

EGU24-11534, updated on 20 May 2024

<https://doi.org/10.5194/egusphere-egu24-11534>

EGU General Assembly 2024

© Author(s) 2024. This work is distributed under the Creative Commons Attribution 4.0 License.



Financial risk management needs to integrate compound events in physical climate risk assessment

Andrej Ceglar¹, Nicola Ranger², Kai Kornhuber³, Michaela Dolk⁴, and Olivier Mahul⁴

¹European Central Bank, Climate Change Centre, Frankfurt am Main, Germany

²University of Oxford, School of Geography and the Environment, Oxford, United Kingdom

³Columbia University, Lamont-Doherty Earth Observatory, New York, USA

⁴World Bank, Washington, DC, USA

The world has recently witnessed many unprecedented climate disasters, often coinciding with other crises such as pandemics, socio-economic instabilities and ecosystem degradation (closely linked to biodiversity loss). These compound shocks exert profound effects on human, environmental, and economic dimensions, presenting substantial implications also from a financial risk standpoint. Consequently, it becomes imperative to transcend the isolated assessment of individual events and associated risks and progress towards an integrated evaluation of interconnected crises. Compound shocks exhibit characteristics marked by non-linear, intricate, and often unpredictable effects on both society and the economy. Consequently, discerning their impacts cannot be simplified to a mere summation of the effects of their individual shocks. The intricate nonlinearities have the potential to amplify the repercussions of climate-related shocks, presenting considerable challenges to financial stability. Recent advancements in the fields of climate impact modelling, catastrophe risk modeling, machine learning, and macroeconomic modeling hold promise in addressing the existing gaps in modeling compound risks. Our study builds on a survey we conducted among twenty-six central banks and supervisory bodies, revealing a consensus on the crucial importance of considering compound shocks in climate change scenario analyses, specifically pertaining to physical. Leveraging the insights garnered from this survey, we set up a research direction towards integration of compound risks into the development of scenario narratives, storylines and (macro-)economic models capable of effectively capturing compound shocks.