

## **Numerical short range fog forecast and low clouds with COSMO-FOG**

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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 and is often connected with serious accidents. An improvement of localisation, duration and variations in visibility therefore holds an immense operational value for the field of transportation in conditions of low visibility. However, fog is generally a small scale phenomenon which is mostly affected by local advective transport, radiation, turbulent mixing at the surface as well as its microphysical structure. Therefore, a detailed description of the microphysical processes within the three-dimensional dynamical core of the forecast model is necessary.

For this purpose, a new microphysical parametrisation based on the one-dimensional fog forecast model, PAFOG, was implemented in the COSMO model. The implementation of the cloud water droplets as a new prognostic variable allows a detailed definition of the sedimentation processes and the variations in visibility. A horizontal resolution of 2.8km and a vertical resolution of 4m close to the ground describe the boundary layer processes, forecasted by COSMO-FOG.

In some realistic fog situations (radiative and advection fog) the potential of COSMO-FOG forecast will be presented. It will be shown that the interaction between the earth's surface and the atmosphere is one of the most important issues for reliable fog forecasts.