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Stable Boundary Layer Low-Level Jets: A comparative study

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The presence of Low-Level Jets (LLJs) in the stably stratified boundary layer is very frequent. They develop usually under situations of weak synoptic pressure gradients that allow inertial oscillations to take place, but also the setup of jets of topographical origin (katabatic and basin winds) that are ubiquitous over complex terrain. In fact, any source of baroclinicity in the lower atmosphere can be at the origin of a LLJ: sea-land circulations, or warm outflow over a cold sea, as well as particular terrain configurations like chanelling through a narrow valley. The last cases can happen with well defined pressure gradients.

LLJs are one major factor of horizontal transport within the stable boundary layer and their vertical wind shear is a generator of vertical turbulent transport as well. In this work a number of LLJ found at very diverse places on Earth will be treated together, searching for common features and differences between them, especially dealing with the efficiency of vertical mixing.