



PhD position in Soil Science

The Chair of Soil Science and Geomorphology invites applications for a PhD position (m/f/d) in the field of climate change-induced treeline dynamics for the soil science sub-project of the project "TREELINE-II: Sensitivity and Re-sponse of Treeline Ecotones in the Nepal Himalaya to Climate Warming". **TREELINE-II** is an ambitious research project at Universität Hamburg, Universität Tübingen and Tribhuvan University Kathmandu, funded by the German Research Foundation (DFG).

The project:

The project aims to understand effects of climate change on treeline environments in the Ne-pal Himalaya, focusing on spatial and temporal differences between krummholz and non-krummholz treelines in response to climate change. Understanding these differences is key to the question to what extent Himalayan treeline shifts can be expected in the 21st century. Results of **TREELINE-I** indicate that climate warming effects are altered at local scale by non-thermal factors. At the Rolwaling treeline study site (c. 4000 m), the dense *Rhododendron campanulatum* krummholz zone retards a treeline shift to higher elevations. Krummholz thickets are highly competitive and act as a barrier, slowing down population processes at the front-edge of the treeline-forming species *Betula utilis* and *Abies spectabilis*. Other driving factors of treeline inertia presumably include limited availability of nitrogen and phosphorous, as well as soil moisture deficits in the pre-monsoon season, the latter adversely affecting tree growth in recent decades. **TREELINE-II** will test the hypothesis that krummholz zones are the crucial structural component of central Himalayan treeline ecotones controlling any treeline shifts, and that climate warming leads to widely disparate spatial and temporal responses of krummholz and non-krummholz treelines.

Responsibilities and specific duties:

Duties include academic services in the project named above. The candidate will be responsible for the Work Package 2 'Treeline Soils Analysis' of TREELINE-II. In this work package, we will assess soil property effects to elucidate the role of krummholz zones in treeline dynamics across central Himalayan treelines and underlying mechanisms and feedbacks that maintain the competitiveness of *R. campanulatum*, but are unfavourable to most other plants. These are (i) inhibition of growth of other plants beneath *R. campanulatum* driven by allelopathy, (ii) limited nutrient availability resulting from low CNP contents, low cation exchange capacity and high soil acidity, and (iii) pre-monsoon drought stress at the beginning of the growing season.

Requirements:

The candidate should have experience in field-based methods of soil science and/or geocology. Earlier experience in soil sampling and lab work is not absolutely required, but would be a plus. Preferably, the candidate has a strong interest in treeline research. Experience of fieldwork in high mountain regions is desired. The willingness to cooperate with colleagues from other disciplines and institutes is a prerequisite. The candidate must have either profound knowledge in English or in German with good knowledge in English. We are looking for motivated PhD students with MSc degree or equivalent.

The PhD position is remunerated at the salary level TV-L 13 and calls for 65 % of standard work hours per week (Full-time positions currently comprise 39 hours per week). The fixed-term nature of this contract is based upon Section 2 of the academic fixed-term labor contract act (Wissenschaftszeitvertragsgesetz, WissZeitVG). The term is fixed for a period of 3 years.

The University of Tübingen aims to increase the share of women in research and encourage female scientists to apply. Severely disabled applicants will receive preference over equally qualified non-disabled applicants. We offer an excellent, interdisciplinary and dynamic research environment in an international team (<http://www.uni-tuebingen.de/soilscience>) and a vibrant city (<https://www.tuebingen.de/en/>). For more information contact Prof. Dr. Thomas Scholten (thomas.scholten@uni-tuebingen.de). Please send your application (one single pdf-formatted document) with detailed curriculum vitae, and statement of research interests, certificates/transcripts before **12 February 2023** to Margaretha Baur (margaretha.baur@uni-tuebingen.de).