Determination of Confidence Limits for Model Estimation Using Resampling Techniques

N. K. M. NANSEER[1], M. J HALL [2], H. F. P. VAN DEN BOOGAARD[3]

[1]*Lanka Hydraulic Institute, Sri Lanka*
[2]*Dept. of Hydrology and Water Resources, IHE, The Netherlands*
[3]*Delft Hydraulics, The Netherlands*

From the last few decades a variety of models has been used in the field of hydrology to estimate hydrological components such as runoff, infiltration, base flow etc. However, there is uncertainty in these model results due to the stochastic nature of hydrological process, the limited amount of data available for assessing the true random mechanism of hydrological processes and insufficient data. Prediction of such uncertainty is very important since it determines the reliability of outputs that models predict. Uncertainty could be presented in the form of confidence limits. However, theoretical confidence intervals are not readily available for many cases. In this situation resampling techniques that make a certain kind of inference between the statistics and the hydrology can be adopted to solve this problem. This paper deals how confidence limits can be constructed for uncertainty of observed data and model structure. Both linear and nonlinear models are used for this purpose. Key word: uncertainty, model estimation, confidence limits and resampling techniques.