Influence of tree- thinning on long-term CO_2 exchange over a larch forest

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Larch forest is an important research object for evaluating CO_2 uptake by forests because it is a common tree type of plantation that has been planted widespread over northeastern Japan. Quantifying the influence of the forest management on carbon budget in larch forests have significance on the securement of forests as a source of CO_2 absorption. Thus, National Institute for Environmental Studies (NIES) has implemented long-term monitoring program of CO_2 exchange over larch forests. Fuji Hokuroku Flux Observation Site was established in the foothills of Mt. Fuji as an alternative base for monitoring, and began observations in January 2006. The site is dominated by larch trees of more than 50 year-old. 30% thinning was conducted at the site in spring of year 2014 and 2015. The characteristics of CO_2 exchange were affected from the human disturbance. Gross primary production (GPP) and ecosystem respiration (RE) of CO_2 were remarkably decreased temporarily after the thinning. Consequently, both GPP and RE has recovered gradually. Net ecosystem production (NEP) has not fully recovered at 2017 to the level before the thinning because the speed of the recovery differs for GPP and RE. We will introduce the results of carbon fluxes and related parameters for the sites.

Keywords: CO2, flux, disturbance, long-term observation

