

Ice in the Arctic Ocean recedes dramatically for the fourth year in succession

Bremerhaven/Hamburg. This year, the summer sea ice cover in the Arctic Ocean will reach one of its lowest levels in the past 20 years. This is shown in analyses of satellite pictures carried out by Prof. Dr. Lars Kaleschke at the University of Hamburg's KlimaCampus. For the fourth time in a row the Arctic region is covered in even less ice than the downward trend allowed one to expect in the past few decades. "The results are alarming because this negative development has accelerated. There is absolutely no indication that the ice cover is 'recovering'," Lars Kaleschke said. Prof. Dr. Rüdiger Gerdes of the Alfred-Wegener Institute for Polar and Marine Research believes that this development is not solely due to natural causes; instead it is a result of the climate change being brought about by human beings. The two scientists presented their most recent research results at a joint press conference with the Klimahaus Bremerhaven 8° Ost on Monday.

Kaleschke reckons that by the end of the Arctic summer the September average for the area of sea ice around the North Pole will show that the ice has been reduced to around 4.9 million square meters. The average for the past 40 years shows that in September the ice covered an area of 6.7 million square kilometers; in 1980 the expanse covered as much as 7.8 million square kilometers.

The average expected for this September is one of the four lowest figures shown since satellite analyses were first carried out early in the 1970s. Scientist registered the lowest expansion of sea ice at 4.2 million square kilometers in 2007. The minimum expanse of sea ice fluctuates considerably from one year to the next; on a statistical average, the area has been reduced by around eight per cent every ten years since 1970.

In the past two years the area of sea ice has increased again over that of 2007. For this reason it was not ruled out that the negative trend of the past few years could be reversed this year. However, this expectation was not confirmed. According to Professor Gerdes, the fact that the actual ice conditions in the Arctic Ocean are now falling short of figures calculated in the global climate model shown in the IPCC report may have different causes. Professor Gerdes is an expert on sea ice with the Alfred-Wegener Institute, his responsibilities including analyses of the climate models for the Arctic region.

"Nowadays, long-term natural variabilities in the climate and the influence of human beings play a comparable role in the Arctic region," Gerdes says. The anthropogenic rise in temperature coincides with a warm phase in the Atlantic multidecadal oscillation (AMO); together they result in the dramatic reduction in ice seen in the past few years. The AMO shows a cold period from 1860 to 1930 with low temperatures on the surface of the water, followed by a warm period in the 1940s. Another warm period has followed since the 1990s. For the future development of the ice in the Arctic Ocean, it is decisive how long the AMO takes to return to its cold phase.

According to Gerdes, the fact that the warm period in the 1940s did not cause the sea ice to melt to the same extent that it does today is due to the differing developments of the thickness of sea ice. "In the meantime the ice mass has in some case fallen below the critical point that enabled it to melt in summer. Seventy years ago the ice was so thick in winter that this could not have happened," Gerdes explained.