

# Online monitoring of climatic parameters: a statistical study about environmental changes in Qatar

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## ABSTRACT

Twentieth century has witnessed unprecedented changes in the climate whose profound effects are also observed on ecosystem and human life. The source of these changes are presumed to be increasing concentration of greenhouse gases which result into rise in temperature worldwide. Unwanted effects have also been observed in the Gulf region in terms of reduced but intensive and unpredictable rainfall, average increase in temperature, sea level rise, lack of drinking water and regular drought. Qatar, being a richest country whose economic growth depends on petroleum and natural gas industry, is paying focus on its environmental development programs, which is also a goal of recent national vision. In this study, we have focused on monitoring of temperature and rainfall pattern in Qatar through different control charting schemes, i.e., memory less (Shewhart) and memory type (EWMA and CUSUM) control charting structures; while time series analysis was performed for the period of 1990–2012. It has been observed that temperature have increasing trend while rainfall depicts decreasing trend in last decades. Furthermore, forecasting of average weather is made by memory type structures which may serve as principle tool in environmental development initiatives.

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