The research group **Theory of Atmospheric Dynamics and Climate** at the Institute of Atmospheric and Environmental Sciences of the Goethe University in the city of Frankfurt (https://frankfurt.de/english/about-frankfurt) invites applications for a

Research Assistant (m/f/d)
Postdoctoral Scientist
(E 13 TV-G-U)

to be filled on July 1st 2024 for four years. The position is funded within the Transregional Collaborative Research Centre 181 "Energy Transfers in the Atmosphere and the Ocean" by the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft). The salary grade is based on the job characteristics of the collective agreement (TV-G-U) applicable to the Goethe University.

Within CRC 181 the understanding of the energetic coupling of various processes in the atmosphere and their influences on climate and its variability is to be improved. The advertised position is part of sub-project W1:

„Gravity Wave Parameterization for the Atmosphere"

Project leaders: Prof. Ulrich Achatz (Goethe-Universität Frankfurt), in collaboration with Prof. Carsten Eden (Universität Hamburg) and Prof. Gerd Baumgarten (Leibniz-Institut für Atmosphärenphysik an der Universität Rostock).

The aim of subproject W1 is to establish an energetically consistent approach for the formulation of a gravity wave parameterization in atmospheric models. It represents the key role of gravity waves in the atmospheric energy cycle through their energetic coupling to both the resolved flow and small-scale turbulence. Furthermore, an energetically consistent gravity wave parameterization helps us to better understand the role of these waves in the climate system. Subproject W1 develops parameterizations of varying complexity and efficiency and validates them against observations and process-resolving simulations. Among these, MS-GWaM in the climate and weather model ICON-a is the first and so far only parameterization that takes into account both transient interactions of gravity waves and the effect of their horizontal propagation. These effects have a significant influence on climate variability.

The research focus of the advertised position is the coupled dynamics of gravity waves, large-scale flow and turbulence. A flow-dependent description of the source of gravity waves for MS-GWaM is to be derived from process-resolving simulations using machine learning. This will be integrated into ICON together with an energetically consistent coupling of gravity waves and turbulence, and the influence of these processes on climate variability will be investigated.

Information on the research group where the position will be located can be found at http://www.goethe-university-frankfurt.de/45681958/Theory-of-Atmospheric-Dynamics-and-Climate. Its focus is on scale interactions in atmospheric dynamics, applied e.g. to large-scale low-frequency variability or gravity-wave dynamics. Middle-atmosphere dynamics is another field of work. Methods employed are e.g. multi-scale asymptotics, stochastics, and numerical simulations. Inquiries should be addressed to Prof. Dr. Ulrich Achatz (achatz@iau.uni-frankfurt.de).

The DFG CRC 181 offers a comprehensive and structured training for early career researchers. In addition to self-organized activities such as workshops, trainings and a guest program, the successful candidate will have the opportunity, if desired, to pursue international research visits. The consortium conducts an ambitious program to gradually enhance gender equality on all career levels.

Requirements
Applicants should have a very good PhD in meteorology, physics, or a related field. Expected is a strong background in theory and/or modeling, a genuine interest in atmospheric dynamics as a field of research and the readiness to work (or learn working) with atmospheric weather and climate models.

The Goethe University is committed to a policy of providing equal employment opportunities for both men and women alike, and therefore encourages particularly women to apply for the position/s offered. Individuals with severe disability will be prioritized in case of equal aptitude and ability.

Applications and deadline
Please send applications as one single pdf file to achatz@iau.uni-frankfurt.de, including (i) a letter of motivation, (ii) a CV, (iii) copies of all relevant certificates, and at least two contacts for reference letters **by June 26th 2024**. Applications will be considered beyond this date until the position has been filled. For further information, please contact achatz@iau.uni-frankfurt.de.

We look forward to your application!