UNIVERSITÄT
BERN

Physics Institute

**Climate and Environmental Physics**

Bern, 25 August 2021

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

# PostDoc (30 months)

## Dynamic global vegetation modeling and greenhouse gas sources and sinks

A fascinating challenge in Earth system science is to understand how the land biosphere influences the atmosphere 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 for past and future projections.

Measurements of the greenhouse gases $CO_2$, $CH_4$, and $N_2O$ reveal a rich spectrum of spatio-temporal variations. The overall research aim is to explore and quantify the terrestrial mechanisms contributing to these variations using LPX-Bern. LPX-Bern includes modules for dynamic wet- and peatland area, land use, for carbon, nitrogen, $CO_2$, $CH_4$, and $N_2O$ fluxes. Modern observations are combined with paleo information for improved understanding. Monte Carlo simulations using established Latin Hypercube parameter sampling may be applied for probabilistic projections and to constrain with observations the C-N cycles, the role of nitrogen limitation for the carbon sink, and $CO_2$-$N_2O$-$CH_4$-climate feedbacks. The PostDoc will further collaborate with our team to set up and analyze simulations with the Bern3D-LPX Earth System Model of Intermediate Complexity. LPX-Bern results are routinely 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 U. Bern and two H2020 EU projects. The division has more than twenty years of experience in using DGVMs and earth system models. 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 (joos@climate.unibe.ch). A pdf of your Ph.D. thesis is welcome.

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