



## Nocturnal offshore convection near the island of Corsica

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In the region of Corsica, located in the western Mediterranean Sea, the mean daily lightning activity for late summer and autumn as an indicator for deep convection shows a distinct maximum in mid-afternoon and a secondary maximum in the night. During the night, most of the lightning activity is located offshore and near the island's coastline. Currently there are no observational data which could be used to explain this nocturnal offshore convection but understanding its formation mechanism is crucial for accurately forecasting the regional weather. In this work, we explore two possible mechanisms initiating nocturnal offshore convection: (i) convergence with subsequent lifting due to the interaction between drainage winds and the synoptic flow over the sea and (ii) dynamically induced lee-side convergence due to the island barrier effect. To this end, we perform numerical simulations with the Consortium for Small-scale Modeling (COSMO) model at a convection-resolving horizontal grid spacing of 2.8 km. The analysis of two cases with different low-level wind directions reveals that the role of the island's drainage flow can either favour or hinder the development of deep convection. Furthermore, convective initiation is very sensitive to terrain elevation and model initialisation time and small changes of these features can decide whether deep convection occurs or not.