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The Cerdanya-2017 field experiment: preliminary analysis of storm events

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From December 2016 to April 2017 The Cerdanya-2017 field experiment, carried out in the Cerdanya county (Eastern Pyrenees Mountain Range), covering a small area over the Spanish, French and Andorra border, was performed with the objective of examining different meteorological processes highly influenced by complex terrain. The region of study is a relatively flat area located at 1100m above sea level, part of the higher Segre valley, surrounded by mountains mostly aligned west to east and exceeding 2900m. One part of the experiment was the Gravity Waves, Orographic Precipitation and related processes project (GWOP'17) focused on gravity waves, rotors and orographic effects upon precipitation processes leading to orographically induced precipitation, including both enhancement and rain-shadow effects. Specifically three subtopics were addressed: a). Lee mountain waves and associated processes as rotors and subrotors and boundary layer separation; b). Dynamics and microphysics of the precipitation processes influenced by orographic effects, with emphasis on heavy precipitation events; and c). Interaction of gravity waves with cloud structures and its influence on precipitation processes in the Pyrenees. An overview of the field campaign instruments and database of events is provided along with preliminary results of selected case studies for process understanding and fine scale numerical modeling. Examples of observations recorded during selected events will be included, covering weather radar, micro-rain radar and disdrometer datasets, and also wind-profiler, microwave-radiometer, and Doppler lidar as well as preliminary results comparing field-campaign behavior with previous climatological observations. This study is performed with partial support from the Water Research Institute of the University of Barcelona and grant CGL2015-65627-C3-2-R (MINECO/FEDER).