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**UNIVERSITÄT
BERN**

Bern, 30 April 2021

Physics Institute
**Climate and Environmental
Physics**

The Division of Climate and Environmental Physics, Physics Institute, University of Bern opens a position for a

PostDoc (30 months)

Modeling land biosphere greenhouse gas sources and sinks

A fascinating challenge in Earth system science is to understand how the land biosphere influences atmospheric composition and climate. Greenhouse gas sources and sinks in tropical and boreal forests, permafrost soils, wet- and peatlands feed back to the ongoing global warming. We offer the opportunity to further develop and apply the LPX-Bern Dynamic Global Vegetation Model over periods of slow and fast climate change in the past and for future climate projections.

Analyses of ice cores, as carried out in our division, reveal a rich spectrum of variations in the concentration of the greenhouse gases CO₂, CH₄, and N₂O from decadal to glacial-interglacial time-scales. The plan is to explore and quantify the terrestrial mechanisms contributing to these variations and to use paleo information in combination with modern data for improved understanding. Monte Carlo simulations with Latin Hypercube parameter sampling will be applied for probabilistic projections and to constrain the C-N cycles, the role of nitrogen limitation for the carbon sink, and CO₂-N₂O-CH₄-climate feedbacks with observations. Simulated emissions will be used in combination with an atmospheric transport matrix to simulate the seasonal cycles of GHGs at different stations worldwide. The PostDoc will further collaborate to set up and analyze simulations with the Bern3D-LPX Earth System Model of Intermediate Complexity. LPX-Bern results will be provided to the Global Carbon Project, Trends in the land carbon cycle project (TRENDY), and the atmospheric inverse modeling community.

The research is funded by the Swiss National Science Foundation (SNF) and linked to the Oeschger Centre for Climate Change Research of the University of Bern and two H2020 EU projects. LPX will be run on the Linux clusters of the division and the University. The salary is according to the guidelines of the SNF. The project duration is initially 30 months. The project start is preferentially in 2021.

We require a Ph.D. in Physics, Environmental Sciences, or similar disciplines. Experience in numerical modeling, writing skills, and the ability to fruitfully collaborate with others are essential.

More information can be found on <http://www.climate.unibe.ch> (follow link Research->Research groups->Earth System Modeling: Biogeochemical Cycles) and <http://climatehomes.unibe.ch/~joos/>

Please send your complete application (CV, certificates, grades of courses, letter of motivation, contact details of references) as a single pdf file to Fortunat Joos (fortunat.joos@climate.unibe.ch). A pdf of your Ph.D. thesis is welcome.

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