



Decadal changes in daily precipitation totals in Greece

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The changes in daily precipitation totals in Greece, during the 45-year period (1957-2001) are examined. The precipitation datasets concern daily totals recorded by 20 surface meteorological stations of the Hellenic National meteorological Service, which are uniformly distributed over the Greek region. First and foremost, the application of Factor Analysis resulted in grouping the meteorological stations with similar variation in time. The main sub groups represent the northern, southern, western, eastern and central regions of Greece with common precipitation characteristics. The results show that the shape parameter of the precipitation gamma distributions remains rather stable in this period of study, independent of total precipitation, while the scale parameter, which characterizes the scale of the intensity of the daily precipitation (the higher the scale parameter is, the higher the intensity is), is most variable. High figures of the scale parameter appear in the western, eastern and southeastern Greece, while low ones appear mainly in the central continental Greece. Furthermore, important changes are observed in daily precipitation totals exceeding various thresholds such as 10, 20, 30, 40 and 50 mm. More specifically, a positive trend in the number of days with precipitation above the examined thresholds is evident at the eastern and southeastern sub regions of the country while negative trends are appeared elsewhere.