



Mesoscale nocturnal low-level circulations in the Duero Basin

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The Duero Basin occupies the Northwestern quarter of the Iberian Peninsula. It is surrounded by mountain ranges peaking to 2400 m above the sea level and there is a large plain in the center, where katabatic flows converge and get organized at the mesobeta scale, when no synoptic forcings exist. Moreover, mountain valley circulations may superimpose to the low-level gravity currents and contribute to the basin scale organisation of the flows.

A high-resolution mesoscale simulation is performed with large detail in the lower 1000 meters above the ground to inspect the circulations as seen by the Meso-NH model. Main structures are identified: short and long katabatic flows, confluences, cold pools,... and the existence of return flows upwards is checked. The simulation is verified against available observations and surface radiative temperature from MSG and NOAA satellites.