

Warmer climate makes Baltic more salty

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Science has long believed that a warmer climate will increase river runoff to the Baltic Sea, thus making the inland sea less salty. However, a new extensive study from the University of Gothenburg reveals that the effect will probably be the opposite: climate change will reduce river runoff and increase salinity in the Baltic Sea.

"There could be major consequences for the Baltic's sensitive ecosystem," says researcher Daniel Hansson.

The Baltic is a young, brackish sea with a unique and sensitive ecosystem containing both marine and freshwater species. Researchers have been warning for many years that tiny changes in the salt content could have a major impact on the ecosystem. The basis for the argument has been that a warmer climate will increase river runoff and make the [Baltic Sea](#) less salty.

University of Gothenburg researchers, who have analysed 500 years' worth of [climate data](#), now say that the effect could instead be the opposite.

Researchers at the Department of [Geosciences](#) have been able to reconstruct the flow of freshwater to the Baltic Sea since the 16th century by analysing atmospheric observations from the past 500 years. The study, which has been published in the *International Journal of Climatology*, shows that in the past, warm periods have coincided with less freshwater in the Baltic Sea. If the climate becomes warmer in future, river runoff may also fall, leading to an increase in [salinity](#).

However, there may be major regional differences:

"More freshwater runs off in the northern Baltic and Gulf of Finland when it's warmer, while the opposite occurs in the southern Baltic. The reason for this is that a warmer climate leads to increased [rainfall](#) in the north and east and less rainfall in the south. Our study shows that the decrease in the south is greater than the increase in the north, which means that overall the water will be saltier," says Daniel Hansson, researcher at the Department of Geosciences.

The increase in salinity in the Baltic Sea may have a major impact on the sensitive ecosystem, which is dependent on a delicate balance between salt and fresh water.

"A saltier [sea](#) will benefit certain animal and plant species while being problematic for others, which could upset the entire ecosystem," says Daniel Hansson, who emphasises that there is still a considerable degree of uncertainty:

"We've studied changes over the past 500 years, which is not the same thing as predicting what will happen over the next 500 years. But there is reason to believe that warm periods in the future will behave similarly to the way they have done in the past," says Daniel Hansson.

Provided by University of Gothenburg

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