



## **Atmospheric patterns for heavy rain events in Calabria**

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The Calabria peninsula, in the Central Mediterranean Basin, is occasionally affected by heavy rain events. This work investigates the possibility to correlate atmospheric patterns with raingauge measurements in order to improve the dynamical mechanisms that produces heavy rainfall in this country.

Heavy rainfall dataset and RAMS model simulations are used for this study. More in detail the raingauge dataset extends from 1 January 1999 to 31 December 2006 (8 years) and from this dataset 93 events were selected requesting that at least 1 station measured 60mm/day and that 20 stations recorded at least 20mm/day. These rainy events were then simulated by RAMS, forced by ECMWF analysis, which gives the gridded atmospheric fields.

The geopotential height fields of 1000hPa and 500hPa surfaces and the 850hPa temperature field were used in the classification. By means of Principal Component Analysis (PCA) the number of variables was reduced. The Cluster Analysis (CA) was then applied to these variables to find atmospheric patterns corresponding to heavy rain events.

The most important atmospheric patterns and their correlation to precipitation fields will be discussed.