridge to the lander spot! We would first see a float flowed by the big, orange flag.

We waited and waited and a little later than expected Lander B surfaced! Again the crew scuttled about the deck hauling in the floats and the lander! It was good to have it back - there was a tangible relief within the group! As the boat hotfooted it to Alfie's surfacing location it became clear, as we examined Lander B, that something was very wrong with the camera connections.

The cables were burnt to charcoal so the initial excitement soon faded into disappointment. It looked very much like we would get no still photographs! Disheartened we went back to flag spotting and sure enough Alfie had surfaced. We waited with baited breath to see if Alfie had suffered the same fate as Lander B.

Thankfully not so - as Alfie landed on deck there was a cheer of happiness! We had done it - both landers back! And to our sheer joy we had caught 3 fish, some whelks, amphipods and

some other shrimp thing whose name escapes me! Toyo's amphipod traps had worked an absolute treat! He was clearly over the moon and a little smug!

We had all been pulling his leg about his primitive-looking traps but despite their design they had done us proud. We quickly downloaded all the videos onto the laptop and what a treat was in store for us! Amazing images of Liparid fish clustering around the bait - up to 17 at a time which is totally unheard of! I was so delighted for Alan and Toyo - they had worked so hard and it seemed like a fitting end! Result!

We were late for lunch but nobody cared - it was all happening on deck and lunch could wait! It was, as ever, cold and looked like yesterday's lunch rehashed! We picked at it very quickly as we all wanted to get back to our catch. We preserved the samples in ethanol after measuring them and taking lots of photographic evidence.

We looked over the amphipods traps carefully extracting any other small creatures that had been caught in the mesh as although small, they were still definitely of interest!

With the early start and the constant adrenaline rushes everyone was starting to fade by 3.30pm, so off to bed for a nap before dinner. We all hoped for steak and ale pie for dinner, which would have been a fitting reward, but no such luck! Cold fish and some nasty side dishes again. I picked at the dry fish meat and ate a little rice but it just wasn't satisfying! In the evening we all watched through the entire video footage. Twice! Just incredible! What a day it had been - from a rough start when we thought the landers weren't coming back to actually having recorded something never ever been seen before was just the best feeling. We all slept well and happy.

Day 9

Alan Jamieson

Where's the typhoon?

Got up this morning still feeling pretty chuffed with the results of yesterday, still can't believe we saw so many liparids let alone getting three of them back. We have officially taken the deepest images of fish, ever. The deepest ever caught in a trawl was 600m deeper, but so what.

Anyway, today was the day that Typhoon 15 was going to knock us off our feet and send us running like demented chickens to the nearest port. Hmmm. It seems that the sun has come out and it's actually a very nice today. In fact the sea is now blue as is the sky.

Even last year the sea and sky were grey the entire time, the only interesting thing is that it rains whenever you go outside, a lot like Aberdeen actually. However today, whilst expecting to see some really hardcore weather it's turned out to be the best day yet. I made some enquiries about this Typhoon and it seems that it simply couldn't be bothered to come this far, in fact it ran out of steam and decided to just become a miserable storm to irritate those in South Japan.

Typhoon 16 and 17, which I was also told were on the way, seem to have followed suit. Don't get me wrong, wasn't looking forward to it and in fact it has been a blessing as originally we were supposed to recover the day before docking, meaning a lot of frantic work in the last 24 hours. Thanks to the threat of Typhoon 15 we are done early. Cheers T-15!

We spent a lot of time watching back the videos last night. Incredible stuff. Funny to think all that is going on so deep down. One of the more interesting footage shows the large amphipods persistently grabbing hold of the fish tails before being whipped off. The juvenile fish seem to get irritated by small amphipods latching on. To get rid of them, the fish swim upside down while head butting the seafloor. What else can you do if you have a nippy crustacean on your head and you have no hands? I am really pleased we also broke the deepest decapod record (again, for the 4th time).

There is a little bit of debate about exactly where the hadal-zone starts. It is generally accepted that 6000m is the start but suggestions have been made in the past that it should be closer to 7000m (increases endemism). Up until now our fish and decapod records have been a little over 7000m and in the case of the decapods they may well just be (and probably actually are) abyssal vagrants.

However, seeing them closer to 8000m categorically makes them hadal and not just a component of some abyssal-hadal transition. Decapods are alive and well in the Hadal-Zone. How they were never caught all those years ago is a mystery, I suppose trawling at that depth just isn't efficient enough to catch them. Right tool for the job and all that.

Another interesting find are the whelks. There is a bit of a buzz about these coming back from Aberdeen colleagues. I don't really know anything about whelks, Toyo will perhaps explain more. The interesting thing is that at these depths it should be impossible to form a hard shell. There is an important boundary in the deep-sea called the 'carbonate compensation depth' or CCD which causes calcium carbonate to dissolve. In the Atlantic Ocean this depth is about 4500m and is thought to be shallower in the Pacific. So if a whelk, with a shell, is hauled from 7700m where it is impossible to form a shell, how did it do it? The chemistry is beyond me, but what I do know is that these whelks are not 'normal', the shells are actually very soft and this is where it gets interesting. These two little oddities will go back to the UK to have someone in-the-know take a look.

Other than that not much else happened today, we just stripped down and cleaned the landers, put a lot of it away, eventually processed the oceanographic data. For those who find this interesting, the bottom temperature was 1.905°C, the bottom salinity was 34.68ppt and the exact pressure exerted on the lander at the bottom was 7900dbar. Fascinating stuff, I'm sure you'll agree.

Toyonobu Fujii

Working on deck

The chime for breakfast went off at 7.20am. I had a lot of beer last night and I think Japanese breakfast (particularly miso-soup) works well for mornings when you suffer from a 'slight' hangover. However, I have no doubt that nothing can really top the full English breakfast when it comes to the mornings with 'heavy hangover'!

After breakfast, Alan brought us an interesting surprise... When the two landers were deployed to the bottom of Japan Trench two days ago, there were two small metal containers attached to the landers, but nobody actually knew what they were for... Now, Alan brought them in front of us and opened up the containers. Thus, we now know what it tastes like when we have a cup of coffee made out of Nescafe Gold Blend which has been to hadal depth!

After the nice taste of 'hadal coffee', we started to take the landers a part and tidy up our lab. Acoustic releases and other scientific payload that had been attached to the lander frames were mostly removed and cleaned with fresh water. It was very fine weather out side today and we were happy to do such kind of job on the deck of our ship, the RV Hakuho-maru.

After dinner, I decided to come back to my cabin immediately. Why? Yes, because I had to catch up with this blog writing which I could not do in the last three days...

Debbie Crockard

A chance to relax

Relaxed day today, we dismantled the rest of the lander Alan and Laura took each of the releases apart and removed all of the batteries to prevent a problem with them leaking. As a precaution they decided to remove and clean everything with batteries just in case.

Toyo and I took all the remaining equipment from the lander and rinsed it all in fresh water to stop salt crystals forming in any of the gear. Then we had the rest of the day to relax.

The weather is stunning so Laura and I made the most of the top deck and got some sunbathing in, freckles are out with a vengeance but it was a nice way to spend the afternoon.

We still don't know what happened to the stills camera but it definitely packed in on the way down and unfortunately we didn't get any pictures.

It was a cup noodle tonight - I think the chef is seeing how Japanese he can make the food before we stop eating altogether!

Laura Burns

Stripping the lander

After breakfast we were all treated to hadal coffee! Alan's little secret was that he had filled the capsules that he bolted onto the lander with Nestlé's best Gold Blend freeze-dried coffee! As we

all supped up we thought we must be the only people in the world that had drunk coffee that had been to 7703 metres! Now as we all had had our caffeine fix we set about stripping down the lander of all its components.

Alan and I took charge of the acoustic releases taking all the batteries out so acid didn't leak when they were in storage and wreck the intricate electronics inside. Toyo and Debbie unbolted the cameras, lights, remote flashes and all the clamps holding them in place. It was a good bit of teamwork and before we knew it, everything had been done.

Lunch again was some deep fried pork in breadcrumbs- essentially it sounds good but then you get a nasty tasting surprise in the middle! I spat it out far quicker than it had gone in and quickly drank some green tea to get the taste away! That's the thing with Japanese food, well Hakuho Maru more so, you just never know what you're going to get! In the afternoon as it was lovely and sunny, Debbie and I took to the top deck to catch some Pacific rays. Ah this was the life! It was so hot but luckily we had both packed some sunscreen that quickly got liberally applied to any bare skin.

5.20pm again and time for dinner! We all thought it might just be cold fish again - there was a definite pattern emerging after 7 days. Yes, fish again! And cold again! I find it absolutely extraordinary - a lot of effort goes into presenting the meals; I only wish that they would channel their efforts into making tasty edible food instead - I feel the ships caterers could do with a little bit of the Gordon Ramsey magic!

Along with the fish rolls there was some plate of what I can only describe as a brown sloppy mess - Toyo explained it was aubergine but it was definitely a long time since it had been an aubergine! I had lots to put in the slops bucket tonight - definitely a cup noodle night. Luckily our supplies were still strong - enough at least to see us all through until Monday. We had just one bar of Toblerone left - I took the executive decision to open it - life's too short not to eat the last Toblerone! Ah so tasty!

We spent the evening watching Japanese telly - obviously we had no idea what was going on but at least it was a nature programme on Africa so we made up our own commentary! Anything that was some sort of antelope was deemed a goat and crocodiles and hippos were animals, we decided, to be avoided at all costs if you liked your life! Our evening had been quite entertaining but we all thought that we might be going slightly mad! Before bed I hit the shower - something to do, as it was still too early to hit the hay!

Day 10

Alan Jamieson

Reconsidering onboard food

I can't be bothered talking about work today, I've thought about nothing else for days now. We decided to have the day off, relax and Toyo and I messed around trying to compress videos and

stills to send to this very website. There seems to be a lag between high-street technology and research vessel technology, trying to send high definition or just relatively hi-tech video from a low-tech ship isn't really ever going to happen. Anyway enough about work.

Seems the other bloggers have been banging on about food a lot and Toyo, his hot tub. I personally haven't tried the hot tub, but I have been throwing myself into Hakuho-Maru cuisine. As much as I go to bed hungry every night I am actually eating a little bit of most things they dish up.

The fish is typically ok and the soup is mostly brilliant. I discovered that I actually enjoy what we have come to know as fishy-sprinkle-rice toppings. I had to draw the line at tonight's dinner when I nearly vomited on the table after sucking up a long cold, slimy slither of seaweed. It looked and tasted like the biggest man on earth who happened to have the man-flu snuffles had sneezed into a bowl.

I think Toyo and I have been influencing each other regarding some issues at meal times. He has influenced me in that I am kind of trying most things with an open mind. I have influenced him in that today, whilst eating a pile of brown sticky stuff, leant over the table, and in a serious sincere tone said "this is good turd, try some".

It seems that if you don't eat anything you lose a lot of weight. Now, that was probably the most stupid sentence I have ever written. It is true though. I haven't eaten a full meal now in 10 days and my trousers are falling down. I have to be careful not to put the 17 spanners in my pocket as they will certain go South.

Toyo still seems to be turning into a cat; he eats scraps of fish, sleeps about 22 hours a day and is looking a little hairier than usual. But saying that, turning into a cat isn't that bad, it's better than say, a giant spider, that wouldn't be nice for anyone. I guess he's probably prowling about on deck after dark looking for rabbits and birds.

Oh, which brings me nicely to another non-work related story. There was a small bird on deck for a while (I didn't see Toyo lick his lips, but I bet he was). I have seen enough little stowaway birds on ships to know it'll die within 2 days. Laura and Debbie gave it fresh water, even though I said it'd be dead in two days. Later they gave it bread, even though I said it'd be dead in two days. Two days later it was dead.

So, back to food for a bit... If there are any crazy billionaires with too much time and money on their hands reading this, could they please arrange to send a helicopter and winchman out to 36.48 degrees North by 141.41 degrees East to a ship called Hakuho-Maru, currently heading North, and have a piping hot steak and ale pie (with all the trimmings and light puff pastry) dropped off on the aft deck. A corn on the cob starter, and trifle for desert would also be greatly appreciated. Many thanks in advance.

Toyonobu Fujii

A bit sick of my PC screen

Another sunny day today! Good Japanese breakfast was served this morning as usual (rice, miso-soup, grilled fish, dried seaweed and some pickles) - my British colleagues are still sticking to toast & coffee for their breakfast but they must try Japanese style at least once, before we finish this trip in three days time. I will encourage them at some point today, perhaps...

We have done most of physical work for this cruise so today is the day to spend some time at the desk. We have loads of video clips recorded, not only under water (featuring activities of benthic fauna at the bottom of Japan Trench), but also on board (featuring our own activities on the RV Hakuho-maru).

For me, editing these massive video recordings to produce something digestible is not an easy job and is simply time consuming... Thus I spent hours and hours to do this throughout today. Occasionally, I got out of my cabin to get fresh air on the deck. The weather was still beautiful and I spotted a nice golden patchy reflection of the sun in the surface water. Back to my cabin and I got a little bit sick of my PC screen by the time I heard the chime for dinner at 5.20pm...

Today's dinner consisted of rice, miso-soup, foiled cod with seasonal vegetables, marinated seaweed in vinegar. A lot of sea food again - my British colleagues decided to have cup noodles instead to keep them going and started to long for chips & burgers when they eventually get back on land... Well, just only another two days, my pals!

Debbie Crockard

A chance to relax

Another quiet day, it has been so beautiful and the sea has been so calm we have been enjoying the good weather as much as possible. It can get a little slow once all the work has been done, we were expecting a lot more small amphipods to come up in the traps and so while the bigger ones were much more exciting it has meant that cataloguing them has been a much easier job than usual.

Alan has been feeling a bit adventurous on the food front and decided to try the affectionately named "snot seaweed" the look on his face was priceless as he tried not to throw up in the mess hall. Even Toyo avoided that particular dish, though both of them discovered a new love for "fishy sprinkles" for on their rice.

We managed to get the T.V. to pick up a movie tonight in English which was originally very exciting; unfortunately it was one of those movies with a lot of expressive staring and long pauses. Think the Japanese fishing channel was much more interesting.

Ok off to watch some more Japanese T.V. There was a ten pin bowling match on somewhere...

Alan tangles with green goo

Despite there being no real jobs today, we all got up bright and early for breakfast - 3 rounds of toast and Toyo's traditional Japanese breakfast - fish! Alan and Toyo wanted to do a little picture and video editing after breakfast so as it was a 2 man, 2-computer job, Debbie and I were relieved of any duties! With the sun already hot we headed up to the top again to catch some of the warm early morning Pacific rays!

And again lunchtime - although we never really like what we eat, meal times are a milestone within the day and something to do at least! I had bet Alan £5 or 3 beers that he wouldn't eat some of the fishy sprinkles I originally thought were herbal tea but he had accepted (I think it was the promise of the beer when we got back to Tokyo!) I sprinkled the fishy delights thickly onto toast and offered it to him. And surprisingly he actually enjoyed it! By 3pm Alan, Debbie and I were hungry again so tucked into a snack pot noodle! The rest of the afternoon I spent reading and sleeping - it's surprising how much I can sleep!

Dinnertime again, and no doubt fish. We were presented with a tin foil parcel on the tray! What was inside it was anyone's guess. Opening it up, a small fillet of fish was revealed. What a surprise! It was hot but the whole dish was horribly slimy - even the onions! Any hope of lovely flaky baked fish soon vanished. I made do with a small bowl of stodgy rice.

Toyo tucked into his side dish and what a slimy mess he found! Long threads of green slime - something that you would probably scrape off the rocks at low tide! He screwed up his face as he pronounced it tasted like vinegar! Since Alan had actually enjoyed the fishy sprinkles I thought it time to get my own back! I challenged him to eat some of this seaweed that looked like man-flu snuffles! He surprisingly accepted - he must have been feeling brave!

So with his chopsticks picked up a scope of the green goo and scoped it into his mouth but as he tried to bite a mouthful off it kept on coming - just like a never-ending piece of spaghetti! We all were laughing as he retched at the taste and the way it slimed down his throat! I'm surprised he didn't throw it all back up immediately! When there's little to do, these moments of pure insanity really cheer up the day. Good on him - much respect! You wouldn't have caught me eating it that's for sure.

Toyo grabbed an early night but Alan, Debbie and I switched the telly on again for more Japanese fun! We stumbled across an English film with Japanese subtitles - it was about the life of Picasso! It was an exceptionally strange film but at least we understood what was being said! I returned to my cabin feeling hungry. I went to bed thinking this must have been the very first time I had gone to bed hungry. These small moments in your life make you appreciate what you have all the more!

Day 11

Alan Jamieson

What's next?

So today was a packing up day. Time to sort stuff out, leave notes to yourself for the future and so on. Packing boxes doesn't really facilitate an interesting story so I'll take this opportunity to talk about what's next.

What's next for the data from this cruise?

Well, it has to be said that although this part, the being at sea with landers etc, might be quite a conspicuous part of the whole thing, the real hard work comes afterwards when deciphering what it all means. Deploying the landers and capturing videos of fish deeper than anyone else is fantastic and a great achievement for everyone in HADEEP but that doesn't actually mean anything. A 'cool' factor only goes so far.

So in the coming months, I'll take a little bit of a sideline while Wing Commander Toyo and Professor Monty Priede will painstakingly work out everything that's going on and extract every piece of information they can from the videos and try to place just what we've found into the wider picture. Big picture stuff.

I guess Toyo will sit and analyse until there's nothing left to analyse. Monty will explain exactly what it means when a fish puts its left fin in, left fin out, in, out, in, out and shake it all about (by that I mean swimming gaits, not the hokey cokey). Speaking of the Hokey Cokey, are we sure that's what it's all about? Are we sure there isn't maybe something else? Seems a bit simple to be 'what it's all about'.

Anyway, going off on a tangent there, whoa sailor.

What's next for HADEEP?

The project itself has a year to go and by all accounts it's going extremely well. The next HADEEP cruise, number 5 no less, will be on the Japanese Research Vessel Tansei-Maru; the Hakuho-Maru's little sister. This time we have more deck time, which isn't hard - 21600 seconds... We will be leaving in March next year for 2 weeks to the Izu-Bonin Trench that runs south of the Japan Trench. It's much deeper with a maximum depth of 9500m.

It will have a completely different dynamic to it than this one. For starters it is small, very small. We have 4 Aberdeen University berths (although I think we're getting that cut back) but we are not allowed to take any students this time as the work will be too fast and furious for any educational purposes apparently. All four of us will be sharing a very small room together. Also, we are not allowed to take any female scientists as there are no female facilities on board.

With that in mind, Toyo and I plan to take the biodiversity-boy Dr. Martin Solan, who instigated a lot of HADEEP, and the fabulous Dr. Dan Mayor who could bring a whole new scientific slant to the project, if not just a little reggae. The work will be much harder too. We should get as many deployments as we can fit into 11 days on station that means we can, like we did on the FS Sonne last year, do a transect of deployments from 6000 to 9500m. Who knows what we'll find there.

What's next for us?

On the 6th of October we dock in Shiogama in northern Japan. There we will unload all the gear onto a truck and get on the train back to Tokyo. The following two days we will spend in the Ocean Research Institute at the University of Tokyo unloading the gear and sorting what is to stay at ORI, what's to go into storage and what needs sending home.

We'll need to sort out the logistics of getting the samples back as well, which is never easy. At the end of the week, Laura and Debbie fly home to Aberdeen, Toyo will go and visit his parents near Hiroshima for a week before going home and me, well no rest for the wicked. I'll be flying to Athens and driving to Pylos to visit the NESTOR institute for particle physics to join the Greek research vessel 'Philia' with its Max Rover ROV to go back out to sea for a week and try and recover a lander I lost off the Bay of Navarino this summer, but that's an entirely different story...

Toyonobu Fujii

Exploring the ship

It's Saturday today. There is still no sign of anyone of my British colleagues who wants to try Japanese traditional breakfast (rice, miso-soup, grilled fish & seaweed), so I enjoyed it just by myself as usual. There is not much left to do in terms of our project, so I decided to spend some time to explore this ship today.

We have been on a Japanese research vessel, RV Hakuho-maru, and therefore I can find some things which are quite unique to Japanese culture. So I started my exploration in quest for 'something Japanese' by visiting toilet, to begin with. The traditional Japanese style of toilet can be used for both businesses but some sort of precision must be required when the ship is rocky at sea...

Washing machines look different from the types we can see in European countries. The 'communal shower room with big bath-tub' is also very typical in Japan. When I walked into a place called 'entertainment room', I found a large collection of 'manga' (Japanese cartoons). Manga is widely accepted books by not only kids but also grown-ups for fun, cool stories, fantasy, inspiration, excitement or even educational purposes, which thus seem to play various roles in Japanese society.

Eating habit also reflects Japanese culture. In Britain, we typically find something like salt, pepper, vinegar, tomato ketchup or HP sauce at the dining table, which can accompany your meal. Here you find salt, pepper, soy sauce, brown sauce, chilli powder, chilli oil, fish sprinkles and pickled plums. Meals themselves are very Japanese, which has already mentioned throughout this blog. So, there are a lot of 'something Japanese', aren't they? If you are to get on a Japanese vessel but not sure how to cope with any of these 'Japanese ways', just let me know!

When I got out to the deck, the sun was just about to set into the horizon under a totally clear sky. Dinner time then came with the chime at 5.20pm as usual. Today's dinner consisted of rice, pork steak (miso flavour), crab meat with Chinese leaf, mushroom soup with some garnishments. Our cruise is approaching towards the end and we will be on land the day after tomorrow.

Debbie Crockard

Penultimate day

Full day of relaxation today, the sun is out and the sea is as smooth as a mirror. Think I could get used to this typhoon weather! We spent a lot of time drinking tea today and sitting on deck with our earphones in, the ship isn't exactly decked out for sun bathing so we made our way to the very top deck, to be closer to the sun, and stayed out of everyone's way.

The earthquake team are still hard at work but the air guns have been pulled on board so the ship has a sort of eerily quite without the ship shaking bang every 60 seconds.

Only 2 more dinners to go before we are on land and on our way to the pizza place for some extra cheese pizza and cold beer!

Our last day

We have a lot of cup noodles left so a little cup noodle eating competition seems to be in order, think we can get Alan to eat at least 8 before he begins to turn into one.

The cruise has been an amazing I still can't believe we got such brilliant footage and the samples were so cool to see live! It has been great to get the chance to take part in some actual fieldwork away from the university and the experience will be indispensable.

Alan and Toyo - we have had a brilliant time on the ship and will go away with so much more knowledge about doing raw science, and the people we have met have been great. Tokyo is such a stunning city I wish we had more time to see more of Japan and experience more of the Japanese culture, though I won't miss the ship food!

It was a shame that we could only get one deployment done as what we have found was so interesting we could have easily spent several more days gathering data. It will be brilliant to see what the team find when they next come back to Japan and would be really exciting to see

what they find even deeper in the trench, especially if they manage to see any fish deeper than 8,500m.

It's hard to explain how satisfying and exciting it was to see the data and to know that we have experienced something that very few people ever have or ever will again. The new information that the video footage will supply will add to a very limited knowledge of these deep-sea creatures that few are lucky enough to have seen in person. I'm so grateful that we have had the chance to be counted among those few.

Debbie

P.S. If you're ever looking for a research assistant anywhere else you have my number!

Laura Burns

Highs and lows

The penultimate day of the cruise had arrived and as we all gathered for breakfast we worked it out as 3 more breakfasts, 2 more lunches and 2 more dinners until we disembarked the ship! Once again with no jobs, Debbie and I took advantage of the sunshine again and posted ourselves upfront on the bow area to catch the morning sun. Boy it was hot!

Lunch came and went - I just had toast and butter. Now after 11 days of toast even this was becoming tedious to eat - dry crusts, hard to chew! We were all feeling the need for a little variety. The afternoon was spent sleeping, reading, and sleeping until dinnertime.

The evening meal was at least, edible! A fish hunk in teriyaki sauce! The sauce was its saving graze - hadn't it been without, it would have just been another dry, cold piece of fish! There was some sort of pork meatball wrapped in a cabbage leaf tied with what looked like animal fat! It tasted ok and it was hot! We decided that this, apart from the ramen had been the best meal so far but that meant some sort of repercussions for tomorrow's food. Generally it would be an ok meal followed by 5 days of nastiness!

We watched the telly again tonight but unfortunately no English film. We watched the news that had intermittent English interviews - mainly George Bush making a mess of things as usual!

With final day of the cruise looming, it was time to reflect on the last 12 days onboard RV Hakuho Maru sailing in the northwest Pacific. There were definite peaks and troughs to the adventure. Definitely the data collected from Alfie was a superb high for all the team, and managing to recover both landers safely even if Lander B didn't provide us with any pictures was still fantastic.

I have enjoyed learning all about the logistics to building the landers and what the components do too - it puts into perspective the lectures we had in university in our final year! And I did enjoy checking the floats (really Toyo I did!) and greasing the shackles - it's a good job to do as

its 'nice to look after your stuff!' Having never been so hungry in my life, the food situation was a horrible low point and unfortunately a daily occurrence!

I feel very fortunate to have joined Alan and Toyo on this cruise and it has definitely given me an appetite for deep-sea research! It had been an absolute privilege to work with Alan and Toyo - always willing to explain things to you and making me feel part of the team (although I didn't do much!!) Both these boys have gained my utmost respect - what a dam good job they do and what a credit they are to Oceanlab! I wish them both all the best in their future cruises and whatever lies ahead of them!

P.S: Just for the record Alan, Debbie and Toyo - I am never eating plums again! Ever! Yes, you all know what I mean!!

Day 12

Alan Jamieson

Last day, last blog

Last full day today and the last blog I suppose. First thing tomorrow we'll be demobilising in Shiogama, so the potato, the giraffe, the peanut and the tomato will go off-line tonight probably.

This website thing has been interesting, never done it before. Thank goodness we found something interesting! The four of us agreed from day 1 not to read or discuss each other's blogs to make it more interesting for when we get back. It'll be interesting to see what bits of the cruise meant what to who. And of course, we haven't seen the website, I have no idea even what it looks like. The impression I get from a few folk back home is that it went well, so that's great. We even got a question from someone! I'm sure we'll take a sneaky peak when we get back to Tokyo.

All in all, I've quite enjoyed this cruise, far more than I thought I would. Having the extra two people makes a big difference. This ship oozes silence and isolation so the extra company was superb. It's been good that it's only two weeks as well. At this point last year we had another 10 days with nothing to do still ahead of us. Toyo as ever has provided a constant source of amusement, most of which isn't suitable for this website, not to mention the fact his 'giant amphipod trap' finally caught something. Never though I'd see the day.

Laura and Debbie have been good fun to have on board. They have both remained very enthusiastic, entertaining and helpful the entire time (although I have no idea what they've written in their blogs...). It's always a bit of a lottery when bringing students you don't know to sea, but we chose well this time. I hope they have learned something and enjoyed the experience and that Toyo and I haven't changed their minds about a career in science.

It's very rewarding when all your hard work pays off (although I'm still gutted about the stills camera). Although big Hadal-Lander A, or 'Alfie' as Laura calls it, might still be a temperamental brat sometimes, it has never once failed to deliver something fascinating; it's now done 8 deployments in 4 hadal-zones, and long may he deliver. This whole Hadal-Zone project is fascinating, having the opportunity to take a peak into the unknown, and see it for the first time is wonderful. The split second feeling you get when you fire up a random video sequence for the first time and see seventeen bright pink hadal-endemic liparids dancing away is hard to explain, but it's good.

So, if anyone has actually been reading these blogs (other than the web boys at NERC), on behalf of the HADEEPers on board, Cheers!

Alan the Potato, 5th October 2008.

Toyonobu Fujii

Bye for now, & cheers!

The weather is beautiful again today. The surface of the sea looks extremely calm and smooth. Although we had some typhoons around Japan recently, weather in autumn is generally fine and clear in Japan.

This is our last day for this scientific expedition, and we did the final deck work this morning to make sure that all the gear we need to use for the next cruise will be ok. All the things we brought on to this ship were also packed up nicely and they are now ready to be taken away first in the tomorrow morning when the ship eventually reaches to Shiogama port in Miyagi prefecture (northeast Japan).

We get off the ship there around lunch time and then head back to Tokyo, which probably takes around 2 hours by a well-known bullet train, Shinkansen. I spend some time to tidy up my cabin in the afternoon. My clothes are now in the washing machine.

I have just finished the last dinner on this cruise - rice, beef stew, deep-fried salmon with white radish, boiled spinach dressed with small fish and soy sauce. All other scientists have also finished their research activities by now and our ship is steadily heading towards the scheduled destination.

All in all, this cruise has been successful and enjoyable, and I would like to say thank you to my dear British (Scottish?) colleagues and all the people who made this expedition happen, all the people who helped our work during this cruise and all the people who have been tracking our activities through this blog! Apparently, we will come back to Japan Trench again in March next year...

So, shall I say, bye for now & cheers! Toyo