



## Climate Change in Denmark: Models, Uncertainties, Effects and Adaptation

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### ABSTRACT

Adapting to climate change requires a common understanding and quantification of how human activities, interacting with natural processes, affect human and natural systems. **The Centre for Regional Change in the Earth System (CRES)** is a five year funded multidisciplinary climate research platform financed by the Danish Council of Strategic Research. It brings together leading scientists with excellent and long track records of quality research in climate change and key Danish stakeholders and practitioners with a need for improved climate change information.

CRES carries out a number of specific research activities, all tied together with a common agenda taking an interdisciplinary approach. The overall objective of CRES is to extend knowledge on and reduce the uncertainties surrounding regional climate change and its impacts and thereby support future climate change adaptation and mitigation policies. While more specific objectives are to: a) reduce uncertainty surrounding regional climate change and its impacts for the period 2020-2050 by improving model formulation and process understanding; b) identify key changes and tipping points in the regional hydrological system, agriculture, freshwater and estuarine ecosystems caused by changes in seasonality, dynamics and extreme events of precipitation, droughts, heat waves and sea level rise; c) quantify confidence and uncertainties in predictions of future regional climate and its impacts, by improving the statistical methodology and substance and by integrating interdisciplinary risk analyses; d) interpret these results in relation to Danish, European, and global risk management approaches for climate change adaptation and mitigation.

Since the start of CRES in October 2009, scientific advancement has taken place with respect to each of these specific objectives. A large number of scientific papers have resulted from this and has in many cases substantially lifted the scientific foundation that underpins decision making with respect to climate change adaptation. With CRES, one may argue that advancing the underlying scientific understanding of issues central for decision making particularly in Denmark has gone hand in hand with the need to communicate the state-of-the-art in addressing these issues. An emerging theme already pertinent to CRES activities is to take a risk based approach towards understanding climate change impacts and when considering practical adaptation options and strategies.

This presentation will highlight both some of the scientific achievement as well as how these have been communicated to the users of climate change information needed in adaptation work as well discussing how the remaining efforts within the lifetime of CRES are expected to kick-off the next stage in defining how climate change science meets societal needs related to adaptation.