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Explosive cyclogenesis of extra-tropical cyclone Klaus and its effects in Catalonia. A case study of hurricane force gusts.

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On 23th and 24th of January 2009, the extra-tropical cyclone Klaus crossed the north of Spain and the south of France producing several deaths and generalized damages. The cyclone of Atlantic origin underwent an explosive deepening of more than 1 hPa per hour at the surface level. Catalonia region was affected by gale-force winds and hurricane gusts. The Atlantic depression underwent a process called explosive cyclogenesis (when a surface cyclone deepens at a rate higher than 1 hPa/hr over 24 hours, approximately) in front of the Spanish Atlantic coasts. In this study we focus on its impact in the Catalonia areas where both synoptic and local effects were important. Also we evaluate the performance of the numerical weather prediction model outputs against observed data.