High impact weather and cyclones simultaneity in Catalonia

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The Western Mediterranean in general and Catalonia in particular are usually affected by high impact weather (HIW) events, mainly heavy rain (HR) and strong wind (SW). The improvement in the understanding and the accurate forecast of such events are major concerns for the meteorologists of the region. In the present study, HR and SW events in Catalonia are cross-referenced with an objective cyclone database for a 9-year period (from June 1995 to May 2004). Results show that in most of the HR events a cyclone is located close to Catalonia, in such a way that the feeding of a wet flow to the affected region was allowed. These cyclones can be either shallow and weak or deep and intense. For SW events many simultaneous cyclones also appear to be connected with the generation of SW. However, other SW events seem to be related to meso-scale circulations and, as a result, not always well captured in the cyclone database. Moreover, coincident HR and SW events are analysed. In almost all of such events a deep cyclone is located in the vicinity of Catalonia.