



Long-lasting Fog in the Ebro valley: a high-resolution mesoscale simulation

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A 48-hour simulation of a radiative fog event in the Ebro Valley (in the NE part of the Iberian Peninsula) is made. The fog extends over the complete lowlands of the valley, which are about 350 km along the river axis and near 100 km transversally. It is established during the first night and does not lift and dissipate until midday of the second day, therefore lasting more than 30 hours.

The simulation is able to reproduce the overall behaviour of the fog event, which is monitored making use of METEOSAT imagery and the network of meteorological stations. The simulation allows a short lifting of the fog during a pair of hours of the first midday in some areas that did not take place in reality. The evolution is compared to a pure single-column run to evaluate the importance of the lateral detraining of fog by basin motions according to the model.

The simulated fog has its top at approximately the same height above the sea level everywhere, therefore being deeper in the low terrain areas. The depth of the fog evolves up to 500 m over the terrain, generating a well mixed fog layer driven by top-bottom convection due to radiative and evaporative cooling at the top. Above the fog a sharp inversion is generated. The air above the fog behaves disconnected from the fog layer, interacting with the fog at its limits over the slopes.