



<http://uhh.de/cen-mountainmodels>



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

CENTER

FOR EARTH SYSTEM RESEARCH
AND SUSTAINABILITY (CEN)



APPLICATION

The Winter School invites international and national PhD students interested in challenges of modelling methods to answer current questions of high mountain research. Experience in R is required at beginner to intermediate level. More experienced PhD students are also warmly welcomed.

We are looking forward to lively exchanges of knowledge about the challenges of exploring high mountain areas, as well as international networking of junior scientists with a climatological and ecological background.

REGISTRATION FEES AND DEADLINES*

Early bird 60€ until 31st October 2019

Regular 80€ until 30th November 2019

* Fees includes the icebreaker and beverages during workshop. Not included in the workshop: travel cost, accommodation and any other personal expenses.

Please register under

<https://www.conferences.uni-hamburg.de/e/mcme2020>

Applicants should upload a short motivation letter (max. 200 words) in the registration process.

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DEPARTMENT OF EARTH SCIENCE

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For further information, please visit

<http://uhh.de/cen-mountainmodels>

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WINTER SCHOOL MODELLING CHALLENGES FOR MOUNTAIN ECOSYSTEMS

23.- 28.02.2020



INSTITUT FÜR GEOGRAPHIE
BUNDESSTRASSE 55
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MODELLING CHALLENGES

Based on heterogeneous and often topo-graphically complex terrain, high altitude ecosystems are characterised by distinct vertical climatic gradients and respective altitudinal vegetation zonations. Compared to other high mountains of the world, such as the Alps or the Rocky Mountains, the Himalayas are often underrepresented in scientific modelling literature.

HIGH ALTITUDE ECOSYSTEMS

Modelling studies in remote mountainous regions such as the Himalayas face numerous challenges:

- limited data availability due to difficult accessibility of the terrain
- poor data basis with unknown magnitude of uncertainties
- limited number of reference studies for comparison

PROGRAMME

With short, introductory lectures and current research-orientated hands-on sections, the Winter School will cover the essential methods for modelling climate and ecological data. We will create all models with freely available remote sensing data (MODIS) and climate data (Chelsa), using the open-source software R.

We will address potential model pitfalls, discuss solutions and provide example data from the Himalayas. Besides the provided example data, all participants are encouraged to prepare and work with their own data.

During the Winter School, data and problems brought in by participants will be discussed and analysed.



PT. 1: MODELLING CLIMATE DATA

Based on the generated time series, spatiotemporal statistical climate modelling will be presented. The aim is to analyse and predict surface parameters such as land surface temperature and snow cover in the Himalayas. Special focus is on automatization of data preparation and processing as well as machine learning algorithms.

PT. 2: ECOLOGICAL NICHE MODELS

The modelled results of Pt. 1 will be used as predictor variables to model the ecological niche of a treeline species: the Himalayan birch (*Betula utilis*). Additionally we will use different climate predictor variable sets (Chelsa and Worldclim) to model the distribution under current climatic conditions. Special focus is on model comparison, evaluation and prediction.