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Reduction Effect Analysis of Erosion Control Facilities Using Debris Flow Numerical Model

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With the increase in frequency of typhoons and heavy rains following the climate change, the scale of damage from the calamities in the mountainous areas has been growing larger and larger, which is different from the past. For the case of Korea where 64% of land is consisted of the mountainous areas, establishment of the check dams has been drastically increased after 2000 in order to reduce the damages from the debris flow. However, due to the lack of data on scale, location and kind of check dams established for reducing the damages in debris flow, the measures to prevent damages based on experience and subjective basis have to be relied on.
This study, the high-precision DEM data was structured by using the terrestrial LiDAR in the Jecheon area where the debris flow damage occurred in July 2009. And, from the numerical models of the debris flow, Kanako-2D that is available to reflect the erosion and deposition action was applied to install the erosion control facilities (water channel, check dam) and analyzed the effect of reducing the debris flow shown in the downstream. After installing the erosion control facilities, most of debris flow moves along the water channel to reduce the area to expand the debris flow, and after installing the check dam, the flow depth and flux of the debris flow were reduced along with the erosion. However, even after constructing the erosion control facilities, damages were still inflicted on private residences or agricultural sites located on the upper regions where the deposition was made.
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