

BIOCLIMATIC CONDITIONS OF THE RUSSIAN ARCTIC USING THE UNIVERSAL THERMAL CLIMATE INDEX (UTCI)

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Overall impact of climatic conditions on human can be estimated using bioclimatic indexes. We used UTCI index to estimate bioclimate for the Russian Arctic. Initiated by Commission of the International Society of Biometeorology, and developed with support from the European Union within the COST Action 730, the Universal Thermal Climate Index (UTCI) aims at the assessment of the outdoor thermal conditions in the major fields of human biometeorology. Index UTCI can be described as an equivalent environment temperature ($^{\circ}$ C) which provides the same physiological impact on human as the actual environment. Seasonal fluctuations of UTCI index and changes of distribution of discomfort levels during the climate change were shown for the Russian Arctic territory. The results demonstrated that extreme cold stress can be observed nearly throughout Russian Arctic. Strong cold stress occurred in the European territory and Western Siberia north of 65° N. In East Siberia and far east, strong cold stress was observed near 60° N on 50% of the days or more. Extreme cold stress was observed in the latitudinal zone of $70\text{--}80^{\circ}$ N for 5 months in European Russia and for 6 months in West Siberia. At the beginning of the 21st century the duration of extreme cold stress reduced by 1.5–2 months in the east and by 3 months in European Russia. The period of extreme and very high cold stress decreases during the modern climate warming, especially in Arctic, in the north of European part of Russia, in the western and central Siberia.

Keywords: Arctic, Universal Thermal Climate Index (UTCI), cold stress, climate change.