Oral.1: **16:00-16:15. Land surface processes on Convection-Permitting Climate Modelling**

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Abstract

Most km-scale models used to address climate questions will be configured over continents. It is thus important to determine if current land-surface models (LSM) are suitable to provide correct lower boundary conditions to the atmosphere at these resolutions.

LSMs have seen a rapid development in global Earth system models. At these resolutions models assumed implicitly that only vertical movements of water are relevant. Only water from local precipitation can evaporate within each grid box. The complexity of smaller scale surface processes are represented with tiling approaches to mimic the diversity at the surface.

Using LSMs at km-scale begs the question if these basic assumptions are valid. Hill-slopes are not sub-grid any more and water transfers from ridge to valley need to be represented explicitly. In semi-arid regions the flow of water at the surface and shallow aquifers along slopes are critical for evaporation over the dry period. Humans have developed infrastructures to carry water over a few tens of km in order to satisfy demands. This water will then evaporate, especially over crops, at another location than where it fell as precipitation.

The LIAISE field campaign over Spain has documented how lateral water transfers at the landscape scale, natural and man made, affect evaporation and the atmospheric boundary layer. We will discuss how these observations can be used to test the ability of LSMs to represent surface energy balance contrasts at km-scales.