



## **Frequency, seasonal dependence and synoptic scale patterns of cyclones associated to very intense rainfall on Sardinia island.**

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A study about cyclones that produce very intense rainfall on Sardinia, an Island located in the middle of Mediterranean sea, is presented. The study covers 50 years between 1950 and 1999. The cyclones have been selected imposing a threshold of 200 mm/day registered on almost one station of the Sardinia network. The mean distance between the stations of the network is about 10 km. The corresponding synoptic patterns for mean sea level pressure (msl) and geopotential height, from the ERA40 re-analysis, have been analysed. About 50 events have been identified in 50 years. The number of such cyclones in a year is very well described by a poissonian distribution. The analysis of frequencies per month shows that there is a significant difference between high frequency event months (October, November, December and March) and low frequency months (all the others). The events grouped per decade show no significant difference between the decadal frequencies. The same holds if the events are grouped per twenty years. The cluster analysis of 500hPa geopotential height and mslp patterns shows that about the 80% of these events fall in only two configurations. An other peculiarity is that the events are associated with easterly winds on Sardinia and the stations interested by rainfall greater than 200 mm/day are situated on the easterly side of the island. The results of a second study using a 150 mm/day threshold will also be discussed.