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PhD Position (3-years) available in the field of Complex Systems at the Institute for Chemistry and Biology of the Marine Environment, Carl von Ossietzky University Oldenburg, Germany.

Position is part of the [CriticalEarth](#) project – a Horizon 2020 Marie Skłodowska-Curie Actions, Innovative Training Network (ITN).

We would like to encourage applications from [candidates worldwide](#) wishing to pursue a PhD degree in the field of [Theoretical Physics/Complex Systems with applications to the Earth System](#) with an interest in the following research areas; [Earth System modelling, nonlinear dynamics, climate simulation, and tipping point behaviour](#).

The working group Theoretical Physics/Complex Systems at the Institute for Chemistry and Biology of the Environment (ICBM) at the Carl von Ossietzky University Oldenburg (UOL), Germany, is **offering one PhD Fellowship**, referred to as early-stage researchers (ESR) in Complex Systems Theory, **starting between 01.04.2021 and 30.09.2021 and limited for 3 years**. The salary corresponds to a standard doctoral position in physics according to TV-L pay group 13, full time. The position is suitable for part-time work for personal or family reasons subject to approval by the Research Executive Agency (REA). The research focus of the group Theoretical Physics/Complex Systems is on the application of nonlinear dynamics to the analysis of all parts of the Earth System, such as oceans, atmosphere, biosphere, particularly to the response of oceans and ecosystems to climate change.

The position is posted as part of the exciting **CriticalEarth** project - "Multiscale Critical Transitions in the Earth System - funded through the Horizon 2020 Marie Skłodowska-Curie Actions programme under Grant number 956170.

You will join a network of 15 PhD Fellows (ESRs), trained to research new methods for assessing the mechanisms and associated risks of critical transitions in the climate. The focus will be on investigating how complex mathematics can be used to predict and avoid irreversible climate change. The position will offer you an excellent background, working within a strong, cross-disciplinary network among leading Universities and research institutions across Europe and with contacts to industry, governmental- and non-governmental institutions.



CriticalEarth

Project Description:

ESR15: Project Title: **How trends and fluctuations mask critical transitions in high-dimensional multistable systems possessing long transients.**

Principal supervisor: **Professor Ulrike Feudel, based at ICBM, UOL in Germany.**

This PhD project will deal with the question why abrupt critical transitions discovered for parts of the climate system often do not show up in large climate simulations. This PhD project will study the role of slowly varying driving forces of climate change, fluctuations of environmental variables and the spatial resolution of different processes in the climate system. We will use a hierarchy of different climate models to contribute to the understanding of masking effects caused by the three factors mentioned and employ methods of nonlinear dynamics to study the interplay of the different time scales between drivers and response as well as the interplay between local critical transitions and their global effect.

Secondments for at least 6 months at the University of Reading (UK) and University of Exeter (UK) will provide training in climate simulations and theoretical development of B-, N- and R-tipping in nonlinear dynamical systems.

Job description for ESR15

The positions are available for a 3-year period and your key tasks as a PhD student are:

- To work independently, develop and carry through your research project
- Attend PhD courses to learn additional skills
- Write scientific articles and your PhD thesis with support from your supervisors
- Teach and disseminate your research, participate in network related and international conferences and workshops
- To stay at a partner research institution for at least six months to develop new skills
- Contribute to the everyday activities at the department

Formal requirements for ESR15

- MSc degree in physics, mathematics, earth system/climate science or similar
- Excellent grades
- General interest in climate, geoscience and related applications
- Good English language skills (written and oral)
- Good computer programming skills

Eligibility: Because the aim of EU ITN projects is to attract candidates from worldwide locations, **applicants must not** have resided and not have carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date — unless as part of a procedure for



obtaining refugee status under the Geneva Convention¹. [If you are applying from a location that requires a visa or permit, then we will be able to provide support and advice throughout the process of relocation for you and your family. Feel free to ask us questions in advance if you need more information and reassurance.](#)

The applicant must be an Early Stage Researcher (ESR) i.e. at the time of recruitment she/he must be in the first 4 years (full-time equivalent research experience)² of her/his research careers and must not have been awarded a doctoral degree.

Further requirements: CriticalEarth will create an exciting environment for you to learn as PhD Fellows, and candidates should be able to demonstrate enthusiasm for research and a desire to learn new skills. You should also enjoy working independently and as part of a wider network of other students. All fellows must be willing to travel and will be required to complete international secondments.

Application Procedure:

The application, *in English*, must be submitted electronically as ONE pdf file to be send to ulrike.feudel@uni-oldenburg.de.

The deadline for applications is 31 March 2021, 23:00 GMT +1.

Please include

- Cover Letter, *stating which PhD project in the ITN you are applying for and detailing your enthusiasm and background for applying for the specific PhD project.*
- CV with relevant work experience (if any)
- Diploma and transcripts of records (BSc and MSc)
- Research statement (max. 1 page) and list of publications (if any)
- Names and addresses of 2-3 persons willing to provide a reference letter

The University wishes our staff to reflect the diversity of society and we welcome applications from all qualified candidates regardless of personal background. The selection will be exclusively based on qualification without regard to gender identity, sexual orientation religion, national origin or age.

The University of Oldenburg is dedicated to increasing the percentage of women in science. Therefore, female candidates are particularly encouraged to apply. In accordance with Lower Saxony legal regulations (NHG §21), equally qualified female candidates will be given preference. Applicants with disabilities will be employed preferentially if equally qualified.

After the expiry of the deadline for applications, the authorized recruitment manager selects applicants for assessment on the advice of the Interview Committee. Afterwards an



assessment committee will be appointed to evaluate the selected applications. The applicants will be notified of the composition of the committee and the final selection of a successful candidate will be made by the Head of Department, based on the recommendations of the assessment committee and the interview committee.

The main criterion for selection will be the research potential of the applicant and the above mentioned skills. The successful candidate will then be requested to formally apply for enrolment as a PhD student at the PhD school OLTECH, the Oldenburg graduate school of science, medicine and technology. You can read more about the recruitment process at <https://uol.de/en/oltech/application-admission/>.

Questions

For specific information about the PhD scholarship, principal supervisor Ulrike Feudel, ICBM, UOL (ulrike.feudel@uni-oldenburg.de) will be happy to answer your questions and provide advice. Direct Phone: +49 441 7982790. For further information about Critical Earth please consult the project website www.criticalearth.eu or contact interim project coordinator, Eliza Cook at the University of Copenhagen: elizacook_@nbi.ku.dk.

¹1951 Refugee Convention and the 1967 Protocol

² This is measured from the date when a researcher obtained the degree which would formally entitle him or her to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the researcher is recruited, irrespective of whether or not a doctorate is or was ever envisaged.

