

CS 05 Remote influences on European Climate

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Context / Social problem

The direction of the wind is of the utmost importance for the European and particularly the Dutch climate. Easterly winds bring relatively dry, warm summers and relatively cold winters. Possible changes in these wind directions must be considered when making statements about future changes in the Dutch climate. It is also in the public interest to obtain an understanding of possible extreme weather events that we have not experienced in recent history, such as an exceptionally powerful storm or an extremely dry or wet season. Climate studies can provide the first indications of such events.

What do we know/not know?

It is known that different global climate models show a variety of changes in the European climate as a reaction to increasing concentrations of greenhouse gases in the atmosphere. To an important extent these reflect the degree to which the models produce changes in wind direction statistics. We know little about how these statistics will change, or the chances of easterly winds increasing, for example. There are indications that changes in tropical precipitation could play a role. If so, it could be an important source of uncertainty because the climate models produce a wide range of patterns for the warming of tropical oceans and associated changes in precipitation.

It is known that the climate can fluctuate considerably in the absence of increasing concentrations of greenhouse gases and that a coincidental chain of events can cause record-breaking conditions. We have little idea what form an extreme weather event that has never occurred before in the Netherlands might take.

What is being studied?

Changes in the wind climate across Europe in relation to the warming of tropical oceans are being surveyed in recent simulations with various climate models. The

research is investigating how the uncertainties in the warming of tropical oceans affect uncertainties in the expected future climate in Europe. In addition, various extreme events are being selected from a large set of existing simulations made using global models with a limited spatial resolution. These will then be run through a regional model with a high level of spatial detail.

What are the results, and who are they for?

Information on the possible distribution in the future climate and on the selected extreme events will be used as an input to CS07 for the construction of scenarios.

