Regional Frequency Analysis of Low Flow in Northern Karoon Watershed

M. Shamaeizadeh[1] and S. Soltani[2]*

(Received: Feb. 03-2013 ; Accepted : Aug. 7-2013)

Abstract

Hydrologic drought which usually affects wide regions can be studied through Low flow index. In this study, to predict hydrologic drought in North Karoon watershed, 14 stations with suitable and long enough duration data were recorded in the 1387-88 water year. Then 13 physiographic and climatic characteristics of the chosen stations were used to perform homogeneity test for cluster analysis. 7 day low flow series were calculated in each station and according to chi-square and Kolomogragh smirnov tests and Z^{DIST} parameter, 2 parameter gamma distribution was selected as the best regional distribution for this region. Therefore, a seven day low flow index was estimated using FREQ for 5,10,20,50,100 return periods. Regional analysis was performed using a multiple regression method. Moreover, flow duration curves were delineated to obtain Q95 index. Then, zoning maps for Q95، Q7,2 ،Q7,10, Q7,100 were prepared. The results of regional analysis indicated that the averages of height and slope were the two most effective parameters in low flow in this watershed. The investigation of zoning maps showed that southeastern part of this watershed experiences severe droughts compared with other parts.

Keywords: Hydrologic drought, Low flow, Regional analysis, Multiple regression, Zoning of low flow.

1. Dept. of De-desertification, Collage of Natur. Eng. Isf. Univ. of Technol., Isfahan, Iran.
*: Corresponding author, Email: ssoltani@cc.iut.ac.ir

[DOR: 20.1001.1.24763594.1393.18.70.21.0]