



Precipitation Regime in Southern Iran Assessed by Harmonic Method

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ABSTRACT: Precipitation regime maybe defined as the characteristics of the seasonal distribution of precipitation at a particular place. Seasonal variation of precipitation regime is important due to its effect on the dry farming products in southern Iran including Fars province with about 122700 km² area. Annual precipitation totals varies generally from less than 100 mm in northern desert part to more than 800 mm over high levels of Zagros range where directed northwestern to southeastern of the area. Data are monthly precipitation totals (MPT) for 97 synoptic and raingauge stations in 1971-2000 period. In order to assess climatic type of precipitation regime, harmonic technique used in the frame of a model designed in Excel software. Inputs are 12 averages of MPT during total period. Outputs are 6 harmonic terms with different time lengths from 2 to 12 month. Each harmonic comprises of amplitude and phase angle interpreted respectively as importance and maximum occurrence time of that harmonic. Results illustrated also by maps. Dominant harmonics for all stations are generally the first and the second with 84% and 12% importance with maximum precipitation occurrence in February and December respectively. The rest harmonics can be negligible due to their smallness except in southern Fars province where the last harmonics, 2 and 2.4 month lengths, are higher than other localities because of probable effects of summer monsoon air currents and those originated from convectional type in spring. It is then demonstrated a very seasonal climate type of precipitation regime in Fars province showing dominant precipitation events mostly in winter due to Mediterranean westerly and Sudan southwesterly as well as dry conditions during

summer. Although the available total records were short that limits temporal trend analysis, nevertheless the method used could advantageously render seasonal precipitation patterns in different parts of the province with climate type verifications related to regional circulation currents.