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**CONTROL ID:** 1790278

**TITLE:** LOGGING AND FIRE EFFECTS IN SIBERIAN BOREAL FORESTS

**ABSTRACT BODY:** The Russian boreal zone supports a huge terrestrial carbon pool. Moreover, it is a tremendous reservoir of wood products concentrated mainly in Siberia. The main natural disturbance in these forests is wildfire, which modifies the carbon budget and has potentially important climate feedbacks. In addition, both legal and illegal logging increase landscape complexity and fire hazard. We investigated a number of sites in different regions of Siberia to evaluate the impacts of fire and logging on fuel loads, carbon emissions, tree regeneration, soil respiration, and microbocenosis. We found large variations of fire and logging effects among regions depending on growing conditions and type of logging activity. Partial logging had no negative impact on forest conditions and carbon cycle. Illegal logging resulted in increase of fire hazard, and higher carbon emissions than legal logging. The highest fuel loads and carbon emissions were found on repeatedly burned unlogged sites where first fire resulted in total tree mortality. Repeated fires together with logging activities in drier conditions and on large burned sites resulted in insufficient regeneration, or even total lack of tree seedlings. Soil respiration was less on both burned and logged areas than in undisturbed forest. The highest structural and functional disturbances of the soil microbocenosis were observed on logged burned sites. Understanding current interactions between fire and logging is important for modeling ecosystem processes and for managers to develop strategies of sustainable forest management. Changing patterns in the harvest of wood products increase landscape complexity and can be expected to increase emissions and ecosystem damage from wildfires, inhibit recovery of natural ecosystems, and exacerbate impacts of wildland fire on changing climate and air quality. The research was supported by NASA LCLUC Program, RFBR grant # 12-04-31258, and Russian Academy of Sciences.

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**INDEX TERMS:** 1632 GLOBAL CHANGE Land cover change, 0468 BIOGEOSCIENCES Natural hazards, 0439 BIOGEOSCIENCES Ecosystems, structure and dynamics .

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