Belowground plant biomass of different tundra vegetation types and the relationship with local climate

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Climate warming is known to have large impacts on tundra ecosystems, but little is known about the effects on the belowground part of the vegetation which represents a larger pool of biomass than the aboveground part. To improve our understanding of the biomass allocation pattern of tundra vascular plants to belowground, I took samples from three different vegetation patches (graminoid dominated, shrub dominated, mixture) in Kytalyk Nature Reserve, northwestern Siberia, Russia. Results show that different plant functional types (PFTs) differed in both temporal and spatial root growth pattern.

We also integrated previously published data about belowground biomass or root production. Data were categorized into three different groups according to vegetation types (graminoid dominated, shrub dominated, mixture) and correlated to local annual temperature. It is shown that although both graminoid dominated and shrub dominated vegetation increased aboveground biomass with temperature, their belowground part do not necessarily have the same pattern with temperature. These results give us some implication that when we look into climate change effects on tundra vegetation, different PFTs and vegetation types should also be taken into account.

Shrub-tree interactions — paving the way for forest advance?

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Spatial and temporal patterns on tree-ring delta-^{13}C and tree growth over the past 100 years in circum-Arctic ecosystems

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Arctic and boreal ecosystems are exposed to rapid and strong increases in temperature and related environmental changes under Arctic amplification. Early dendrochronological studies in the region focused on the positive growth of trees to warmth (D'Arrigo and Jacoby, 1993). However, A number of more recent studies have demonstrated a reduced sensitivity of tree