

Interactive comment on “Debris flow sediment control using multiple herringbone water-sediment separation structures” by Xiangping Xie et al.

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With the development of science and technology, the idea for debris flow mitigation also changes and develops accordingly. We think it is not necessary to stop debris flow totally and store the sediment in water-shed but to block harmful particles and discharge harmless fluid downstream. This herringbone water-sediment separation structure is designed to separate hazardous particles to decrease debris flow discharge, reduce sediment concentration and mitigate impact force, hence to minimize hazardous effect of debris flow. We aimed to solve the common problem that open structure would be buried by sediment after several debris flow events by using this herringbone structure, which is fully elaborated by Xie, et al(2014). According to preliminary experimental research, this structure is possible to get separated material of good sorting effect, which is not presented by other structures, let alone research and application about this as-

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pect. That is why I emphasis this character in this paper. Although the sorting effect is not good enough in the experimental results, it shows the possibility to improve the sorting effect by optimizing the structure parameters. It has some practical meanings from this perspective. According to existing engineering design experience, particle size distribution is always treated as a known condition although we all clear know that it changes during a debris flow event and so did we do. As for the difference from event to event, we presented a discussion about the control effect of the multi-structure system to different grain size distributions as P18 shows. The analysis demonstrated that multi-structure system shows good stability of control effect when facing different debris flow situation, that is, different grain size distribution. Undoubtedly, there still goes a long way for this structure from experimental research to practical application. The next step about this structure is to build a realistic construction for further study. We got preliminary understanding from experimental study and use observation of real debris flow events and the control results of the structure to revise the results of experimental study. That is always the way of such research carrying on.

[1]XieT., Yang H., Wei F., et al. A new type debris flow water-sediment separation structure and its model test. Bulletin of Engineering Geology and the Environment, 73(4):947-958, doi: 10.1007/s10064-014-0585-9, 2014.

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