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A method of generating virtual drainage-basin by introducing models of slope/stream evolution

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A method of generating virtual drainage basin to understand relationship among characteristics of geomorphic distribution, rainfall distribution, and runoff distribution was developed. Here the concept of generating virtual drainage-basin is that the drainage-basins are generated at random under some physically based conditions on the basin form. The method is an improvement of Nakakita and Matsuda (2007). They proposed the method of generating virtual drainage-basin based on erosional developing model of channel network by Horton (1945). For the improvement, mathematical models of evolution of slopes and streams were introduced into the methodology. As a result, we achieved to introduce the concept of time into the generating virtual drainage-basin model.

Keywords: drainage basin, landform evolution, channel network, slope evolution, longitudinal profile