



Variability and spatial distribution of rain regime in Greece based on synoptical disaggregation of precipitation series

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A pronounced spatial and temporal variability in rain regime is observed in Greece due to the complexity of the terrain, land-sea interactions and smaller scale processes. The work presents the results from a procedure of disaggregation of precipitation series across Greece based on their meteorological origin.

Greek domain was divided in four sectors, based on geographical and climatological considerations: Sector A includes the western part of Greece which receives the larger amounts of precipitation on a yearly basis. Sector B corresponds to the northern and northeastern basin of Greece, characterized by enhanced continentality. Sector C includes parts of central coastal Greece and islands of the Aegean Sea, exhibiting strong seasonality in precipitation. Finally, Sector D covers southern and southeastern areas, characterized also by strong seasonality. Four main synoptic situations that produce precipitation in Greece were decided, based on synoptic maps (surface and 500 hPa geopotential height) for the Eastern Mediterranean (from NCEP reanalysis database) and disaggregation criteria were set for processing precipitation time series. These situations include:

1. Zonal advections: Air flow has a western component and they are related to the passage of fronts.
2. Backward advections: Flow presents a significant southern Mediterranean participation.
3. Backward advections of continental origin: Flow has a significant northerly component and air masses have a continental origin
4. Convective and local situations

A positive trend of the precipitation connected to flows with a significant northerly component of continental origin was found at Sectors A, B and C while no significant trend was detected in precipitation connected to zonal advection. In section D, precipitation connected to zonal advection has increased while a decreasing trend is observed in precipitation related to flows of continental origin.