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KlimaCampus Kolloquium

Pierre Friedlingstein

The terrestrial carbon cycle in the climate system A journey from the tropics to the Arctic

The terrestrial carbon cycle plays a central role in the climate system. On the average, about 30 % of the anthropogenic emissions of CO₂ are being absorbed by terrestrial ecosystems, the rest being taken by the ocean or remaining in the atmosphere and contributing to climate change. The land carbon sink is a complex combination of ingoing and outgoing natural fluxes (photosynthesis, respiration, fires, etc) as well as fluxes from land use changes. These processes are being affected by changes in environmental drivers, atmospheric CO₂ being probably the main driver of land sink, modulated by climate, nutrient limitation, etc.

In this talk, I will present recent finding in land carbon cycle, focussing first on the global carbon budget, then highlighting the sensitivity of land ecosystems to natural variability, focussing on the 2015/16 El Nino and its impact on tropical ecosystems. I will then focus on mid- to high-latitudes systems where centennial warming starts playing a critical role on ecosystem feedbacks.

Finally I will present the implication of carbon cycle feedbacks and uncertainties on future projections and remaining carbon budget consistent with climate targets.

Pierre Friedlingstein, from University of Exeter, UK, is guest of Victor Brovkin (MPI-M).

Bundesstraße 53, Room 22/23 (ground floor)