

The Wegener Center for Climate and Global Change at the University of Graz offers a
3-year PhD position (m/f/d) in
Mesoscale convective systems under Climate Change over the Alps.

We are seeking a highly motivated student to work on the MoCCA project funded by the Austrian Climate Research Programme. Mesoscale convective systems (MCSs) are large, organised and long-lived clusters of thunderstorms. They produce hazards such as heavy rainfall and severe winds, and are a key contributor to climate risks in southern and central Europe. The Alps play a particular role with respect to MCSs as their topography, first, affects systems moving into the Alps, and, second, may trigger new systems. The **main aim of the MoCCA project** is to advance our understanding of MCSs related to the Alps in order to enable more trustworthy projections of the severe rain and wind hazards associated with these events as a basis for improving climate risk assessments. The **specific work of the PhD student** will encompass a process-oriented evaluation of a hierarchy of climate models, quantifying future changes in MCSs and the associated uncertainties, including projected changes in the large-scale environments and a range of MCS characteristics, and the generation of storyline simulations with a high-resolution regional climate model to understand the influence of sea surface temperature, topography, thermal wind systems, and climate change on observed events. The work will be carried out in close collaboration with climate experts and climate service providers from the Austrian weather service Geosphere Austria and contains a strong knowledge transfer and capacity building component for climate services at the regional scale. The project also offers funding for an extended research stay at either NCAR (Boulder/US) or ETH Zurich. Overall, MoCCA will contribute to high level activities on climate risks by the World Climate Research Programme.

The student working on the MoCCA project will have an MSc or comparable degree in meteorology/atmospheric sciences or a related subject, and will be interested in broadening their view on the interdisciplinary aspects of climate change. Required for this project are good programming skills in linux/unix environments; the interest in deepening their knowledge in mesoscale meteorology, regional climate modelling and the analysis of big data; the openness to collaborate with climate service providers; and to proactively train scientific writing and scientific presentations.

We expect the candidate to be self-motivated and, in close collaboration with the main supervisor Prof. Douglas Maraun and colleagues from Geosphere, to develop a research programme, to publish scientific papers, and to present their work at international conferences.

Preferred starting date will be October 2024. Payment will be according to a 75% position of the Austrian Research Fund (75% of 50.103,20 EUR per year).



The student will join the **Regional Climate research group**, led by Prof. Douglas Maraun and Prof. Albert Osso, with some ten motivated young scientists working on regional climate variability and change, extreme events, regional climate modelling and the statistical analysis of observational data as well as global and regional climate model ensembles.

The **Wegener Center for Climate and Global Change** at the University of Graz is an interdisciplinary research institute of the University of Graz. It is a core institute of the new Field of Excellence "Climate Change Graz" and brings together four research groups and about 60 scientists from climate physics, meteorology, economics and social science.

Graz is a laid back city of 300,000 people in the southern Alpine foothills, just a short drive from skiing resorts and hiking treks, and a three hours drive from the Adriatic sea. The medieval, renaissance and baroque old town is UNESCO World heritage, and Graz is a UNESCO city of design. The city was European Capital of Culture 2003 and hosts an Opera, theatres, various museums and many festivals such as the Austrian film festival, the mountain film festival and several music festivals. The people from Graz enjoy good food and the wine from the rolling vineyards in "Styrian Tuscany" south of the city.

How to apply - Deadline 28 June 2024

Please submit your application including the reference MoCCA and all application documents as a **single pdf** until 28 June 2024 to sabine.tschuertz@uni-graz.at. Interviews will be held in the first week of July. Applications after the deadline may be considered until the position is filled. For informal inquiries please contact Douglas Maraun (douglas.maraun@uni-graz.at).

Application Documents

1. A motivation letter,
2. an abstract in English of the master thesis including a web-link or ftp-link to an electronic copy of the thesis (or a thesis draft),
3. a CV including information on previous work experience and publications and a transcript of records,
4. evidence for knowledge in English at level C1 or higher (e.g., suitable IELTS, TOEFL, or EFL certificate and/or brief justification letter summarizing the experience),
5. two letters of recommendation.

The University of Graz strives to increase the proportion of women in particular in management and faculty positions and therefore encourages qualified women to apply. In the event of underrepresentation, women with equal qualifications are generally given priority for admission. We welcome applications from persons with disabilities who meet the requirements of the advertised position.

Your responsibilities

- Conduct a process-oriented evaluation of a hierarchy of climate models;
- quantify future changes in MCSs and the associated uncertainties, including projected changes in the large-scale environments and a range of MCS characteristics;
- simulate storylines of observed mesoscale convective systems with a high-resolution regional climate model to understand the influence of sea surface temperature, topography, thermal wind systems, and climate change on these events;
- collaborate with climate experts from the Austrian weather service Geosphere Austria addressing observations of mesoscale convective systems;
- collaborate with climate service providers at Geosphere Austria to support the development of climate services;
- publish scientific papers and write a cumulative PhD dissertation (based on the papers);
- present your work at international conferences.

Required expertise

- MSc or comparable degree in meteorology/atmospheric sciences or a related subject,
- good programming skills in linux/unix environments,
- experience working with climate data (e.g. NetCDF).

Your personal profile

- Self-motivated and responsible,
- independent but also a team player,
- interest in working in a young, diverse and international research team,
- interest in broadening your view on the interdisciplinary aspects of climate change,
- interest in deepening your knowledge in mesoscale meteorology, regional climate modelling and the analysis of big data,
- openness to collaborate with climate service providers,
- openness to proactively train scientific writing and scientific presentations.

What we offer?

- A young and dynamic team with an inspiring research spirit,
- many opportunities for personal development, in particular also for female researchers,
- an extensive international network and possibilities to engage in international activities,
- funding for an extended research stay and visits to international conferences and workshops,
- support for young families.



Links

Regional Climate Research Group: <https://wegcenter.uni-graz.at/en/our-research/regional-climate/>

Douglas Maraun: <https://homepage.uni-graz.at/en/douglas.maraun/>

Graz: <https://en.wikipedia.org/wiki/Graz>