

Topographic controls on the abundance of Siberian larch forest

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Topographic controls on the abundance of larch forest was evaluated for entire eastern Siberia, where larch species primary dominates. For each of 0.5-deg grid, correlation coefficients (CCs) between overstory LAI and topographic properties for each of larch-dominating plots were calculated. To try to explain its geographic heterogeneity, principal component analysis was conducted by bringing together varieties of environmental data including the CCs. It suggested larch forests avoid areas with drought risk for grids with positive Principal Component 1 (PC1), while avoid areas with inundation/over-wetting risks for grids with negative PC1. Consistently, 2×2 contingency tables of inundation/over-wetting risks and presence of larch forest showed larch forests avoid areas with the risks, and this trend is more apparent for areas with negative PC1 than for positive PC1. These results suggest topographic heterogeneity controls abundance of larch forest through both of drought and over-wetting stresses.

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