

# **The Polar Stern The Aicsex Project**

## **English version:**

TC in: 00:03:00:00

TC out: 00:08:55:17

Duration: 00:05:55

TC in: 00:03:20:01

VOICE OFF

We are at the North Pole, in the heart of the Arctic Ocean.

A sensitive indicator of climate change, the Arctic Ocean is at the centre of the Arctic Ice Cover Simulation Experiment, also referred to as AICSEX. Four European Union countries - Germany, Great Britain, France and Finland - and Norway take part. By studying the data pertaining to the last 100 years, AICSEX aims at measuring the evolution of the temperature and at predicting the effects of melting ice on the climate in the 21st century. To learn more, we went to Bergen, in Norway to the Nansen Environmental and Remote Sensing Centre.

**TC in: 00:04:00:23**

**INTERVIEW**

**Prof. Ola M. Johannessen**

**Founding director NERSC**

**By studying satellite monitoring of the Arctic ice cover, we have learned that over the last 20 years the ice has decreased 8%.**

**TC out: 00:04:14:06**

VOICE OFF

The area of the Arctic covered by ice in the summer continues to shrink. This one of the lessons learned from satellite photographs that have been available since the '70s. This graph shows the evolution of the area of the ice cover during one year.

**TC in: 00:04:34:12**

**INTERVIEW**

**This measurement is also supported by measurements of ice thickness taken by nuclear submarines under the ice.**

**TC out: 00:04:43:02**

VOICE OFF

September 2002 was a red-letter month. The ice cover had never been so thin. Data collected by submarines was made available to scientists. This is how it was possible to determine that over the last 30 years, the thickness of the ice in the autumn has been decreasing by 4cm per year on the average, representing 40% of the total volume of ice.

**TC in: 00:05:04:18**

**INTERVIEW**

**The temperature record for the last hundred years shows actually that we had a strong increase in the temperature in the 1930's et 40's, followed by a cooler period and then warmer temperature again, let's say from 1970 up to now.**

**This temperature increase in the 1930's was actually caused by natural variability, while the increase in temperature of the last, let's say 20 years, has been caused by or partially caused by human influence.**

**Now the human influence is over-emission of CO<sub>2</sub>, which is causing global warming.**

**TC out: 00:05:53:04**

**VOICE OFF**

This global warming is felt more in the Arctic than in the rest of the world. This is why every attention is paid to this region.

**TC in: 00:06:02:16**

**INTERVIEW**

**Our climate simulation studies have shown that the change in the area of ice is not so dramatic during wintertime: we expect a 20% decrease. However during summertime, we will essentially have an ice-free Arctic Ocean at the end of the century.**

**TC out: 00:06:23:22**

**VOICE OFF**

At the end of the 21<sup>st</sup> century, the polar ice cover may completely disappear during the summer. If this ice melts, scientists affirm that nevertheless the level of the seas will not change.

**TC in: 00:06:35:07**

**INTERVIEW**

**When floating ice melts, this does not cause an increase of the sea level. Simply because the ice is frozen from water and it melts again, so no water has been added.**

**TC out: 00:06:54:05**

**VOICE OFF**

This experiment shows ice cubes floating in a glass of water. When the ice cubes melt, we can see that the level of water in the glass is still the same.

**TC in: 00:07:09:14**

**INTERVIEW**

**However, if the Greenland ice sheet and Antarctica start to melt, then the sea level will increase.**

**TC out: 00:07:18:08**

**VOICE OFF**

That's true. Unlike on the North Pole, where the ice floats on the sea, ice in Antarctica and Greenland covers the landmass. If it were to melt, this could cause a significant rise in sea level.

The melting of the polar ice cover could have a series of consequences in the long run. This glacial region is particularly rich in plankton and fish. The ecosystem will change if the ice

melts, but scientists do not yet know precisely how. In addition, we would expect shrinking of the polar cap to facilitate maritime transport and it could simplify the logistics of off-shore oil activities in the region.

**TC in: 00:07:58:05**

**INTERVIEW**

**The fresh water from the melting ice will spread in the North Atlantic and influence the ocean circulation (currents) such as the Gulf Stream.**

**TC out: 00:08:08:19**

**VOICE OFF**

The third consequence, but not the least important, is the impact of melting ice on the ocean currents.

Indeed, when the ice melts, cold water disperses in the North Atlantic Ocean. This colder water is less salty and lighter. The lighter water flows with greater difficulty, reducing or even totally stopping deep-water currents from the northern seas into the Atlantic. If deep-water formation slows down, the ocean currents themselves will be affected. This will thus have an impact on Europe's climate.

**VOICE OFF**

By studying the effects of natural variability and human activity on the Arctic, the AICSEX project gives a greater understanding of this vast area of seas, considered to be an outpost of on-going climate changes.

**TC out: 00:08:55:17**

**International version**

TC in: 00:09:00:00

TC out: 00:14:55:17

Duration: 00:05:55

**B-ROLL:**

TC in: 00:15:00:00

TC out: 00:23:09:11

Duration: 00:08:09

00:15:00:00

Interviews of Ola Johannessen

00:18:22:19

Floating ice + Arctic

00:19:16:24

Scientists on ice

00:19:35:14

The Nansen Center

00:20:22:00

Satellite

00:20:28:09

Animation of a submarine under water

00:20:55:00

Arctic ice

00:21:37:11

Ocean water

00:21:56:05

under water images

00:22:12:04

Polar ice

**TC out: 00:23:29:11**