Geophysical Research Abstracts
Vol. 14, EGU2012-1555, 2012
EGU General Assembly 2012

Spatial variability of pouring rain in the City of Málaga. (South of Spain)

JM Senciales Gonzalez, P Aguayo Maldonado, JD Ruiz Sinoga, and JF Martinez Murillo
University of Malaga, Geography, Physical Geography, malaga, Spain (sinoga@uma.es)

Several studies demonstrate the spatial and temporal variability of rainfall in the Mediterranean climate (Llasat et al., 2005; Neppel et al., 2007; Rodrigo and Derieg, 2008), as well as episodes of atmospheric dynamics which tend to intervene in such events (Llasat et al., 2005; Martin et al., 2006).
Considering that the recurrence of torrential events is usual in the southwest of the Mediterranean Coastal areas and occasionally its difficult to structure, the study of the highest events were restricted to those that exceed 100 mm in 24 hours.
The study of these events is very important to analyze the vulnerability of urban areas, taking as an example the case of the city of Malaga (South of Spain)
Elías y Ruiz (1979) were calculated for the city of Málaga a maximum value of 220-240 mm for a period of 100 years return; and a maximum of 60 mm/h for 10 years. In the same area, the probability estimates by Senciales (1997) from a single station indicate a recurrence of between 10 and 25 years for such events. But with a wide number of stations a greater cumulative frequency is obtained.
The city of Malaga has been divided into various sectors according to their topography, proceeding to multivariate analysis with SPSS-18 of maximum and average values greater than 100 mm. precipitation and linking them with the following independent variables: month of the year of the event, situation in altitude, wind in surface and surface situation. The best results were obtained by dividing the city into four sectors; Valley area, East Coast (steep), foothills (moderately steep) and mountains (steep). The units of the average values by sector with regard to the situation in area (depression, frontal system or occluded frontal system) and height (flow of cold air or cold drop) reached significant values ($r2 > 0.5$ and even > 0.9) repeated by dividing the city in only three areas, Valley, East Coast and mountains but with minor adjustment in the latter. Torrential events showed no dependence -against expected- on the month of the year are presented, except for a small relation ($r2 = 0.4$-0.5) to analyze them together with the situation in height in the Valley and East Coast areas.
The calculation of the recurrence of such events, according with other studies in the area has been added to these analyses (Lavee et al., 1998; Ruiz Sinoga et al., 2010; López-Bustins et al., 2008), showing a certain increase in their frequency over the past 60 years.