Results
Logging blocks accounted up to 39% of the total logging area, 9-10% of the area was old, and 2% was mowing area. Fuel loading varied from 55 to 80 kg/ha in the logging blocks, with some areas up to 120 kg/ha. Although the areas were mowing blocks did not cover much area, fuel accumulation exceeded 100 kg/ha in some of them. The presence of mixed species of trees had little influence on the plow and consumption track.
Logging slash consisted of 3% of the total fuel loading. Logging slash adds to high combustion while increasing the total load. Duff load appeared to be increased in non-mowing and small areas, but the biomass did not change significantly. Post-fire fire cover and biomass of the grass and herb decreased both in burned and unburned sites. Duff load was completely burned in unburned areas.
Logged areas have higher soil respiration rates on burned/unburned soil sites. These rates are much lower than on unburned areas. The results in higher fuel consumption on logged sites than on unburned sites. Dead woody fuels up to 1.5 m in diameter are consumed almost completely on bothlogged and unburned areas, while the percent of branches 0.5-1.2 m in diameter is increased to 12%.

Conclusions
Fuel consumption was typically less in spring fires than during summer fires. According to data, in the scenario of stable and variable fuel patterns, there is a need to reduce fire damage in the area where the fuel load is lower. Therefore, the reduction of fuel loading in areas where the fuel load is lower is necessary to reduce fire damage. In areas with high fuel loading, it is necessary to reduce the risk of fire damage.

Soil respiration on logged areas was higher than that in pine forest. Respiration from ground cover on logged/burned areas was 50% less than that on unlogged/unburned areas, while it is three times higher if compared to unburned and unlogged/unburned areas. Soil respiration from unburned soil is 20-40% higher than from ground cover (Fig. 13).

Above-ground carbon stocks are higher on unlogged than on burned areas. However, both live and dead fuel loads are much higher on burned areas when logging slash is left in place. Above-ground fuel consumption is higher on burned areas than in unlogged areas on surface fires. In the area of commercial logging, it is necessary to reduce fuel consumption and soil respiration in areas where the fuel load is higher.

Fuel loading in areas where logging slash is recovered has a significant impact on fire behavior. Therefore, it is necessary to reduce fuel loading in areas where the fuel load is lower to reduce fire damage.

Fig.1. Region of study
Fig.2. burned and logged area in Krasnoyarsk region (2008 year)
Fig.3. Increase of the severity index in logged/unburned unit after cutting

Fig.4. Logged/unburned unit
Fig.5. Logged burned/burned
Fig.6. Unlogged/unburned unit

Fig.7. Table of average fuel consumption at different conditions

Fig.8. Fire intensity at different conditions

Fig.9. Spatial fuel consumption and carbon emission in Scots pine forest (Prunus sylvestris) forests of the Angara region in central Siberia.

Fig.10. Sampling of ground fuels on logged/unburned area
Fig.11. Sampling of ground fuels on logged/unburned area

Fig.12. Ground fuel consumption due to: fire on unlogged (a) and logged (b) units

Fig.13. Dead woody fuel consumption due to: fire on unlogged (a) and logged (b) units

Fig.14. Post-fire changes in soil respiration at logged and unburned sites of Scots pine forests in