



## **Correction of sensible heat flux by a large aperture scintillometer using bowen ratio over urban residential area in Seoul, Korea**

Jung-Hoon Chae and Moon-Soo Park

Weather Information Service Engine, Center for Atmospheric Science and Earthquake Research, Seoul 121-835, Korea, Republic Of (zhzhah79@gmail.com)

A large aperture scintillometer(LAS) data sampled for the period from 1 February to 31 March 2014 at urban residential area in Seoul are modified using the variable Bowen ratio and a net radiation data to determine the space-averaged sensible heat flux(SHF). A LAS system is installed over the rooftop of two buildings with a distance between receiver and transmitter of 535 m, an effective height of 18.43 m, a wind speed sensor height of 25.0 m. The path-averaged building height, roughness length, and displacement length between the receiver and transmitter are 9.2 m, 0.43 m, and 7.11 m, respectively. The Bowen ratio computed at every 30 minute interval by the data sampled at 10 Hz with a 3-dimensional sonic anemometer and an infrared H<sub>2</sub>O/CO<sub>2</sub> gas analyzer is found to be well correlated with meteorological variables such as net radiation and mixing ratio. Therefore, it is parameterized as a function of mixing ratio. The resulting parameterization is applied to estimate the SHF by LAS. The Monin-Obukhov similarity universal function should be changed according to the atmospheric stability using the sign of net radiation sampled at the same time. It is found that the resulting sensible heat fluxes are available under all atmospheric stability and are much improved compared with those by eddy covariance method.