

Abstract

Snowfalls are very important as dominant source of water supply and to control flow regime thus; snow hydrology is valuable and important in mountainous basins. Furthermore; estimation, simulation and prediction of flow from snowmelt have many applications in different ways. Monitoring of snow physical characteristics, using remote sensing by MODIS satellite images has been possible for continuous monitoring due to the need of high spatial and ground resolution of the satellites imageries in comparison to the other sensors. Snowmelt Runoff Model (SRM) is a degree-day model to simulate the daily runoff in mountain basins. In this research, SRM has been-used for flow simulation in the Kasgan watershed, located in Esfahan province. The topographic map was used in order to delineate the upper-watershed of Tange Zardalo hydrometric station and to determine hypsometric map with 500 meter interval. The Snow cover map in different hypsometric areas was created using MODIS images without any cloud over which were taken from 2012 to 2013. By analyzing meteorological, hydrometric data and other information, input parameters to the model were produced. The precision of model was determined using statistical parameters such as coefficient of determination (R^2) and differences in volume (D_v) between the measured and estimated runoff. Result showed the coefficient of determination at 0.62 and differences in volume at 22.52% in 2012-2013 period. This result confirms that the SRM model is partly fitted to simulate daily runoff in this study area.

Key words: Snow cover, MODIS, Simulation, Degree - day, SRM



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