

The effects of climate and environmental change to Late Quaternary vegetation and fauna in Northern Eurasia

Summary

The PhD project will use multi-proxy approach (paleobotany, stable isotope and elemental analyses) to shed light to the environmental change and its effects to the local vegetation and fauna during the Late Quaternary period in Baltic region and Northern Eurasia.

Research field:	Earth sciences
Supervisors:	Dr. Leeli Amon Prof. Dr. Siim Veski
Availability:	This position is available.
Offered by:	School of Science Department of Geology
Application deadline:	Applications are accepted between June 01, 2020 00:00 and July 03, 2020 23:59 (Europe/Zurich)

Description

The climate, environmental and biodiversity changes are processes known throughout the Quaternary period. On the Northern Hemisphere the numerous glaciations drove the migration of the species and the Pleistocene-Holocene period witnessed the extinction of several species. Whether the latter was caused by the change in ecological niches, climate & environment or human activity is still under heated debate.

Vegetation dynamics is closely coupled with changes in climate and environmental factors. Fauna is in close interaction with the changes of the vegetation. The combination of different factors, including the environmental changes possibly had effect on the migration and later, extinction of the large herbivore species, woolly mammoth. There is still ongoing debate about the causes or the combination of the causes that led to extinction. The change in vegetation could be reconstructed using pollen and plant macrofossil found from sediments but also herbivore coprolites, permafrost etc. In geological record numerous findings of mammoth remains are revealed. The excavated remains and the sediments around them could offer various information about past environment, vegetation dynamics, animal dietary habits, migration etc.

The combination of paleo-botanical (plant macrofossil analysis) and geochemical (isotope and trace element analysis) methods would provide a unique insight into the past environments and the effect of changes to the biota. The research material will be acquired in cooperation with Tomsk State University, Russia and collections in Europe. Department of geology, TalTech offers a wide range of know-how, laboratory equipment, tools and collections for paleo-ecological research.

Responsibilities and tasks:

- Successfully complete the research project, write at least three scientific publications and PhD thesis
- Attend relevant PhD courses and trainings regarding the methods, laboratory work (also abroad)
- Relevant teaching and outreach
- Teach and work for the department
- Work in the laboratories and assist in research fieldworks (if needed)

Qualifications

The applicants should fulfill the following requirements:

- a good BSc and MSc degree from an internationally recognized university in an Earth Science discipline (Geology, Quaternary geology, Physical Geography, Palaeoecology) or relevant subject area (Limnology, Ecology, Environmental Archaeology). Previous background in paleo-ecology related projects would be an advantage.
- English language proficiency at a minimum of IELTS band 6.5 with no component score below 6.0, or equivalent level (if not decided otherwise).



- motivated, ready to focus on multi-disciplined project, great communicative skills, proactive and willing for team-work, affinity with working in the field, previous experience in the laboratory works.



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