

## Development of Hydro-debris 2D model for larger area

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The Hydro-debris 2D model has been developed and applied for both larger and limited zones in the Hiroshima debris-flow disasters that occurred both in 2014 & 2018. The model application for hindcast for wider and limited areas with the same scheme is tested in order to obtain better and precise hindcast as well as a future forecast of rainfall-induced debris flow disasters by improving the geological classification module for the initiation of the debris flow. A universal algorithm for predicting the debris flow disasters solely by the initial geological boundary conditions and forecasted rainfall distribution may contribute to improving early warnings in this field.

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