



## **A case study of shallow radiation fogs over CIBA: Observations and simulations (WRF and HARMONIE models)**

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The adverse effects of fogs over human life are widely known; especially those concerning the transport. However, the prediction of fogs is one of the goals not achieved by the Numerical Weather Prediction (NWP) models yet. One of the reasons of this failure is because there coexist many processes affecting the fog cycle (onset, development and dissipation) and they are, in some way, interlinked with each other.

High pressure systems over the Iberian Peninsula led to a period with more than ten foggy days in January 2012 over CIBA (Research Centre for the Lower Atmosphere) site, a suitable place for the development of radiation fogs during autumn and winter. This place is located in the Montes Torozos, an extensive and homogeneous plateau with almost no slopes, situated over the Northern Spanish Plateau.

Some days characterized by shallow fogs of the mentioned period have been chosen because these days (with fogs observed very close to the ground) seem to be the more difficult days to forecast by the NWP models. A deep observational analysis has been performed for these days using data from several meteorological instruments deployed on a 100m and a 10m towers at CIBA site. Besides the observational analysis, numerical simulations with the Weather Research and Forecasting (WRF) and HARMONIE models were performed in order to see the ability of these models simulating the fogs. Different physical options were used for the WRF model and some improvements were found using more complex schemes of turbulence, microphysics and land-surface.