Atmospheric patterns for Mediterranean heavy rain

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The Mediterranean heavy rain events are probable related to mesoscale structures, but these mesoscale structures are framed in some kinds of larger scale atmospheric patterns. In order to explore in a systematic way the kind of large scale atmospheric patterns that are associated with heavy rain, a global classification of the atmospheric situations simultaneous and preliminary to 472 heavy rain events in the Mediterranean zones of Spain and France has been undertaken, by using statistical methods. The result is a series of eight atmospheric patterns, every one of them associated with heavy rain in different regions of the whole area. Although in some of these patterns a clear cyclonic structure is identified, the cyclonic structure is, perhaps, only an embedded weak depression or through, not very clear in the average charts. In both cases, the heavy rain would generally be organised by a warm (and wet) cyclonic low layer inflow. A few particular examples of different kind of situations help to clarify the panorama given for the average atmospheric patterns.