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# Estimating Fuel Characteristics in Tundra Ecosystems of Central Siberia, Russia

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## ABSTRACT

The Northern Hemisphere plays an important role in shaping global hydrological, ecological, weather and climate processes. The Arctic tundra biome is experiencing the fastest rate of warming, leading to extensive changes of vegetation, permafrost thaw and increased wildfires. Despite their relevance for global biogeochemical and biogeophysical processes, Siberian tundra ecosystems are still extremely poorly studied, limiting the effective assessment of vegetation productivity and predicting possible fire effects. The purpose of our study was to estimate fuel structure and loads in different tundra ecosystems in the Krasnoyarsk krai, Central Siberia. The lowest fuel loads were found in dry lichen-dominated areas and on the surface of the frost-heaved hummocks. Wet herbaceous and moss tundra ecosystems were characterized by higher stores of dead organic matter due to high moisture and slower decomposition rates. In the southern tundra (near the city of Norilsk), shrub biomass accounted for most of the organic matter reserves (up to 77%), while in the northern tundra (near the settlement of Dikson) its contribution decreased to 7-15%. To better evaluate vegetation productivity and fire risks, further efforts should be made to integrate field studies and remote sensing data across the different tundra ecosystems.

**Keywords:** Arctic, fuel loads, lichens, moss, shrubs

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