



Modeling the october 1997 storm event in Azores

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October 1997 was characterised by a considerable amount of consecutive storms, with a higher-than-usual number of low pressure systems crossing the North-Atlantic between the Azores Islands, and the Iberian Peninsula. The North Atlantic Oscillation Index (NAO) for this month was less than -2, reflecting this unusual low pressure belt. It is though natural that this month was characterised by a positive precipitation anomaly in these regions. Therefore, at the end of that month, a considerably large extent of volcanic soft materials that covers Azores Islands was particularly susceptible to landslides occurrence. It is within this context that the extreme precipitation event occurred on the 30th and the catastrophic hazards of the 31st of October should be evaluated. In fact, a particularly intense storm developed on the 30th of October on the southwest of the archipelago. Besides its strength, this system was characterized by another oddity; it stayed stationary during the entire day of 30th October, causing a major rainfall event in the eastern sector of the Island, where precipitation values of more than 200mm were observed in less than 24h. On the morning of the 31st of October 1997, an outstanding number of landslides (nearly 1000), mostly of debris flow type occurred on the S. Miguel Island, the largest of the Azores archipelago. One of these debris flows was directly responsible for the death of 29 people living in the Ribeira Quente village. As a consequence of the large east-west precipitation gradient observed over the Island, the most affected counties were those located in the eastern sector of the Island, namely Povoação and Nordeste. Here, we show that this catastrophic event was badly forecasted by the ECMWF model, in particular, the maximum 24h precipitation observed over the eastern tip of the Island ($> 200\text{mm}/24\text{h}$) was poorly reproduced by the ECMWF model. However, the MM5 mesoscale model was capable of reproducing those high values for the eastern counties as well as the relatively low values ($< 50\text{mm}/24\text{h}$) observed over the western part of the Island.