

# Imperial College Iceland Expedition 2018

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## Overview

This document reports on the 24 day trekking expedition completed by Imperial College students in the Southern province of Iceland. Both the planning stage and the course of the expedition are reported on, being the focus on the knowledge acquired and relevant information on locations we traveled through.

Iceland was chosen as the location for this expedition due to the terrain features specific to active volcanic regions, which was something that none of the team members had experience as of the start of the trip. Within the country, the inland regions were the most attractive for the members due to their isolation and lack of road infrastructure. Finally, the Southern province was chosen taking into account travel costs within the country, and simplicity for resupplying during the trek.

The expedition was planned in detail so that large portions of our itinerary did not coincide with any marked trail, however, care was taken in choosing the itinerary so that the terrain was reasonably transitable.

## Objectives

Our aim was to hike the Icelandic Suðurlands, and experience the wilderness and unique terrain formed by the heavy volcanic activity found around the country. None of the members had ever been to this country or ever participated in such a long hiking trip, so it also served as a mean for us to acquire experience necessary in the planning of more ambitious objectives.

Our general objectives were:

- Completion of an unsupported hike along the Icelandic Suðurlands with the exception of a two food parcel deliveries along our path.
- Summiting some of the most famous volcanoes that lay along our path.
- Acquiring experience in thru-hiking type expeditions and in hiking through the barren landscape characteristic of sub-polar regions.
- Complete an aerial survey of the infamous 2010 eruption in the Eyjafjallajokull.
- Improve our map and compass navigation skills.

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- Acquire experience in wild camping in poor weather.

## Planned Itinerary

As of the start of the trip, we planned having 2 days in Reykjavik for setting up our resupply points and to get to know the city. On day 3 we were to take a bus to Þingvellir, where an initial 5 day trekking stage would start. During this first stage we were to walk 12 to 15 km per day starting Northeast and later Southeast in the direction of Geysir. After a day's worth of rest at a campsite and resupplying for a 7 day trek, the second stage was to start. During this stage we were to walk between 15 and 20 km per day, ascend Hekla and arrive at the end in Landmannalaugar, a popular hiking destination. Here, a day's worth of rest would follow and another 7 days of food would be resupplied. The following stage accompanied the famous Laugavegur trail for the most part and finished in Þórsmörk, overshadowed by our research objective: the glaciovolcano Eyjafjallajökull.



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## Expedition Team



### Andre Farinha

*Role:* Expedition Leader

*Age:* 24

*Academic background:* M.Sc. Mechanical Engineering at Técnico, Lisbon (2016), M.Phil Applied Fluid Dynamics at Von Karman Institute (2017), Ph.D Aeronautics (1st year)

*Relevant experience:* First unsupported multi day hike at the age of 9. Since then, performed several unsupported multi day hikes in Portugal, and acquired experience in wild camping, navigation and foraging.

Covered 400 km of the E9 European coastal path over 6, 2 to 3 day hikes, large portions of which off path and mostly

solo.

Completed a pilgrimage to Fatima.

Hiked to the top of the Pic du Midi de Bigorre in the Pyrenees.

Also hiked to the summits of several low altitude Portuguese mountain ranges: Sintra, Arrábida, Lousã, Monfurado, Caldeirão, Gardunha, Açor, Aire e Candeeiros, Estrela.



### Monal Patel

*Role:* Training and Logistics Officer

*Age:* 24

*Academic background:* Mechanical Engineering (MEng), PhD Candidate in Computational Fluid Dynamics

*Relevant experience:* 2 day hike in Dartmoors, Outdoor club, Fellwanderers.

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## Stephen Winn

*Role:* Finances and Equipment Officer

*Age:* 23

*Academic background:* M. Eng. at INP-ENSEEIH (Toulouse, France) [2014-2016], MSc Advanced Mechanical Engineering at Imperial College London [2016-2017], PhD Fluid Mechanics at Imperial College London [2017-present]

*Relevant experience:*

2 day hike in the pyrenees near Foix, France. Hiked up 'La Montagne Noire' i.e. The Black Mountain in Central Southern France. Multiple weekend camping trips along the Brittany coast and the Gulf of Morbihan. Hikes in the Verdon Gorge in South East France (near Avignon).



## Tomás Tristany

*Role:* Safety and Logistics Officer.

*Age:* 21

*Academic background:* Studying Mechanical Engineering at Técnico, Lisbon (2014 - now)

*Relevant experience:* Hiked to the top of Carrauntoohil (Ireland), Pico (Pico, Azores, Portugal), Fuente de (Spain), Freita (Portugal), Arrábida (Portugal), Aire e Candeeiros (Portugal), Montemuro (Portugal).

Made several 4 days expeditions through mountains and rivers mainly in Portugal.

Completed 10 pilgrimages to Fatima and 1 to Santiago de Compostela.



Participated in Sintra Mountain Magic Trail.

Also hiked in some European mountain ranges: Dolomites (Italy), Nordkette (Austria), Breuil-Cervinia (Italy).

Also hiked in several Portuguese mountain ranges: Sintra, Gerês, Peneda, Estrela, Dornes, São Macário, Coelheira, Montachique.

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## Planning and Training

### Logistics

Due to the length of the expedition and the lack of inhabited areas along the way, we brought all of our food from the UK, which required us to find someone to meet us along the way and deliver supplies. We took to Iceland 60-70 kg of food, and just a week before our departure, the company which agreed to resupply us along the way cancelled. In fact, as we found out later, this used to be a fairly common procedure, however, Icelandic people in the tourism industry are not very keen on providing it anymore. In the end, we managed to post through regular mail the first package to Geysir, and as for the second one, the company Trex very reluctantly accepted to deliver it to Landmannalaugar.

### First Aid

Before embarking on our expedition, we carried out a 2-day first aid course organised by Marlin Training. This course gave us the basic expedition knowledge and helped us come up with a list of first aid supplies to buy.

### Maps

For the purposes of navigation, we purchased two maps of the regions that we planned to hike. Before our departure, these were annotated with the planned route as well as interesting points, alternative trails and escape routes in case of complications.

We also borrowed a GPS from the exploration board's equipment supply and loaded maps of Iceland. The maps on the GPS were not as detailed as the paper maps and the GPS itself was just meant as an emergency tool in case we got lost.

Overall, map and compass navigation suited us well for most of the trip. The maps used were the number 2 and 4 of the series Iceland: Mál og Menning Touring and Hiking Maps, which are scaled at 1:100,000 with 1:50,000 details. These maps were sufficient for the entirety of the trip, however, visual inspection of the terrain was often necessary to ensure translatability and in multiple occasions, having a 1:25,000 would have made things much simpler. We also noticed

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considerable differences in the location of paths, which is to be expected as the series is from 2010. On another note, we initially planned on detouring from our route and meet a marked trail when we had large river crossings ahead. As we found out the hard way, the best crossing option was often well away from the locations marked on the trails and plenty of time was wasted on some of these detours.

The GPS was used on the way up Hekla as we were aware of deteriorating weather conditions and wanted to be sure we found the way back in the midst of the fog. On another occasion, we used the GPS to cross-check our position when we got caught up by a storm in open ground.

## **Training**

To condition our bodies for multi-day hiking, and to get to know our way around the tents and stove provided by the board, we took part in multiple trips around the UK. While some of them were day hikes in the south of England, we went on as many weekend trips as possible.

### **Snowdonia**

We joined the Imperial College Fellwanderers for a weekend trip to Snowdonia where we went for two hikes: on Saturday, we hiked up Aran Fawddwy and reached its summit at a little over 900m. On Sunday, we hiked up Cadair Idris in the rain (good training for the Icelandic weather!).

### **4 Inns**

In April 2018, we took part in the Four Inns hike: a 65km day hike through parts of the peak district (see [link](#) for more information). It was a great event to get used to navigating, teamwork, wet weather and organisation. We managed to push through and finish the walk arriving around 2 am (after leaving around 7am the previous day) for a total of ~19 hours walking.



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## **Lake District**

Our first independent hike as a team took part over a weekend in May. We headed up to the Lake District with the aim of getting to the top of Scafell pike whilst carrying most of our equipment. We also used this opportunity to practice setting up the tents, cook dehydrated food using the stove and test out our sleeping kit. This trip also helped us make a list of final additions to our kit before our departure.

## **General Comments**

### **Travelling in Iceland**

Iceland is a large country with a small population, which leaves wide areas of pristine wilderness to be explored. This doesn't make it however difficult to travel around the country or to get to more remote locations. Even though we decided to simply walk the whole way from where public transportation could take us, there is a wide range of tourism companies that provide coach transport to a greater variety of locations or even companies that will provide transportation in jeeps to virtually anywhere in the country (even some of the glaciers).

Strætó, the public buses in Iceland are very scarce outside Reykjavik, so multiple locations can only be reached taking, for example, the Reykjavik Excursions buses, which are extremely expensive. For example, the Strætó bus to the airport will cost around £13 while the Reykjavik Excursions one is £30.

Generally, we found that hitchhiking around Iceland is extremely effective and very reliable if done on the ring road.

### **Camping in Iceland**

Just like the other Scandinavian countries, Iceland used to have the right to roam law in effect, however, wild camping is now forbidden since 2015 due to multiple incidents with tourists camping and littering, mainly around the ring road. In practice, this means that if there is a campsite available in the area, everyone is expected to camp there and may get fined otherwise. On the other hand, when travelling in remote locations, it is perfectly acceptable to wild camp.

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National parks are an exception in this, as it is mandatory to camp in the provided parks, which are paid.

## **Weather**

Any research on Icelandic weather will tell that it is very unpredictable and that care should be taken when travelling in the highlands. Even though these warnings aim at reducing the amount or mountain rescues required every year, due to extremely inexperienced hikers who come to the highlands without the necessary gear and without making suitable preparations, we found the weather hard to read in some occasions.

When we arrived in Iceland we were warned that the highlands were still in winter conditions and most of the mountain roads still closed due to a late Summer. During the following two weeks, the weather was mostly constant, with almost permanent drizzle, frequent fog, but temperatures no lower than 5 °C. Towards the last week of the trip, we had frequent sunny weather but heavier rain.

Overall, the weather was quite predictable, staying constant throughout the day and with the fog clearing around 10 to 11 pm and coming back down around 3 to 4 pm. Temperatures ranged between 5 °C and 15 °C, with exception of the mountain tops where it dropped below 0 °C. We even had some light snow at the top of Hekla. We had, however, an occasion where we were hit by a storm stronger than we expected, as we saw it coming in from the North during a very sunny day.

## **Tourism in Iceland**

Tourism in Iceland is a very big industry. The country was visited last year by almost ten times its own population, making the conservation of its wilderness a major concern for the local population. We noticed that even though the majority of Icelanders are extremely sympathetic, some few locals can be hostile towards hikers. Issues such as mountain rescues and wild camping are sometimes best left alone. Nevertheless, we'd say that most Icelanders we met were happy to have such diversity of people travelling in the country, regardless of their worries with the issues this brings. Travellers in Iceland should then take extra care in observing the local policies and especially with leaving no trace in the wild.

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## **Huts in Iceland**

There are plenty of huts around Iceland, especially at campsites, which can be rented at different prices. There are also plenty of mountain huts spread around the country and we came across many of them. As far as we know, they are all paid and don't necessarily have water sources nearby. A few we found had an access code while others were permanently open, however, even the ones that are closed have a front porch that can be used as an emergency shelter.

## **Water sources in Iceland**

Iceland is very wet. We almost never had any lack of liquid water, except for a few occasions that we melted some snow. The area around Hekla had no water sources whatsoever, except for the snow on top of the volcano, so we stocked up on a few extra litres on our way there.

We also found the water sources to be extremely clean. We took with us chlorine pills for water purification, which we never used. However, the areas we hiked in were extremely unpopulated, to a point that we barely saw any of the famously numerous Icelandic sheep. Care was also taken in the choice of water sources, however, and when in doubt, we boiled water at night for the following day.

## **Expedition Journal**

Starting with the last stages of preparation for the expedition and during the expedition itself, the team kept an online log of the daily activities to keep family and friends posted on the status of the members. This log can be found on <https://lettersthule.wordpress.com/>. The section below will consist of a more complete review of our daily whereabouts and thoughts on the execution of the expedition.

## **Changes to the original plan**

The original plan for our route was sketched using the information on the acquired 1:100,000 maps, with 1:50,000 details and the very high-resolution aerial photography available in the

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following websites: <http://www.map.is/base/#> and <https://ja.is/kort/?type=map>. The aerial photography was particularly useful in providing terrain details on the areas where we will be travelling that are not visible in the 1:100,000 maps. The tools used were mostly effective, except in their failure to highlight a 10 km wide swamp that resulted in a wetter than usual 5-hour hike under the rain.

There were many small changes done to our initial plan that revolved mostly around difficult terrain features, river crossings, or simply because there was something interesting out of our path that we wanted to check out.

The largest change to the initial plan was our starting point. Because the Straeto bus schedules are updated each year, we learnt when we arrived in Iceland that the bust carrying us to Pingvellir was not running this Summer. We then started our trip further East, in Laugarvatn. This resulted in a shorter first stage, even though we undertook two detours up a couple of dormant volcanoes.

The walking rhythm during the second stage of the expedition was much faster than previously predicted, and even though we did a few detours to compensate that, we ended up having 2 days of waiting at the Landmannalaugar campsite.

We also changed the planned camp location for the Hekla ascent. As sleeping too close to a volcano that can erupt at any moment was a risk we didn't want to take, we set up camp 16 kms away from the top.

The final trail was roughly inserted into google maps (picture bellow), which measures a total distance traveled of 370 km and a total ascent and descent of roughly 11,000 metres.



## Stage 0

### Day 1

We flew into Keflavik airport early morning and took the bus to the centre of Reykjavik. First, we headed to the Airbnb we had booked for the first night to drop off our gear and the approx. 70kg of food that we had flown across. Our priority was to arrange for our resupply packages to be dropped off at two points along the way (we had originally contacted a company who had agreed to do it but they cancelled at the last minute). After a bit of research, we arranged for the first package to be delivered to a small restaurant at Geysir by the postal service (we were warned that it might not reach the place by the time we got there because post is slow in Iceland ...) and the second would be delivery by a coach company (Trex) to a campsite at the start of the final stage of our trip. Relieved that we had found a solution to these problems, we relaxed in the evening at a hot spring centre and enjoyed one of our last non-freeze-dried meals for a while.

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## Day 2

We got up early and headed to the coach company to drop off our packaged supplies and headed into Reykjavik centre to make like tourists for a few hours. We then headed to the bus depot to catch two buses which would take us to Laugarvatn at the start of our trail. We arrived there late afternoon and properly started our trip. We headed from the 'city centre' up a first hill to find a spot to camp. After a while of walking around looking for 'soft' and 'even' ground, we decided we would settle with the rocky ground we had in front of us as the rain and fog started to roll in. We enjoyed our first warm freeze dried meals and turned in to sleep, exhausted but excited to finally be starting!



## Stage 1

### Day 3

We walked from the previous day's campsite, across a snow-capped mountain range, towards a flat-topped volcano, Hlodufofell, that lay in the distance. Not quite able to reach it in a day, we stopped to camp in the middle of an ash desert and enjoy the view of the snowy mountains surrounding us (see pic below). The past two days gave us a small taste of Icelandic weather: plenty of rain, fog and a wee bit of sun!



#### **Day 4**

We spent the morning covering the distance left to the base of Hlodufell (top left in the pic below). We left our gear at its base and hiked up to the plateau at around 1100 meters. From the top, we could see the lava fields surrounding us as well as the snow-covered mountains and shield volcanoes in all directions. We could also see the glacier located on the other side. Later that afternoon, we had to hike back down through a passing cloud so thick that we couldn't see more than a few meters ahead.

We admit having committed a mistake here. Encouraged by the seemingly mild weather, we committed to the climb with minimal gear. This means we only took a compass with us and didn't bring both the GPS and the map, leaving us on the flat top of a snow covered mountain, surrounded by thick fog. To complicate even further the situation, Hlodufell is surrounded by steep cliffs being the only walkable route on the south face of the mountain (which is quite steep itself and difficult in the presence of snow as we found it). In the end, using the compass we managed to backtrace our path to a point where our footsteps were visible and got safely down. From then on, we knew we could not underestimate the mountain tops in Iceland.

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That evening, we made a small campfire (using supplies left near a hut) and even roasted a chouriço (which was supposed to be part of the next day's lunch!). Luxury items are not overrated. There were no liquid water sources in this area so we melted snow from the area.



## Day 5

We woke up in the morning and decided we were still too far ahead of time and decided to take a detour up Lambahraun, a shield volcano with a 5 km radius and thus a barely perceptible slope uphill. The lava fields around it were some of the most spectacular scenery we saw in Iceland. Intricate rock structures sprinkled on volcanic ash so thin that our feet sunk sometimes up to 10 cm in the ground, all surrounded by a fog so thick that the team doubted the navigator until we were about 100 m from the crater at the top, creating quite an amazing atmosphere. We ventured into the snowy 0.5km radius crater at its summit, surrounded by snow and basalt structures.

Leaving Lambahraun behind we reached the mountain road and followed it heading East. As we were walking along the dirt road, we saw other humans for the first time in 3 days. We waved as they drove by in the late afternoon, not caring about the fact the road was actually closed and traffic was forbidden.





## Day 6

We woke up with quite a bit of excitement as we knew we would be arriving at our first stop at civilisation in a few days. We got underway and as we walked, we saw the landscape slowly changing from barren lava fields to fertile and lush grasslands and then pine forests with beautiful purple flowers. We finally got to our destination: Geysir. We collected our resupply package (from the restaurant that accepted to let us have it delivered there), took a hot shower, and relearned about social interaction. Andre spent all dinner staring at other hiker's meals with an expression akin to that of a hungry wolf looking at a delicious lamb... We told him to stop as people were starting to get scared.



## Day 7

For the first time since our arrival, we woke up to glorious sunshine turning our tents into ovens. We ran outside to bask in the sun and enjoy the warm weather whilst it lasted (quite the rare event at this point). This was a good opportunity to charge our electronics with the solar panel we had been carrying around (it hadn't really seen any use up until now ...) We washed all of our dirty clothes using the facilities at the campsite and went to have burgers at the food court outside Geysir (luxury!). We were also able to see the geysers that get their name from this location (see below) This was a much-needed break before the much longer stage ahead.

We found our day at Geysir especially weird. Even though we were excited about talking to other people besides us 4, the mass of tourists visiting Geysir had just arrived on a bus from Reykjavik and was not exactly on the same hiker's fraternity mindset we were in...



## Stage 2

### Day 8

We left Geysir early in the morning and the day started pretty well despite the rainy weather and the wet tents. We had what we thought was going to be a nice hike ahead of us, with an easy initial section on road and then a detour up some hills to a set of ruins. These ruins ended up being a very cosy looking set of cottages, whose suspicious owners were happy to see us on our way.

Passed the hills, we crossed the Fossa river into a very wet bog, so much so that some of us didn't even bother putting the boots back on and went on barefoot. What we didn't expect was that the bog would stretch out for 10 more kilometres. We pressed on under the rain trudging through a knee-deep mixture of mud and water and realised the UK is not the only place in the world where bogs exist on top of hills. This eventually lead us to a spot near the Stora Laxa river. Exhausted, after a 27 km day with the largest load we would ever carry during our trip (between 24 and 27 kg), we set up camp for the night.



## **Day 9**

We had a very relaxing morning walking along the incredible Stora Laxa canyon which looked like something out of Jurassic Park (200 m deep with water roaring through it). This would be the river we would cross further downstream, later in the day. Walking barefoot on the sometimes 30 cm deep moss that populated the areas around this canyon, as the warm sun dried our tents and boots, was one of the best sensations we ever experienced. Later on, it took us about three hours to settle on a point to cross where the ice cold water would only come up to our waists instead of our necks. There was never a day that we cursed the inaccuracy of our maps as this one, as the crossing point marked on the maps could not be more dangerous.



## Day 10

During most of the day, we had good weather with a few showers here and there, as we walked west towards the lowlands. At two points during the day, we were able to take shelter in huts (which are dotted around the Icelandic landscape) which were open despite being unoccupied. We were able to permanently borrow a few extra calories from leftovers (nuts and biscuits) in return for carefully handwritten notes in the guest books.

Towards the end of the day, the wind picked up to a point that it ripped Andre's waterproof trousers to shreds. The rain followed soon after and chased us to an abandoned geothermal pool building (Reykholt pool). We were soaked to the bone upon arrival and hung most of our equipment up to dry around us! To our delight, the changing rooms still had a roof in them and thus, we set the tents up indoors to keep us from the cold. We went to sleep as we heard multiple rescue helicopters flying through the night.

After the bog crossing, this was unquestionably the toughest day of the expedition. Despite the permanent sunlight in Iceland, it was darker during this storm than it ever was during the night while we were there. The heavy rain and strong winds got through all of our hard shell jackets and waterproof boots. At some point, we also had to stop consulting the map as the heavy rain was hastening its destruction. We ended up momentarily lost as we took an uncharted path, but managed to get back on track and progress across 5 different branches of the same river that flowed between us and shelter. By the time we reached the pool, Andre, who had gotten into the habit of hiking with only shorts and t-shirt, and putting the waterproofs on if necessary, was starting to get very cold so it became imperative to find some shelter. In retrospect, we think this situation could have deteriorated in the absence of good maps and knowledge of shelter up ahead.



## Day 11

In the morning after the storm, we experienced the best weather we would have for the whole trip which allowed us to dry off most of our soaked gear. We also took the opportunity to bathe in the abandoned geothermal pool at great risk to our health (we only waded in after seeing two locals jump in first). We gathered our gear and headed toward Hekla which overlooked us for most of the day. Our path was infested with swarm upon swarm of flies! Despite Tomas' best attempts at genocide, they kept coming by the thousands. We made it to the lava fields at the foot of Hekla where we set up camp and had our dinners. We planned the following days' ascent to the highest point (just under 1.5 km). We also prepared an evacuation route in case the volcano decided to wake up. Before reaching the Hekla lava fields we stocked up on 8 extra liters of water as the area around the mountain is completely deprived of water, except for the snow at the top.



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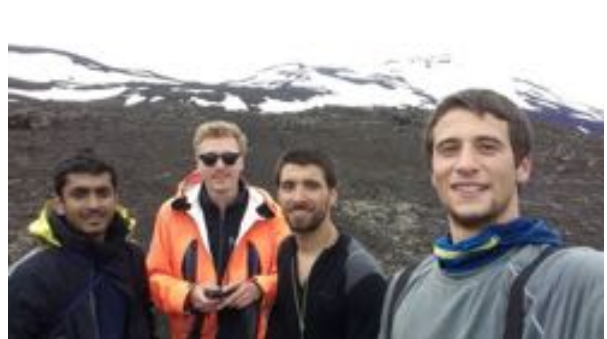
## Day 12

On the morning of the climb, the stove broke down, which required a quick fix with duct tape and sandpaper. From then on we had to cook with slightly lower pressures as the piston was barely kept in place. The climb up the mountain was extremely silent, the snow muffled our footsteps and the lack of wind or anyone around us reminded us of the magma below.

The tough way up through snow and lava fields rewarded us with an amazing view of the landscapes we had been crossing for the last two days. Unfortunately, when we reached the summit the clouds moved in and blocked the view. On the other hand, we were rewarded with the heat from the volcanic gases being emitted from the crater at the top of the volcano.

On the way down we crossed ways with some students on a field trip and we went to explore an amazing and mysterious red coloured crater. In total it took us 10 hours to go up and return to our campsite with a total distance travelled of 33 kms. Exhausted but very pleased with the climb and the incredible views, we retired to our tents.

We were very happy with the way the day developed. This time we didn't neglect carrying our maps and GPS, so finding our way down the mountain through the fog was an easy task. The area around Hekla was also quite varied in scenery as lava fields from different ages spread around its slopes. Regarding our escape plan, we were expecting we would be able to run down the mountain in case of increased activity. However, due to the deep snow, we doubt we would be able to get out of there in the 30 min warning period the last 3 eruptions had. We learnt from the locals, however, that in case of imminent activity, there is an automatic alarm sent to all the cellphones in the vicinity of the mountain so we were carrying the satellite phone.





### **Day 13**

Once again we were blessed with good weather and we managed to cover half of the way to Landmannalaugar where we would finish the second stage. As we had already eaten the days' snacks on the way up Hekla (we needed the extra energy), we had two lunch rations each this day, which proved to have less content than our daily lunch ration plus snacks. At this point of the trip, the hunger was so intense that we spent most of the day fantasizing about which all-you-can-eat restaurant we would invade when we got back to London.

Halfway through the day, we entered the Friðland að Fjallabaki nature reserve, so this meant wild camping was no longer permitted and increasingly more people could be found in the areas hiked in.





## Day 14

The next day we made an early morning start for a fast hike towards Landmannalaugar. We passed through very diverse areas where we saw a bit of everything Iceland has to offer: snow, moss, mountains, waterfalls, lava fields and geothermal activity. We even boiled the water for our lunch on a volcanic hot spring and saved a bit of fuel! We met a lot of hikers and relaxed in a natural hot spring while we ate a LOT of extra snacks bought at the campsite. We now conclude that we should have included more luxury items with the resupply boxes as we ended up using a lot of extra money on the small shop at the campsite.

We felt a marked change at this point in the trip as we were suddenly surrounded by many other hikers. As such, this made Landmannalaugar very different from the wild regions we had been crossing so far. The many tourists attracted by the trails and sights of the region bring a lot of civilisation to this increasingly popular location. This time, however, with this many hikers around, we managed to exchange our experiences with other people and had a great time relaxing with other hikers. We were even fortunate enough to get some extra free food from hikers who were either taking the trail South-North or giving up on the trail.



## Day 15

We spent a peaceful day at Landmannalaugar. Baths, eating and sleeping, got us nicely refreshed for the next stage. Around lunchtime received our resupply package from Trex which lead to much excitement.

At this point, we spoke with the national park rangers, and they OKed the research permit to fly the drones near our final checkpoint. We had also time to get some reading and cook an

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amazing mushroom and vegetable pasta soup (with ingredients from our resupply package). We planned for an early departure the next as we had to do two checkpoints instead of one because of the snowy conditions midway.



## **Stage 3**

### **Day 16**

We started Iceland's most popular trail: the Laugavegur trail. We crossed long mountains covered with snow and full of interesting points of geothermal activity. Ornamented with long shiny fields of obsidian. On the way down to Álftavatn we were presented with one of the most amazing landscapes we had seen so far. We could see mountains on the horizon, a glacier on the left and a lake in the centre, as well as a mountain the shape of a pyramid covered with moss. As we were now in national park territory, we had to camp in the campsite along the trail. We set our tent up next to the lake with many other hikers and enjoy the sun whilst sharing some stories with fellow travellers.



## Day 17

We set off from Alftavatn heading to the next stop on the trail: Emstrur. The night before, we spoke with a guide who suggested a few detours along the way. After lunch, we broke off from the trail and headed toward the glacier we could see in the distance. After a few kilometres, we crossed a waist-deep river which took us from a lunar landscape of rock and volcanic ash to lush moss covered hills. This was one of the coldest rivers we crossed during our trip, in fact, there was not much distance between our crossing point and the glacier itself.

We dropped our stuff off and tried to walk to the glacier (see picture below). We quickly realized it was a lot further than it first appeared and gave up trying to reach it when a huge valley opened up in front of us. We went back to set up our tents and played cards before turning in for the night, which at this point had become a tradition that went with the next day's chocolate ration.



## Day 18

We started the day early and swiftly caught up to the Laugavegur trail heading to Thorsmork. Along the way, we saw the landscape changing from the usual volcanic wasteland to dense green woodlands dotted with pink and yellow flowers. We walked past the end of the Laugavegur trail to a little campsite tucked away in a cosy valley with a view of the last climb that awaited us to the top of Eyjafjallajokull.

With this, we finished the Laugarvegur trail in less than 3 days, with about 7 km extra for our detour towards the glacier.



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## Day 19

Tomas and Andre went for a day hike up a trail around the campsite and the surrounding peaks whilst Monal and Stephen stayed at camp and rested. The hike was simply amazing, it started in a deep valley with cliffs, caves, waterfalls and dense vegetation which had an enormous contrast with the desolated volcanic regions we were accustomed to. From there the trail went up a very steep peak with a 360° view over glaciers, snowy mountains and rivers. However, perhaps the most incredible thing to be seen up there were deep valleys with such intricate rock features that seemed hand sculptured. They raced down the mountain to meet Dr. Kieran Wood from the University of Bristol who had just arrived in Iceland that morning. He travelled with us for the next few days to the glacier up ahead.

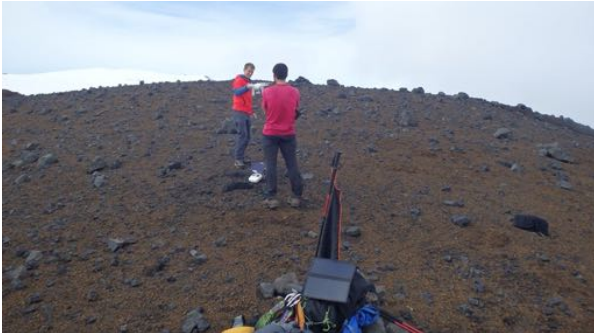


## Day 20

The next morning we started early the 900 meters ascent through the fog to the top of the Fimmvörðuháls. We had an early start so that we could arrive before the fog started coming down, most likely from the surrounding glaciers, as we had learned over the course of the trip. This was of extreme importance as we needed clear skies for flying our drones and acquire high-resolution data for a 3D map of the infamous 2010 eruption. In the end, we did manage to have 4 hours of great weather during which we flew the drone Andre had been carrying in his backpack since the beginning of the trip and an extra drone brought by Kieran. The results from this dataset were of good quality and will hopefully help volcanologists better understand this eruption.

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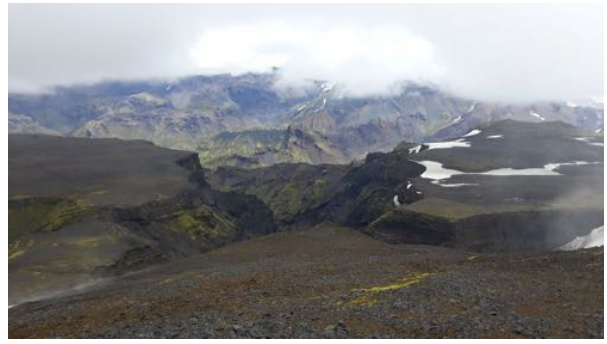
After that, we kept heading to Skogar and stopped in a campsite by dinner time to have a cosy meal and play some cards. For this section of the hike, a German girl named Anna, joined us increasing our small party to 6 members (us plus Kieran and Anna)!



## Day 21

The night was tough. The wind was so strong that broke one of the tent poles. We woke up, had breakfast in the hut and then started down the mountain towards Skogar. On the way down we followed the river that got wider and wider and was punctuated with waterfalls (15 incredible waterfalls in 6km). The last waterfall, Skogarfoss, marked the final point of our hike and a popular sightseeing destination. We celebrated the end of our walk and retired to a nearby restaurant to watch the World Cup final live. After dinner, we parted ways with Kieran and decided to hitchhike our way towards Reykjavik. We split up into two teams and raced to a meeting point about 40 km from Reykjavik, a small town called Hveragerdi. Along the way, we met a bunch of interesting people only one of which was an Icelander (surprisingly, a lot were American).





## Day 22

At the Hveragerdi campsite, we woke up to the amazing smell of fried eggs and toasts. We walked around town and saw a restaurant using natural hot springs to cook meals, as well as a delightful florist with lots of delicious smelling roses (including one that smelt like orange cheesecake according to Andre). After wandering around Hveragerdi, we went to a supermarket for the first time in over 3 weeks and finally managed to buy fresh fruits and vegetables, alongside a proper quantity of snacks. In the afternoon we trekked to the local geothermal area where we saw lots of boiling hot springs. We settled in a hot river which was at the perfect

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temperature for real comfort and ended up staying around 3 hours... We hitchhiked our way back to the campsite and had ourselves a very filling dinner!



### **Day 23**

In the morning we packed up everything and said goodbye to our friend Anna. After that, we managed to hitchhike all the way to the centre of Reykjavik! Once in Reykjavik, we did some final sightseeing under the shining sun and went to have the celebration dinner of our expedition! We finally went to the the burgers place we had been dreaming about for the past week. The lamb burgers were absolutely delicious. We tasted the local specialities that are fermented shark and puffin meat! After that, we took the bus to the airport, where we would wait until early morning for our flight back to London.



## **Gear Review**

### **Footwear**

We all took with us some sort of boot as footwear and most of us products with a waterproof lining. GoreTex shoes held up well against most of the rain, however, after a days' worth of rain, the inside would inevitably get wet. We would recommend waterproof boots for this sort of trip as most of the time, even if it is not raining, everything is wet and thus, minimalist trainers will inevitably get wet. Furthermore, hiking with trainers is limited to light loads and/or marked trails, not to hiking through rough and uneven terrain with heavy loads. The volcanic rocks were tough on the shoes, often wearing out stitching seams after a few days. In one case, the shoe started opening as the seams were worn out and cut. On this, we would note that Andre took with him a pair of thick leather boots with no exposed seams, which held up very well against the abrasion and also did very well with the rain. We had Scarpa, Meindl and Kathmandu shoes.

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## Backpacks

We had with us 65 to 70-litre backpacks, which were appropriate sizes for the hike. The adjustable hip belts and back size adjustments were critical to a comfortable configuration for the weight we were carrying. The maximum weight carried was around 27kg and the bags held up very well in those conditions. We had Vango Sherpa 60+10 Rucksack, Backpacks Slim MAC rucksack (70L), 60+10 Jack Wolfskin backpack and a 25 year old Karrimor internal frame 65L.

We all used rain covers during the trip. These are often disregarded as a waste of space as they do not keep the water out in strong rains. We found them useful as they can easily keep away consistent light rains as we encountered most of the time. For further waterproofing, we all had our clothes, sleeping systems and sensitive gear inside dry bags and other items such as food inside heavy duty bin bags (we suggest taking a few extra ones as they tend to wear out). One of the tents was carried inside a dry bag which proved to be quite useless as more often than not the tents were stored wet from the night rain.

## Clothing

It was a good idea taking Thermal layers, as the temperatures and winds at higher altitudes varied significantly to lower altitudes. It was close to 0 °C at higher altitudes while lower altitudes would have 10-15 °C. We all had Gore-tex waterproof jackets, which were necessary and did almost always kept us dry. Only, when we were in a storm, strong winds and rain resulted in some leakage. We didn't invest as much in waterproof trousers. Some had good Berghaus gore tex light waterproofs (hard shell), while others had soft shell waterproof trousers. Both trousers were heavily damaged by the sharp volcanic rocks, we had to duct tape various holes. The light shells Andre bought, however, were destroyed by strong winds and by the end of the trip, were a messy looking piece of cloth held together by stitching and duct tape that barely covered half of his lower leg.

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## **Sleeping Kit**

We had 0°C comfort rated down sleeping bags. They kept us warm every night even in the coldest conditions experienced on top of mountains. We had no issues keeping the down dry, even in this very wet conditions. Some of the members regularly placed his wet hiking clothes in the sleeping bag during the night and had no issues with that.

The tents we borrowed from the board were extremely sturdy, yet lightweight. They had some damage prior to the trip, namely some tears on the floor (repaired using duct tape) and a broken aluminium pole (repaired using some glue and a tight fitting piece of carbon fibre tube). This same pole broke later during the trip and was repaired again using a sturdier tube.

## **Cooking and Water Kit**

Primus Omnifuel stove, with gasoline, was used. It required the fuel chamber to be pressured by a hand piston pump. We had a seal failure on the piston pump, due to wear and tear. Although we managed to engineer a temporary solution for it. In the future, be sure to take multiple seals for the piston as they are critical to the operation of the pump, and weighed very little as well as occupy a small volume.

## **Other Gear**

We all took trekking poles from Black Diamond, which held up for everyone except for Andre's which got permanently bent after extreme force. Their carbon tips remind sharp preventing slipping even on rock. Having a pair of extra lightweight shoes was good decision for river crossings and for usage as comfortable camp shoes. Some members took hats as headwear, which proved to be useful to keep light rain away from the face.

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## Food Review

A number of freshwater streams from melting snow in the mountains or from the spongy moss-covered hills releasing rain water, provided fresh water. Nothing tastes better than fresh mountain water. However, there were areas, particularly the ash deserts around Hlodufell tabletop volcano, where there was no water. There still was small volumes of snow which could be melted to provide drinking water. This snow did have a tendency to have small amounts of ash mixed which would settle at the bottom of bottles, but there was no other option. In these areas, there was no vegetation and a fairly flat terrain (around shield volcanoes). However, we didn't need to use any of our chlorine tablets.

The first resupply point at Geysir was slightly tricky. The parcel was delivered to a local restaurant. Which had been "worried" by unexpected an "English" parcel - words of their manager, - despite their agreement to receive the delivery beforehand. Some break down of communication occurred in their line of command- which we thought threatened our expedition as they initially claimed to not have received any parcel. However, apart from that small glitch, everything was perfect. The other delivery at Landmannalaugar was received as expected.

Only for the first week, we had non-freeze-dried lunches. These were the best lunches, filling and calorific but massive. We had Chorizo, cheese, bean and fajita wrap. For the remainder trip, we had 450 kCal freeze-dried lunches and 1000 kCal Dinners, every day.

Weight losses for Monal and Andre were 4 kg each. We aimed for around 3500 calories per day per person. Fat has an energy density of 9000 kcal/kg, this means between Monal and Andre, an average weight loss of 4kg suggests a calorie deficit of around 2000 kcal per day per person over the 21 day hiking period. This is coherent with our continuous feeling of hunger. Often, considering eating moss, which by the way is edible but has no calorific value as most of it cannot be digested by the body.

Doubling breakfast, 2 of the snacks and lunch would reach 5500 kcal day per person. This covers the deficit of 2000 kcal. Perhaps this would have prevented the continuous feeling of hunger and weight loss, at the expense of extra weight.

The macronutrients were optimised for thru-hiking. The daily fat, carbs and protein percentages were around, 30%,60% and 10% respectively. Perhaps, some carbs could be reduced and a bit

more protein could have been taken. The daily food mass intake was round 0.8 kg. This resulted in the overall food energy density of around 4400 kcal/kg.

Table 2: Summary of Foods

Breakfast: Granola + oats	Snack 1: Mixed Nuts	Snack 2: Chocolate bar(50g) + Protein bar	Snack 3: Biscuits	Dinner: Freeze-dried
The portion was quite small. Could easily double the portion. Tasted fine	These were good to munch on but didn't taste so good. Important to taste the mix before buying in bulk.	Oreo, fruit and nut, plain flavours were great. The chocolate was the best decision.	Custard creams, ginger nuts and bourbons. The portion was small. Could be doubled.	They were filling, however the flavours could be optimised. See below for a detailed discussion.

The following dinner flavours were:

- Vegetable Tikka with Rice - 3
- Chicken Korma with Rice - 3
- Thai Green Chicken Curry with Rice - 2
- Asian Noodles with Chicken and Mixed vegetables -1
- Spaghetti Bolognese -2

Lunch flavours:

- Scrambled egg, Potato and Mixed Peppers -3
- Macaroni cheese - 2
- Mediterranean Vegetable Pasta -1
- Scrambled egg with cheese and Caramelised Onion -2

Numbers are associated with the food flavours correspond to (1-3, most favourite to least favourite). Sadly, the dinner flavours were not ordered in equal quantity and worst of all the higher quantity corresponded to least favourite flavours. It is recommended to taste the flavours before placing a bulk order.

At various points certain group members (Stephen) did start to hallucinate and mistaking geographical features for their favourite foods, for example - one of the members (Stephen)

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would have sworn to have seen a freshly barbecued stack of ribs in the distance, instead of slightly copper-rich, tarnished, brownish volcanic rock.

We took 12 kg of mixed nuts with us to Iceland. Our relationship with them was one of love - hate. By day 7 everyone was mostly tired of the nuts and we started accumulating extra weight between days, but by day 11 no-one would skip their daily intake and eat through next days nuts started to become a problem. To increase our frustration, we had the opportunity to taste some leftover nuts from an empty hut and experience how much superior they were... Truth is, regardless of its ups and downs, and our hate for peanuts (which constituted 55% of the mixture) we know for sure that the nuts kept us going all those days.

## Financial Report

The main areas of spending were Equipment, Food and Transport + Accommodation. Equipment was the most expensive area accounting for about ½ of the total expedition cost, followed by food and transport and accommodation. Table 3 below shows the expenditure by item.

*Table 3: Overall Expedition Expenditure*

<b>Item</b>	<b>Cost</b>
Personal Monal	£636.61
Personal Andre	£479.93
Personal Stephen	£550.36
Personal Tomas	£240.60
Sim card	£150.00
Maps	£41.43
Flights	£576.00
Solar panel	£37.00
Misc	£264.57
Luxury food Iceland	£406.46
Transport	£320.34
Hiking food	£901.83
Food transport	£58.50
Camping + Airbnb	£364.40



Equipment Total	£2,720.84
Food Total	£1,308.29
Transport + Accomodation Total	£998.90
Sum	£5,028.03
Average per person	£1,257.01

The budget for the expedition was £7487, an average of £1621 per person. While the actual spend was £1222 per person. The reduced expenditure can be attributed to discounts on hiking food by Expedition Food, deciding not to climb glaciers which requires guides and extra equipment. We received £500 grant per person from the Exploration board, resulting in a net average spend of £722 per person.

Misc expenses include small items such as petrol for stove, medical kit, etc. "Luxury food" is snacks and meals on rest days from mountain huts. Amongst them, the best investment was in chocolates in hot spring in laugarvatn. That was one of the most pleasurable moment on the trip. Public transport (Buses) in Iceland actually turned out to be a bit more expensive than expected. Towards the end of the hike, we decided to hitchhike from Skogar to Reykjavik. This was free! We discovered hitchhiking is a very common, and decided to try it out. It was a very enjoyable as we met some interesting people. Since a group of 4 is a slightly large and undesirable number, we decided to split into 2 groups of 2. This allowed us to challenge each other for the title of "most desirable hitchhiking pair even with 20 days of personal hygiene ignorance", awarded to the pair reaching Reykjavik the earliest from Skogar. Andre and Monal proudly won the race. What's more is that the wait times for hitching a ride were ridiculously low, less than 30 mins. Considering the fact that there is only one road around the country, where else are people going to drive.

The average food cost per day per person was around £16, the expected cost was around £19. Fairly reasonable, but mainly because of the freeze dried meals discount of 30% by Expedition Foods(<https://expeditionfoods.com/>)! It is possible to obtain even greater discounts, if one contacts food companies in good time, as their responses can be slow. Dinners whilst in Reykjavik were extortionate, one of us did fear losing a kidney at some point to compensate. Half a burger cost £15 and our 2-course dinner with drinks ended up at £150 at the local pub.

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However, the meals and snacks were great emotional boosts. We often dragged ourselves with the false promises and visions of non-freeze dried meals. Don't be surprised if the Icelandic people ask Santa for cheaper food each Christmas. What's more is that high conversion rate of Icelandic krona, £1 pound is ~150 krona, often led us to believe that we were millionaires, at least in Iceland.

On the rest days, we stayed on campsites, to mentally and physically recharge, wash clothes and a little bit of luxury to look forward to between the stages, periods of indulgence were planned. This added some cost. Along the Laugavegur trail, wild camping is not permitted, to preserve the natural beauty of the area. This forced us to camp at the campsites for which we had to pay per person and not tent! Typically, this costs around £20 per person per night. Furthermore, living in Reykjavik in the first couple of night was around £100 for 4 people.

## **Acknowledgements**

We would like to thank Lorraine Craig, Philip Power and the other members of the Exploration Board for their invaluable support and feedback over the course of the planning of our expedition.

We would also like to thank Expedition Foods for their support in providing us with lower cost freeze dried meals, we thoroughly enjoyed our lightweight, yet filling meals.