



Spatial and Temporal Study of Precipitation Characteristics over Iran Using Harmonic Analysis

f. taghavi (1), m moghbel (2), m davudi (3), and a neyestani (4)

(1) Space Physics Department, Geophysics Institute, University of Tehran, Tehran, Islamic Republic Of Iran (ftaghavi@ut.ac.ir, +982188009560), (2) Faculty of Geography, University of Tehran. Tehran, Islamic Republic Of Iran., (3) Faculty of Geography, University of Tehran. Tehran, Islamic Republic Of Iran., (4) Space Physics Department, Geophysics Institute, University of Tehran, Tehran, Islamic Republic Of Iran, neyestani@ut.ac.ir

Iran is located in world's dry belt, so studying the precipitation characteristics and its periodicity of different harmonics has significant role on water resources management. In this study the spatial and temporal analysis of monthly precipitation frequency over Iran are investigated using harmonic analysis techniques. To do so, long monthly precipitation time series data are used to describe the characteristics of precipitation over the whole country in the form of six harmonics. The harmonic analysis showed that the first harmonic are most important for explanation of inter-annual variability of precipitation over the country, so that the first harmonic shows more than 70 percent of monthly precipitation variability in most of regions except Northwest and Southeast of the country. The effects of second harmonic of precipitation is observed mostly in the Northwest part of the country and less intensively in the Southeast and Southern regions, while the third harmonic of precipitation have most effects on precipitation variability of Southeast, Central and Western parts rather than other regions. Also, it is concluded that the date of occurrence of maximum values of precipitation (T_k) for the first harmonic varies from mid-December to March over whole country except in the southern coasts of Caspian Sea.