

## Channel networks formed on steep slopes due to rainfall

IZUMI, Norihiro<sup>1\*</sup>, Junya Nagahara<sup>2</sup>

<sup>1</sup>Faculty of Engineering, Hokkaido University, <sup>2</sup>Sapporo City Office

It is commonly observed that channel networks are formed on slopes subject to erosion due to flowing water. Characteristic morphology of channel networks has been attracting many researchers' interest since long time ago. In the case of mild slopes for flow to be subcritical in the Froude sense, the flow is affected by morphology at the downstream end. Indentations formed at the downstream end of the slope attracts more water than other parts, and the resultant concentration of erosion takes place at the indentations. The interaction between flowing water and morphological changes causes the formation of channel networks. Taking into account of this physical process, the author has performed linear stability analysis to explain the formation of channels on mild slopes. According to their results, channels with spacing equivalent to the critical flow depth divided by the friction coefficient grow faster than those with other spacing. Estimating the friction coefficient to be on the order of 0.01, he concluded that the channel spacing is on the order of one thousand times the critical flow depth. On the other hand, however, his analysis shed no further light on the formation of channels on slopes in the Froude sense. In this study, a series of experiments have been performed to study the formation of channels on steep slopes. According to the experimental results, channels are formed from the downstream end in the case of relatively mild slopes such as 10 degrees, and the channel spacing is relatively large. When the slope angle is 20 degrees, relatively narrow-spaced parallel channels are formed on slopes. When the slope angle is larger than 30 degrees, rhomboid patterns of channels are formed on slopes.

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