

## Irminger Sea: Oct 13 - Grunnskoli Seltjarnarness

Questions from the students at Grunnskoli Seltjarnarness school, Iceland; Answers by Dallas Murphy, Bob Pickart, and Hedinn Valdimarsson

1. How many propellers are on ship?

There are 3 propellers, two in the stern, and one in the bow. Having 3 “thrusters” makes the ship very maneuverable. If you would like to read more about this, please see the journal entry for [Oct. 12](#), and also the e-mail exchange for [Oct. 10](#).

2. Have you seen any icebergs?

We saw many huge, beautiful icebergs several days ago when we sailed very close to the Greenland coast. Some of them looked like small mountains, while others were short and flat (we refer to these as “table top” icebergs). It’s impressive how the waves crash against the base of the icebergs. A few lucky members of the science party saw one of the bergs roll over! While we were doing our science survey we constantly had to dodge the icebergs, which makes it very interesting for the mate driving the ship. We will return to the Greenland coast later in the trip, when we hope to see many more. You’ll find pictures of some of the icebergs on the website.

3. Have you seen seals, polar bears, sharks?

We haven’t seen any of those animals yet. Last year Dallas sailed to the Greenland coast and saw a polar bear swimming across a fjord with two cubs riding on her back! We are far at sea most of the time on this cruise, beyond the habitat of polar bears and seals. As you may know, polar bears are threatened by global warming. As the ice pack shrinks, this makes it more difficult for them to catch food and to rest. (In the US there is a controversy about whether or not polar bears should be put on the endangered species list.) In recent years, in the western Arctic Ocean, polar bears have been seen swimming in open water far from the coast. They have even been known to try and climb aboard research ships! We’ll keep an eye out for polar bears next time we’re near the Greenland coast (in a few days). Yesterday, in the middle of the Denmark Strait (or as you call it in Iceland, the Graenlandssund) we saw dolphin leap entirely out of the water, and we saw a whale spout in the distance. We’ll keep looking for sharks, and keep you posted.

4. Why is the sea salty?

The salt in the sea comes from the land. Originally, salt, or “sodium,” was leached out of the ocean floor when the oceans first formed billions of years ago. Slight acid content in rainwater “dissolves” rocks, and the salts and minerals are then washed into rivers or directly into the sea by rainwater runoff. Some of the salt dissolves, some sinks to the bottom, but the sea remains salty because the rivers continue to flow and the rain to fall. On average, the oceans contain 3.5 percent salt, or 35 parts per thousand. Oceans tend to be less salty near river mouths and melting glaciers; they tend to be more salty in regions where there is a lot of evaporation and low precipitation, such as in the centers of the ocean basins. But all in all, the quantity of salt in the sea remains stable.

5. What do the flags on ships mean?

In the days before radio, flags were used as ship-to-ship or ship-to-shore communication. There is a box on the bridge containing flags for each letter of the alphabet and numbers one through ten.

As first mate Dee explains, we also have what are known as “day shapes” which can be displayed on the mast of the ship. Keep in mind that research vessels stop all the time and lower instruments into the water. (On this cruise we’ve already stopped 140 times to lower our CTD device.) When this happens it is difficult to maneuver, so, to warn other ships, we post three day shapes--two circles and a diamond--on the mast. This configuration means “Restricted in ability to maneuver due to nature of the work”. At night this is done using three lights (two red lights and one white light).

Of course, these days the best way to communicate to another ship is via radio. However, this doesn’t always work. In fact, yesterday we encountered a fishing vessel headed for the same spot where we wanted to lower our CTD. We tried contacting them on the radio, but without luck. However, there is another way to learn about the identification of a ship according to Dee. That is, using the MMSI system. This stands for “Marine Mobile Service Identifier”. When a ship appears on the radar screen this allows us to determine various statistics about the ship, including its name, country of origin, size, draft, etc. So while we couldn’t talk to the fishing vessel yesterday, we did find out who they were. (By the way, we altered our course and did our CTD station at a slightly different location.)

Our vessel also has flags from various countries, which can be used for different purposes. A national flag flown upside down is a distress signal. When a ship enters a foreign port, she flies the flag of that nation from the starboard (right) side of the mast, and her own nation’s flag from the stern or the port side of the mast. These are called “courtesy flags.” On special occasions, you “dress the ship” by flying all the signal flags.

6. Do you have a u-boat aboard?

Subs used for research are called submersibles. *Knorr* doesn’t have any aboard, because you need special apparatus to launch and recover the sub. By the way, have you heard of the deep-sea submersible Alvin? One of the other ships from our institution (The *R/V Atlantis*) carries the Alvin, which has done more than 4,000 dives over the last 40 years. Alvin is often used to learn about deep-ocean animals and bottom features such as mid-ocean vents. Then there are small unmanned submersibles such as the vehicle called Jason. You may recall that the *Knorr*, using Jason, discovered the remains of the Titanic. In the study of physical oceanography, such as on our cruise, deep-sea submersibles are not especially useful (though it would be fun to go down in one, don’t you think?).

7. Are you feeling well?

For the most part everyone is feeling very well, thank you. Some people have been seasick in the heavy weather. But most everyone is better now. When a person recovers from seasickness they are said to have “found their sea legs.”

8. Is the food good?

The food is excellent. The galley people are heroes. They probably have the hardest job on the ship, and everyone appreciates them. If you'd like to read more, see the Captain's discussion in the e-mail exchange for [Oct 10](#).

9. Have you found all the equipment put in the water?

So far, thankfully, the ocean has returned Dr. Bob's measuring devices; it isn't always so generous. There remains one more mooring in the water, and we will pick that up later, hopefully. You will find more descriptions of the devices and their purposes in the journal entry for [Oct. 13](#), and the [Science Tools](#) page.

10. Do you sleep well?

This varies from person to person, and from day to day depending on the weather. Keep in mind that we operate 24 hours a day (running the ship and doing the science work), so that some of the people on board have to work through the night. The personnel schedule is broken up into "watches", which vary depending on what you are doing. For instance, Dallas does his work during a day watch, while some of the science people lower the CTD into the water in the middle of the night. They sleep well for the most part, but it is hard to adjust to the big shift in their normal-life schedule. The crew has a special watch system that is designed to maximize their alertness and give them enough time for a good night's sleep (even if it is during the day!).

The other factor of course is the motion of the ship. When it gets rough it can be difficult to sleep. There are different tricks that people use to keep themselves secured in their bunks (lots of pillows for instance), but once in a while a big roll will cause somebody to fall out! When the weather is nice, the ship rocks you to sleep.

11. How far are you from Iceland?

Now we're about 100 nautical miles from Iceland. The farthest we've been is about 240 miles. We will all be happy to return to your beautiful country after the cruise is over.

We like to receive your questions, please send more!

12. What could happen to Iceland if the sea currents stop?

If there were no ocean currents Iceland would be much colder than today. The weather in the country relies a lot on the warmer waters coming from the south. Some hundreds of years ago we know that there were years of very cold weather in Iceland when sea-ice was nearly surrounding the island. In addition, if no currents were flowing around the country the life in the ocean would be much less and there would not be much fishing in Icelandic waters.

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