HIGHLIGHTS FOR CMEC 2018

CENTER FOR MACROECOLOGY, EVOLUTION AND CLIMATE
UNIVERSITY OF COPENHAGEN

Danmarks Grundforskningsfond
Danish National Research Foundation

The center integrates terrestrial and marine research in a cross-disciplinary research program addressing fundamental questions on the origin, conservation and future of life and biological diversity on Earth.

Research team

At the end of 2018, the CMEC team comprised 21 senior scientists, including four world-leading scientists employed part-time (Miguel B. Araujo, Neil Burgess, Robert Whittaker; Rob Dunn) and one Associated Professor (Gary Graves from Smithsonian Institution).

The CMEC senior scientist worked in 2018 closely together with an exceptional chord of 4 assistant professors, 9 post-doctoral scientists and 15 PhD students from around the world. Additionally, 20 MSc and 14 BSc students graduated with supervision by CMEC researchers.

Senior and junior researchers received one award and 11 grants in 2017.

The annual research center retreat was held in the region of Catalonia, Spain. All PhD students and postdocs presented and discussed their research projects together with the senior scientists.

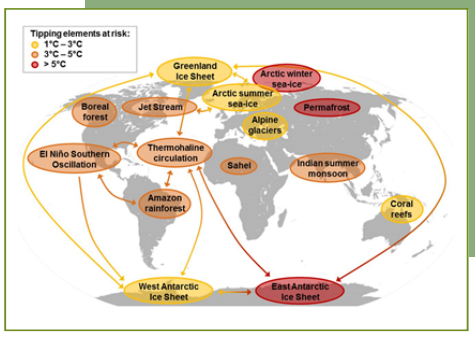
Reserach

CMEC has, during the ninth year of funding, achieved an excellent level in publications with 181 papers published in international peer-reviewed journals, including two in Science, four in Royal Proc. B and one in PNAS – three of the "high prestige" journals targeted by the center for publication of our best work.

Trajectories of the Earth System in the Antropocene

Even if the reduction targets called for in the Paris Agreement are achieved, this may not be enough to keep global warming below 2°C of pre-industrial temperatures. This is because the warming caused by biological processes a 2° warmer world may be enough to trigger abrupt and irreversible feedbacks or "tipping points" in the Earth System.

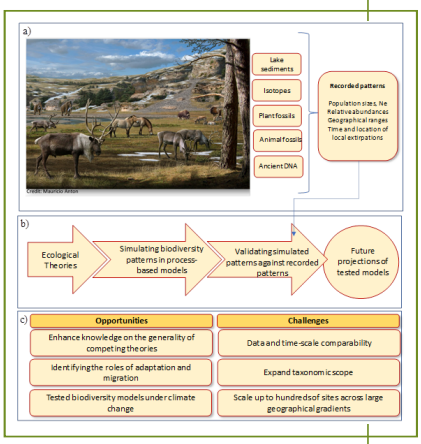
Thus internal biological and physical feedbacks the Earth System may lead to a global climate 4-5°C higher than pre-industrial temperatures and with sea levels 10-60 higher than today. To reduce the risk of this happening, will require collective human action and stewardship of Earth System. Finding ways to store carbon are urgent, agriculture and forestry will have to find more sustainable practices, and conservation of biodiversity will have to be high on the agenda.



Published in Proceedings of the National Academy of Sciences

Cracking the code of biodiversity responses to past climate change

Published in ***Trends in Ecology and Evolution*** and featured on the cover, it explores how biodiversity responded to past climate change to better understand current threats and forecast future consequences. Significant gaps of knowledge concerning the role, interaction and magnitude of key mechanisms behind biodiversity reactions to climate change were identified. To surpass the main conceptual, methodological and data-driven challenges, we propose integrative research programs combining paleorecords (e.g., fossils, ancient genomics) with mechanistic models and experiments. We open the route to implement biodiversity-tested methods.



Reconstructing past environments and climatic conditions provides the perfect playground to understand and assess key ecological theories, test methodological frameworks and validate biodiversity model predictions.