Geophysical Research Abstracts,
Vol. 11, EGU2009-1743, 2009
EGU General Assembly 2009

Climate analyses in Emad-deh, Larestan, Fars Province, Iran

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Different meteorological parameters like precipitation, temperature, sunny hours, relative humidity, wind, number of freezing days, evaporation and transpiration are used to analyze and evaluate the climate of a region for presenting various development and agricultural projects. The aim of this paper is to study these parameters in order to present flood control and artificial recharge project in the Emad-deh Watershed Basin. The quantitative and qualitative determination of existing data has important role in data analyses. There are different methods for being assure of data homogeneity, and in this paper run test has been used. Since there is no any meteorological in the Emad-deh Watershed Basin, the data of surrounding stations have been used. Amongst these stations, the Larestan Station, with 46 years of precipitation data, and lesser time for other meteorological parameters, regarding to its long period of data collection, proximity to the study basin and suitable attention in data recording has been chosen as base station. According to the existing data from 1960 to 2006 (46 years), the maximum, the average and the minimum amount of precipitation in Larestan Station have been 746.5, 247.6 and 40.5 mm, respectively. These parameters for Emad-deh Basin were 663.3, 220 and 36 mm, respectively. The temperature indicators consisting absolute maximum, maximum average, daily average, minimum average and absolute minimum that in Larestan Station with a duration of 37 years from 1964 to 2001 have been reported annually 74˚c, 31.5˚c, 23.9˚c, 16.1˚c and -3˚c , respectively. These indicators for Emad-deh Basin have been calculated 44.1˚c, 28.3˚c, 21.5˚c, 14.5˚c and -3.3˚c , respectively. Daily sunny hours in each month from 1992 to 2003 showed in Larestan Station, in that the minimum was 7.5 hours in February and the maximum was 11.4 hours in June. The monthly maximum average of the relative humidity was reported 62.4% in January and the annual average 44%. These parameters for Emad-deh were 73.6% and 51.9%. Wind direction has been reported 186.2 to 245.4 degrees, in other words, from SW to NW, since 1991 to 2003. The monthly maximum wind speed has been measured 15.7 m/s in April and the maximum average 2.9 m/s in February in an altitude of 10 m. The annual maximum and the annual average maximum wind speed has been reported 11.8 and 2.08 m/s in the same altitude. The number of freezing days, from 1991 to 2003 has been 4 days in December, January and February. The annual evaporation in Larestan station with 36 years of data collection, from 1966 to 1992, that was evaluated through A class basin indices has been reported 2066 mm. Its monthly maximum and monthly minimum have been reported 312.4 mm in April and 51.2 mm in January respectively. The measurement of real evapotranspiration is very difficult, but its annual value has been calculated in two methods in Emad-deh Watershed Basin: These are Thornthwaite and Blany- Criddle Methods; the values are 1272.8 and 11677.2 mm, respectively. The type of climate has been determined by two methods: These are DeMartonne and Emberger methods. According to DeMartonne method which has been calculated by using dryness coefficient, the average annual temperature and the average annual precipitation, the climate has been determined dry. In Emberger method, which has been calculated by using maximum temperature in the hottest month of the year and the minimum temperature in the coolest month of the year and the annual average precipitation, the climate has been determined as semi-hot desert.