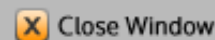




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CONTROL ID: 1460674**TITLE:** Greening of the Arctic: Partitioning Warming Versus Reindeer Herbivory for Willow Populations on Yamal Peninsula, Northwest Siberia

ABSTRACT BODY: Arctic warming has been linked to observed increases in tundra shrub cover and growth in recent decades on the basis of significant relationships between deciduous shrub growth/biomass and temperature. These vegetation trends have been linked to Arctic sea-ice decline and thus to the sea-ice/albedo feedback known as Arctic amplification. However, the interactions between climate, sea ice, tundra vegetation and herbivores remain poorly understood. Recently we revealed a 50-year growth response over a >100,000 km² area to a rise in summer temperature for willow (*Salix lanata*), one the most abundant shrub genera at and north of the continental treeline and an important source of reindeer forage in spring, summer and autumn. We demonstrated that whereas plant productivity is related to sea ice in late spring, the growing season peak responds to persistent synoptic-scale air masses over West Siberia associated with Fennoscandian weather systems through the Rossby wave train. Substrate was important for biomass accumulation, yet a strong correlation between growth and temperature encompasses all observed soil types. Vegetation was especially responsive to temperature in early summer. However, the role of herbivory was not addressed. The present data set explores the relationship between long-term herbivory and growth trends of shrubs experiencing warming in recent decades. Semi-domestic reindeer managed by indigenous Nenets nomads occur at high densities in summer on exposed ridge tops and graze heavily on prostrate and low erect willows. A few meters away in moderately sloped landslides tall willows remain virtually ungrazed as their canopies have grown above the browse line of ca. 180 cm. Here we detail the responses of neighboring shrub populations with and without intensive herbivory yet subject to the same decadal warming trend.

CURRENT SECTION/FOCUS GROUP: Global Environmental Change**CURRENT SESSION:** GC019. Environmental, Socio-economic and Climatic Change in Northern Eurasia and Their Feedbacks to the Global Earth System**INDEX TERMS:** [0475] BIOGEOSCIENCES / Permafrost, cryosphere, and high-latitude processes, [0439] BIOGEOSCIENCES / Ecosystems, structure and dynamics, [0480] BIOGEOSCIENCES / Remote sensing, [0456] BIOGEOSCIENCES / Life in extreme environments.**AUTHORS/INSTITUTIONS:** B.C. Forbes, Arctic Centre, University of Lapland, Rovaniemi, FINLAND;
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