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Geographical factors affecting variability of precipitation regime

A.A. Sabziparvar[1], S. Movahedi[2], H. Asakereh[3], A. Masoodiyan[4], and Z. Maryanaji[5]*

1) *A.A. Sabziparvar, Associate Professor, Department of Irrigation Engineering, Faculty of Agriculture,
   Bu-Ali Sina University, Hamedan, Iran (presenting author),

2) S. Movahedi, Assistant Professor, Department of Geography, Esfahan University, Iran

3) H. Asakereh, Associate Professor, Zanjan University, Iran,

4) A. Masoodiyan, Associate Professor, Department of Geography, Esfahan University, Iran,

5) Z. Maryanaji, Former Ph.D Candidate, Department of Geography, Esfahan University, Iran

Corresponding author details:
Bu-Ali Sina University, Mahdiyeh Avenue, University Boulevard, Hamedan, Iran.
e-mail: swsabzi@basu.ac.ir; sabziparvar@yahoo.co.uk; Fax: +98 811 8273001

Abstract

This study compares the precipitation regime by using harmonic analysis for the last four decades (1965-2004).We used interpolated precipitation data from different weather stations distributed across Iran and a 15x15 km spatial grid was constructed from the interpolated dataset. Validity of data was carried out by statistical tests. The variability of precipitation regime was explored by using three harmonic analysis methods for precipitation variances. In addition, the effect of geographical factors (altitude, latitude, longitude) in relation to the precipitation regime was verified. Based on the founding of the present research, the dominant precipitation regime in Iran is hibernal which is due to Mediterranean large scale systems entering Iran in winter. This kind of regime tends to more concentration. In addition, fluctuation of the seasonal precipitation regime has been different so that in some regions results in appearance and in other regions leads to change or elimination. The spatial parameters in the three harmony variance of the case study have various effects. This effect is more obvious in the third harmony variance so that the more the longitude increases (south to north) the more the third harmony variance rises and this means that the regions of Iran in higher northern latitudes are more exposed to local factors and seasonal precipitations than those of southern latitudes regions. The results can be applied for environmental plans and water resources risk management, especially for arid and semi-arid regions like Iran where water shortage is a serious governmental challenge.