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## The EXAEDRE campaign for a better understanding of the microphysical, dynamical and electrical processes in thunderstorms

The 4-year ANR-16-CE04-005 EXAEDRE (EXploiting new Atmospheric Electricity Data for Research and the Environment) project aims at providing a comprehensive description of the electrical activity in thunderstorms in the north-western Mediterranean region through innovative multi-disciplinary and state-of-the-art instrumentation and modeling tools.

The EXAEDRE airborne campaign, supported by ANR, CNES and the MISTRALS/HyMeX program, was conducted between mid-September and mid-October 2018 in the Corsica region. The French Falcon research aircraft was equipped with four microphysics probes, a cloud radar, eight electric field mills and a series of high-energy particle detectors. Eight research flights sampling different types of convective and precipitating systems at different stages of their lifecycle were conducted from only few kilometers away from the electrical cores to farther in the stratiform region. Lightning activity was documented by the research Lightning Mapping Array SAETTA network and the operational Météorage lightning locating system. Additional ground-based remote sensing and in situ observations were collected at a super site equipped with research instruments from end of June 2018 to beginning of November 2018.

A summary of the scientific and technical objectives of the EXAEDRE campaign will be given first. Second a short description of the daily operations including forecasts, flight preparation, flight decision and guidance will be presented. Then an overview of the eight EXAEDRE flights will be presented with examples of microphysical, dynamical and electrical features based on concurrent airborne and ground-based in situ/remote sensing observations.

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