

## Changes in throughfall and its stable isotopic compositions after stripe thinning in a Japanese cypress plantation

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We investigated changes in throughfall and its isotopic composition due to forest thinning for examining changes in canopy interception processes. For one headwater catchment in a Tochigi site which covered by 20 to 50 years old Japanese cypress and cedar plantations, 50% line strip cutting methods were conducted at December 2011 for the efficiency of timber use. Monitoring periods were from May 2010 to October 2012. Throughfall was measured and collected using twenty tipping bucket rain gauges and collectors in a 10 by 10 m area with a grid pattern. Using the relationship between cumulative gross rainfall and cumulative throughfall (Link et al. 2004), throughfall was separated into two components, direct throughfall and drains from the canopy. The isotopic composition of throughfall and open rainfall were analyzed and compared for each rainfall event. After the thinning, amount of throughfall and direct throughfall were increased. The mean difference of  $d^{18}\text{O}$  values between throughfall and open rainfall during the post-thinning periods was larger than that during pre-thinning periods; however, the difference of these values was small. Spatial variability of the throughfall rate and the  $d^{18}\text{O}$  values in throughfall were affected by canopy structure only during post-thinning periods. Changing in forest structure by thinning affect interception processes in plantations.

Keywords: canopy interception, stable isotope, stripe thinning, Japanese cypress plantation