COST 722 : Comparison of European high resolution fog forecast models

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The presence of fog and low clouds in the lower atmosphere can have a critical impact on both airborne and ground transports. High quality predictions of fog formation and dissipation, together with the associated changes in visibility, would, therefore, be an immense operational value in the field.

The parameterization of fog processes in numerical models plays a determining role in the short range forecasting of fog and low clouds. Each European meteorological office has its own parameterized fog forecast model, adapted to the specificity of its forecast area. In order to identify the advantages and shortcomings of the actual parameterizations, in the frame of the project COST 722 : “Short range forecasting of fog, visibility and low clouds”, a comparison campaign of European fog forecast models has been conducted. The following countries were involved : Austria, Denmark, Germany and Switzerland. For the comparison during the last quarter of 2005 (September - December 2005), a detailed set of measurements, supply by the Lindenberg Observatory of the German Weather Service (DWD) was used. The model comparison involved single column models as well as three-dimensional models. In the first phase, each model produced a set of four month fog forecasts initialized once a day in order to statistically quantify the fog forecast quality. In the second phase, the comparison focused on a set of chosen fog events: radiative fog events with or without cloud cover, no fog events, and strong fog events which forced each model to be initialized during the fog period. Based on the large simulation spectrum involved in this comparison, this presentation will give a detailed overview of the actual European fog forecast possibilities.