Kerlingarfjöll 2010, expedition report

Project Title: Dynamics of a marginal glacier in an active volcanic region

During August and September 2010, a team of final year undergraduate students from Queen Mary, University of London, embarked on an eight week expedition to Kerlingarfjöll, central Iceland, fig 1. The purpose of our expedition was to carry out three separate, yet inter related projects aimed at investigating the current behavior and past dynamics of a marginal glacier within this active volcanic region, fig 2. Specifically, we were interested in how the glacier responded to meteorological changes, to the addition of geothermal energy and how this related to previous glacial dynamics. Over a five week study period, a series of ablation stakes were set up by Jonathan Wheatland in order to record daily melt rates from the glacier surface. Jonathan wanted to use direct measurements of surface melt rates from the glacier, to reproduce the mass balance of the glacier over a yearlong period which is important to climate studies. The effectiveness of a point surface energy balance model in predicting melt when compared with observed melt rates was also evaluated to assess the feasibility of such a models use in predicting future melt. Richard Bailey had the task of constructing a gauging station and a series of data loggers in the glacier valley in order to monitor the discharge of meltwater from the glacier on a daily basis. Richard wanted to investigate whether the geothermal energy from this active volcanic region had a significant impact on melt rates occurring at the base of the glacier. Finally, a comprehensive geomorphological map detailing the glacial geomorphology of the entire glacier complex was carried out by expedition leader Ricky Stevens. A key objective for Ricky was to use the legacy of landforms around the glacier, to tell a story of how the landscape had evolved over time.

Background to Kerlingarfjöll

Kerlingarfjöll is located in central Iceland (-19.25°E, 64.64°N) between Iceland’s second and third largest ice caps of Langjökull and Hofsjökull. The region has a long history of volcanism, with a large majority of the area residing in the remnants of a caldera. Locally volcanic activity is still prevalent with a number of hot springs being present. Kerlingarfjöll was once more extensively glaciated with a local skiing centre being run for much of the 20th century. However major glacier retreat has occurred since 1950 especially during 1980’s onwards to such an extent that skiing activities ceased in 2000. The once extensive glaciers have now broken up into cirque glaciers, which dote the Fannborg – Loðmundur mountain range.

Why Kerlingarfjöll and getting a team together

In August 2009, with the support of the Royal Geographical Society with Institute of British Geographers (RGS-IBG): Learning and Leading Fieldwork Apprenticeship award, Ricky worked as a field assistant on a project entitled ‘Sensitivity of Icelandic Glaciers to Climate Change’. Ricky joined Dr. Simon Carr (QMUL) and Dr. Stephanie Mills (Kingston University) on a month long expedition to Kerlingarfjöll, central Iceland, where he assisted Simon and Stephanie in researching the sensitivity of one of the marginal glaciers in the area. Ricky helped in the construction of an Automated Weather Station (AWS) in close proximity to the glacier, as well as in the implementation of a series of ablation stakes on the glacier surface. With this initial glacier monitoring program in place and with further support from the RGS-IBG, Ricky successfully planned and led this current expedition back to Kerlingarfjöll, central Iceland in order to continue monitoring the health of the glacier.
However the trip would not have been a success if it were not for Ricky’s expedition team members, final year students Jonathan Wheatland and Richard Bailey. The initial steps of planning an expedition usually involve sourcing a team of individuals who demonstrate a desire to want to immerse themselves within a wilderness environment. In Jonathan and Richard, this is exactly what Ricky found; two fellow students who showed a willingness to be part of a team, and whose continual support and friendship from the very beginning of the expedition served to make it as memorable as it was.

Pre Departure Planning and in country connections

With team Kerlingarfjöll founded and funding secured thanks to the RGS-IBG Geographical Fieldwork Grant and Queen Mary Expedition Fund, the next step involved booking the ferries to Denmark and Iceland as well as carrying out some pre departure fieldwork training. As Ricky had travelled to Iceland the previous summer, booking the ferry tickets was a straightforward task. We had chosen to take the ferry to Iceland because we had been allocated with the use of a Land Rover Defender by the Gordon Foundation as part of the Geographical Fieldwork Grant award. For logistical purposes, taking a ferry allows you to stay with your vehicle for the entire journey, simply driving off the other end when you reach your destination. In order to travel to Iceland, the team had to catch an overnight DFDS seaways ferry crossing (Fig 3) from Harwich in the UK, departing on Sunday 25th July 2010 to Esbjerg in Denmark for arrival on Monday 26th July 2010. From here, Ricky had his first experience of driving on the right hand side of the road, as the team embarked on a six hour drive towards the northern town of Nykøbing Mors. An overnight stay in a picturesque hostel coupled with a greasy pepperoni pizza for three in the local town centre, proved to be a great way to enjoy this quaint little town. The following morning the team had an early start as we continued driving northwards to the harbor town of Hanstholm where our ferry to Iceland awaited us. From Tuesday 27th July - Thursday 29th July, the team braved what proved to be a choppy Atlantic ferry crossing as we made our way towards Iceland.

Who would have thought that only three weeks earlier, the three of us were standing in Mile End Park, only a stones throw away from Queen Mary, practicing how to use our fieldwork equipment on the grassland. With the supervision of Dr. Simon Carr, Jonny and Richard were taught (with Ricky reminded) how to hold an ice axe, how to perform an ice axe arrest (incase you slip on the glacier) and most important of all; how to ‘walk like a cowboy’ when wearing your crampons. Crampons can be described as a set of spikes which attach to the sole of compatible mountain boots enabling the person wearing them to grip whilst scaling a glacier. However, due to the nature of the sharp spikes which protrude from the base of the crampon, those who fail to ‘walk like a cowboy’ and thus purposefully move their legs slightly further astride than normal, risk spiking themselves in the calf, which one can imagine is probably not the most pleasant injury to have! As clinically insane as we may have looked at the time to the mere passers by, as we stood there wielding ice axes and learning how to fit crampons to our boots, the techniques we learned from this basic training fundamentally underpinned our daily safety routine on the ice at Kerlingarfjöll. Working on a glacier is relatively safe as long as you put into practice those basic steps such as checking each others boots are strapped tightly and checking each person has a walkie talkie and an ice axe, items which could prevent serious injury.

Other aspects of our preparation involved a Land Rover Training Experience on behalf of the RGS-IBG and the Gordon Foundation. This was a brilliant day out for the team, a chance to
bond, which is actually another fundamentally important aspect of expedition planning. If you can develop a better understanding with your team members before you leave, this can ensure that you act as more of a team during fieldwork. The training provided us with the essential skills of how to operate a 4 x 4 vehicle on difficult terrain and how to perform those simple under bonnet checks which keep the car operating to its maximum potential during an expedition. There were also some insane aspects to the training as captured below in fig 4.

Our fieldwork at Kerlingarfjöll was particularly welcomed by Páll Gíslason, the owner and co-coordinator of the region. Páll is currently re-developing the Kerlingarfjöll resort in an attempt to promote outdoor activities such as hiking, camping and sight seeing. From observation it seemed clear that the high level of tourists, who travel to Kerlingarfjöll by various means, is a testament to the unique appeal of this volcanic region nestled in the heart of Iceland. Providing an increased awareness of how the glaciers at Kerlingarfjöll are responding to ongoing climate trends may help Páll in any managerial decisions he makes in the near future. For instance it is hoped our data may be reproduced in the form of tourist information boards and camp site posters which will serve to inform the locals about the past and present history of the area.

**On the road, camp life and our daily commute to ‘the office’**

After two days crossing the north Atlantic, the team arrived at Seyðisfjörður, on the east coast of Iceland. Ricky decided it was important that Jonathan and Richard had their ‘initiation’ into Iceland, which involved tasting the Pylsur hotdog! Figure 5 captures Jonny and Richard just before they took their first bite of this traditional Icelandic snack. Over the next few days we headed to Reykjavik where we collected some valuable fieldwork supplies and purchased all of our food in preparation for the next few weeks camping at Kerlingarfjöll. We were living on a food budget of £3 per day whilst camping, eating such basic foods as pasta and rice, which we often supplemented with bacon, pepperoni, ham and various pasta sauces. When you are camping in a remote location such as central Iceland, there is no fridge to keep food fresh, so we had to purchase items which would stay edible for long periods of time.

Our field site was only accessible via a 4 x 4 track which took us into the mountains. Having the use of a Land Rover proved invaluable for the team since we were using specialist equipment which would have proved extremely difficult to transport by foot. Figure 6 shows an image of the Land Rover parked in close proximity to our study site. Every day we followed the same routine. Usually, we would arrive at the glacier by 09.30am and we would initially assess the weather conditions. Providing conditions were deemed safe to work in, we would unload our equipment and prepare for the day. Preparation involved testing our walkie talkies, lacing up each others boots and carrying out a final equipment check.

**Day to day routines and project set up**

The day-to-day routine that the group followed was established so that each of the projects needs was taken into account. A normal day would consist of driving for 20-minute up the track to our study site in the mountains. In the first week, preparation for the work needed to be carried out for each project was made. Firstly the foreland of the glacier was walked to help Ricky plan his day to day route whilst mapping, secondly Richards melt water channel monitoring station was built, which required a suitable site to be chosen in a ever changing environment, and finally Jonny’s network of ablation stakes were drilled. After the first week it was decided that more work would be accomplished if the group split up. However due to
the fact that it would be unsafe to carry out work on the ice alone it was chosen that Richard
would always accompany Jonny whilst he carried out work on the ice. Jonny would then
accompany Richard whilst working in the melt water channel, leaving Ricky to work in the
foreland. This alternation between the ice and melt water projects depended highly on
weather conditions as poor conditions meant that work on the ice would be unsafe, if this was
the case work on Richards melt water project would be carried out instead. Radios were
carried at all times to ensure the safety of each team member.

On the road with Linda, camping trouble and friendly Icelanders

A car is essential to travel around Iceland, and our Land Rover did a fantastic job of keeping
us safe and sound throughout the course of the expedition. We did encounter some problems
though, 7 punctures and a gear box failure were but a few to mention. The vehicle was old
and had spent many previous years on fieldwork duty encountering the harsh Icelandic
terrain. Despite taking great care of our Linda (as we had named her), we suffered the
cumulative effect of her 10 years of driving on Icelandic roads. Whenever we broke down or
had a flat tyre our team work always prevailed and with the help of the locals we were often
back on the road in no time at all. It proved to all of us that despite planning for problems,
you can never be too prepared and we were grateful for the two boxes of vehicle spares
which had been kindly supplied to us by the Gordon Foundation.

Camping itself wasn’t as straight forward as we had planned. We found that drying our rain
soaked clothes was difficult. Without dry clean clothes we knew that we couldn’t last too
long in the field. We therefore took full advantage of any sunny weather, washing our clothes
by hand and creating a washing line between our tents when the sun was shining (fig 6). This
maintained camp hygiene which was very important because of the duration of our
expedition. More importantly, it boosted our morale because dry socks and warm clothes
enabled us to face the fierce winds and driving rain with a smile. When the weather did
deteriorate, the staff at Kerlingarfjöll became concerned for our well being and after two
weeks of braving the elements in our small tents, we were ushered into a bespoke wooden
cabin. After returning from a day in the field, we would often try to repay this kindness by
helping Páll with washing up duties in the restaurant, cleaning duties in the local tourist’s
cabins as well as collecting wood to aid with the construction of a disabled ramp which was
being built by Páll. People looking out for us and showing us kindness has been something
we have experienced from the very beginnings of our expedition planning. From receiving
grants and expedition advice from staff at the RGS-IBG and Queen Mary University of
London, to a local Icelander lending us a wheel nut wrench when we had a flat tyre; these
examples highlight the help we have been so fortunate to receive every step of the way.

Other places we visited

On our journey we were able to see a lot of Iceland’s stunning landscapes that we would not
have been able to visit if we had not travelled by car. We all agree that there are too many
sites we saw to talk about in this report. However there is one which has to be mentioned, this
is Jökulsarlon as it was here that we all agreed that we had finally ‘made it’ to Iceland. It was
an amazing introduction to what Iceland had to offer. Jökulsarlon’s beauty comes from the
fact that Breiðamerkurjökull, an outlet glacier of the Vatnajökull ice cap calves into it
creating a lake of icebergs, which is one of the most awe-inspiring landscapes. We all agree
that this is just one of many memories we will keep and made the whole experience of
research in Iceland enjoyable.
Our journey home

The return journey was the most tiring aspect of our trip as by this stage we were mentally and physically exhausted. Two days prior to the departure date of our ferry home, we woke up early expecting to say goodbye to Kerlingarfjöll with a long drive intended in order to reach Seyðisfjörður. Unfortunately to our complete shock we realised that our Land Rover had two flat tyres and due to previous punctures incurred on the trip, we had no spares to replace them! Thankfully after a panicked call to our rescue contact in Reykjavik, ‘Totti’ came to our rescue, embarking on the six hour drive from Reykjavik to Kerlingarfjöll with 2 new wheels! The following morning and with Linda back to her best, we said a final farewell to what had been our home for the best part of two months.

Our departure was good timing as the winter weather was closing in fast. Little did we know that our travel problems were about to take a turn for the worse again. As we headed North across central Iceland, we were unaware that a storm was brewing in the north Atlantic. Later that night, as we sat together eating hotdog and beans celebrating what had been a successful day’s drive to our designated pit stop, a phone call from Dr. Simon Carr, soon wiped our smiles away! We were told that the storm had forced the ferry company to move its departure time forward. The lack of communication meant we were completely unaware throughout the day. As a result, we had a race against time the following morning in order to reach Seyðisfjörður before our ferry sailed away! Luckily, we made it to Seyðisfjörður with time to spare and so we decided to have one last cup of tea in the service station where our journey had began two months earlier. This was the perfect way to say goodbye to Iceland, all of us together, probably all lost in our own little world as we reflected quietly on what we had achieved.

The ferry crossing was extremely rough and we were held up in the Faeroe Islands for many hours because of the major storm. We had phoned ahead to alert our connecting ferry that we would be delayed by 9 hours and we were told that we should make it on time. As we sailed into Denmark and waited patiently to be unloaded off the ferry, it dawned upon us that we were not going to make our connecting ferry in time. Our instincts proved correct and with the next ferry leaving Denmark in 3 days time, there was no other option but to remain in Denmark. We found a campsite near the port and used our remaining provisions that we had left to get through the next few days. Comically, we spent that night sleeping in the Land Rover because we were too tired to put up our tents! Over the course of our three day stay, we enjoyed some coastal walks by the sea, and it was here that we founded the beach sport ‘stone cricket’. Using resources at hand, Jonny turned a mere piece of driftwood into a cricket bat and with an array of stones to choose from, we played some cricket to pass the time away! Eventually, and after getting a final seventh puncture, we finally made it home to England. The drive back to Queen Mary was full of reminiscing and relief that we were finally home.

Back in the UK

Since coming home from our Icelandic travels, we have already held a post expedition talk to the second year and postgraduate students at Queen Mary. We aim to present this talk again in the New Year, with the hope of raising awareness of the support that is available from the
Queen Mary Expeditions Fund. We have also been working tirelessly on analysing the data we collected for our Independent Geographical Study projects.

Our expedition to Iceland was a life changing experience for all of the team. The opportunity to conduct a high level of research within one of Europe’s last great wildernesses for such an extended period of time has provided the team with memories which will last a lifetime. This experience has taught us a variety of academic skills which will stand us in good stead for the future. Indeed, each member of the team is now considering going on to study at Masters Level or to pursue teacher training qualifications and this is all thanks to the support which we received from Queen Mary. We will never be able to fully convey how sincerely grateful we are for the belief you showed in our expedition. This trip really was a once in a life time event, and it would not have been possible without your help, for this we thank you.

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