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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Forest harvesting impacts on micrometeorological conditions and sediment transport activities in a humid periglacial environment" *by* F. Imaizumi et al.

Anonymous Referee #2

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General comments: This study carried a careful field experiment for studying forest harvesting impacts on micrometeorological conditions and sediment transport activities in a humid periglacial environment. It is important for management of the periglacial catchment, especially the vegetation-erosion processes. The observation methods were generally reliable, the datasets showed good quality, and the presentation of results were also clear. However, the discussion section requires improvement as the present version is more or less repeating of the results rather than a discussion. The discussion should focus on showing a more general cognition that helps people understand micrometeorological conditions and sediment transport activities in a humid periglacial, and the influence of forest harvesting on such processes. In addition, the

abstract should be revised with less common sense but more scientific findings from this study.

Specific comments: There are several points require correction or clarification: Page 2 line 5: as this study is not relevant to aquatic ecosystems, I would suggest delete the sentence. Page 3 line 27: why not arrange the CC and NC at the same contours with similar slope gradient? As the steep slope is apt to failure, it is inappropriate to just neglect the influence of the different slopes. Please clarify! Page 4 Table 1: the difference of the contributing area would also affect the calculation of sediment yield, e.g. a smaller area would give a larger sediment yield rate. So the difference in the cross-sectional topography could not be distinguished from the comparison of the ridge, straight, and valley. Please clarify! Page 5 lines 10-14: it should be explained how to deal with the non-measured periods/ or why it is acceptable with such discontinuous measurement. Page 5 lines 15-20: as you have both temperature logger data and some short period radiometer data, why not try to correlate the two datasets and extension of the radiometer data? Figure 2: the high boulders at CCV acted as flow resistance structure and could reduce erosion ability of flow and may not be ignored, therefore the influence of vegetation clearance may not be distinguished by the comparison of CC and NC. Page 10 lines 18-19, the 0-3 mm hr-1 difference in rainfall intensity between the CC and NC is not clearly seen from Fig. 7. Figure 4: typing error of "(b) after harvesting" Figure 8: why CC not measured for the sampling period as NC? for the different peaking rainfall intensities, how the velocities of CC and NC along slope were comparable? Figure 9: the uncertainty should be indicated as there is one dot of NC having no clear displacement of ground surface sediment at the maximum hourly rainfall as high as 11 mm hr-1 Figure 11: typing errors in the caption, see (g), (i), (j) Page 23 lines 13-16: I would suggest write the sentences as "Our study clarified that forest harvesting promoted changes in the micrometeorological conditions by removal of the forest canopy, such as increases in the diurnal range of ground temperature, shortening of snow cover period, and increases in the throughfall. However, sediment transport activity has been restrained due to the trap of sediment by branches

of harvested trees and the growth of understories."

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