

Climate Change and Permafrost Degradation in Northern Eurasia: Geographic Impact Assessment

*Dmitry A Streletskiy¹

1. George Washington University

The Arctic regions of Northern Eurasia are progressively warming. One of the major concerns of observed and projected warming is the presence of permafrost. Limited permafrost observations show that following climatic trends permafrost is warming across the region. The active layer, the layer just above permafrost that is subject to seasonal thawing and freezing, is also increasing. These changes are important for many natural ecosystem processes and also critical in the design of infrastructure on permafrost. This work is utilizing the latest available climate input and permafrost-geotechnical modeling in order to locate the areas where permafrost degradation and associated hazards may negatively impact critical infrastructure. The cost of various types of infrastructure is then used to estimate the monetary value of impacted infrastructure and to evaluate the ability of regions to absorb the cost required to maintain infrastructure on permafrost. The results can be used to inform decision makers and planners in areas occupied by permafrost.

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