

**Simulation of some electrical effects on cloud microphysics:
modeling and HyMeX SOP1 (2012) testbed**

Intended for the Electrical Effects on Microphysics Session

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The impact of electrical effects on cloud physics is studied for some selected processes: the sedimentation of charged hydrometeors and the growth of aggregates in presence of electric field. In the first case, the fall speed of the hydrometeors is adapted to include the electrical force as suggested by Beard (1980). Thus depending on the polarity of the hydrometeors and on the vertical orientation of the electric field, the fall speeds are slightly increased or decreased. This effect is leading to a slight vertical displacement of the bulk charge densities and mixing ratios. The second effect is highly parameterized from Latham (1969). Its purpose is to accelerate the conversion of pristine ice crystals into aggregates when the electric field stays well above 50 kV/m. Series of twin experiments (with and without effects) are performed for a real selected case of HyMeX SOP1 (2012). Several diagnostics are computed to display the overall impact of the electric field on cloud microphysics (flash rate, location of the charges) and finally to assess the strength of the electrical reaction onto microphysics despite known uncertainties.

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