ECOSYSTEMS: ECOLOGY AND DYNAMICS, 2022, Vol. 6, No. 4, P. 89-104

DYNAMICS OF ECOSYSTEMS AND THEIR COMPONENTS

UDC 551.34 + 551.24

PALEOECOLOGY OF THE NORTH OF WEST SIBERIA IN THE LAST EPOCH OF THE PLEISTOCENE: NEW EVIDENCES AND SCENARIOS

© 2022. V.S. Sheinkman*, **, *, S.N. Sedov*, **, ****, E.V. Bezrukova*******

**Earth Cryosphere Institute of the Tyumen Science Center of the Siberian Branch of the Russian Academy of Sciences*
Russia, 625026, Tyumen, Malygin Str., 86. E-mail: vlad.sheinkman@mail.ru
***Tyumen State University*
Russia, 625003, Tyumen, Volodarskiy Str., 6. E-mail: serg_sedov@yahoo.com
****Tyumen Industrial University*
Russia, 625000, Tyumen, Volodarskiy Str., 36
*****Institute of Geology of the National Autonomous University of Mexico*
Mexico, CdMx C.P.04510, Mexico City, University campus, Del. Coyoacán
******A.P. Vinogradov's Institute of Geochemistry of the Siberian Branch of the Russian Academy of Sciences*
Russia, 664033, Irkutsk, Favorski Str., 1a. E-mail: bezrukova@igc.irk.ru

Received December 01, 2022. Revised December 10, 2022. Accepted December 15, 2022.

In this article we present the materials in respect to the Quaternary paleocryological, paleosoil and paleobotanic development in the north of the West Siberian Plain. Data demonstrating wide distribution of polygonal-wedge structures in the region are elucidated. The structures represent polygonal ice wedge pseudomorphs and initially ground wedges. The former developed in the terminal phase of the Pleistocene in the end of marine isotope stage-2 (MIS-2), and are the successors of the epigenetic polygonal ice wedges which cut the Karginian (MIS-3) alluvial mass, whereas the second formed in the syncryogenetic alluvial deposits in the course of MIS-3. Redeposited material of cryohydromorphic paleosols has been revealed in the filling of the pseudomorphs; fragments of humus horizon are included – they are used for ^{14}C-dating. Spore-pollen spectrum in that filling shows prevalence of boggy tundra and tundra-steppe vegetation. The set of obtained data casts doubt on hypothesis of prevalence of cold deserts and ice sheets in the study area and shows existence of developed vegetable cover at a background of sufficient and, in places, superfluous moistening. It occurs on account of close position of the permafrost roof. Also the conclusion in respect to non-glaciated development of the region in the cryochrons, which are similar to MIS-2, is concluded.

Keywords: permafrost, paleocryogenesis, polygonal-wedge structures, paleoecology of West Siberia, spore-pollen spectra, Pleistocene paleosols, polygonal ice wedge pseudomorphs.

Funding. This research was funded for the State Assignments No. 121041600042-7 of the Earth Cryosphere Institute of the Tyumen Science Center of the Siberian Branch of the Russian Academy of Sciences "Researching the Ways of Formation, Structure and Variability, and Forecasting of the Cryosphere Condition, Including Permafrost and Cryogenic Landscapes"; No. 121042000078-9 of the Tyumen Science Center of the Siberian Branch of the Russian Academy of Sciences "Development of Methodological Foundations for Interdisciplinary Studies of the Role of the Cryosphere in the Evolution of Substantial and Energetic Interactions on the Earth's Surface, in the Life Support Mechanisms of the Biosphere and the Ecological Aspects of Human Life. Assessing and Forecasting the Changes in Cryogenic Landscapes and Ecosystems in the North Part of West Siberia under the

Influence of Natural and Anthropogenic Factors"; No. 0284-2021-0003 of the A.P. Vinogradov's Institute of Geochemistry of the Siberian Branch of the Russian Academy of Sciences "Spatio-Temporal Ecosystems and Climate Variability in Eastern Siberia during the Late Pleistocene-Holocene".
DOI: 10.24412/2542-2006-2022-4-89-104
EDN: HRMOLP