

The **Institute for Geophysics and Meteorology** at the University of Cologne (IGMK) invites applications for a

## Research Assistant position with the opportunity for graduation

### Development of an Aeolian-Biogenic model

starting after October 1st, 2016 with a weekly working time of 29,87 hours (75% position). The initial contract is limited for 3 years. It is a qualification body with the possibility of promotion. The salary is based on the German E13 TV-L scale if terms and conditions under collective bargaining law are fulfilled.

We offer a productive and interdisciplinary working atmosphere including several possibilities for career development.

The position is related to the Collaborative Research Center SFB 1211 - "Earth - Evolution at the Dry Limit", which was recently approved by the German Science Foundation. Within the SFB 1211, IGMK together with the collaboration partners (Universities of Aachen, Bonn and Cologne, Jülich Research Center) will work at the intersection of landscape evolution and biological evolution – which are mutually dependent. The researchers will focus on dry and extremely dry regions because processes of biological activity unfold more slowly in these regions, which makes them easier to identify. In this phase, the focus will be on the Atacama desert.

#### **Requirements**

We expect strong interest in atmospheric science with specialization in atmospheric and surface modeling. Applicants should have a Master-of-Science-equivalent university degree in meteorology, geophysics, physics or mathematics. Experience in scientific programming, preferably in a UNIX/LINUX environment, and knowledge in computational modelling is highly desirable. Candidates must possess excellent communication skills both in written and spoken English.

#### **Detailed project description**

##### Development of an Aeolian-Biogenic Model

Aeolian processes on geological time scales are closely related to both climate change and bio-ecological evolution. In the Atacama desert where fluvial/glacial processes are absent, aeolian processes virtually govern the evolution of the land surface and the proxies of planetary geomorphology. On the other hand, land-surface conditions (e.g. soil wetness, vegetation cover and surface crust) strongly influence the rate of aeolian transport. The central task of our research unit is to develop a conceptual framework for the investigation of interactions between aeolian and biological processes in the Atacama desert and to develop for the first time a numerical system for modeling such interactions on geological time scales.

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The doctoral candidate will develop a module for quantifying the aeolian-biogenic interactions. Of particular importance is to quantify the strength and thickness of the biogenic crust, and to derive adequate parameterizations of these quantities as a function of environmental control parameters. At the same time the inhibition of aeolian erosion by the presence of crusts, as well as the effects of dust erosion and deposition on the formation of crusts will be considered. All these ingredients will be cast in a set of partial differential equations. The simulations will be extensively compared against observations from the literature and from the field and remote sensing campaigns within SFB 1211.

## Applications

Interested candidates should send a CV; a cover letter describing background, training and research interests; certificates; and the contact information of two referees as a single PDF to [meteo-jobs@uni-koeln.de](mailto:meteo-jobs@uni-koeln.de). Please clearly indicate which position you apply for. Review of applications will begin immediately and continue until **September 30, 2016**.

## Selection

The selection for the position will be based solely on merit without regard to gender, religion, national origin, political affiliation, marital or family status or other differences. Among equally qualified candidates, handicapped candidates will be given preference.

The University of Cologne is an equal opportunities employer. Applications of women are thus especially encouraged; applications of disabled persons will be given preferential treatment to those of other candidates with equal qualifications.

For more information contact

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