Abstract

The study on the early warning of flash flood and landslide due to rainfall and runoff, which result in turbidity, suspended solid and water color was carried out in the Yang sub basin of the Nan River. The duration of study was 90 consecutive days during July to September 2009 over 4 stations, namely, Ban Nam Krai, Ban Don Mun, Ban Na Far and Ban Phai Mun. The results of the study showed the minimum daily rainfall of 9.77 mm. at Ban Nam Krai and the maximum daily rainfall of 23.94 mm. at Ban Don Mun. These results corresponded well with the minimum runoff of 0.34 cms at Ban Nam Krai and the maximum of 15.01 cms at Ban Don Mun. The minimum average suspended solid was 12.69 mg/l at Ban Nam krai wheres the maximum average was 40 mg/l at Ban Phai Mun. The lowest average turbidity was 6.23 NTU at Ban Nam krai and the maximum average was 75.09 NTU at Ban Phai Mun. The water color was of minimum value of 60.42 PCU at Ban Nam Krai and of maximum value of 284.76 PCU at Ban Phai Mun.

The prediction equation at Ban Nam Krai and Ban Phai Mun by employing a daily rainfall of 50 mm resulted in the water colors of 100.80 and 128.41 PCU, respectively. The equations were statistically tested by wing Chi-square analysis resulting in $x^2 = 24.59$ and 42.36 with the confidence of 95% ($\alpha = 0.05$), respectively. The equations at Ban Nam Krai and Ban Phai Mun were, therefore, not applicable for prediction of flash flood and landslide. Also, the results from the equations were equivalent to the colorless in the Munsell color system. On the other hand, similar tests were carried out at Ban Don Mun and Ban Na Far resulting in the color values of 382.73 and 603.11 PCU, respectively. The equations were tested by the Chi-square analysis resulting in $x^2 = 14.60$ and 38.69 at ($\alpha = 0.05$), respectively. The predicted water color at Ban Don Mun water color at Ban Na Far was 603.11 PCU equivalent to 10 YR 7/8 or yellow in the Munsell color system. The study recommended continuing monitoring additional data to confirm the reliability of the predicted equation.

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