Performance Evaluation of four different rainfall data sets for using as rainfall runoff model input data In ungauged basins

Mostafa Khoshchehreh (1), Mehdi Ghomeshi (2), and Ali Shahbazi (3)

(1) Faculty of water science engineering, University of shahid chamran, Ahvaz, Islamic Republic Of Iran (mostafakhoshchehreh1991@gmail.com), (2) Faculty of water science engineering, University of shahid chamran, Ahvaz, Islamic Republic of Iran (ghomeshi@scuac.ir), (3) Water and environment models center, Khuzestan water and power authority, Ahvaz,Islamic Republic of Iran (alish1980@gmail.com)

The lack of rainfall observation data and inadequate spatial distribution of the stations is one of the main challenges to calibration rainfall runoff model and generating initial condition for operational purpose. Estimation of rainfall distribution using satellite images products and reanalyzes rainfall data sets could be a good alternative in ungauged basin or basin with poor distribution of stations. Base on the method and algorithms used to produce these data sets, the skills are different in each basin specifically for hydrological simulation purpose. In this study we evaluate the skills of five different rainfall data set including CMORPH, CRU, PERSIANNCCS and ERA Interim as input of rainfall runoff models. A conceptual lumped rainfall runoff model, CRFM, was used to analyze the performance of datasets. Dez River Basin with area of 17600 km2 located in south west of Iran, was selected for analyzes the rainfall data sets. This basin including two main sub basins with totally different topography and geology, so it was a good choice to evaluate the performance of the data sets. The results suggested that the rainfall runoff model with ERA Interim reanalysis rainfall data as the input have the highest performance between other data sets and could be used efficiently for simulating rainfall runoff process. CMORPH, CRU, PERSIANNCCS rainfall data sets fail to estimate temporal pattern and quantity of basin wide rainfall and hydrographs generated by this data sets is highly underestimate in comparison with observed river flow.