Geographisches Kolloquium

Wintersemester 2024/2025

Dienstag 05.11.2024 | 16.15–17.45 Uhr | H6 (Geo II)

GIB Lecture Series

Tipping points and cascading transitions in the Earth's climate system

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Human-made global warming can lead to the destabilisation of large-scale components of the Earth system such as the ice sheets on Greenland and Antarctica, ocean circulation patterns in the Atlantic, or global biosphere components. These Earth subsystems are the so-called climate tipping elements [1].

Recently, the risk of destabilising one or several tipping elements has been assessed because of overshooting global warming levels of 1.5 °C [2, 3]. Our analyses show how crucial it is for the state of the planet to adhere to the climate objectives of the Paris Agreement and emphasises the legacy of our climate (in)action today for centuries to millennia to come.

Further, we find that tipping elements in the climate system are not isolated entities but are interacting across scales in space and time. In a recent review, we found that the majority of interactions between climate tipping systems are destabilising, enabling the possibility for climate domino effects under ongoing global warming [4].

Summarized, this presentation will provide an overview on tipping elements in the Earth's climate system, their current state as well as their interactions, not least assessed in the Global Tipping Points Report 2023 for COP28 [5].

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