

## PostDoc and PhD Vacancies at KIT in Multi-scale Volcanic Plume and Cloud Modeling

**VOLIMPACT** is a research unit funded by German science foundation (DFG) to revisit the volcanic impact on atmosphere and climate in preparations for the next big volcanic eruption (FOR 2820). Seven universities and research institutions are involved in the first phase of this project (2019-2021). The overall goal of **VOLIMPACT** is to deepen the understanding of how the climate system responds to volcanic eruptions using the recent advancements made in models and measurement techniques. These advancements enable us to study, for the first time, the effects of volcanic eruptions consistently over the full range of spatial and temporal scales including the initial plume development of explosive eruptions, the variation of stratospheric aerosol particle size and radiative forcing caused by volcanic eruptions, the response of clouds, the effects of volcanic eruptions on atmospheric dynamics, as well as their climate impact.

A quantitative description of the volcanic source is crucial to initialize multi-scale atmospheric and climate models. **VOLPLUME** is one work package of the research unit that focuses on this initial stage of the eruption. The main objective is to better understand the volcanic plume development from (micro-)physical and chemical perspectives using the state-of-the-art modelling system ICON-ART with Large Eddy Simulation (LES) physics. Institute of Meteorology and Climate Research (IMK) at **Karlsruhe Institute of Technology (KIT)** leads the **VOLPLUME** project and is seeking competent and enthusiastic candidates to fill the following vacancies:

**1- PostDoc Position: Modelling the Convective Volcanic Plumes in ICON-ART modeling system with LES physics;** *Duration:* 36 Month (fixed-term contract), *Salary:* 75% TV-L 13. *Starting date:* as soon as possible

**Duties:** The candidate shall further develop ICON-ART modeling system with LES physics to include convective plume development in the model with focus on microphysical processes. The work will include model development, numerical experiments and the presentation of research findings at international conferences and in peer-reviewed journals. The position does not come with teaching obligations.

**Qualifications:** Applicants should have a PhD in meteorology, atmospheric sciences, physics or related fields. Key requirements for the position are excellent expertise in numerical modelling and scientific programming as well as experience in at least two of the following topics: LES, aerosol dynamics and cloud microphysics. Knowledge and experience on volcanic plume / convection modeling is a plus.

Excellent English language communication skills are mandatory, German advantageous. We expect high skill in presentation techniques and a strong publication record in peer-reviewed journals.

**Contact person:** Dr. Bernhard Vogel ([bernhard.vogel@kit.edu](mailto:bernhard.vogel@kit.edu))

**2- PhD position: Modelling the Chemical Evolution of Volcanic Plumes in ICON-ART modeling system with LES physics;** *Duration:* 36 Month (fixed-term contract), *Salary:* 75% TV-L 13. *Starting date:* as soon as possible

**Duties:** The candidate shall develop a plume parameterization in ICON-ART (LES physics) and adjust the chemistry and aerosol dynamics to this new parameterization. The work will include model development, numerical experiments and the presentation of research findings at international conferences and in peer-reviewed journals.

**Qualifications:** Applicants should have MSc in meteorology, atmospheric sciences, physics or related fields as well as experience in numerical modeling and scientific programming using FORTRAN. Knowledge and experience on volcanic plume / atmospheric chemistry modeling is a plus. English language communication skills are mandatory.

**Contact Person:** Dr. Ali Hoshyaripour ([ali.hoshyaripour@kit.edu](mailto:ali.hoshyaripour@kit.edu))

Another project within **VOLIMPACT** is **VOLCLOUD** (“Cloud response to volcanic eruptions”), co-lead by KIT and the University of Leipzig. Within **VOLCLOUD**, we will study the effects of volcanic aerosols on clouds and the contribution of these aerosol-cloud interactions to the overall radiative forcing associated with volcanic eruptions. At KIT, the focus will be on the impact on mixed- and ice-phase clouds, via additional cloud-active aerosol particles, and on the impact of volcanic emissions on deep-convective clouds and cross-tropopause transport. This project will also use the ICON-ART model. We seek qualified applicants for the following position:

**3- PhD position: Modeling the impact of volcanic aerosols on mixed-phase and ice clouds;**

*Duration:* 36 Month (fixed-term contract), *Salary:* 75% TV-L 13. *Starting date:* as soon as possible

**Duties:** The candidate shall set up, run and evaluate ICON-ART simulations and analyze the results. The work will include modifications of the model code, numerical experiments, data analysis, collaboration within **VOLIMPACT** and beyond, and the presentation of research findings at international conferences and in peer-reviewed journals.

**Qualifications:** Applicants should have MSc in meteorology, atmospheric sciences, physics or related fields as well as experience numerical modeling and scientific programming. Knowledge and experience on cloud or aerosol modelling is a plus. English language communication skills are mandatory.

**Contact person:** Prof. Dr. Corinna Hoose ([corinna.hoose@kit.edu](mailto:corinna.hoose@kit.edu))

**How to apply:**

Please send your application including a cover letter that outlines your motivation, background and training, a CV, copies of university certificates, and contact details of up to three references as a single pdf file to the contact person of the position by 31 January 2019. Please also use these contacts for questions and inquiries.

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