

Quality Assessment of the Cobel-Isba Numerical Forecast System of Fog and Low Clouds

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Short-term forecasting of fog is a difficult issue which can have a large societal impact. Fog appears in the surface boundary layer and is driven by the interactions between land surface and the lower layers of the atmosphere. These interactions are still not well parameterized in current operational NWP models, and a new methodology based on local observations, an adaptive assimilation scheme and a local numerical model is tested.

The proposed numerical forecast method of foggy conditions has been run during 3 years at Paris-CdG international airport. This test over a long time period, allows an in-depth evaluation of the forecast quality.

This study demonstrates that detailed 1D models, including detailed physical parameterizations and high vertical resolution, can reasonably represent the major features of the life cycle of fog (onset, development and dissipation) up to +6h.

The error on the forecasted onset and burn-off time are typically 1h. The major weakness of the methodology is related to the evolution of low clouds (stratus lowering). Even if the occurrence of fog is well forecasted, the value of the horizontal visibility is only crudely forecasted. Improvements in the microphysical parameterization and in the translation algorithm converting NWP prognostic variables into a corresponding horizontal visibility seems necessary to accurately forecast the value of the visibility.