Application Of Remote Sensing And GIS In Snow Hydrology

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Most of watersheds with considerable annually yield are located in mountains. Much of precipitation in these watersheds is snow. Estimation of snowmelt runoff in different seasons is very important in water resources management. Snowmelt Runoff Model (SRM) with was developed applied to Alpine mountain watersheds by Martinec in 1975 nowadays is used as an operational model in more than twenty-five countries.

“Kameh”watershed located on the North-East of “Torbat Heydarieh” has been selected as a reference watershed and all of the hydro meteorological (hydrological data) of this watershed has been recorded for several years.

In this work images taken by NOAA satellite in AVHRR format has been analyzed with making use of Remote Sensing (RS) soft wares and snow covered area witch is one of the most important input parameters of SRM model, has been determined. Then hypsometric map of watershed has been reproduced by making use of Geographical Information System (GIS) soft wares such as Arc View.

Next, hydrological and hydro meteorological data such as precipitation and temperature and physiographic parameters of watershed have been transferred to SRM model and snowmelt runoff which is simulated by SRM model has been compared with actual snowmelt runoff recorded at hydrometric station. Finally, SRM model has been calibrated for Kameh watershed, and has been shown that SRM can be used as an operational model in similar watersheds for prediction of snowmelt runoff in the case of temperature increase due to global change.