



Convective initiation forced by a descending dry layer and low level moist convergence: a case study of CSIP IOP 9

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A narrow line of convective showers formed over southern England in the afternoon of 18 July 2005 and was observed by a large number of instruments that were deployed as part of the Convective Storm Initiation Project (CSIP). The showers formed in the region behind a cold front and beneath two descending dry layers. The dry layers formed as two distinct folded features associated with a tropopause depression that was located to the north-west of the UK and had formed 2 days earlier from a breaking Rossby wave over the Atlantic. As the layers descended over the UK the upper-level cold front, associated with the lowermost dry layer, overran air of higher wet-bulb potential temperature (θ_w) nearer the surface and resulted in convective, or potential, instability. Combined with a surface convergence line formed by flow around upstream orography and the weakening/cooling of a lid also by the lowermost dry layer, these factors were sufficient to force convection up to around 6 km where it was eventually halted by the uppermost dry layer. Here, we present observations from CSIP and model data to illustrate the unique processes involved in forcing the convection.