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Project website			
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Context / Social problem

The North Atlantic Ocean is of crucial importance for the climate in Europe. To make predictions about changes in the European climate, we need measurements (temperature, ocean currents) from various locations in the North Atlantic Ocean and a better understanding of the processes that control heat transport in the ocean.

What do we know/not know?

In qualitative terms we know that the North Atlantic Ocean has a large impact on the climate in Western Europe. However, there is much debate about the importance of the ocean in quantitative terms (in comparison to the atmosphere) and about which mechanisms in the ocean are important. Are changes in deep-ocean circulations important, or is everything determined by the Gulf Stream? Is vertical mixing indeed a crucial element in maintaining the major ocean flows? The BSIK-CS01 project is the Dutch contribution to an international research effort to resolve these and other questions.

What is being studied?

The BSIK-CS01 project contributes to the monitoring of the North Atlantic Ocean by conducting biennial hydrographic surveys of an area between Ireland and Greenland. Measurements are taken of the water temperature, salt content, currents, oxygen content and nutrient content through the whole water column at a monitoring points about 50 km apart. At two characteristic sites water temperature, salt concentration and currents are continually measured by self-registering anchored instruments. The north-south heat transport in the ocean is being investigated further in a modelling study and the outcome compared with these measurements. In addition, detailed studies are being

made of the internal waves in the ocean. These waves are very important because they cause vertical mixing, which in turn is crucial for heat transport. The current generation of models still use simplified parameterisations of this vertical mixing, despite the fact that the model results are highly sensitive to this parameter.

What are the results, and who are they for?

The result will be a recognisable Dutch input to international efforts via the World Climate Research Programme (WCRP), the CLimate VARIability and predictability programme (CLIVAR), and other bodies to improve climate models so that their margins of uncertainty can be reduced.

