



Hiking accidents and strong northerly winds over Mediterranean Pyrenees

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Mediterranean Pyrenees is a very popular area for tourism, hiking and climbing. The region is located in easternmost Pyrenees range, on average 100 km distant from the Mediterranean Sea, and near of one of the most populated areas of south-western Europe. Highest peak reach 2900 m MSL and there are a lot of summits reaching more than 2000 m MSL, bare and rounded above 2000 m MSL.

Two of the main climatic characteristics of this region are the very frequent summer convective storms and the wintertime cold air outbreaks. The second phenomenon is characterized by the presence of violent winds from the northwest to northeast and a strong temperature fall and very low wind chill temperatures. This cold advection frequently occurs behind a snow-producing cold front. As a consequence a lot of drifting and blowing snow and accompanying whiteout conditions occurred in the area. These hazardous weather conditions, comparable to blizzard or ground blizzard, are locally named torb.

Torb conditions represent a serious life-threat, especially to people who hike over 1500 m. People caught in poor visibility conditions, strong winds and freezing temperatures can quickly become disoriented, have frostbite and hypothermia and slip on ice. A number of fatal accidents occurred along the XX century and related to severe winter conditions have been selected from different sources, mainly press and rescue services. The most dramatic case occurred on the 30th December 2000, when nine people perished because of hypothermia, but in some others events two or more hikers were killed. Eight events, four of them occurred in December, have been analyzed with the aim to establish the associated synoptic configurations. In the most recent cases mesoscale processes have been analyzed using satellite imagery, surface observations

and additional numerical model outputs.

In some occasions cold air blocking by the Pyrenees ceases suddenly and, as a consequence, cold air could advance as a density current over the range. The blocking is associated with an Atlantic approaching ridge and the high density and stability stratification of postfrontal air-mass. The flow acceleration associated with the rapid change in weather conditions is the most specific meteorological aspect to take into account when forecasting cold air outbreaks. A better forecast of the density current development could increase notably the safety of mountaineers.