Plinius Conference Abstracts,
Vol. 11, Plinius11-108, 2009
11th Plinius Conference on Mediterranean Storms

Rain intensity over specific rain thresholds in Athens and Thessaloniki, Greece

C.M. Philandras (1), P.T. Nastos (2), J. Kapsomenakis (2), and C.C. Repapis (2)

(1) Research Center for Atmospheric Physics and Climatology of the Academy of Athens, 112 51 Athens, Greece (phatmcli@otenet.gr / +30 210 8842098), (2) Laboratory of Climatology and Atmospheric Environment, Faculty of Geology and Geoenvironment, University of Athens, Panepistimiopolis, 157 84 Athens, Greece (nastos@geol.uoa.gr / + 30 210 7274191)

It is well documented that climatic change has caused significant impacts in the water cycle and great spatial and temporal variability of the rain events. The rain scarcity in many cases is associated with extreme convective weather resulted in flash floods, which threatens the human life and the existed infrastructure.

In this study, the annual mean rain intensity (mm/h) along with the annual number of rain days for rain events over specific rain thresholds, such as 10, 20, 30, 40, 50 mm, in two Greek cities Athens and Thessaloniki, during the period 1930-2007, are examined. The meteorological data, which concern daily rain totals (mm) and duration (h), were acquired from the National Observatory of Athens and from the meteorological station of the University of Thessaloniki.

Our findings show that, in Athens, an increase in the number of annual rain days and the mean rain intensity over the aforementioned rain thresholds appears at the end of 1980's and continues until nowadays. On the contrary, concerning Thessaloniki, a decrease in the rain days is apparent from 1980, while the decrease in the mean rain intensity concerns only the rain thresholds of 10 and 20 mm. This analysis reveals that extreme rain events are more frequent in Athens, which is under a high urbanization rhythm, than in Thessaloniki at the north of Greece. Finally, the patterns of the atmospheric circulation, which are associated with specific extreme cases are analysed, using NCEP reanalysis data.