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A statistical approach to predict afteshocks with M>=5.5: first results

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Investigating aftershock behaviour may find the key to explain better the mechanisms of seismicity as a whole. We studied the temporal behaviour of aftershocks and the data concerning them, checked according to completeness criteria (D'Amico et al.), come from the NEIC-USGS data bank. In our analysis we exclude the first ten days of a sequence because we observe that, in the 89% of sequences analysed, events with magnitude M>5.5 are highly frequent. The determination of a sector suitable to the sequence is important. At present, we use a rectangular sector centred on the "sequence barycentre" and has its sides at a distance from this point equal to 1.5 times the fault length L, this one is calculated through the empirical relation by Utsu (1969). The barycentre coordinates are calculated as an arithmetical mean of the latitude and longitude values of the shocks. The decay can be modeled as a non-stationary Poissonian process where the intensity function is given by the "modified Omori formula" (Utsu et al. 1995). The method used estimates the difference between values of the observed and theoretical temporal trend. Several days before the occurrence of large aftershocks there are "seismic anomalies" considered as precursors.