

## **Irminger Sea: Oct 8 - Sidcot School**

Questions from the students at Sidcot School

Hello to you, Dallas, and all the crew and scientists onboard *RV Knorr*, we are very excited to be involved in this expedition. We have really enjoyed reading your daily journals and feel that we have learnt a lot already. It certainly puts our breezy weather here in the UK in context! The following questions (below, in bold) have been put together by students in Year 8 here at Sidcot school, ( 13-14 year olds).

### **Answers by Ben Harden**

Hello students at Sidcot,

Thank you for your questions, we're really glad to hear that you are enjoying the website! We have weathered the worst of last night's storm and the conditions have calmed now (relatively), only experiencing 30knott winds instead of the 50knott winds we had last night!

General questions:

**How many hours of sunlight do you have per day?**

In answer to your general questions about the cruise, we are currently having about 12 hours of daylight a day- the sun rises at roughly 8am and sets at 8pm.

**How is the food stored and how do you get fresh water? Do you catch any fish to eat?**

The food on board is amazing- I'm being constantly surprised by the cooks' skills, especially in the stormy seas- today they even prepared sushi! I've been told that they do fish for sport in warmer places, but not for food and there are definitely not any fishermen keen enough to fish in these conditions! The water that we use on board is generated from sea water and stored in big tanks.

**Are you likely to see any polar bears, and do you carry guns just in case?**

We're coming up to the greenland coast soon so may get a chance to see polar bears, but we're not holding our breath. I have heard that they have been seen on cruises before, but it would be a amazing event if we were to see one- I presume we're not carrying guns in case as it seems unlikely that they will be getting on deck.

**Just how cold is it?**

The weather is quite cold, the temperature has been around 1 degree centegrade for the last few days. In fact, I've just got back inside from deck and we are in the middle of a snow storm!

**Have you seen the Northern Lights?**

The weather has been generally cloudy, so we haven't been able to see the northern lights, but we are hopeful that we will be able to soon!

**Specific Scientific Questions: ....these were inspired by the photos showing the balloons. About the weather balloons:**

**What exactly do they do and how do you get the information from them?**

Now, time for some science: I am responsible for launching the weather balloons, or radiosondes as they are officially known, along with a three other scientists from the UK and Canada. The idea is to study storms in this area of the world by looking at cross sections of the atmosphere. To get these cross sections, we use the radiosondes.

**About the radiosondes:** The radiosondes (or sondes for short) are small white plastic boxes that have sensors on them that can record temperature, pressure and humidity (I will try and get a photo of one on to the website soon). Alongside this, they are also fitted with a GPS receiver which allows them to work out where they are, what direction they are traveling in and at what speed. This allows us in turn to work out the wind speed and direction as the sonde travels up in to the atmosphere. They have a transmitter arial and all of the data recorded by the sonde is transmitted back to us on the boat- we have an arial mounted on top of the boat. From the sondes, we therefore get measurements of temperature, pressure, humidity, wind speed and wind direction at 2 second intervals as it ascends.

**How easily do they break?**

Launching the radiosonde is straight forward in calm conditions: one person holds the balloon and another person places the sonde on their flat outstretched palm. When everyone is ready, the balloon person simply lets go and the sonde is away! We were out last night launching in 50knott winds (about 25meters per second!) and in these conditions launching is a little more difficult (to say the least), but we follow a similar procedure. In answer to your question on how easily do they pop, the answer is that they are generally very sturdy, but will pop if you get them caught on a sharp object on the deck- a very easy thing to do when the balloon is being whipped around by the high winds as was the case last night when we popped one.

**As the balloon rises, the balloon expands (why? and how big will it get? are two interesting questions maybe for you to think about). Eventually (at around 10km up) it will pop and sonde and balloon will fall back to the sea and are lost.**

**How many would be needed to lift one person?**

The sonde is attached by a string to a helium filled balloon with a diameter of about 1.5 meters. We fill the balloon with enough helium to allow it to support a 500gram weight attached to the bottom. In answer to your question, I suppose this means that you would essentially need about 150 balloons to lift a 75kg person! I hope you can assure Mrs Harden that there is therefor little chance that i will be taken

away on the wind!

How many do you have on board and how much do they cost?

We have a total of 64 sondes on board and a slightly larger number of balloons. We have so far launched 16 and have lost a further 3 to the sea during launching, an expensive loss (each sounding costs about 230euro!) but was understandable due to the high winds and the difficulty of communication between the two people launching.

The general plan is to launch at least 1 or 2 balloons a day and during storm periods we launch 4 a day. The storminess of the cruise so far is the reason we have launched so many already- this has excited us, but I think everyone else on the boat is looking forward to calmer weather!

Thank you again for your questions, I hope I have been able to answer them adequately- we look forward to hearing again from you next week! Until then, wish us luck as we hear there's another storm blowing in tonight (have heard talk of it being named a 'hurricane low' by the danish meteorological institute!). Calm weather follows we are assured.

All the best,  
Ben Harden

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