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Analysis of a squall line event in the Basque Country: the 6 March 2019 case

Joseba Egaña (1,2), Olatz Principe (1,2), David Pierna (1,2), Santiago Gaztelumendi (1,2)

(1) Basque Meteorology Agency (Euskalmet), Vitoria-Gasteiz, Basque Country, (2) Tecnalia R&I, Energy and Environment Division, Meteorology area, Vitoria-Gasteiz, Basque Country

We can consider a squall line as a linear configuration of storms that could be formed along and/or ahead of a cold front, usually promoting heavy precipitation, hail, lightning and strong winds. Squall lines typically bow out due to the formation of a mesoscale high pressure system which forms within the stratiform rain area behind the initial line. The pressure difference between the mesoscale high and the lower pressures along the squall line could cause damaging winds.

On March 6, 2019, during the afternoon, a squall line crosses the Basque Country from west to east, generating storm showers and wind gusts exceeding 100 km/h in some areas. The synoptic situation is determined by a zonal circulation, in which there is an approaching trough in height, with a deep depression on the surface located in the British Isles. The cold front associated with this depression crosses the Iberian Peninsula from west to east, activating and forming a squall line that affects the Basque Country area generating some problems.

In this work we present a detailed analysis of this event in order to better understanding its characteristics, the developing general environment and the local evolution and effects of the squall line. Synoptic aspects, mesoscale situation and other local meteorological characteristics are analyzed including different information from the Basque Country Automatic Weather Station Mesonetwork, the Basque Meteorology Agency Doppler Radar (sited in Kapildui mountain), different Meteosat images, synoptic and mesoscale numerical models products and other data sources available in the area during this episode.