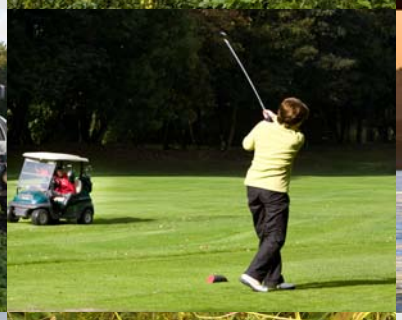
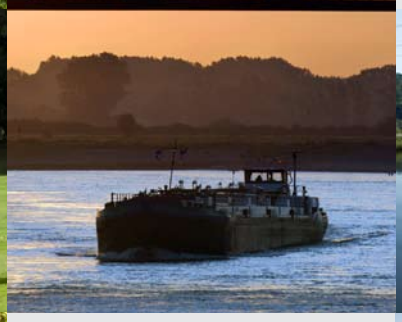
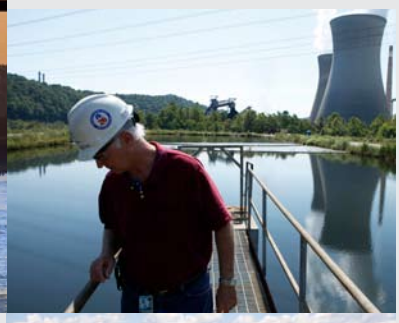
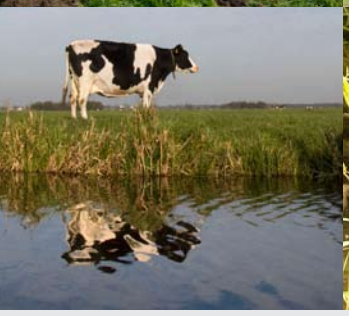
Ongoing research in the Knowledge for Climate programme

In the research programme Knowledge for Climate, knowledge institutes work closely with the Dutch authorities and the business community. The better the cooperation between these parties, the better the chance of successful and feasible adaptation strategies. Demand is a significant driver for knowledge development. Knowledge about climate, water, the natural environment, urban areas and physical space serves as the basis for further developing and shaping ideas and plans for climate-proofing the Netherlands. This encompasses both scientific and technical knowledge as well as knowledge from the social sciences. Since the official kick-off of the programme in November 2008 in Rotterdam, the first group of projects are approved and are underway. Here we present a selection of these projects. For a full overview and more information on their progress and preliminary results, please visit: www.climateresearchnetherlands.nl.




Model platform – Coupling (KKF01b)

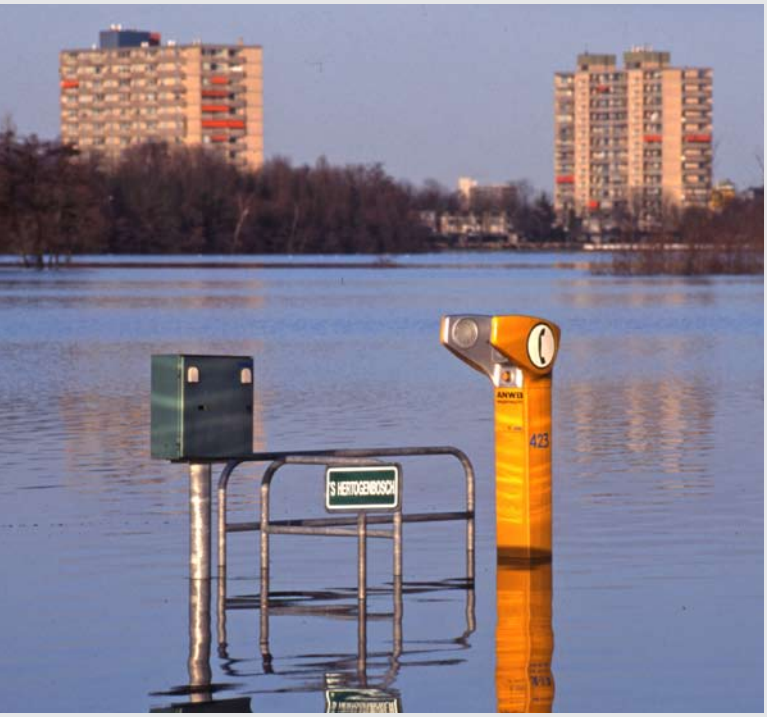
The process of designing adaptation strategies requires a supply of consistent climate, hydrological, ecological and socio-economical scenario's. The inherent interdisciplinary character of climate change and the need to develop adaptation strategies at local to regional scales requires that climate and climate impact data and models need to be coupled to determine regional implications of global climate change. For developing spatial planning strategies, this requires coupling between climate scenario's and sectoral climate impact models (water, nature, agriculture and socio-economic models). The end product of this project will be a data and modelling platform that facilitates the supply of consistent scenarios for physical boundary conditions as well as for other boundary conditions. Initially this platform will be limited to data exchange; later fully coupled models may be constructed. Such a platform allows for regularly updating and guarantees that the scenarios will be based on up-to-date science and technology.

Model platform – Tailoring (KKF01c)

Results from research on climate change, possible impacts and adaptation options are often not available in a format that can be used directly by people that need to develop climate adaptation strategies. Therefore pre-processing and post-processing of data, and generation of additional data/information is needed. This process is called "tailoring". This project pays special attention on how to tailor information on climate change, its impacts and adaptation options for various users (ranging from researchers to policy makers). In this project tailoring is not limited to climate data, but also includes tailoring of data on hydrology, nature/ecology, agriculture and land use scenarios.

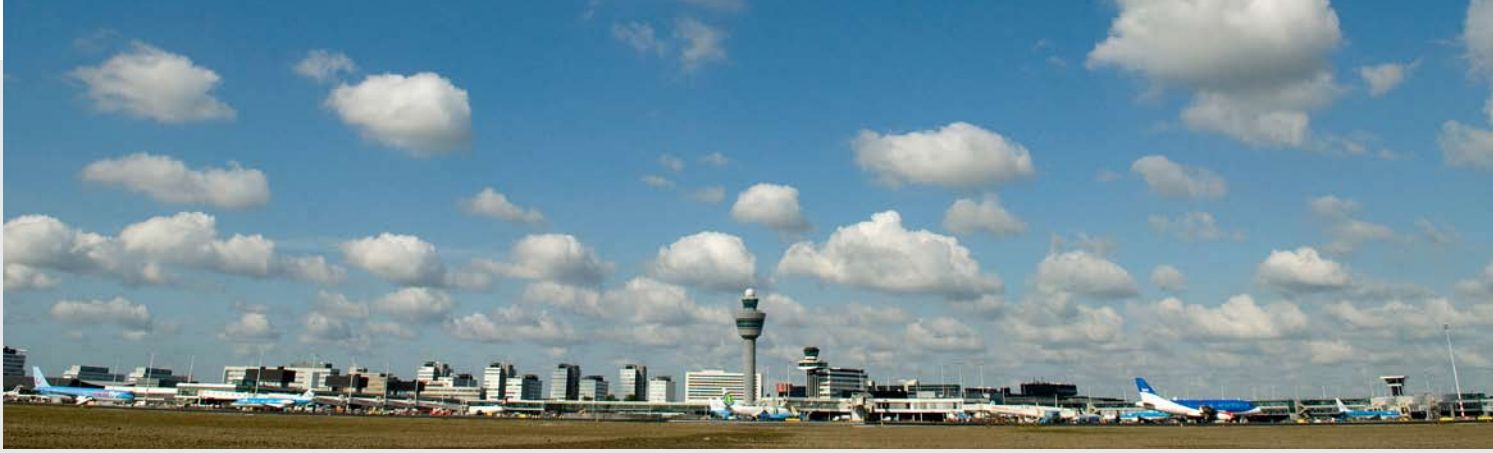
Adaptation to Meuse flood risk (HSGR06)

Given the expected increases in flood probability and risk, research is needed to provide adaptation measures that can maintain future safety. The effectiveness of flood defence measures has traditionally only been assessed in terms of their contribution to reducing flood probabilities. The damages associated with low probability flood events are high, and hence adaptation should also aim to reduce potential damage. The proposed research aims to assess the sensitivity of Meuse flood risk to changes in climate, land use, and socioeconomic development. The project will contribute to the emerging scientific discourse in this field, whilst also providing concrete risk estimates for the Meuse. Moreover, it will develop new spatial planning based adaptation strategies, in a multi-stakeholder workshop setting.



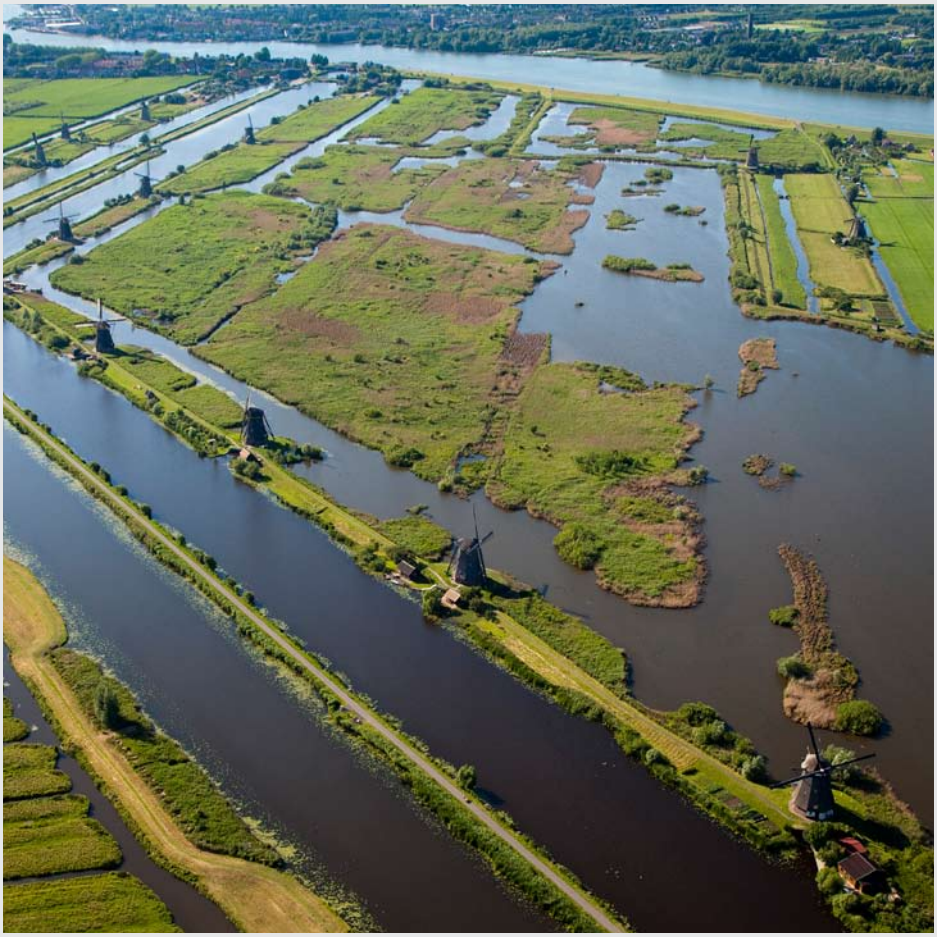
Relationship between perceived flood risks, problem ownership and adaptation choices (HSRR07/ HSGR08)

There is a strong need for a better understanding of what risk perception is and what policy-makers can do to converge their policy with the perceptions of residents and business owners, without creating unwanted side-effects such as lower property values. Currently, policy-makers are reluctant to communicate clearly and fully about risks and problem ownership. One of the sensitive issues is liability. Hence, it is important to understand that the perception of climate-related risks and their geographical variation is crucial for developing adaptation policy and for communication about collective and individual choices that affect risks. This project will enhance our understanding of how policy-makers and professionals can foster shared ownership of flood safety problems among residents and business owners by communicating about risk, without creating unwanted side-effects in a spatial planning context.



The impact of climate change on the critical weather conditions at Schiphol airport

(HSMS03) Schiphol airport operations is very sensitive to critical weather conditions such as fog and low clouds, intense precipitation, heavy winds, and severe lightning. Flight safety and efficiency requires reliable weather information on local scales. This project aims to quantify and better understand how climate change affects the weather conditions at the airport, and will use this knowledge to improve the quality of their weather forecast. They will use the newly developed high-resolution (1-2 km) weather analysis and forecast model Harmonie, to determine the effect of global climate change on the weather parameters and the scales that are relevant for Schiphol operation. Results will contribute to determine which adaptation strategies are most effective to make the airport "Climate Proof".



Managing climate effects in peat meadows and shallow lakes

(HSOV1c) Peat meadows and associated shallow waters encompass a major part of the Netherlands. There are major challenges to regional and local governments to come up with adaptive management strategies to cope with the major stresses posed by climate change on basic environmental requirements for agriculture, drinking water production, nature and residential areas. In the development of adaptation strategies for peat meadows and shallow lakes a difficulty is that the interdisciplinary scientific information available is complex and does not match the requirements of the decision process. This project aims to develop knowledge that is necessary to be able to assess investments to be made in spatial planning and infrastructure over the coming twenty years in terms of their resistance to climate change, and for making changes where necessary.

Heat stress in the city of Rotterdam (HSRR05)

In this project the Urban Heat Island effect over Rotterdam will be predicted, measured and analysed to determine the magnitude, the causes and the mechanisms and frequency of occurrence in the present and in the future. An estimation will be made of the implication of heat on energy consumption, thermal comfort and public health targeting the most risky areas in the city and vulnerable groups such as elderly, children and patients. Various options to reduce the Urban Heat Island effect, heat stress and its consequences will be regarded: 1) behavioural measures (life style adaptation), 2) solutions at building level (for example energy efficient design of building by means of building orientation, materials and construction), 3) solutions at city level (urban planning strategies: building densities, parks, ponds, canals and city green). The most relevant (no regret) options or strategies for the city of Rotterdam will be pointed out, including a recommendation concerning the implementation of the strategies in practice.

Using scientific knowledge by policy-makers in the Deltaregion (HSZD01)

Decisions about (infrastructural) investments related to water management and land use are a regular issue within the Dutch Southwest Delta region since decades. Predicted changes in the global climate require that the policy makers in this region currently reconsider their water management strategies and land use zoning plans in order to minimize flood risks and optimize freshwater availability. The first goal of this research project is to map the patterns of certainties and uncertainties regarding the freshwater availability for land use both qualitatively, through analysis of cultural concepts, and quantitatively, with statistical analysis. The second goal is to translate theory and empirical findings towards practical guidelines for a science policy interface in the Southwest delta.