

Development of large-scale hydrological - sediment transport model based on Hydro-debris2D

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We attempted to perform large-scale hydrological & sediment transport numerical simulation using hydro-debris 2D into the extreme heavy rainfall events induced in July 2017 in Kyushu island mainly in upstream area of Chikugo-river basin. The detailed mechanism of sediment yield differs from one another depending upon soil characteristics and saturation, however using the large-scale numerical simulation it was possible to cover overall estimation for wide area which has been accomplished using hydro-debris 2D integrated numerical simulation for three layer. The advantage of the scheme is to enable numerical simulation without clear distinction between pure water flood event, sedimentation caused by the large volume of waterflow induced by the heavy rainfall and increased river stream, and debris flow caused associated large-scale sediment movement in the slope. However, due to the grid spacing of numerical simulation, debris flow can be reproduced only when fine-scale grid spacing were employed, whereas other sediment transport can be reproduced by relatively course numerical simulation.

Keywords: Sediment transport, debris flow, Hydro-debris 2D