UNIVERSITÄT BERN

Klima- und Umweltphysik, Sidlerstr. 5, CH-3012 Bern

Physikalisches Institut
Klima- und Umweltphysik

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

PhD student

to reveal and quantify past changes in ocean extreme events

Extreme climate and weather events shape the structure of biological systems and affect the biogeochemical functions and services they provide for society in a fundamental manner. There is overwhelming evidence that the frequency, duration, intensity and timing of extreme events on land are changing under global warming, increasing the risk of severe, pervasive and in some cases irreversible impacts on natural and socio-economic systems. In contrast, we know very little how extreme events in the ocean, especially those associated with warming, acidification, deoxygenation and nutrient stress will unfold in time and space, and how these extreme events will impact marine organisms and ecosystems services.

It is planned that the candidate will first synthesize and analyze novel satellite-based and in-situ physical and biogeochemical ocean observations to quantify historical changes in marine heat waves and ocean acidification extreme events. In a second step, the candidate will use a high-resolution global Earth system model to quantify and understand the drivers of past ocean extreme events and to derive model-derived relationship among physical and biogeochemical variables to underpin the extreme event assessment of the sparse oxygen and net primary production observations. The candidate will further develop the Earth system model, present results at international scientific meetings, and publish in the peer-reviewed literature.

The PhD research work will be embedded within the collaborative project *OceanX* funded by the Swiss National Science foundation (SNSF), which aims at discovering and attributing past and future changes in ocean extremes, and at assessing and mapping the risks of the extreme events for marine organisms and ecosystems. The research is closely linked to the activities of the Oeschger Centre for Climate Change Research of the University of Bern. The salary is according to the guidelines of the Swiss National Science Foundation and University of Bern, with funding guaranteed for 3.5 years.

We are looking for a highly-motivated student with a strong interest in oceanography, ocean biogeochemistry and climate physics, and with strong numerical skills. Applicants

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should have a Master in Physics, Environmental/Climate Sciences, Biogeochemistry, or similar disciplines. Requirements for the positions are: experience in numerical modelling (Linux, Fortran, Python, Matlab), statistical skills (extreme value analysis), innate curiosity, enthusiasm for reading scientific literature, excellent writing and communication skills in English, and willingness to closely collaborate with colleagues analyzing other extreme events and changes in the climate-carbon system. Knowledge with satellite and climate model data is advantageous.

In order to receive full consideration, applications must be submitted before June 15, 2017, but the positions will stay open until filled. Applications should include a CV, a statement of research experience and interests (max. 2 pages), an academic transcript of your studies, a web link to the master thesis, and the names and addresses of at least 2 references as a single pdf file to Prof. Dr. Thomas Frölicher (froelicher@climate.unibe.ch).

The start of the PhD project is scheduled for September 2017, or by agreement.

Bern, 22 May, 2017