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## Uncertainties propagation in a hydrological empirical model

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Empirical models have been applied in several works in the literature on hydrological modeling. However, there is still an open question about uncertainties propagation in those models. In this paper, we developed an empirical hydrological model under a Machine Learning approach. Using the Keras interface and TensorFlow library, we trained and tested a Multilayer Perceptron. Our case study was conducted with data from the city of Nova Friburgo, in the mountainous region of Rio de Janeiro, Brazil. Precipitation and river level data were obtained from 5 hydrological stations (in situ), with a resolution of 15 minutes for 2 years. To quantify the propagation of uncertainties, we applied a stochastic perturbation to the input data, following an a priori defined probability distribution, and compared the statistical moments of this distribution with the statistical moments of the output distribution. Based on the proposed accuracy and precision indices, it is possible to conclude, from our case study, that the accuracy is higher but the precision is lower for uniformly distributed stochastic perturbation when compared to an equivalent triangular distribution case.