

## JOB POST

### Junior researcher –

**geostatistics**  
**geochemistry**  
**biogeomorphology**  
**pedometrics**

## JOB DESCRIPTION

The successful candidate is expected to take a leading role in **spatial analysing of soils and tree soil interactions** in old-growth temperate and tropical forests.

We expect to uncover pathways of spatial soil complexity formation and, above all, role of individual trees and microtopography in soils and forested landscape formation. From the theoretical point of view, we would like to supplement soil evolution theory with detailed analysis of non-linear pedogenesis including Holocene polygenesis and regressive soil evolution. From the perspective of applied research we aim to clarify the role of forest management in soil development and hillslope processes.

To do that, we will use an extensive and exactly localized data regarding:

- soil chemistry (38 chemical soil properties analysed in hundreds pedons)
- soil morphology (thicknesses and forms of soil horizons recorded in thousands of soil profiles)
- biogeomorphology and biochemistry (biomechanical and biochemical effect of 1,000,000 trees)
- disturbance ecology (dendrochronological and dendrogeomorphological data)
- geophysics (extensive GPR, tomography and seismic measurements)
- radiometry (dating of soils, outcrops and soil disturbances by isotopes)
- digital terrain model (extensive and repeated terrestrial and aerial laser scanning)

Majority of data originates from the Central European temperate forests (Czech Republic, Romania, Ukraine, Poland). However, data provided by cooperative teams within the **global ForestGEO network** (<https://forestgeo.si.edu/>) will be available as well.

The candidate will engage in starting project *The mystery of biogenic soil creep: the biogeomorphic role of trees in temperate and tropical forests and its ecological consequences*

Abstract of project: Soil creep is potentially influenced by trees. The project aims at clarifying the biogeomorphic impact of tree radial growth and death and its ecological and soil evolutionary implications in primeval forests. We hypothesize that a significant role can be attributed to trees in hillslope processes that are dependent on forest structure, slope angle and disturbance regime. We will quantify the current volume of soil mechanically shifted by trees. This data will be statistically modelled over time on existing up to 40-yr long observations of forest dynamics (1,000,000 trees in database). Effects of trees in soils will be compared with the results of repeated laser scanning covering a 10-yr period (recent changes) and radiometric dating of soils (hillslope processes in the order of 10 – 10,000 years). The response of trees on geomorphic processes will be evaluated using tree rings analysis. The fine scale of individual tree will be connected with forest dynamics on a regional scale. Finally, results from 19 temperate and tropical primeval forests will be combined. In addition to (bio)geomorphic data, we will deal with chemical soil properties. All measurements will be accurately located and will allow spatial analysis.

## DESIRED SKILLS AND EXPERIENCE

### Qualifications

In accordance with the prepositions in project proposal, we search for a person who can demonstrate research expertise and is qualified in spatial analysis of soil data (e.g. geostatistics, spatial multidimensional analysis). Knowledge of pedochemistry is not explicitly required but is an advantage.

We would prefer a person who finished his/her PhD study and is looking for a starting position in research (Postdoc position).

We expect a good command of English, the ability to work in a team and flexibility in timing. If you are interested in the job call, please send us your standard CV (e.g. EUROPASS) including a list of publications, documented experience in research, recommendation letter, and your ideas about your job position.

## ABOUT THE EMPLOYER

### **Silva Tarouca Research Institute, Department of Forest Ecology**

Our team is called „Blue Cat“. Since 1993 we have focused on the research of old-growth forest dynamics, disturbance dynamics, tree spatial patterns at different scales, vegetation dynamics, biomechanical and biochemical effects of trees in soil formation etc. We are members of the ForestGEO network (<http://www.forestgeo.si.edu/>).

For more information about our team, please see <https://www.naturalforests.cz/>

### **Software:**

- R
- ArcGIS
- IDRISI GIS

**Type of employment:** Temporary position – until the end of 2021

**Working hours:** Full time

**First day of employment:** As per agreement (the sooner the better)

**Salary:** Monthly (standard salary on the level of Czech scientific salaries)

**Number of positions:** 1

**City:** Brno

**Country:** Czech Republic

### **Contacts:**

send your application to Kamil Král, Head of Department of Forest Ecology, [kamil.kral@vukoz.cz](mailto:kamil.kral@vukoz.cz);  
**tel.:** +420 541 126 263;

if you have any questions about the project, please contact Pavel Šamonil, project PI,  
[pavel.samonil@vukoz.cz](mailto:pavel.samonil@vukoz.cz), **tel.:** +420 541 126 260,

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