Reference Number 94/2024

Postdoctoral Researcher (m/f/d)
'Open-science tools for monitoring ecosystem extents'

Founded in 1409, Leipzig University is one of Germany's largest universities and a leader in research and medical training. With around 30,000 students and more than 5000 members of staff across 14 faculties, it is at the heart of the vibrant and outward-looking city of Leipzig. Leipzig University offers an innovative and international working environment as well as an exciting range of career opportunities in research, teaching, knowledge and technology transfer, infrastructure and administration.

The German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig is a National Research Centre funded by the German Research Foundation (DFG). It is located in the city of Leipzig and it's a central institution of Leipzig University. More information about iDiv: www.iDiv.de.

The German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig offers the aforementioned position starting **1 September 2024** (later start dates can be considered). Please note that this opening is still pending contract agreement with the funder, which is expected by mid-May 2024.

Background

Changes in ecosystem extents are a key component of global environmental change with many consequences for humans and nature. Correspondingly, many intergovernmental conventions require information on ecosystem extent dynamics. While advances in data, modelling and computational tools promise high-quality, accessible ecosystem data, challenges remain in data integration, processing and comparability, and in fostering ownership and trust by end-users of ecosystem products. The World Ecosystem Extent Dynamics (WEED) project, led by an international consortium of experts in ecosystem mapping and funded by the European Space Agency, seeks to address these challenges. Collaborating with end-users on four continents, the project will develop a globally applicable, open-source and fully cloud-based toolbox to enable users to generate comprehensive maps of terrestrial, freshwater and coastal ecosystem extents and their changes. The envisioned toolbox will support national governments and monitoring institutions with different technical and financial capacities in their ecosystem monitoring and management needs. To develop key components of this toolbox, we offer a two-year postdoctoral position at the German Centre for Integrative Biodiversity Research (iDiv). The project is supervised by Dr Carsten Meyer (head of iDiv's *Macroecology & Society (MAS)* group) and will involve collaborations within the larger consortium, including researchers at the Vlaamse Instelling voor Technologisch Onderzoek (VITO), the Basque Centre for Climate Change (BC3), the International Institute for Applied Systems Analysis (IIASA) and University of Bonn, among others.

About the position

- Fixed term of 2 years (depending on final approval of funding)
- Full-time position (part-time employment is possible)
- Planned remuneration: salary group E13 TV-L
- Place of work: Leipzig

Tasks

- Conducting research to contribute key components to the envisioned toolbox for ecosystem-extent monitoring, incl. developing new methodological protocols and data resources while leveraging pre-existing data and tools, with a focus on:
  - developing a data-cube of analysis-ready time-series on multiple ecosystem characteristics needed to map terrestrial, freshwater, and coastal ecosystems, along with input data (remote sensing, in-situ, modelled); incl. developing and extending protocols and computational pipelines for data assembly, harmonization and quality-assurance (e.g. bias-corrections of remote sensing products), and integrating conflicting data under explicit consideration of uncertainties
  - developing pipelines for the validation of ecosystem-extent/-change maps with heterogeneous reference data and for pixel-level uncertainty estimation, and applying these protocols to several national and regional showcases
- Leading scientific publications and international conference talks on new data/methods/protocols
- Collaborating on work packages led by other consortium members, including co-authoring publications
- Contributing to the management of the project (co-organization of project meetings, annual reporting to funders, etc.)

- Regularly participating in group-based activities (meetings, workshops) and other activities as a member of the larger project consortium and the MAS lab and iDiv community

Requirements

- Master degree and PhD in a project-related field, with interest in a career in science; we will consider final-year PhD researchers whose theses will be submitted by July 2024
- Experience in data- and computation-intensive research
- Strong quantitative background and a high motivation to lead interdisciplinary work at the interface of geography, ecology and data science to support real-world applications
- Prior experience in i) scalable geo-computation, ideally in an HPC environment (Linux-based), ii) spatial/spatiotemporal predictive modelling using Machine Learning/AI tools (e.g. Deep Neural Networks, Random Forest, ensemble methods) and iii) analysis of land-surface changes, such as changes in land cover/use, vegetation, surface water, soil moisture, snow cover, surface temperature, or other remotely sensed variables
- Good command of an open-source programming language (e.g. R, Julia, Python) and experience in/willingness to adopt version control (Git) and FAIR/reproducible data and code
- Ideally, a good understanding of ecosystem-related concepts and major characteristics of different ecosystem types, and an interest in embracing the multi-disciplinary dimensions of the project (e.g. engaging with literature, data and methods on vegetation ecology, hydrology, land use, remote sensing, or geostatistics, as needed for the task at hand)
- Track record of publishing in international journals (or promising PhD chapters yet to be published)
- Excellent English communication skills (speaking and writing)
- Openness to embrace and take ownership of a project with a set direction (mandated deliverables), work packages interdependencies and an ambitious time-line, and the needed skills, incl. excellent team and collaboration skills, excellent organizational and time-management skills, and the ability to effectively capitalize on the pre-existing data, tools and expertise available in the consortium
- A proactive and results-oriented mindset, combining attention to detail with a sober judgement of priorities

What we offer

- A 2-year postdoc position in a highly dynamic, collaborative and interdisciplinary working environment; note that postdoctoral salaries are generous relative to cost of living in Leipzig, and benefits like health insurance and pension plans are standard
- Career-building support, incl. proposal writing, teaching opportunities and voluntary participation in iDiv's postdoc career support programme
- Networking opportunities with experts in the project consortium and at iDiv, and through ties to international networks engaged on ecosystem mapping/monitoring, incl. the GEO Global Ecosystems Atlas, GEO BON's Ecosystem Structure Working Group, and CEOS Ecosystem Extent Task Team
- Access to extensive pre-existing data resources on ecosystem types and other relevant variables (land use/cover, etc.), along with associated modelling and data-processing scripts, linked to powerful High-Performance Computing (HPC) resources
- The working language at iDiv is English. iDiv is a highly international centre with employees from ~40 countries and various forms of support for employees from outside of Germany (Welcome Centre, German classes, etc.). Leipzig is an attractive city with rich culture and beautiful surroundings, and international visitors usually find it easy to settle in.

How to apply

Please send your application with the usual documents, quoting reference number 94/2024 via our application portal under https://apply.idiv.de by **13 June 2024.** Online interviews will be in the then following two weeks. We envisage this project to start 1 September 2024, but exceptions for later starting dates may be considered.

Applications should include:

- Cover letter describing motivation, research interests & relevant experience
- Tabular summary of professional career, including a detailed account of relevant technical skills/prior experience
- Digital copy of Master's as well as PhD certificate (or expected date of graduation- before start of position- with explanation on current status of PhD)
- Access to one of your recent modelling/geo-computation projects relevant for this position (e.g. link to GitHub repository)

- PDF of what you consider your best/most relevant first-authored journal publication (final-year PhD researchers may alternatively send copies of two first-authored manuscripts that are 'in the pipeline' and indicate the target journals)
- Contact details of two scientific references

Please note that it is not possible to guarantee confidentiality and rule out unauthorised access by third parties when communicating by unencrypted email. While we prefer applications via the above-mentioned portal, hard-copy applications may also be sent to: German Centre for Integrative Biodiversity Research (iDiv), Dr Carsten Meyer, Puschstraße 4, 04103 Leipzig. We kindly request that you submit copies only, as we are unable to return application documents. Interview expenses will not be reimbursed.

Queries concerning the application process should be directed to our HR Department (hr@idiv.de). For research project questions, please contact Dr. Carsten Meyer (carsten.meyer@idiv.de) with "WEED" in the email header.

Leipzig University aims to increase the proportion of women in positions of responsibility and therefore expressly invites qualified women to apply. Severely disabled persons – or persons deemed legally equal to them under Book IX of the German Social Code – are encouraged to apply and will be given preference in the case of equal suitability.

iDiv is committed to establishing and maintaining a diverse and inclusive community that collectively supports and implements our mission to do great science. We welcome, recruit, develop and advance talented staff from diverse genders and backgrounds.

Data Protection

If you choose to apply and send us your documents, you do so voluntarily. Any personal data contained within your application documents, or obtained during an interview, will be processed by Leipzig University – as the advertiser of the position – exclusively for the purposes of the selection process for the position advertised. It will not be passed on to third parties without your consent in the individual case. The legal basis for such data processing is Sect. 11(1) of the Saxon Data Protection Implementation Act (SächsDSDG) in conjunction with the EU General Data Protection Regulation (GDPR). The controller for the application process within the meaning of the GDPR is the addressee of the application, specified in the advertisement.

Your personal data will be stored for six months after the end of the recruitment process and then erased or destroyed in accordance with data protection regulations. You may refuse or withdraw your consent with effect for the future without giving reasons. In these cases, Leipzig University will not or no longer be able to process and consider your application. Under the GDPR, subject to the relevant statutory requirements you have the following rights vis-à-vis the addressee of the application with regard to your personal data: right of access (Art. 15 GDPR); right to rectification of inaccurate personal data (Art. 16 GDPR); right to erasure (Art. 17 GDPR); right to restriction of processing (Art. 18 GDPR); and right to object to processing (Art. 21 GDPR). If you have any questions, please contact the Data Protection Officer at Leipzig University (office: Augustusplatz 10, 04109 Leipzig). You also have the right to lodge a complaint with the Saxon Commissioner for Data Protection.