Nonlinear Processes
in Geophysics

Open Access

EGU

Discussions

NPGD

Interactive
comment

Interactive comment on "Application of Gamma functions to the determination of unit hydrographs" *by* Hongyan Li and Yangzong Cidan

Hongyan Li and Yangzong Cidan

aerlin321@163.com

Received and published: 12 August 2020

Thank you for your evaluation and careful revision of the article, I will treat it with heart. According to what you said, the parameter optimization of Collin iteration method and genetic algorithm is more common in hydrological research, but there are few applications in unit line estimation. There are many methods for deriving the unit line, but these methods have certain requirements for flood data when deriving the unit line and the estimated unit line may not be optimal. Therefore, this paper uses the Gamma function to simulate the law of the basin confluence process, and at the same time, the Gamma function parameters And based on the condition that the error between the calculation process and the measured process is minimum, the genetic algorithm is used to optimize the parameters of the Gamma function, the initial unit line is derived,

and then the final unit line is calculated using the Collins iterative method. The comparison and analysis of the results of the actual calculation examples show that the unit line deduced by this method has better accuracy than the general method, and at the same time, it can reveal the watershed confluence law. The main research purpose of this paper is to apply newer methods commonly used to optimize and improve the accuracy of mature methods.

―――――――――――――――――――

Interactive comment on Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2020-1, 2020.