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Effect of Ecological Elements in Pollution of Tehran and Management Role in Decreasing Pollution based on Synoptic Stations

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Abstract

Air pollution is one of the most important effective parameters in urban micro-climatology and increasing population. Excessive use of fossil fuel resources, no use of environmentally friendly technologies and more importantly, the absence of proper environmental management are signs of growing urban climate change. Study on the influence of climatic factors like temperature, humidity, precipitation is important for climate change concerned. In this study, these aspects of Tehran's climate have been preliminary studied over the last two decades. The temperature has constantly increased, humidity and precipitation ha decreased. Dependant of the climatic factors are measured and analyzed. The green space of Tehran is not based on standard protocol and this make the weather of Tehran critical. The ecological impact of climatic elements is obvious to reduce the negative effects of these elements, need good management.

1. Introduction

Climate change has a lot of harmful influence on the environment. Tehran is one of the cities in terms of environmental pollution caused by industrial processes and urban activities. Particulate matter concentrations often exceed threshold values at which human health is severely affected. Tehran is most important for political, economical, trading and industrial purpose in Iran and appearing of any kind of climatic oscillation would result in some irreparable damages such as lake of water sources, violent floods, soil erosion, etc. The damages would cause lots of environmental problems (Hans and John, 1969). The appropriate environmental programs need to design to curb or manage climatic problems and reduce (Hejazi and Moghimi, 2002). Temperature, relative humidity and precipitation and their influences on climatic changes are remarkable in recent decades in Tehran. Variability in these parameters will have huge adverse impact on the socio-economic life of the people. Government authorities must play a proactive role in curbing out of the vulnerability to save the environment and normal life. The article has tried to emphasize the preliminary study to draw attention of the people.

2. Location

Tehran is situated at foot of the Alborz sierra. The distance of Tajrish square in north of Tehran from the peak of Tochal mountain (4,000 masl) is 7 km. The famous Damavand summit (5,671 masl) is situated 50 km away to the east of Tehran. Furthermore, Tehran lies between 35°38′ to 35°50′ latitude and 51°18′ to 51°31′ longitude. Located in the southern foot of Alborz, its elevation varies from 1,060 m in the south to 1,800 m in the north with 740 m fluctuation. It is 70 km from Dasht-e-Kavir to northern parts of Tehran.

Geographical and climatic position of Tehran led to the recognition of different kind of micro-climate received information from some selected stations of Tehran (Table 1).

3. Climatic Status

Nowadays, one of the most important issues in capital city is the urban climate. People are affected by the environment directly or indirectly. Urban expansion strongly influences precipitation and moisture and weather parameters besides temperature increasing constantly over the period of study. The weather parameters were gathered for the period of 1985-2004 in three specific time frames of 1985-1991, 1992-1998 and 1999-2004.

Tehran is far from all moisture sources, temperature pays more attention than relative humidity and precipitation. Mean average temperature in the city had been observed to increasing at constant rate from 1985-2004. From 1985-1991 to 1992-1998,

Table 1: Selected meteorological stations

Station	Latitude	Longitude	Height (m)	Source
Chitgar	35o 44′	51°10′	1305.2	Meteorology
Doshan Tape	35°42′	51°20′	1209.2	Meteorology
Geophysic	35°42′	51°23′	1418.6	Meteorology
Shomale Tehran	35°47′	51°37′	1548.2	Meteorology
Mehrabad	35°41′	51°19′	1190.8	Meteorology
Darakeh	35°49′	51°23′	1700	Power ministry
Abhaye sathi	35°42′	51°23′	1240	Power ministry
Shahid Abas pour	35°45′	51°35′	1300	Power ministry

temperature increased from about 21.3°C to 21.8°C, which ultimately reached to about 22.4 during 1999-2004 (Figure 1). This increasing trend would be result of human intervention and population load, fuel consumption, greenhouse gases composition, dense construction of building materials etc with the diminishing topography of the city.

The second important parameter is relative humidity. The trend of relative humidity over the period of 20 years (1985-2004), showed bit different feature. It remained unchanged till the period of 1992-1998 and showed strong increase during 1999-2004 (Figure 2). Infact, this constant rate of relative humidity had been realized when there was increase of average temperature. This indicates other possible factors played to this unchanged parameter.

The third factor under consideration is precipitation (Figure 3). Data on average precipitation revealed another different trend of variability of precipitation over the 20 years. Average precipitation had been decreased from the average of about 30.5 cm to about 29.2 cm from 1985-1991 to 1992 -1998. Interesting the average record during 1999-2004 showed a quite higher jump in precipitation to average of 32 cm.

Studying on the major climatic parameters are very important is very important because climate influences human activities and vice-versa as well (Kaviyani, 2001). It had been found that changing greenhouse gaseous composition, raising air pollution as well as anthropogenic activities are the main factors in changing the local climate of the cities. The north of Tehran is

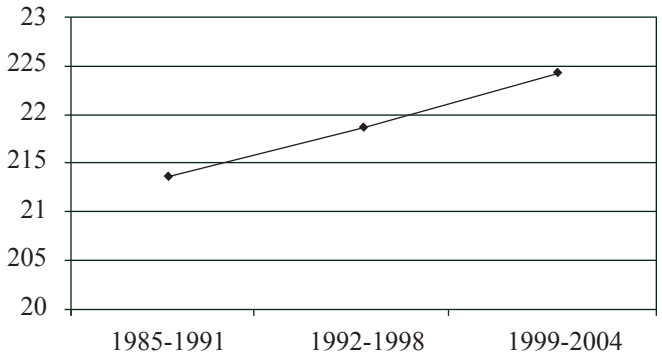

Figure 1: Mean average temperature in Tehran

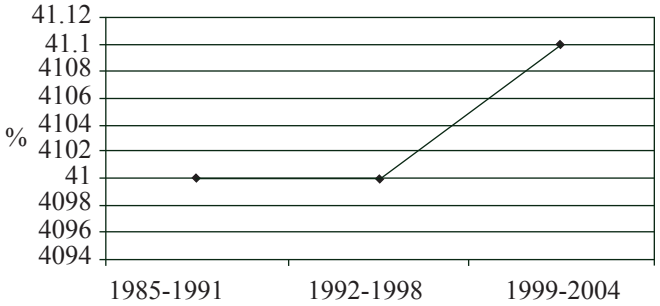

Figure 2: Mean average relative humidity in Tehran

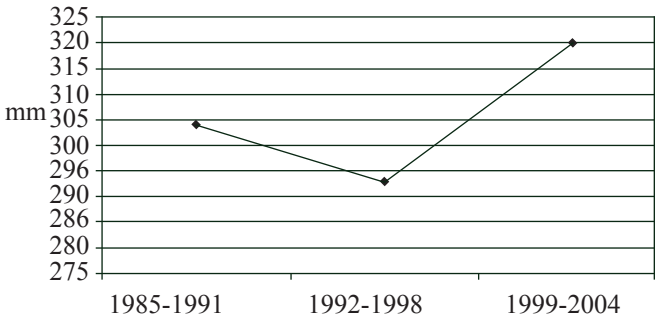

Figure 3: Mean average precipitation in Tehran

surrounded by Alborz Mountain and the east is surrounded by Bibishahrbanoo Mountain. So, Tehran has been located on the lowest place. The building materials attract more radiation and the amount of insolation followed by human interference and air pollutions might had influenced the micro-climate of the city.

Inverse relation between temperature and relative humidity was well understood, however the constant rate of relative humidity during first two average years revealed the role of other influencing factors. Positive correlation between relative humidity and precipitation clearly stated the influence on relative humidity. Negative deviation from the average precipitation of 1985-1991 might have helped to maintain the relative humidity constant with increasing temperature. Increasing precipitation from 1992-1998 onwards had helped to increase average relative humidity.

4. Conclusion

It is understood the change in the climatic parameters in the Tehran city over the year of 20 years. However, it needs a detailed study to find out the best possible counter measure to sustain ecological balance. Government should formulate different feasible studies to find out the myth and create awareness among the growing population.

5. References

Hejazi, Z.Z., Moghimi, S., 2002. Introduction to Microclimatology. Payame Noor Publications, Tehran, 37.

Hans, N., John, C., 1969. Principles of Climatology. Holt Rinehart and Winston, Inc, New York, 128.

Kaviyani, M.R., 2001. Microclimatology. Samt Publications, Tehran, 133.