Print

Denmark Strait: 11: Sidcot School, UK

Representing Sally Harden and her high school students at Sidcot School in North Somerset, England is one of her students. Thank you, Gabz, for the excellent questions.

Question 1: What impact, if any, would the disruption of the North Icelandic Jet current have upon us?

Answer: Please see physical scientist, Kjetil Vage's answer in the Tertnes School, Norway answers. What he said in his answer to question 5 is universal to all the countries around the North Atlantic that are affected by the climate processes involving currents and the atmosphere.

Answered by Kjetil Vage via Pat Keoughan, Outreach Team

Could global warming affect the North Icelandic Jet? The scientists aboard the Knorr and other oceanographers are working to answer that question. © Pat Keoughan

Some scientists predict that parts of the North Atlantic could get much cooler as a result of global climate change. © Pat Keoughan

Question 2: How long does it take for the scientific research unit to collate and analyse all the data and form a theory?

Answer: This depends on the complexity of the dataset in question. The moorings, for example, will be in the water for a year, so we have to wait at least that long to get hold of the data. Once we have retrieve them, there will be a period of post processing to produce a dataset which is clean and useable by the scientists ready to undertake the analysis. This will probably take somewhere between 3-6 months. Then the scientists get their hands on the data. The time it takes to come to conclusions based on what they are seeing is dependent on the complexities of the currents, the quality of the data, and the number of man hours put in. Typically this will take somewhere in the region of 1-3 years. This will be the time required to analyse the data based on the things that the scientists set out to look for.

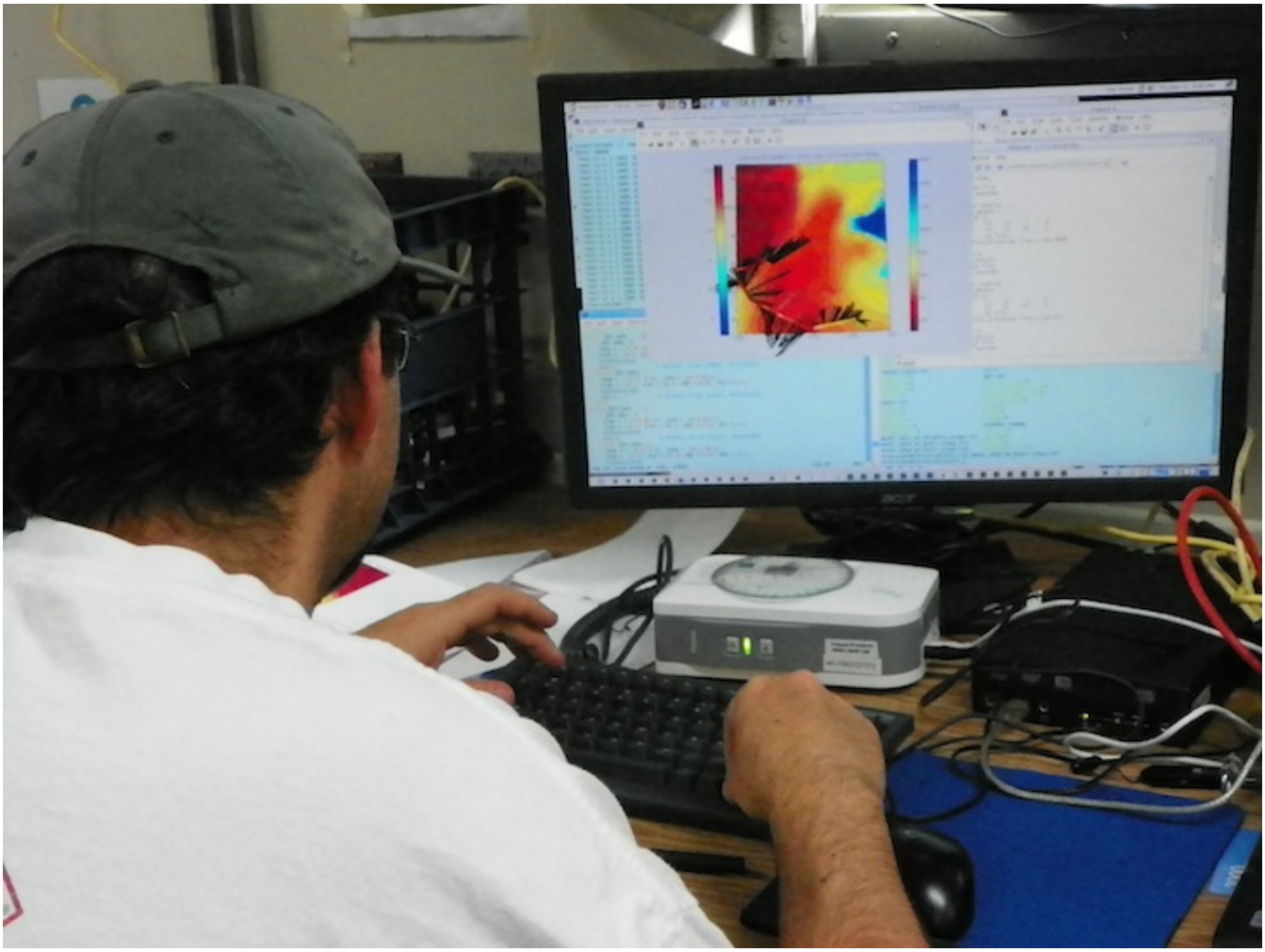
This is the basic process by which the data from the moorings will be analysed. However, all data collected in the oceans, is then available for Bob or someone else to come along and look at from a completely different perspective with a different set of questions at a later date. So there is really no telling how the data collected here will affect future research objectives and at what stage in the future. The theory that Bob developed for the formation of the NIJ was born out of nearly a decade of thought, measurements made by a number of different scientists, and the use of idealized numerical modeling. Theories can be also even longer in the making due to the time required to gather enough data, sift through that data and, importantly, think about what it all means.

Answered by Ben Harden, Meteorologist and Videographer, Outreach Team

Question 3: Can you make any instant comparisons between new measurements and observations, with any measurements taken previously?

Answer: Absolutely. The data from the CTD is immediately available to view. The cross sections of the ocean made by the CTD is up on Bob's screen not long after a line is finished. For the North Icelandic Jet (NIJ), for example, Bob is repeating the same lines that previous cruises undertook when the NIJ was seen. This means that he can make like for like comparisons of his cross sections with cross sections of previous cruises. And yes, he has seen it, in the same place and with similar properties to previous years. It was this immediate confirmation of the existence of the NIJ that allowed him to then go and chase it upstream to find out where it came from.

Answered by Ben Harden



Research Associate Dan Torres puts in the data from a recent LADCP (an ADCP lowered on a CTD) to produce a diagram the scientists on board can use immediately. © Pat Keoughan

Question 4: Have you found any correlation between salinity levels and abundance of sea life?

Answer: Most sea life is dependent on basically two factors: Light and nutrients. These two factors allow phytoplankton and zooplankton to grow and provide the basis of the ocean's food chain. You therefore get an abundance of sea life in regions where these two exist in large quantities. The near surface region provides excellent light, but nutrients are a little less evenly distributed. Typically the deeper ocean is rich in nutrients so it is regions where deep water is brought towards the surface that sea life flourishes. This often happens along the coastal regions of the ocean where winds drive the upward transport of deep water and specific open ocean regions also exist. As far as salinity is concerned, often as you go down in the ocean, the salinity of the water will change. As the water is drawn towards the surface, it will bring its distinct salinity signature up with it. So, even though salinity doesn't have a specific role to play in controlling sea life quantity, it is a useful quantity to measure in order to determine when water is being drawn upwards. This is a lot easier than measuring the nutrient content of the water so can be an important tool in the marine biologists' kit.

Answered by Ben Harden

Where there are lots of seabirds, fulmars in this case, you can be sure there is food. The bird field guide says they eat fish, squid and crustaceans. A couple crew members saw some fulmars eating a jellyfish. © Pat Keoughan

Nature isn't the only source of food for seabirds. © Pat Keoughan

Last updated: December 27, 2011

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