

Dear Class Two,

Thank you for your letters. We are very glad to hear that you are enjoying learning about Antarctica at school and we are enjoying being here too! I have enjoyed reading your letters and thank you for taking the time to write them. I have tried to write answers to all your questions and added in some extra pictures, so I hope you can all find out some of the information you wanted to know.

A lot of you mentioned about day light in the summer and you are right! In the summer, it is always daytime here as we are in the Antarctic Circle, which means due to the way the Earth rotates on its axis we experience periods of 24-hour daylight. It also means that in the Antarctic winter we experience some days of zero sunlight! It is a strange experience going to bed when it is bright outside and takes time to get used to.

It is very cold in Antarctica, especially in winter where it can become -20°C easily. You can get very cold when you are outside so we have to wear lots of special clothing designed for very cold environments.

This includes snow boots that are designed for -100°C . We are all given lots of gloves and hats to make sure we do not get cold. It is also important to eat lots of food in cold weather and we have 4 meals

a day...plus snacks. Working in the cold burns a lot of calories. When we are out in the field, we don't have any heating like you do in a normal building so we use Refleks stoves, Tilly lamps and Primus stoves to heat our tents and camps. These can make tents very cosy and it can even get above 25°C inside when its -10°C outside. Primus stoves are a very old design that have been used for decades, as they are very reliable in extreme conditions. We use Primus stoves to cook meals on in the field too.



Figure 1: This is a melon hut that we have at some of our summer field sites to live and sleep in. There are 4 bunk beds, a stove and a radio inside.



Figure 2: Walking in blowing snow can be hard, it is important to layer up and wear warm clothes that cover your hands and face.

Several of you mentioned the penguins too. The main penguins we see here are Adeliés and Chinstraps. We get loads of penguins and seals here. If I was to guess I think I have maybe seen 200 penguins so far!! We get many birds like Skuas that come here to lay their eggs and raise their chicks. It is a very harsh environment here and the skuas lay their eggs on top of rocks. We also get Arctic terns, which travel all the way from the Arctic to the Antarctic, a very big journey indeed.

You also asked about husky rides, unfortunately, we don't have any dogs in Antarctica anymore due to the environmental impact dogs can have on the natural environment. The Environmental protocol of the Antarctic treaty required the removal of all non-native

species from Antarctica by April 1994. This came about to reduce our impact on Antarctica, especially as some canine infections are said to have spread to seals.



Figure 4: A Skua chick that hatched on the rocks.



Figure 3: An Adelié penguin porpoising in the sea.

The British Antarctic survey used to use working dogs (including huskies) lots to help move people, equipment and food around the continent however when vehicles like snow cats, snow planes and skidoos become widely available the dogs became more of a recreational hobby on lots of the bases. Although we no longer have dogs on station we still have some of the old buildings that the dogs used to live in which include dog claw marks and dog collars from some of the sledge teams. The dogs look very cute in all the pictures around base and it would have been lovely to see them working in the snow, however it is important to protect our environment and minimise our impact on such a beautiful place.

It is currently Antarctic summer and there is lots of melting ice, climate change is adding to this as it is changing the Antarctic environment. You can definitely help reduce the effects of climate change by changing you habits like using less energy, walking to school and using the car less and eating more environmentally friendly food. Every little helps, making small changes and supporting more environmental conscious brands in the supermarket all help.

You also asked about walking on the frozen sea. So far I have not been in Antarctica for winter so have not seen the main sea ice form around the station. However, when I was in the field at a place called Fossil Bluff on Alexander Island (where there are many very cool fossils and they even found a fossil of a tree) there was a frozen melt lake that I walked on. It was very smooth and slippery like an ice rink. The sea ice however will be very different to this, as it will form in lots of different ways causing a rough surface, which is why it was so hard for Shackleton to pull the lifeboats over the ice when they had to abandon the Endurance ship.



Figure 5: A lone penguin in the brash sea ice.

You also asked if I had visited the place where Scott died. Scott died on the Ross Ice Shelf, which is north of the Transantarctic Mountains. I have not been to the Ross Ice Shelf as most of our science happens further west of the Ross Ice Shelf. I have however been to the Ronne Ice Shelf and to the Larsen Ice Shelf. Ice shelves are very impressive to see as the ice is extremely thick and forms big ice cliffs into the sea. There can also be a lot of crevasses that form on ice shelves that can be very dangerous but beautiful to see.

My favourite part of Antarctic is Butler Island near the bottom of the Larsen Ice shelf (72° 12' 23"S 60° 10' 09"W). We went here to service an automatic weather station this season and it was beautiful. To get there we flew over the Wilson Mountains and Condor Peninsula, which was

beautiful. The island itself looks like a dome of smooth snow surrounded by sea ice. The sea ice is a mix of brash ice, open water and big icebergs that break off from the nearby Ice shelf and Glacier. It was beautiful there and we camped out in a tent next to our plane as the only three people for hundreds of miles. It was very still and peaceful.



Figure 6: Camping out with our plane and the automatic weather station.

There is lots of science going on at Rothera including ecological work, meteorological work, marine and space science! I work in the meteorological team looking after the instruments and taking measurements of the weather. There are currently some Dutch scientist on station that are looking at the different mosses that grow on some of the islands. The marine team complete regular dives to look at the animals and organisms in the sea. There is lots more science going on and if you want to see more have a look at this, <https://www.bas.ac.uk/about/about-bas/our-organisation/our-science-teams/>.

We launch weather balloons 5 times a week to help create better weather forecasts across the world. The weather balloons we use are 350 gram balloons that we fill with Helium. The balloons start just over 1 meter wide when we release them on the ground. The helium makes the balloon rise as it is lighter than air, as the balloon goes up the pressure of the air around it decreases causing the balloon to get bigger. The weather balloon stretches to the height of double decker bus before it bursts!

Some of you asked about swimming. Our main station, Rothera research station, has a lot of access to sea which allows us to use boats to visit other islands and conduct scientific research in the sea. It would be lovely to go swimming here, although it would be very cold, however we cannot swim here as there are Orca and leopard seals that are very dangerous to swim with. We do however have divers on station that conduct supervised dives and even dive under the sea ice in winter. When there is a planned dive we conduct 'seal watch' before beginning the dive. If any leopard seals or orca are seen the dive is stopped.

Our spare time on base is filled with many of the things you would do at home. We play board games, paint, read, watch tv, play music and go for walks. We are also very lucky that we are able to go skiing and snowboarding near the station. There are no ski lifts here however so you have to walk, skin up or ride a skidoo to go skiing. We also have some bicycles that can go on the snow or on our runway.



Figure 7: We are lucky enough to be able to ski at the weekend when the snow is good.

I hope that answered some of your questions. Enjoy the rest of your Antarctic project and maybe one day you will be able to see Antarctica for yourself and help protect our natural world through science and exploration.

Best wishes,

Jo and the Rothera MET team.



Figure 8: The summer MET and Engineering team 2021/22.