



## **Radiation and boundary layer measurements during the partial solar eclipse on March 20, 2015 at Lindenberg, Germany**

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A partial solar eclipse could be observed during the late morning of March 20, 2015, over Northern Central Europe. Almost cloudless sky conditions over Lindenberg during the eclipse allowed to study in detail the effect of the shadowing of the sun on the radiation fluxes and the subsequent reaction of the near-surface atmospheric boundary layer. Such an event is of special interest since it represents – when compared to a shadowing of the sun by clouds – an almost ideal laboratory-type situation with respect to a well-defined reduction and subsequent increase of incoming solar radiation and also concerning the horizontal homogeneity of the shadowing of the sun. The partial eclipse over Lindenberg lasted from 08:39 UTC until 10:59 UTC with a maximum shading of about 73% of the sun disk at 09:48 UTC. Radiation measurements revealed a reduction of the global radiation to about 24% of the undisturbed value while net radiation decreased to less than 10%. As a consequence, turbulence ceased close to the surface, the sensible heat flux changed sign for about 20 minutes and a shallow surface inversion developed. The presentation will give a detailed description of the radiation and micrometeorological measurements performed at Lindenberg Meteorological Observatory during the solar eclipse. Particular attention will be devoted to the spectral radiation measurements, to the turbulence measurements and to the comparison of micrometeorological measurements over grassland and over forest. Moreover, the measurements will be compared with model simulations performed with the German NWP model COSMO.