Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 7,500 employees in one of Europe's biggest research centres and help us to shape change!

The Institute of Bio- and Geosciences – Agrosphere (IBG-3) conducts research to improve our understanding of hydrological and biogeochemical processes in terrestrial systems. Its research contributes to the sustainable and resource-conserving use of soil and water. Within the working group 'Multiscale Geophysics of soil-plant systems', we develop and apply hydrogeophysical methods to enhance the characterization of the critical zone including aquifers, peatlands, permafrost soils and agricultural fields. One of our main foci is to enhance the resolution of small-scale heterogeneity related to the soil-plant system.

We are offering a

PhD Position - Agrogeophysics for Sustainable Soil Management under Climate Extrems

Your Job:
This PhD project will be part of the Green ERA-Hub project AGROSOIL-Agrogeophysics for Sustainable Soil Management under climate extremes. With project partners in Ireland and Uruguay the project aims to examine the effects of various agricultural practices, like fertilizer use and irrigation, on cereal crops, focusing on subsoil`s role in water and nutrient availability and crop resilience, especially under extreme weather conditions. High-resolution subsoil characterization using electromagnetic induction (EMI), electrical resistivity tomography (ERT), and ground penetrating radar (GPR) will be combined with soil sensors systems and UAVs with multispectral cameras.

Your tasks in detail:

- Development and application of high resolution time-lapse GPR and EMI imaging methods at multiple scales to enhance the understanding of the soil-root system
- Find links between non-invasive geophysical monitoring and the availability of Nitrate and water in the soil
- Improve the small-scale process understanding controlling soil-plant interactions and

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our **Online-Recruitment-System!**

Questions about the vacancy?
Get in touch with us by using **our contact form.**
Please note that for technical reasons we cannot accept applications via email.
www.fz-juelich.de

to extend the gained understanding to the large scale to be used in precision agricultural management
- Connect novel processing and inversion techniques to experimental data from different regions and link the findings to relevant processes of the soil-plant system
- International travel to Uruguay & Ireland to perform combined field trails

Your Profile:
- Master's degree in geophysics, physics, geoscience, computational geoscience, or related natural sciences with an overall grade of at least good
- Experience in programming (e.g., matlab, phyton, C/C++) and parallel computing
- Advanced knowledge of numerical methods
- Geophysical fieldwork experience, preferably with GPR, EMI and ERT
- Strong English writing skills
- Since the work involves interdisciplinary cooperation with several researchers and technicians, good communication and organizational skills are essential
- Drivers licence is required (or should be done within first 3 months)
- Physical geophysical field work is required

Please feel free to apply for the position even if you do not have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

Our Offer:
We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We offer ideal conditions for you to complete your doctoral degree:
- Working in an interdisciplinary environment as well as excellent facilities for hydrogeophysical research and numerical simulation and inversion studies
- Opportunities to being part of the national and international scientific community
- PhD students are encouraged to attend international conferences and a three months research stay abroad with a cooperating partner is possible planned
- Workshop and field work in Ireland and Uruguay
- Working in the heart of Europe
- A highly motivated working group as well as an international and interdisciplinary working environment at one of Europe's largest research institutions
- Outstanding scientific and technical infrastructure
- Continuous mentoring from your scientific supervisor
- Dynamic, inclusive and diverse working group and work environment
- 30 days of annual leave (depending on agreed working time arrangements) and provision for days off between public holidays and weekends (e.g. between Christmas and New Year)
- Opportunity to develop your strengths, e.g. through a comprehensive training programme; a structured programme including continuing professional development and networking opportunities specifically designed for Jülich's doctoral researchers by the Jülich Center for Doctoral Researchers and Supervisors (JuDocS): https://go.fzj.de/JuDocs
- Targeted services for international employees, e.g. through our International Advisory Service

For further information visit our website
https://www.fz-juelich.de/en/ibg/ibg-3/research-groups/environmental-processes-and-technologies/multiscale-geophysics-of-soil-plant-systems

In addition to exciting tasks and a collaborative working atmosphere in Jülich, we have a

lot more to offer: https://go.fzj.de/benefits

The position is for a fixed term of 3 years. The salary is in line with pay group 13 (75%) of the Collective Agreement for the Public Service (TVöD-Bund). In addition, an annual special payment is granted (“Christmas payment”), which amounts to 60 % of the monthly salary. The monthly salaries in euros can be found on page 66 of the PDF download: https://go.fzj.de/bmi.tvoed

Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: https://www.fz-juelich.de/gp/Careers_Docs

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

Further information on diversity and equal opportunities: https://go.fzj.de/equality