VolkswagenStiftung

Establishing modern ecophysiological measurement methods as a contribution to research on the consequences of global climate change in Kazakhstan

Initiative: Zwischen Europa und Orient - Mittelasien/Kaukasus im Fokus der Wissenschaft

Ausschreibung: Ausschreibung: Strukturell orientierte Maßnahmen

Bewilligung: 20.12.2018

Laufzeit: 3 Jahre

The laboratory equipment for plant ecological research and teaching to be installed at Pavlodar State Pedagogical University will allow the quantitative analysis of carbon, water, and nitrogen relations in plants and their environment both under field conditions and in the laboratory.The acquisition of an instrument for high-precision measurements of the CO2/H2O gas exchange in plants with integrated measuring unit for the analysis of chlorophyll fluorescence is planned. This instrument allows the quantification of photosynthesis (CO2 assimilation, chlorophyll a fluorescence), plant transpiration, and the respiration in plants and soil. Scholander pressure chambers will be acquired to quantify the plant water status. The purchase of a portable photometer is planned for the quantitative analysis of NH4+ and NO3- concentrations in solutions. The instrument will be used to examine net nitrogen mineralization under field laboratory conditions. Instruments for the measurement of air and soil microclimate will complement the equipment. The implementation of the new instruments in research and teaching at the Pavlodar State Pedagogical University is planned in a joint pilot project under the participation of the applicants and scientists and PhD students from the Pavlodar State Pedagogical University. Field campaigns for the comparative study of four different forest and grassland ecosystems are planned. Moreover, a course block for graduate students will be held in Pavlodar. By integrating scientists, PhD students, and graduate students, a broad and sustainable impact shall be achieved. With the participation of scientists and PhD students (who are not funded by the project, but work in related disciplines), a multiplier effect is intended. This way, the planned project could become an important stimulus for ecology and climate warming research and teaching in Kazakhstan.

Projektbeteiligte

Prof. Dr. Markus Hauck
Universität Freiburg
Fakultät für Umwelt und Natürliche Ressourcen
Institut für Forstwissenschaften
Professur für Angewandte Vegetationsökologie
Freiburg

Prof. Dr. Bulat Zhumadilov
Pavlodar State Pedagogical University
Department of General Biology
Pavlodar
Kasachstan

Dr. Choimaa Dulamsuren
Universität Freiburg
Institut für Forstwissenschaften
Professur für Angewandte Vegetationsökologie
Freiburg