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The influence of mountain-valley breeze circulations on the formation and maintenance of dry lids in the COPS region

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The Convective and Orographically-Induced Precipitation Study (COPS) is an international field campaign which took place during the summer of 2007 over the Vosges, the Rhine Valley and the Black-Forest. The aim of this intensive observation campaign was to study various phases of convection and convective environment and improve quantitative precipitation forecasts. An analysis of water-vapor profiles show the existence of tropospheric dry air layers for several days. These dry air layers, also known as lids, are hypothesized to play an important role in the inhibition and the initiation of convection over the COPS region. Sometimes, these layers are very thin and require instruments with a good vertical resolution to be observed, such as radiosoundings or Lidar profilers.

In addition, due to the presence of orography, breeze circulations interfere strongly with many atmospheric phenomenons, from aerology to large mesoscale environment. Firstly, the poster will shortly mention the origins of these dry layers and how these ones are advected over the Rhine Valley region. Then, we will describe the influence of breeze circulations on dry layers from several COPS case studies. The understanding of the changes and the evolutions of these layers is very important to determine and quantify the convective capping. So, for some cases, we will show how thermally orographically induced circulation can explain a significant part of these changes.