



## **On scintillometry: a brief review**

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Among other things, the surface fluxes of sensible and latent heat determine the diurnal evolution of temperature and humidity of the atmospheric boundary layer (ABL). Usually, flows in the ABL are turbulent and in meteorological and hydrological models the surface fluxes have to be parameterised on a scale of at least 1 km. Usually, on this spatial scale the Earth surface is heterogeneous. Validation and calibration of the surface flux parameterisations require independent observations on the same scale. Unfortunately, conventional measuring techniques yield point observations only. Most parameterisations of surface fluxes are derived from point measurements over homogeneous terrain. Long-path scintillometry can provide fluxes on km/scale.

In addition, there is a need for methods of observation of trace gasses. It appears that short-path laser scintillometers can be used for that purpose also.

Finally, for fundamental research on turbulence in the ABL use can be made of the fact that scintillometry does not require the assumption of frozen turbulence and that it can deal with circumstances that turbulence is intermittent. Other methods such as eddy-covariance suffer from the fact that these must rely on the frozen turbulence and non-intermittency assumptions.

A brief review will be presented on recent field experiments and applications.