

Scientists of the first climatic REC will find out what the Chara sands are hiding

Scientists of Siberian Federal University, on the basis of which the first in Russia climatic research and educational centre Yenisey Siberia operates, have conducted expeditionary studies on the territory of the Chara Sands — the northernmost desert in the world.



The unique data will make it possible to reconstruct how the appearance of the forest ecosystems of the Chara depression has changed over the past thousand years.

The expedition studied the forest ecosystems of the sandy valley covering the area of the Chara depression between the Upper and Middle Sakukan rivers. According to the head of the expedition, leading researcher at the School of Ecology and Geography of Siberian Federal University Vladimir Gavrikov, this territory is a natural monument, and the anthropogenic impact there is still minimal. At the same time, the area is poorly covered by regular ecological research, therefore any scientific data describing the specifics of the functioning of its unique landscapes is very valuable.



"The formation of the Chara sands is associated with the activity of the wind, which patiently passed through and sorted fluvioglacial and limnoglacial deposits that accumulated at the foot of the Kodar ridge. In those days, herds of mammoths and woolly rhinos could be found in the Chara depression. Moreover, the Chara sands are not static, because the wind is a sculptor who never stops working. The analysis of the speed of sand movement over the past hundreds of years is important because it is related to the dynamics of climatic factors. Trees growing here in Spartan conditions are sensitive to changes in environmental conditions, which is very important for climate reconstruction," he said.

The team took wood samples for dendrochemical analysis. From the point of view of dendrochemistry, information on the elemental composition of wood in clean regions not affected by industrial emissions is of formidable value.

"This allows us to hope that the factors of individual development and local climate prevail in the distribution of chemical elements over the tree rings. Thus, the Chara Sands will provide a reliable background for subsequent comparison with similar objects in anthropogenically modified landscapes," the scientist emphasized.

In order to study the background varieties of the soils of the Chara depression in the Kodar National Park, the team laid a soil catena at different heights, took samples for further study of the soil-geochemical background, and the features of the migration of chemical elements.

Furthermore, the researchers took surface samples at the foot and on the slopes of the Kodar ridge for spore-and-pollen analysis. They will analyze tiny formations of silica contained in plants — phytoliths that

have been perfectly preserved for dozens of centuries. This will help find out what plants grew in the desert 100 years ago or even during the construction of the Egyptian pyramids. All sediments studied will be dated by AMS radiocarbon dating which will determine the age of a tiny seed that has lain in the soil or on the bottom of a lake for several thousand years.

The expedition was organized in the framework of the Late Holocene Dynamics of the Boreal Forests of Asia against the Background of Changing Geochemical and Climatic Conditions project supported by a grant from the Russian Foundation for Basic Research.

22 september 2021

© Siberian federal university. Website editorial staff: +7 (391) 246-98-60, info@sfu-kras.ru.

Web page address: <https://news.sfu-kras.ru/node/25264>