

DETERMINING THE MOST APPROPRIATE METHOD OF ESTIMATING THE RUNOFF IN THE AQUIFER BASIN OF CENTRAL IRAN

Najmieh Hezarkhani^{1*} and Mohammad Mahdavi¹ Ali Fathzadeh² Zahra Khanbabaei³

1*. Aquifer Engineering Department of Islamic Azad University, Science and Research Unit of Tehran
Faculty of Natural Resources, University of Tehran

2. Department of Geology, Yazd University, Yazd, Iran

3. Tarbiat Moallem University, Tehran, Iran

Email: najmieh2010@gmail.com

Abstract

Estimating the annual volume of the aquifer basin is of the main issues in designing the aquifer projects. Since the aquifer basin of central Iran covers half of country and a great number of the aquifer basins are situated in the arid and semi arid regions of the hydrometric stations, their watering figures are estimated by experimental models. The general structure of these models in some cases brings about considerable differences in the estimated and observed figures resulted from an incorrect selection of a model. This study has made use of 9 experimental formulas of Justin, Lisi, the world Meteorology Organization ratio, Agricultural Research Association of India, ICAR, Khosla, Turc, the Irrigation Department of India, and Inglis and De Souza for calculating the annual runoff in the water basin of Iran. Therefore for selecting the basins with the least annual natural and artificial Debi changes, the equal aquifer basins with an area less than 300 square kilometer which had no stank and vast agricultural lands which had little to middle degree of penetrability were firstly chosen. In selecting and determining the basin border two soft wares, Google earth, and ArcGIS were used, then the geological, climatological, and land applicability maps of the studied basin were prepared and their hydro climatologic statistics in the common 30-year-old time limit (1976-2005) were extracted. At the end, the annual runoff altitude of the selected stations was determined using the aforementioned 9 ratios and these outcomes were compared with the observed data of the stations using four methods MAPE, RMSE, t distribution, and the unilateral analysis variance. The results show the superiority of Khosla to the other methods in the arid and semi arid regions. The estimated data in both arid and semi arid climates were studied separately, in both cases Khosla was selected as the most appropriate method.

Keywords: *water balance sheet, experimental methods, arid and semi arid regions, runoff, Central Iran*