Workshop on ocean tipping points and extreme events

Date: 14th of April 2023, 09:30-11:30

Venue: Online, registration until the 13th of April

Level: Subject-specific knowledge not required

Registration available **here**

TiPACCs Tipping Points in Antarctic Climate Components

COMFORT

AMAP Arctic Monitoring and Assessment Programme

The Research Council of Norway

Aim and Scope

Recently, tipping points have attracted a lot of attention from both science and the media in the discussion of human-caused climate change. The IPCC in their latest assessment report no. 6 list tipping points in their glossary: "A critical threshold beyond which a system reorganizes, often abruptly and/or irreversibly." The events of tipping are called regime shifts. In this workshop, we will cover the definition itself in more detail along with recent findings on marine tipping points and regime shifts from the two EU Horizon 2020 projects COMFORT and TiPACCs and the Arctic Monitoring and Assessment Programme. The event will cover aspects of reversibility, time scales, uncertainties involved, mitigation pathways and adaptation options, and policy-relevant recommendations.

Agenda:

Moderator: Christoph Heinze (UiB)

09:30-09:50: Abrupt changes, regime shifts and tipping points: potential impacts on Norway by Friederike Fröb (UiB) and Petra Langebroek (NORCE)

09:50-10:05: Q&A

10:05-10:15: Assessing the mitigation potential and side effects of ocean-based Carbon Dioxide Removal techniques by Giang Tran (GEOMAR)

10:15-10:25: Emit now, mitigate later? Response of the Earth system to zero and negative emissions by Jörg Schwinger (NORCE)

10:25-10:35: Adaptation in the changing Arctic by Rolf Rødven (AMAP)

10:35-10:40: Policy recommendations by Christoph Heinze (UiB)

10:40-11:30: Q&A session

SPEAKERS

Christoph Heinze, University of Bergen, Bjerknes Centre for Climate Research

Christoph Heinze is a professor in marine biogeochemistry at the Geophysical Institute and Bjerknes Centre for Climate Research, University of Bergen, since 2004. He received his PhD from the University of Hamburg and the Max Planck Institute of Meteorology in 1990. Prof. Heinze's research deals with modelling of marine biogeochemical cycles, quantifications of the global carbon cycle, simulation and interpretation of the climatic sediment record, and feedbacks between biogeochemistry and climate. He served as lead author for IPCC AR4/WG1 (4th Assessment Report of the Intergovernmental Panel on Climate Change, Working Group 1 "The physical basis") and as review editor for IPCC AR5/WG1. Heinze is a member of the Norwegian Academy of Science and Letters since 2019. He coordinates the ongoing EU H2020 project COMFORT on ocean tipping points.

Friederike Fröb, University of Bergen, Bjerknes Centre for Climate Research

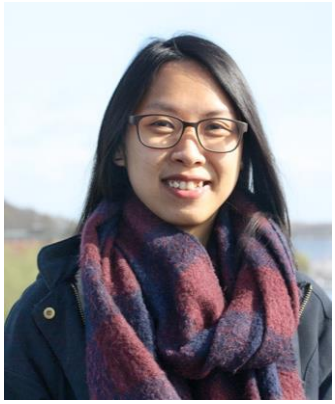
Friederike Fröb received her PhD degree in 2017 from the University of Bergen, after which she joined the biogeochemistry group of the Max Planck Institute in Hamburg, Germany. She is now a postdoctoral researcher at the Geophysical Institute at the University of Bergen and the Bjerknes Centre for Climate Research within the H2020 COMFORT EU project. Fröb is an expert in chemical oceanography, researching local and global carbon cycle processes and biogeochemical systems on different timescales, working with both, marine observational data, and global Earth System Model data. Her ongoing research strongly focuses on identifying abrupt shifts and nonlinear processes in ocean biogeochemistry within the CMIP6 database and analysing the impact of climate change hazards on marine ecosystems.

Petra Langebroek, NORCE, Bjerknes Centre for Climate Research

Petra Langebroek is a Research Director at NORCE and Bjerknes Centre for Climate Research in Bergen, Norway. Her research focuses on the (un)stability of ice sheets and how they interact with climate. Langebroek coordinates the European Horizon 2020 project TiPACCs which investigates the possibility of tipping points in the Antarctic Ice Sheet and surrounding continental shelf seas. She received her PhD in 2009 from the University of Bremen (Germany) and did a PostDoc at the Alfred Wegener Institute in Bremerhaven. In 2011 she moved to Bergen to work at the Bjerknes Centre and (now) NORCE. Langebroek participates and leads various projects targeting ice sheet and climate interactions, on various time scales, using numerical models. Her extended research group deals primarily with development and research using the Norwegian Earth System model NorESM.

Jörg Schwinger, NORCE, Bjerknes Centre for Climate Research

Jörg Schwinger obtained a PhD in Geophysics from the University of Cologne, Germany. After moving to Bergen, Norway, he has worked at the Bjerknes Centre for Climate Research on modelling the global carbon cycle (and other biogeophysical cycles) and their relation to global climate. Using the Norwegian Earth system model, he has worked on determining the current ocean carbon sink, on carbon cycle feedbacks, and on future projections. His recent research focuses on the response of the carbon cycle and the Earth system to net-zero and net-negative emissions.



Giang Tran, GEOMAR, Germany

Giang Tran is a postdoctoral researcher at the GEOMAR-Helmholtz institute for ocean research, Kiel. She completed her PhD in 2017 at the National Oceanography Centre, Southampton, which is affiliated with the University of Southampton. She has been working on assessing the effectiveness and potential side effects of Carbon dioxide removal (CDR) techniques in mitigating the impacts of climate change on marine ecosystems. She utilises an Earth System Model of Intermediate Complexity (EMIC) and perturbed parameter ensembles to provide a quantification of the parametric uncertainty associated with future projections. Her work aims at determining the likelihood of remaining in safe marine operating spaces under various emission scenarios and CDR portfolios.

Rolf Rødven, Arctic Monitoring and Assessment Programme (AMAP)

Rolf Rødven (PhD, MBA) is the Executive Secretary of the Arctic Monitoring and Assessment Program (AMAP).

AMAP is mandated to monitor and assess the state of the Arctic region with respect to pollution and climate change issues, as well as their impacts on ecosystems and human health, and to provide policy recommendations to the Arctic Ministers.

Rødven holds a PhD in Northern Populations and Ecosystems and an MBA in strategic leadership and finance from UiT – the Arctic University of Norway. He has been authoring several scientific papers on Arctic socio-ecological systems.

His previous positions include research director and director at the Norwegian Institute of Agricultural and Environmental research – Northern department, research director at the Norwegian Institute of Bioeconomic research, and head of the research section at the Faculty of Biosciences, Fisheries and Economy, as well as leading positions in environmental management.

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