

Questions about climate prediction? Contact researchers directly

Contact information about researchers is available on our website: www.bjerknes.uib.no

Professor Tor Eldevik

My research focus is on the role of the northern seas in climate in past, present and future climate variability and change, recently including predictability and underlying mechanisms.

Co-leader RG4, Coordinator NORTH



Professor Noel Keenlyside

My research interests are seasonal to decadal variability and predictability of climate. I am particularly interested in ocean-atmosphere interaction, and in the improvement of climate models and in enhancing climate prediction.

RG2, STERCP, EPOCASA, GREENICE, PREFACE



Erik Kolstad, Researcher II

My main research interests are climate dynamics, numerical weather modelling, and dynamical downscaling, and predictability and natural variability from intra-seasonal to multi-decadal time scales.

Project leader HordaKlim



Stefan Sobolowski, Researcher II

My research interest focus on improving our knowledge of present and future climates, climate change and climate variability at local to regional scales.

*Project leader R3, Co-leader DYNAMITE
Coordinator EVOGLAC and EURO CORDEX*



Professor Asgeir Sorteberg

My main two research interests are synoptic to large scale atmospheric dynamics with special emphasis on mid-latitude cyclones and research connected to the water cycle.

WACYEX, EXPREC, FLOODING



BJERKNES CENTRE
for Climate Research



The aim of the Bjerknes Centre is to understand and quantify the climate system for the benefit of society.



Climate Prediction

at the Bjerknes Centre for Climate Research

BJERKNES CENTRE
for Climate Research



Will it be a snowy winter in Norway next year? Will there be hot summers on the west coast towards 2020? And where is the ice edge in the Barents Sea? In other words, can one predict regional climate months to years ahead in the same way forecasts predict the weather for the coming week?

Climate prediction is one of the major challenges within current climate research. This is a short overview of the latest research and on going projects at the Bjerknes Centre.



CLIMATE PREDICTION

Climate prediction aims to provide the most reliable information possible on how climate will vary over seasons to decades. It combines the fields of weather forecasting and climate change. Current information of the climate, such as ocean temperature, is used to predict climate's natural variations. While accounting also for how climates will respond to changes in greenhouse gas emission and other external factors.

A climate model is a tool used to calculate future climate. These mathematical models vary in complexity, from simple models for energy balance to advanced dynamic models. The purpose of climate models is to explain how the climate will develop in the future, globally as well as locally. Researchers at the Bjerknes Centre use and develop two important Norwegian climate models:

NorESM – The Norwegian Earth System Model

This global coupled model system can be run with various degrees of interactions with bio-geo-chemical processes in the earth system. NorESM entails an advanced and detailed description of naturally occurring and man-made particles (sea salt, dust, soot and aerosols) and how these particles affect the radiation, clouds and precipitation.

NorCPM – The Norwegian Climate Prediction Model

NorCPM is based on NorESM and uses advanced statistical methods to incorporate current observations of climate. It is used to study why climate varies and how long it may be predicted. Climate variability in our areas is strongly influenced by changes in heat transport in the atmosphere and ocean, and NorCPM captures these processes.

RESEARCH GROUPS

There are seven research groups at the Bjerknes Centre and two of these groups work with developing climate predictions.

RG2 – Climate predictions and regional scenarios

The goal is to reliably predict climate on seasonal and longer timescales with focus on the northern high-latitudes. Leader: Anne Britt Sandø (IMR) Co-leader: Noel Keenlyside (UiB)

RG4 – Large-scale atmosphere-ocean dynamics

The goal is to understand how winds and ocean currents – and the heat, moisture, and salt they carry – control climate. Leader: Camille Li (GFI), Co-leader: Tor Eldevik (GFI)

SELECTED PROJECTS

ARCPATH – Looks at coastal communities on eastern Greenland and northern Iceland and how changes in climate might have consequences for these coastal communities. Predicting climate in the Arctic and its impacts.

EPOCASA – Develops a dynamical climate prediction system to assess predictability on seasonal-to-decadal timescales in the North Atlantic Sector and Arctic (NAS).

GREENICE – Contributes to understanding the present and historical adaptation of arctic communities to changes in extreme weather and sea-ice.

NACLIM – Gains knowledge of the northern sea surface temperatures (SST) and sea ice distributions in order to assess decadal climate predictions.

NORTH – Assesses the fundamental structure and operation of the Atlantic thermohaline circulation's northern limb and thus constrains its mean state, variance, and sensitivity related to observed and projected climate change, including possible feedbacks.

PARADIGM – Improves regional predictions of climate both on land and in the ocean.

STERCP – Investigates the potential of an innovative technique to reduce model systematic error. Improves prediction skill and reduce uncertainties in future projections.

WACYEX – Quantifies observed changes in extreme precipitation events in Norway, as well as investigates the weather systems that caused them and how such systems may be influenced by the SST in the Gulf Stream and sea ice in the Arctic.

