

Influence of rainfall increase according to heavy rain and typhoon on nitrogen exports in a forested watershed

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As the rainfall increases, the nitrogen runoff tends to increase in a forested catchment. Therefore, it is expected that runoff of nutrients such as nitrogen and suspended sediments increase from a forested catchment when the rainfall increases by a frequency increase of the heavy rain and the occurrence of a super-typhoon. There is a possibility to influence the river water quality and the stream ecosystem. It was thought that it was one method to actually evaluate the nutrients and suspended sediments dynamics in the forest in the region where the frequency of the heavy rain was high for the more accurate prediction in the future concerning nitrogen output and suspended sediments discharge. In this study, based on the observation in a forested catchment where annual rainfall is more than 2500 mm and the frequency of the heavy rain is high (a southwestern part of Kochi Prefecture, Shimanto River headwaters), the nitrate dynamics were investigated when the total rainfall and annual rainfall increases. The amount of the runoff water was observed in Yusuhara town (YS catchment) and Tsuno town (HT catchment) in Kochi Prefecture, and a regular collecting stream water of the frequency of once or twice a month and was done. Stream water at the runoff was obtained by an automatic water sampler. After it had filtered it, nitrate concentration was analyzed by the ion chromatography. As a result, 1) the relationship between the amount of a total runoff water of one rainfall and the nitrate runoff of one rainfall becomes a tendency of reaching the peak. 2) There is no correlation with the volume of water (rainfall depth and discharge) during year and the annual nitrate runoff. 3) It was thought that the variation in nitrate concentration in stream water observed at the runoff according to the typhoon of the total rainfall 212 mm May, 2011 and total rainfall 742 mm August of the same year in the HT catchment, was almost similar to that in the YS catchment (First, the nitrate concentration rose once and a remarkable decrease, and then the continuance of low concentration), and this may suggest a universality of findings in the YS catchment.

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