



Major oceanographic Changes in the North Atlantic during the 20th Century seen in a 500 year Perspective

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Major oceanographic changes have taken place in the North Atlantic/Arctic basins during the 20th century. In the 1940es a warming occurred with its largest amplitude in the Arctic region. This was followed by a slight cooling and after 1970 again a warming as part of the global warming. In parallel with this, a freshening trend of the high latitude Atlantic (and a salinification at lower latitudes) has been observed together with increased discharge from Siberian rivers and a decrease in the ice cover and -thickness in the Arctic Ocean.

In this presentation, we will investigate these changes in a longer-term context. We analyse results from two different runs of 500 year length each with the coupled climate model ECHAM4/OPYC3, one forced run with time-varying external forcing from solar variations, volcanoes and greenhouse gases and one control run with the external forcing kept constant. We will investigate, whether similar warming/freshening events simulated during the past 500 years. In addition, by comparing these two runs we can answer questions about whether such changes are internally generated or externally forced.