



MILJØVERNDEPARTEMENTET

Climate change in the Barents region what to expect and how to act?

Heidi Sørensen, Deputy Minister
Ministry of the Environment
Vadsø, 1 September 2009

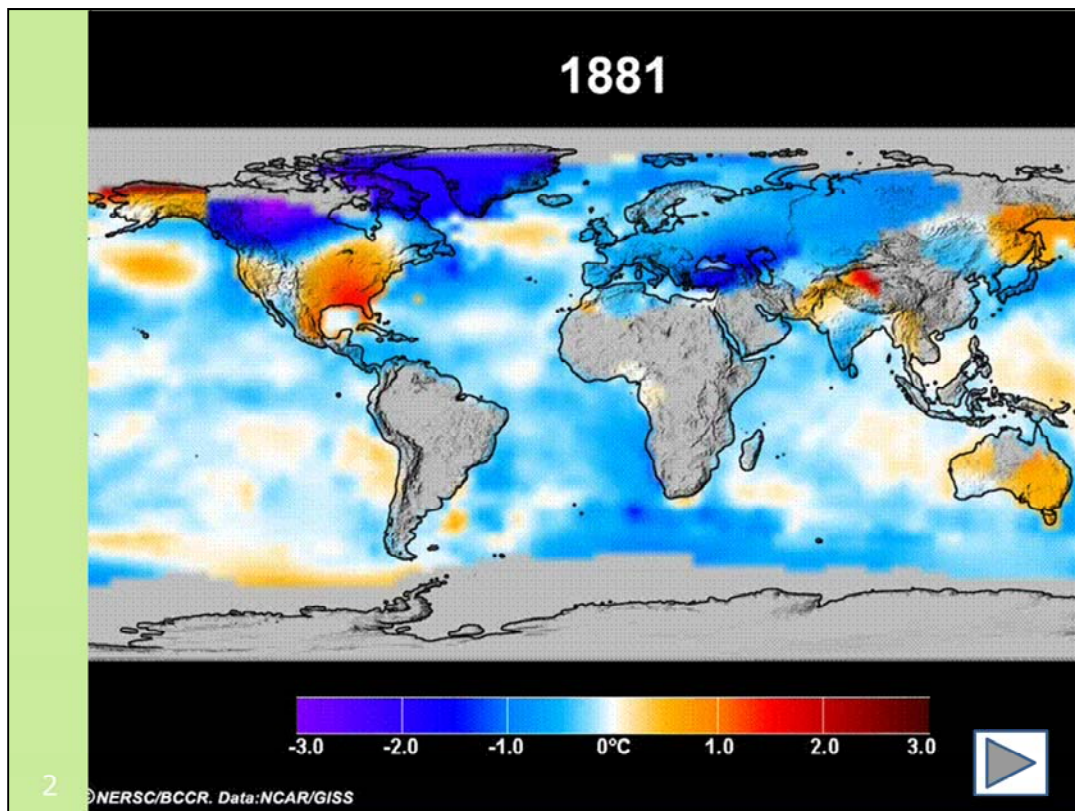
Photo: Tor Arpe Bjørn

Ms Chairman and distinguished guests,

On behalf of the Ministry of the Environment, I am honored to open this conference that brings together scientists, policy-makers and civil society from the Barents Region.

It is important to create such arenas where policy-makers can meet scientists and learn about consequences of climate change. They serve as motivation for the brave actions needed, if we are going to avoid dangerous climate change.

This conference is a major event during the Norwegian chairmanship of the Barents Working Group on Environment. It is our ambition that the conference will bring forward new knowledge and new ideas on how to co-operate on climate change issues in the Barents Region.



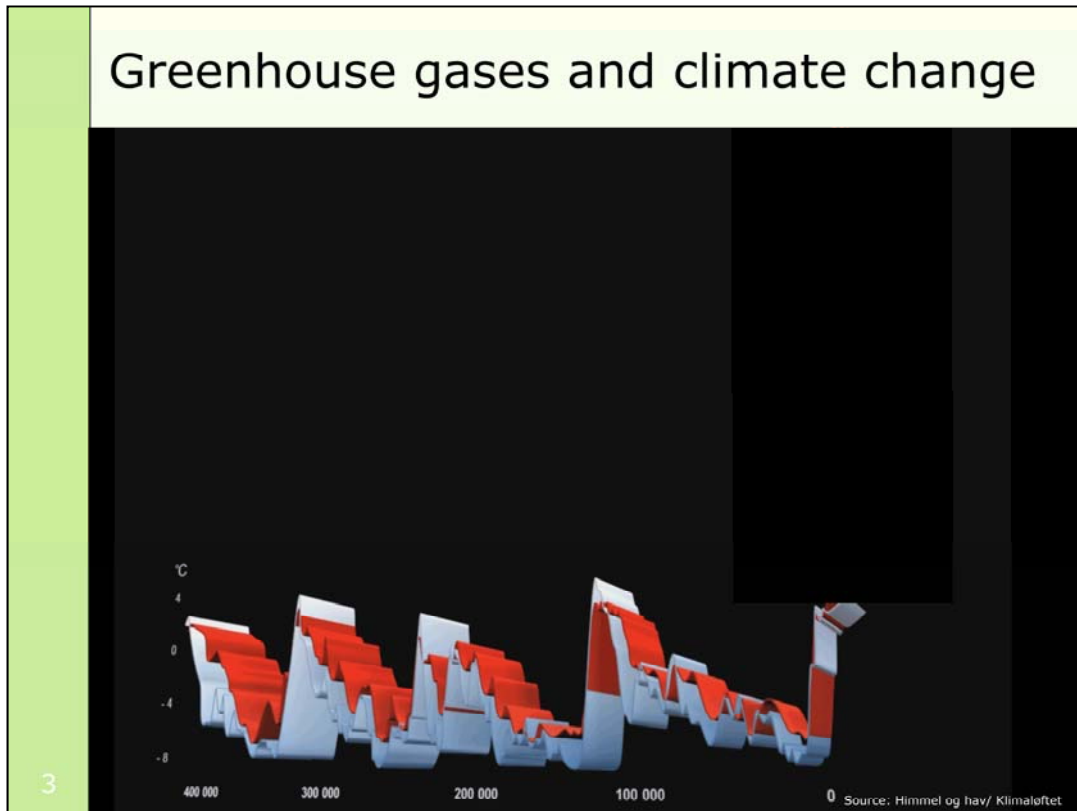
This video animation shows variations in surface temperatures from 1881 – 2007.

As you can see, the natural fluctuations are significant. There are important variations from year to year, and also from decade to decade. Some decades may be warmer in Europe, whilst at the same time Australia is experiencing a colder climate than normal.

But the picture is clear when we approach present time, indicating that global warming is truly more global than the natural variations of the past.

And the Arctic is warming more than any other region.

Greenhouse gases and climate change



The connection between concentration of greenhouse gases in the atmosphere and temperature are beyond doubt.

This figure shows the temperature and concentration of greenhouse gases, based on analyses of ice cores from Antarctica from 400 000 years ago and up until the industrial revolution.

The blue belt shows the temperature, and the red belt shows the concentration of CO₂.

Klikk 1: This shows the increase of greenhouse gases from the industrial revolution and up until today.

Klikk 2: This shows what will happen the next 40 years.

The planet is now experiencing levels of CO₂ in the atmosphere that is nothing like what we have seen the last 400 000 years

The Greenland Ice Sheet is melting



4

Photo: Norwegian Polar Institute

In 2004 I had the opportunity to go by air across the Greenland Ice Sheet.

It made a great impression on me. I saw the melting ponds in the middle of the Greenland Ice Cap.

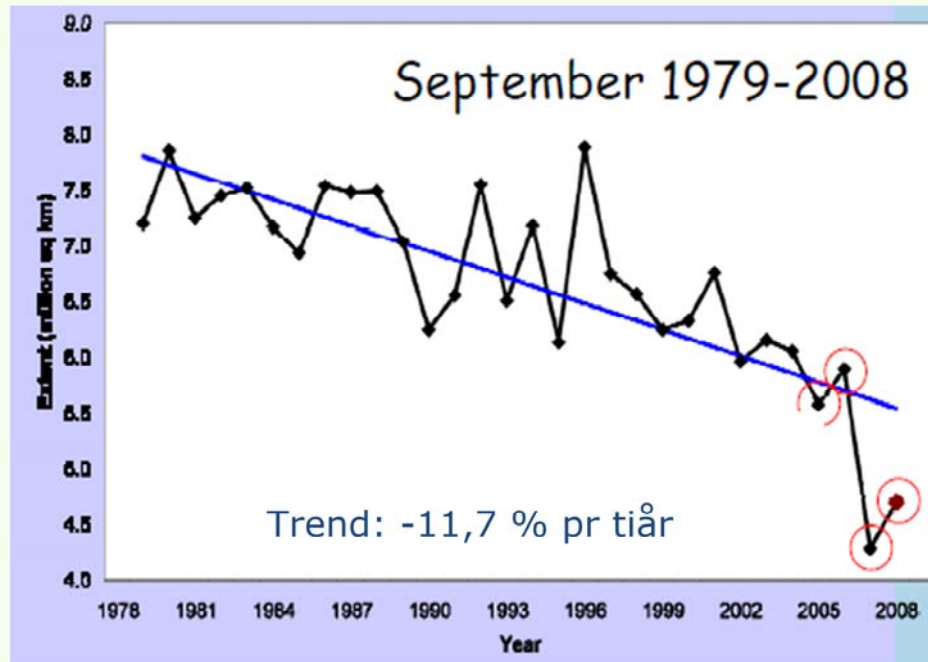
Knowing that the ice sheet at some places is more than 3000 meters thick, made me realize the power of climate change.

The reason why I went to Nuuk, was a presentation of the Arctic Climate Impact Assessment report.

The visit was very useful, and I learnt a lot about melting of the Greenland Ice Sheet and its consequences.

With a melt down of the Greenlandic Ice Sheet, the sea level is expected to rise 6-7 meters.

The Polar Ice Cap

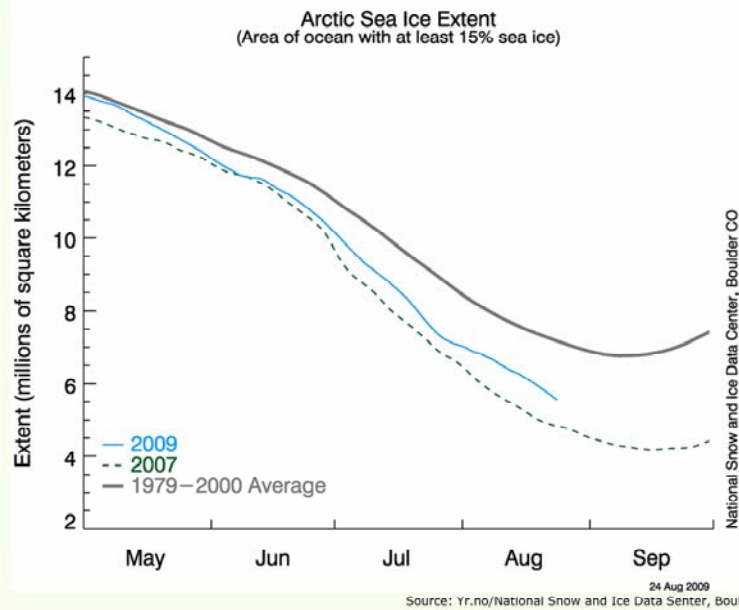


5

Source: Norwegian Polar Institute 2009

This slide shows the decrease of the Polar Ice Cap.

Sea Ice Extent of the Arctic Ocean

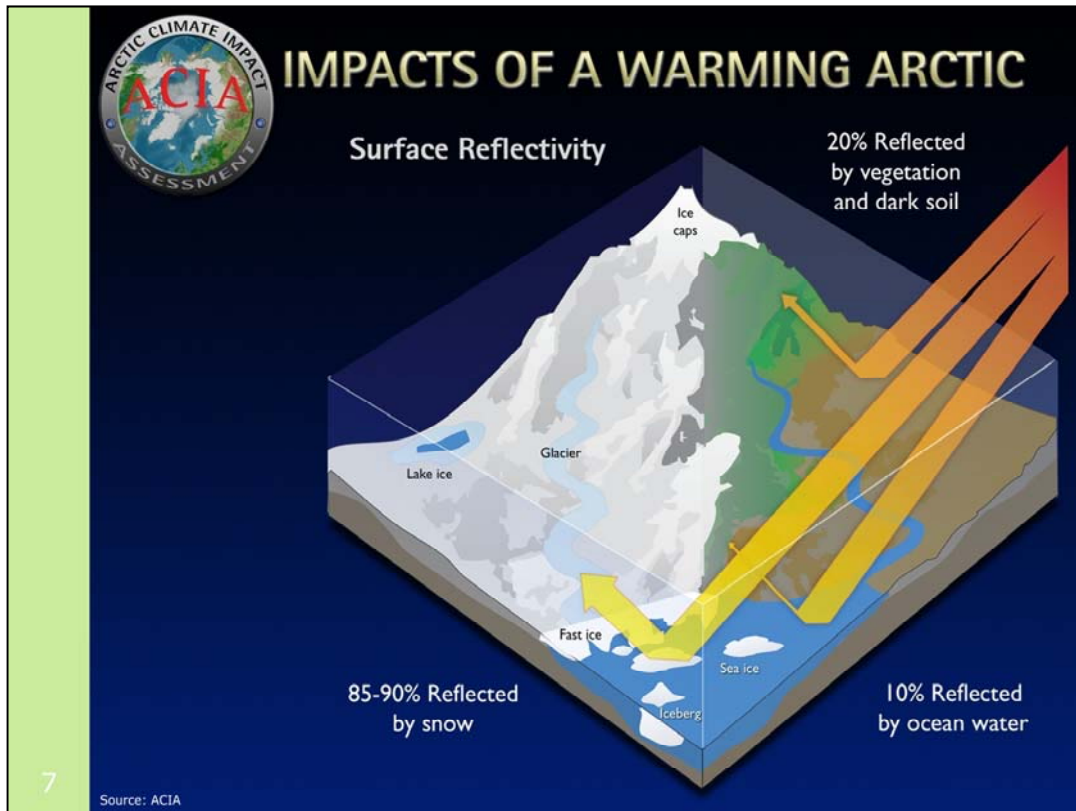


6

The scientists still don't fully understand the collapse of the polar sea ice we have seen since 2006.

The blue line shows ice extent in 2009. It is slightly higher than the minimum in 2007, but well under average for the years 1979-2000.

So let's hope the slight growth in minimum extent is a sign that this dramatic loss of sea ice will slow down.



Rapid loss of sea ice is likely to speed up the warming of the Arctic as well as the globe.

Albedo is the amount of sun energy which is reflected from a surface. The reflection from snow and ice is much higher than for open sea and for vegetation and soil.

This means that melting of snow and ice makes sea and land absorb more energy from the sun. This warms the land and sea of the Arctic, increasing the melting of ice and snow further.

And so it goes in a vicious cycle. This "ice-albedo feedback" is an important reason why the Arctic warms much faster than the rest of the globe. This mechanism also contributes to increased global warming.

Thawing permafrost



Another consequence of climate change is thawing permafrost, which will release methane to the atmosphere and accelerate global warming.

It has been estimated that 900 gigatons of carbon is stored in permafrost worldwide. This large store would more than double the amount of carbon in the atmosphere today if released.

Temperatures in permafrost areas like Siberia, has increased 3 degrees Celsius in 40 years.

Both thawing of permafrost and releases of methane are known to increase.

Releases of methane from permafrost is another vicious cycle, with potentially devastating consequences for global climate change.

Damage to infrastructure



9

Photos: Vladimir Romanovsky

Thawing permafrost will create huge problems buildings and for physical infrastructure like roads and pipelines.

This is already happening many places in the Arctic.
These photos are from Alaska.

Impact on the Barents Region



10

Photo: Trym Ivar Bergsmo

The Barents region is also already affected by climate change. For example, the winter temperature in 2008 was about 5 degrees Celsius above normal in large parts of Scandinavia.

The Barents council and the Nordic Council of ministers have financed a study of the effects of climate change on the biodiversity and eco-system services in the Barents Region.

Indigenous peoples, with their traditional way of life are closely tied to nature and its seasons. Thus, they are more vulnerable to climate change than urban society.

During the International Polar Year several climate related projects have been launched.

One example is a project which brings together reindeer herders from the Arctic countries, to explore the challenges posed by a changing climate (the EALAT-project).

Acidification of seas



The ecosystems in the oceans will also be effected by climate change, and probably more than we thought a few years ago.

Approximately one third of the CO_2 we release to the atmosphere, is absorbed by the sea. This is slowing down global warming, which is good.

However, CO_2 becomes acid when solved in water. This means that the sea also becomes more acid.

This is bad news for all creatures which have an outer shell made of calcium-carbonate, which dissolves more easily the more acid the water becomes.

Effects of acidification are likely to occur first in oceans in the Arctic, since cold water absorbs more CO_2 .

Effects are expected at all levels of the Arctic marine food chain, especially to plankton, fish eggs, coral reefs and herring.

Scientists tell us that before 2025, acidification will have adverse effects on the marine food chain.

Impact on the Barents Region



At this conference, our best scientists will present up to date knowledge on how climate change may affect biodiversity, forests and water bodies.

We will also learn about impact on society - on infrastructure, health and well-being of people in the Barents Region.

Further more, we will exchange experience on adaptation and create a common knowledge basis for co-operation on these issues.



After the Arctic Climate Impact Assessment report (ACIA) was published in 2004, the Barents Council adopted a policy paper on how to follow up the recommendations of the ACIA-report in the Barents region.

This was a very constructive move. Since then, the warming of the Arctic has speeded up much more than expected.

As chair of the Barents Working group on environment, I strongly recommend to lift climate change high on the agenda of the whole Barents cooperation.

I hope this conference will give a basis for reviewing the policy in view of the recent changes. We need to make the policy more operational and give a basis for a real co-operation on climate changes in the Barents region.

Adaptation



14

Photo: The Ministry of the Environment

This conference focuses mainly on adaptation issues.

Even if humanity stopped all emissions of greenhouse gases overnight, global warming would continue for several decades, due to the warming effect of what has already been released.

Adaptation to climate change is therefore necessary, even if we succeed in reducing our emissions.

The 2 degrees Celsius target



However, the most effective adaptation measure is mitigation.

To avoid dangerous climate change, including vicious cycles related to the Arctic climate system, it is imperative to limit global warming to 2 degrees Celsius above pre industrial levels.

The "2 degrees Celsius target" will require at least:

- A peak in global greenhouse gases emissions by 2015
- Reductions in global emissions by 50-85% by 2050.

Achieving the "2 degrees Celsius target" is very ambitious.

Together with the EU, Norway links the "2 degrees Celsius target" to the negotiations for the climate conference in Copenhagen later this year.

Center in Tromsø for research on ice and climate



16

Photo: Bo-deh

Photo: Norwegian Polar Institute

There is however, a great need for more knowledge about the consequences of melting ice.

We are now strengthening and developing this scientific knowhow by establishing a new competence centre for research on ice and climate in Tromsø, called ICE.

The picture shows how the climate expert James Hansson, Minister for Environment and Development Eric Solheim and Director of the Norwegian Polar Institute Jan Gunnar Winther cut a piece of ice at the opening of the center.

A warming Arctic – twice the global level



Photo: UN



Photo: Marit Nyborg

17

The Secretary General of the United Nations Mr. Ban Ki-Moon is now, as we speak, on a trip almost to the North Pole.

He is invited by the Norwegian Minister of the Environment, to observe for himself what is happening to the polar ice cap.

The Climate summit in Copenhagen



We hope that important countries such as Russia and the United States engage to achieve an ambitious global agreement in Copenhagen in December to cut global emissions.

It is crucial that the Climate Summit agrees on;

- tough and specific reductions in global emissions, meeting the 2 degrees Celsius target,
- strong incentives to protect the rainforest in developing countries,
- instruments that provides transfer of funds and technologies from the rich countries to cut emissions in developing countries.

We have everything
we need to get
started, save
perhaps except
political will...

...but political
will is a
renewable
resource.

Al Gore, Nobel
Peace Prize
Laureate

