



Precipitation trends and variability within the Eastern Mediterranean region for the 1961-2012

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This study focuses on assessing temporal trends and variability in rainfall over the Eastern Mediterranean. Non-parametric Mann-Kendall test and Sen's slope estimator were used in determining the statistical changes in the annual and seasonal rainfall climatology based on monthly precipitation totals in 104 rainfall series during the 1961-2012 period. Statistical trends of rainy days per year for 70 daily precipitation records were analysed for the same period. The Shannon Entropy method was applied to the monthly and daily rainfall records in order to study the spatial and temporal variability of precipitation over the Eastern Mediterranean. Finally, the daily precipitation Concentration Index (CI) was calculated to assess the temporal distribution of precipitation series and measure their irregularity.

The results show that: (1) 80% of those analysed stations have a decreasing trend in rainy days, annual and seasonal rainfall amounts. These trends are statistically significant ($p < 0.05$), mostly during the winter and spring seasons, suggesting a seasonal shift of rainfall concentration. (2): Entropy values indicate that the precipitation possesses latitude zonation and has no clear linear relationship with the longitude. (3): Linear CI trends are predominantly positive and the annual values of CI range from 0.54 to 0.79.