

Diary 1 – 18 March 2012

Difficult to imagine global warming in minus 36°C

Daneborg

The Arctic Science Partnership team has started their work in NE Greenland in the new research station in Daneborg.

We finally made it to Daneborg. Weather has delayed everyone on the way up. Snowstorms made it impossible to land the small Twin-Otter airplanes.

But now we are here. The station are finally cleared from snow, the electricity turned on, airboats and snowmobiles have all got a final service as they have been frozen in since their delivery last summer. It is real deep-freeze conditions here – thermometer shows -36°C - and it is difficult to imagine that there is such a thing as climate warming.

However, the region plays an important role in the climate system as all the white snow, sea ice and the ice cap reflect heat back to space.

Furthermore, as sea ice forms it generate dense salts that sink towards the sea floor providing some of the energy to maintain the global current systems around the world. So any change in the region will affect weather conditions all over the globe.

We are here to investigate if newly forming sea ice in open water regions, so called polynyas, also acts as gateways for carbon dioxide (CO₂) to the deep ocean. It has recently been discovered that complex chemical and biological processes occurs within sea ice thereby affecting CO₂ levels in surface waters and thus the uptake of CO₂ from the atmosphere. This is an overlooked factor in the global carbon budget and may affect the green-house gas level on Earth and thereby any potential warming.

The scientists have all been hand-picked from around the world (Greenland, Denmark, Canada, USA, Finland, and Poland) and are specialists in different science disciplines. Some are looking into atmospheric conditions, others into snow, sea ice or ocean processes. New sophisticated equipment, developed in the laboratories around the world is tested and operated in the field for the first time. It a challenge to make things work when temperatures drop below -30°C.

Low temperatures are one thing, thin sea ice and polar bears other challenges. We have planned to measure various parameters from thick fjord sea ice into thinner and thinner sea ice until open water conditions with newly formed sea ice. To get around we use airboats driven by airplane propellers. In principle we are flying over thin ice and water.

Heated tents have been placed on thick ice so equipment and people can be heated up when needed. Unfortunately, a polar bear also liked one of the tents, and after a short visit it decided to leave, luckily without damaging any of the equipment (and people) except from a few holes in the tent.

After two days of calm weather where we succeeded in deploying a lot of equipment that collects novel data. Unfortunately, we have all been grounded inside our cabin by yet another blizzard. Scientists work inside with their data and the kitchen starts smelling of coffee and cake. Not a bad place to be. The research station is an excellent facility and a nice place to be in weather like this. We send a friendly thought to the Aage V Jensen Foundation that generously provided the funds for this facility via the Zackenberg Research Station.

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