

## عنوان مقاله:

The prioritization of isochrones affecting peak flood discharge in Neishabour Bar Watershed, Iran

## محل انتشار:

دو فصلنامه تحقیقات سطوح استحصال آب, دوره 4, شماره 2 (سال: 1400)

تعداد صفحات اصل مقاله: 14

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## خلاصه مقاله:

Iran has geographically located in an arid and semi-arid climate in most regions. Precipitation and its distribution in such regions cause irreparable damage by creating seasonal floods. This study presents a suitable model for optimizing watershed management and flood control in order to reduce flood risks. To reach to this purpose, the concept of time-area diagram in HEC-HMS hydrological model as well Single Successive Sub-watershed Elimination (SSSE) is employed to simulate the flood hydrograph corresponding to the design precipitation for each sub-watershed. According to SCS model for estimating flood discharge and kinematic wave for flood routing, the curve number and Manning's roughness coefficient were calibrated and identified as the most effective parameters. After evaluating the different search methods and objective functions, the univariate gradient as best search method and the Nash-Sutcliffe as the best objective function was selected due to the highest consistency of the simulated discharge in the three events. Finally, the model was validated for ۲ storms and the Nash-Sutcliffe values were calculated as ۰.۹۴۸ and ۰.۸۹۲, respectively. After calculating the peak discharge of each sub-watershed, the effect of each on the output flood production was determined using F and f flood indices. Then, isochronic surfaces of the watershed were extracted using three methods and the spatial distribution of the sub-watersheds in the area was investigated. The results revealed that the level of ۰.۷۵-۱ located in the middle part of the watershed is posed as the first priority. Also, it is concluded that the surfaces near the outlet have played a much smaller role in peak discharge. In general, from the outlet to the upstream and middle parts of the watershed, as travel time level increases, the effect of sub-watersheds on peak flow discharge increases.

## کلمات کلیدی:

Flood potential, Flood routing, HEC-HMS, Isochrone, Kinematic wave, Prioritization, Single Successive Sub-watershed Elimination (SSSE)

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