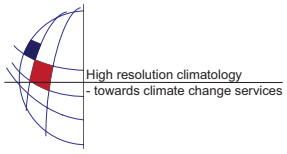
EMS Annual Meeting Abstracts
Vol. 7, EMS2010-357, 2010
10th EMS / 8th ECAC


# First Results of two Optical Millimeter-wave Scintillometer Systems during LITFASS2009

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Scintillometry has become a generally accepted technique to obtain area-averaged turbulent fluxes at the 0.1 – 10 km scale. Optical large aperture scintillometers (LAS) that yield the sensible heat flux (H) have been tested under a wide range of circumstances (De Bruin, 2002) and are commercially available. With a LAS in combination with a millimeter-wave scintillometer (MWS) the evapotranspiration (LvE) can be determined. Our aim is to develop such a combined Optical Millimeter Wave Scintillometer (OMS) system for operational use.

In this study we will present results of the two OMS systems that were operated in the summer of 2009 as part of the LITFASS2009 campaign at the Meteorological Observatory Lindenberg, Germany.

Although the final goal of the OMS system is to obtain LvE, first a number of instrumental issues have to be dealt with, such as scintillations caused by water vapor absorption, direct observation of the correlation between atmospheric temperature and humidity fluctuations, saturation of the LAS signal for long paths and the sensitivity of the OMS to mast vibrations. To this end all raw signals of the scintillometers were measured and stored at 500Hz, providing maximum freedom in the data processing, e.g. allowing spectral filtering. In addition, 2D-acceloremeter measurements were taken on the sensors to evaluate the impact of mast-vibration.