

Scientific Researcher (3-year) position in Ice Microphysics, LMU Munich, Germany

The Ludwig Maximilian University of Munich (LMU) is one of the leading research universities in Europe. With a 500-year history of scholarly excellence, LMU stands for rigorous academic education and outstanding research. The Meteorological Institute Munich (MIM; www.meteo.physik.uni-muenchen.de) is an internationally leading research institution within LMU's Faculty of Physics, focusing on atmospheric physics, weather forecasting, and climate change.

Motivation:

One of the biggest unsolved problems in cloud physics is the fact that we find 10-100 times more ice particles in the temperature range from 0 to -25°C than ice nucleating particles (INP). The same temperature regime produces most of the ice mass which subsequently melts and forms three-quarters of all precipitation on Earth. For decades, scientists have been discussing secondary ice processes (SIP), i.e. production of new ice particle from existing ice, as a possible explanation for the high number of ice particles. One promising SIP mechanism is the production of ice fragments through collisions of ice crystals, aggregates, or rimed particles. Although some progress has been made in recent years, the observational data basis and general understanding of this process remain quite limited.

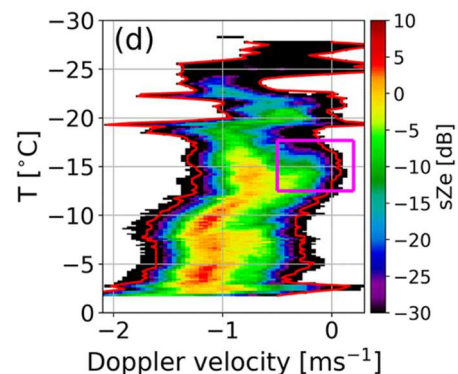


Figure 1: Typical radar Doppler spectrum from zenith looking cloud radar (von Terzi et al., ACP, 2022). Is the secondary “slow” ice particle mode indicated by the pink box caused by SIP (collisional fragmentation)?

The Project:

In the 3-year DFG research project “Quantifying Ice-Ice collisions in a natural Laboratory” (QuILL), we aim to investigate ice collisional fragmentation by combining novel ground-based in-situ sensors, modern cloud remote sensors and Lagrangian super-particle modelling. During a winter field campaign in Hyytiälä (Finland), we will investigate ice fragmentation between natural snow and an artificial ice sphere with a Video In Situ Snowfall Sensor (VISSS) developed by the project partner at University of Leipzig. The results obtained in this “natural laboratory” will then be used to calibrate fragmentation parametrization in the Lagrangian super-particle model McSnow. Synthetic cloud radar observations will be simulated using McSnow simulations and our radar forward operator McRadar. In this way, we will be able to evaluate the SIP parametrizations by comparing real and simulated SIP radar signatures inside the cloud.

The Team:

QuILL is a joint project between LMU (S. Kneifel) and University of Leipzig (M. Maahn). The winter field experiment at the research site in Hyytiälä will be performed in collaboration with D. Moiseev (U. Helsinki). The McSnow super-particle modelling of SIP is a continuation of close collaboration with A. Seifert (DWD), a leading expert in the field of ice microphysics, parametrizations, and cloud modelling. At the Meteorological Institute of LMU, you will join an international team of cloud remote sensing experts in the Experimental Meteorology group led by B. Mayer (https://www.en.meteo.physik.uni-muenchen.de/forschung/atmo_fern/index.html).

Your Role:

You will actively participate in a multi-week winter field campaign in Hyytiälä (Finland) together with the collaboration partners from University of Leipzig. Besides conducting experiments with the in-situ VISSS sensor developed by U. Leipzig, you will supervise the remote sensing observations with special focus on the two radar systems, microwave radiometer and ceilometer. You will analyse and post-process the remote sensing data with existing tools in order to have a profound observational basis for later case study analysis. In close cooperation with A. Seifert - the main developer of McSnow - you will implement experimentally derived parameters of collision fragmentation in McSnow and run an existing framework of McSnow and McRadar for simulating radar moments and Doppler spectra. You will then compare the simulated radar signatures with observations of several case studies to infer the impact of the new experimental in-situ results on SIP inside clouds.

The Position:

Due to the versatility and complexity of the tasks, funding for a postdoctoral researcher has been granted. However, also excellent early-career researchers with strong scientific background interested in pursuing a PhD are welcome to apply. Depending on the qualifications and career stage of the successful applicant, the position will be filled as either:

- a Postdoctoral Researcher with a 100% appointment (TV-L E13 pay scale of the German public sector), or
- a PhD Candidate with a 75% appointment (TV-L E13), providing the opportunity to pursue a doctoral degree.

The position is to be filled as soon as possible and is fixed-term for three years.

What we expected from you:

- Strong interest in ice cloud microphysics, experimental research, cloud radar remote sensing, and using novel modelling tools
- Experience with high-level scientific programming language for data analysis, such as Python (mandatory)
- Excellent Master's degree (mandatory) in Meteorology or Physics
- Highly motivated, well organized, and able to work both independently and as part of a team
- Excellent communication skills in written and spoken English
- Ability to publish results in international journals and to present at international conferences

What you can expect from us:

- An internationally renowned, stimulating, and collaborative research environment at a leading European university
- Access to excellent research infrastructure and facilities
- Support for career development
- Opportunities for international collaboration and conference participation
- Flexible working arrangements in accordance with university regulations

How to apply:

Interested candidates should send their application **as one single PDF**, including a letter of motivation, curriculum vitae, Degree transcripts or records, other qualifications, and contact information of two referees, to the project leader Dr. Stefan Kneifel (stefan.kneifel@lmu.de). **Applications deadline is 15th September 2026.**

Selection & Legal Notice

LMU Munich is an equal opportunity employer committed to increasing the proportion of women in research and teaching, and therefore strongly encourages female scientists to apply. Disabled candidates with essentially equal qualifications will be given preference. LMU Munich actively welcomes applications from all qualified individuals to enhance the diversity of its staff. Please note that expenses incurred in connection with your application (such as travel or accommodation costs for interviews) cannot be reimbursed by LMU. By submitting your application, you consent to your data being processed and stored electronically in accordance with LMU's data protection regulations.