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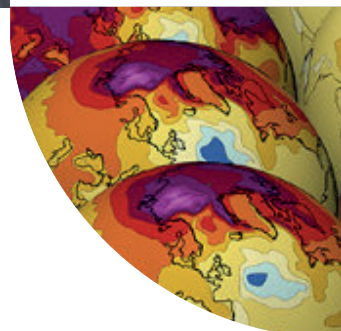
CLUSTER OF EXCELLENCE
CLIMATE, CLIMATIC CHANGE,
AND SOCIETY (CLICCS)

WHAT DO WE MEAN BY „PLAUSIBLE“?

WHERE OUR CLIMATE FUTURE IS HEADING - AND WHERE IT ISN'T

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FEB 2021



CLICCS QUARTERLY

NEWS FROM CLIMATE RESEARCH



WHAT DO WE MEAN BY „PLAUSIBLE“?

Which climate futures are possible and which are plausible? – in May, the “Hamburg Climate Futures Outlook”, a scientific report released by the Cluster, will address this question for the first time. We spoke with Prof. Anita Engels, a social scientist at Universität Hamburg, and Prof. Jochem Marotzke from the Max Planck Institute for Meteorology. Both are CLICCS co-chairs.

What does the report focus on: what’s realistic or what’s politically feasible?

Anita Engels: “Realistic” may well come closest. We examine which options have a reasonable chance of becoming reality – and analyze political processes, corporate strategies, and consumer behavior, as well as social trends and discourses.

Jochem Marotzke: For those of us in the natural sciences, the various emissions pathways are initially on an equal footing. But if we look at the society around us, it’s a very different story.

Not everything that could happen will happen. What do you base this on?

Marotzke: In reality there are various factors that stand in the way of developments toward a climate-neutral society or delay them. Take coal-fired power plants, which have a planned lifetime of decades – with all the resulting emissions.

Engels: Nevertheless, how society will develop remains extremely difficult to

predict. Certain trends can be identified, but history shows us that over and over again events happen that suddenly change everything. Like when the Berlin Wall came down. Maybe, looking back, the change was in the air. But it was simply impossible to predict that it would happen the way it did.

Nevertheless, you hazard a prognosis?

Engels: In the “Hamburg Climate Futures Outlook” we identify so-called social drivers, analyze pressures and sources of resistance, but also possibilities and promising opportunities for change – important evidence and arguments for which we have developed a systematic

evaluation framework. In this regard, we draw on our own and recent international findings.

Who should read the report?

Engels: The report was written first and foremost for the scientific community. We want to assess where the field stands, and to some extent we explore uncharted scientific territory.

Marotzke: At the same time, the “Hamburg Climate Futures Outlook” offers guidance for decision-makers: Perhaps larger efforts are required than expected by some? On the other hand, are there “windows of opportunity” that we can capitalize on for change? Think about the coronavirus pandemic. It’s also discussed in the report.



Social and Natural Sciences: Anita Engels and Jochem Marotzke

CLIMATE JUSTICE — IMPORTANT BUT A SOURCE OF CONFLICT

Although above all the countries of the Global North contribute to global warming, those living in the Global South have long had to bear the consequences. Who should pay for the effects of climate change? What would be fair? Dr. Jan Wilkens is part of a team of researchers investigating various concepts of climate justice in regions that are particularly hard hit. To do so, the team is studying the Arctic and the Mediterranean region as examples. In the former, the team is working with the Arctic Youth Organisation, a network that brings together Iñupiat, Inuits and Saami. The research questions investigated are developed on the basis of local groups' needs.

“Different concepts of justice become apparent whenever conflicts arise,” says Wilkens. “On the ground, we can see whether the measures devised by the global political community are remotely desired at the local level.” Because when it comes to the use of natural resources like



Indigenous Groups in the Arctic Region: The Inuit live in Greenland.

gas and oil, as well as the envisioned energy transition, political and social conflicts can arise. In the name of climate protection, workplaces and natural areas can be reshaped and new technologies introduced that have a direct effect on daily life in the region. The team is analyzing whether, and if so, how these conflicting views are reflected in politics. uuh.de/cliccs-clim-just



REMOVING CO₂ FROM THE ATMOSPHERE

The European Union has agreed on the goal of achieving “net zero” emissions by 2050. After that, it will not be permitted to release any additional greenhouse gases, such as CO₂, into the atmosphere without removing the same amount throughout the EU. At CLICCS, political scientist Felix Schenuit is investigating two key aspects of this ambitious goal: what net zero actually means; and how it can be achieved from a political standpoint.

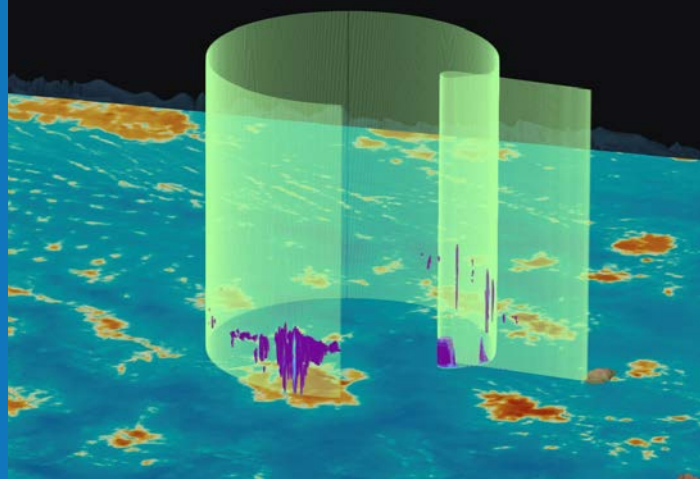
Scientific scenarios consistently show that the agreed-upon climate targets can only be reached if CO₂ is also actively removed from the air. As such, suitable approaches and technologies urgently need to be promoted and tested. In addition, Schenuit proposes “splitting” climate goals: the net-zero goal could, for example, be reached using a mix of 95 percent CO₂ reduction and five percent CO₂ removal. Future legislation should stipulate such a split. Lastly, he argues that only a clear separation will ensure that the urgently needed reduction in emissions is effectively implemented – and not put off, in the hope that new removal technologies will emerge.

www.swp-berlin.org/en/publication/eu-climate-policy-unconventional-mitigation/

CLOUDS — ESSENTIAL FOR FUTURE CLIMATE SIMULATIONS

How many degrees warmer will it become if the amount of greenhouse gases in the atmosphere continues to rise? To answer that question, climate models must accurately reflect key aspects of reality. For example, clouds have a significant impact on the climate, but representing them continues to pose problems for researchers. At CLICCS, next-generation models are being employed. How well they improve the representations is investigated by Dr. Ann Kristin Naumann.

To do so, the meteorologist has compared measurements from the equatorial trade-wind region with model-based results. In this region, the typical “fluffy” trade-wind clouds are common – and precisely this type has a major influence on the climate. Especially in conventional models, the depiction of these clouds is still imprecise.



Naumann found that models employing the latest horizontal and vertical resolution can very accurately reflect the distribution of the water vapor that forms clouds. Yet, not all aspects of trade-wind clouds are accurately represented. Here, the model’s resolution is key, as Naumann shows. If it remains at the kilometer scale, the representation isn’t accurate. The interaction between water vapor and clouds can however be well represented using a grid spacing of between 300 and 600 meters. Accordingly, Naumann’s analysis provides valuable insights into how high a model’s resolution has to be in order to more accurately simulate future climate scenarios.

NEWS IN BRIEF

FIRST PRIZE: BRIGITTE FRANK HONORED WITH YOUNG SCIENTIST AWARD

The economist Brigitte Frank investigated how companies can most simply set climate goals that are also effective. Recently she received the CEN’s Young Climate Scientists Award (First Prize) for her Master’s thesis. She is currently pursuing her doctoral research at CLICCS.

uhh.de/cen-ycsa-gewinner

GLOBAL WARMING — AND HOW THE WORLD TALKS ABOUT IT

People attach different meanings to the term “climate change” by drawing on their own experiences with meteorological events, media coverage, and their religious and moral values for example. In their new book, Prof. Michael Brüggemann and Prof. Simone Rödder present case studies on the topic.

openbookpublishers.com/product/1177

ALEXANDER BASSEN APPOINTED TO WBGU

For the next four years, as a member of the German Advisory Council on Global Change, Prof. Bassen will advise the federal government on matters concerning the environment and sustainable development. As a business researcher, he is currently investigating how companies and capital markets can become more sustainable.

<http://uhh.de/cliccs-en-wbgu>

PUBLISHED BY

Climate, Climatic Change, and Society (CLICCS)
Cluster of Excellence at the Universität Hamburg

Center for Earth System Research and
Sustainability (CEN)
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