Abstract:
Climate change is provoking ever-more extreme events, from forest fires to heatwaves, droughts, and floods. The risk of such events changes as our climate warms, and these risks interact with each other across many environmental and social systems: a heatwave can spark forest fires, which lead to air pollution, impacting public health; drought affects crop harvests, leading to price volatility; the gap between the rich and poor can widen, increasing the risk of social unrest. Yet, the rising systemic risks posed by extreme climate events are hardly considered in most countries’ strategies for working towards the United Nation’s Sustainable Development Goals (SDGs). The key challenge of risks emerging from climate extremes is that they emerge from the continuously changing boundary conditions of global warming, such as rising global temperatures or modified circulation and rainfall patterns. Thus, models that are commonly used to assess the risks posed by discrete hazards unrelated to climate are not necessarily valid in the future, neither for directly climate-driven extreme events nor for other hazards if they interact with additional stresses posed by changing climates (e.g. sea-level rise). This presentation will elucidate this challenge and ask the question, if and which modelling approaches can be helpful for a better understanding of systemic risks. While combining system modelling with artificial intelligence into hybrid modelling approaches offers a lot of potential, there are many challenges to be addressed by future research.

About the speaker:
Markus Reichstein is Director of the Biogeochemical Integration Department at the Max-Planck-Institute for Biogeochemistry. His main research interests revolve around the response and feedback of ecosystems (vegetation and soils) to climatic variability with a Earth system perspective, considering coupled carbon, water and nutrient cycles. Of specific interest is the interplay of climate extremes with ecosystem and societal resilience. These topics are addressed via a model-data integration approach, combining data-driven machine learning with systems modelling of experimental, ground- and satellite-based observations. Since 2013 Markus Reichstein is Professor for Global Geocology at the FSU Jena, and founding Director at the Michael-Stifel-Center Jena for Data-driven and Simulation Science. He has been serving as lead author of the IPCC special report on Climate Extremes (SREX), as member of the German Committee Future Earth on Sustainability Research, and the Thuringian Panel on Climate. Recent awards include the Piers J. Sellers Mid-Career Award by the American Geophysical Union (2018), an ERC Synergy Grant (2019) and the Gottfried Wilhelm Leibniz Preis (2020).

Registration for the event: https://www.uni-bonn.de/de/forschung-lehre/forschungsprofil/transdiszipliinaere-forshungsbereiche/tra-6-sustainability/angebote/lecture-registration

The lecture is held via Zoom and will be recorded and published afterwards. The Zoom access data will be sent to those registered a few days prior to the lecture.

About the Lecture Series
The lecture series on Innovation Pathways to Sustainability is a forum for high profile and internationally visible scientists who are active in academia or at the science-policy interface. The lectures address an interdisciplinary audience of experts from natural, social, and engineering sciences as well as representatives from international and implementation-oriented organizations.

Save the date for the next lecture:
• June 29, 2021, 17 h CEST, Prof. Sabine Schlacke

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