Soil Nitrogen Dynamics after Fire in an Alaska Boreal Forest. (S07-trillhose163059-Poster)

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Abstract:

The boreal forest plays a critical role in the rate of global climate change due to feedback mechanisms between fire frequency, climate warming, and nutrient dynamics. Here we report the soil nitrogen dynamics following an experimental fire (FROSTFIRE) in an Interior Alaska boreal forest as part of the Bonanza Creek Long-term Ecological Research (LTER) program. We investigated inorganic nitrogen dynamics in burned and unburned black spruce and mixed hardwood stands in the Caribou-Poker-Creek-Watershed in the summers of 2000 and 2001. Net N-mineralization was examined in situ for the forest floor and for the mineral soil at two depths (0-5 cm and 5-20 cm). Preliminary results suggest that net N-mineralization (g N m-2) was stimulated by the burn in the hardwood plots. Mixed hardwood stands had higher net N-mineralization rates than did black spruce stands for both burned and control plots. Net N-mineralization in the black spruce stands was relatively unaffected by fire. This is in contrast to increased net Nmineralization typically reported in boreal forests. Our results suggest that some black spruce forests in the boreal zone conserve nitrogen even after a major disturbance.

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