# 予測される気候変動が東シベリアのカラマツ生態系にもたらす影響
# ～植生シミュレーターを用いた予測研究～

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# Endurance of larch forest ecosystems in eastern Siberia under warming trends

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The larch (*Larix spp*.) forest in eastern Siberia is the world's largest coniferous forest. However, its existence depends on near-surface permafrost, which increases water availability for trees, and the boundary of the forest closely follows the permafrost zone. Therefore, the degradation of near-surface permafrost due to forecasted warming trends during the 21st century is expected to affect the larch forest in Siberia. However, predictions of how warming trends will affect this forest vary greatly, and many uncertainties remain about land–atmospheric interactions within the ecosystem. We developed an integrated land surface model to analyze how the Siberian larch forest will react to current warming trends. This model analyzed interactions between vegetation dynamics and thermo-hydrology and showed that, under climatic conditions predicted by the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathway (RCP) scenarios 2.6 and 8.5, annual larch net primary production (NPP) increased about 2 and 3 times, respectively, by the end of 21$^{st}$ century compared with that in the 20$^{th}$ century. Soil water content during larch growing season showed no obvious trend, even after decay of surface permafrost and accompanying sub-surface runoff. A sensitivity test showed that the forecasted warming and pluvial trends extended leafing days of larches and reduced water shortages during the growing season, thereby increasing productivity.

**References**

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