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Thunderstorms in Corsica Island measured during the EXAEDRE aircraft campaign

Keunok Lee^{1,2}, Eric Defer¹, Pauline Combarrous^{1,3}, Jean-Pierre Pinty¹, Magalie Buguet⁴, Olivier Caumont³, Julien Delanoë⁵, Louis Jaffeux⁶, Stéphane Pedeboy⁷, Serge Prieur¹, Evelyne Richard¹, and Alfons Schwarzenboeck⁶

¹Laboratoire d'Aérodynamique, Université de Toulouse, CNRS, UPS, Toulouse, France

²Laboratoire de l'Atmosphère et des Cyclones, UMR 8105, CNRS, Météo-France, Université de la Réunion, Saint-Denis de La Réunion, France (keunok.lee@univ-reunion.fr)

³CNRM, Météo-France, Toulouse, France

⁴ONERA, Palaiseau, France

⁵LATMOS, Guyancourt, France

⁶LaMP, Université Clermont Auvergne, Aubiere, France

⁷Meteorologie, Pau, France

The aim of this study is to enhance our understanding about the microphysical structure of convective cloud systems and its relationships to the ambient electrical field, and to assess the capability of a model to capture the cloud electrical properties. This study relies on the EXAEDRE (EXploiting new Atmospheric Electricity Data for Research and the Environment) aircraft campaign that took place from 13 September to 8 October 2018 in Corsica Island. Eight electrified convective systems were successfully sampled during the campaign by the French Falcon 20 aircraft (e.g. RASTA Doppler cloud radar, microphysics probes, electric field mills) and ground-based platforms (Lightning Mapping Array network, Météorage operational lightning locating system and Météo-France weather radars). In this study, a multi-cell thunderstorm which developed over the complex topography of Corsica Island on 17 September 2018 was selected to investigate and to understand the physical processes linking lightning occurrence, electrification efficiency, cloud microphysics and dynamics. The detailed analysis results using the unprecedented airborne and ground-based dataset and their comparison to the numerical simulation results with a horizontal grid spacing of 1 km comprising the explicit electrical scheme CELLS (Cloud Electrification and Lightning Scheme) implemented in the cloud resolving model Meso-NH has been conducted. The key results will be presented at the conference.