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Title: *Simulating the effects of climate change on fire regimes in Arctic ecosystems: implications for conversion of tundra to shrubland and forest*

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Changes in fire regime are predicted to increase the extent and frequency of wildfires throughout the tundra region of Alaska in the coming century, yet the implication and consequences are poorly understood. Understanding the response of terrestrial ecosystems to climate change is a challenge because of the complex interactions of climate, disturbance and recruitment across the landscape. We use a spatially explicit model (TundraFRESCO) to simulate the effect of climate change on fire regimes and tundra successional trajectories, specifically the conversion of tundra to shrubland and forest. Changes in fire regime and vegetation response were simulated by TundraFRESCO driven by downscaled GCM outputs from the CCCMA-CGCM3.1 and MPI ECHAM5 models under the A1B emissions scenario at 1 x 1 km resolution for Arctic Alaska. In the simulations warming caused an increase in the total area burned per decade, leading to conversion of graminoid tundra to shrub tundra and expansion of forest into previously treeless tundra through the 21st century. We present these results and discuss the potential impacts of a changing tundra fire regime on terrestrial ecosystems in Arctic Alaska.

This presentation can be considered for either the 'Terrestrial Ecosystem Responses to Environmental Stressors' or 'Changing North: Predictions and Scenarios' sessions. I am open to presenting in whichever session is considered most appropriate.