

The **Institute for Atmospheric and Environmental Sciences** (Mesoscale Meteorology and Climate Research Group) invites applications for a fixed-term

**PhD position on “Frozen Soil conditions in Seasonal Forecasting”
(75% E13 TV-G-U)**

for 36 months available from 1st May 2023 or soon thereafter. The salary and social security benefits are according to the German standard and follows the Goethe University pay structure (TV-G-U).

This position is funded – subject to final contracting - within the new Italian-German co-operation IDEA S4S and will include extended research stays in Italy.

Each year, approximately 50% of the exposed (excluding ice sheets, inland water bodies) Northern Hemisphere land area undergoes a seasonal transition from predominantly frozen to thawed conditions. The representation of seasonally frozen ground varies substantially in climate system models and is not well studied in NWP models.

This proposed PhD project targets (a) a better representation of the soils' freeze/thaw processes in seamless prediction models (esp. in the future ICON-Seamless-based German Climate Forecasting System, GCFS, with JSBACH) and (b) a careful initialization of the frozen soil state, particularly in seasonal ensemble forecasting. This would have a beneficial impact on snow-hydrology, flood probability forecasting, and spring/summer soil moisture biases and subsequent heatwave forecasting (i.e., on seasonal forecasting services).

Methodologically, this project will rely on hydroclimatic and soil physics understanding, conceptual model building, surface and atmospheric modelling, analysis, and statistics. The PhD should actively cooperate within IDEA S4S and have an enthusiasm to help with some academic teaching is desirable.

Qualifications:

Candidates with a master's degree (MSc) in meteorology, hydrology, physics, mathematics, computational fluid dynamics or a related field should apply. Experience in performing and analysing experiments with a comprehensive atmospheric/climate system model is helpful. In addition, motivation and ability to participate in model development in an interdisciplinary and international environment is necessary. We expect a highly self-motivated PhD with excellent communication skills, both written and oral, in English. Furthermore, general analytical (problem) solving skills, a willingness to occasionally work flexible hours, independence and organizational skills are expected.

Teamwork and interpersonal skills are very important. The successful candidate will be trained in the relevant methods employed and supported by GRADE (Goethe Research Academy for Early Career Researchers). We offer excellent working conditions, an international multi-disciplinary working environment and excellent research infrastructure.

Goethe University is committed to equal rights and therefore we particularly encourage applications from female candidates and those from under-represented backgrounds. Equally qualified people with disabilities will be given priority.

Applications including a detailed CV, certificates, short description of research experience and interests (2 p. max), names and addresses of two scientific referees, should be sent as a one single(!) PDF document by e-mail to Mr C. Czakay, czakay@iau.uni-frankfurt.de, Institute for Atmospheric and Environmental Sciences, J.W. Goethe University, Altenhöferallee 1, 60438 Frankfurt am Main, Germany, by **15 March 2023**. Interviews are scheduled for end of March 2023. Informal inquiries regarding this position can be sent to Prof. Bodo.Ahrens@iau.uni-frankfurt.de