

Parametarization of bulk transfer coefficient over a lake surface

Aiko Miyano[1]; Michiaki Sugita[1]

[1] Graduate School of Life & Environ. Sci., Univ. Tsukuba

When determining fluxes over water surfaces, the bulk transfer method is often used because it only needs typical meteorological data. The only parameter that should be known is the bulk transfer coefficient, and a proper value of this is essential to estimate fluxes accurately. The coefficient has been described as a function of wind speed, but it was found out that wave parameters are also important. Turbulence and profile data have been collected at the center of Lake Kasumigaura since June 2007. The bulk transfer coefficient was then calculated and the relationships with wind speed, stability and wave parameters were examined. The result have shown that the coefficient decreases as wind speed increases for wind speed less than 4 m/s but stays almost constant for higher wind speed. The same trend was observed between the coefficient and wave height. The interesting point is that, even though water surface has been considered to be very smooth, the small roughness derived from wind has an influence on bulk transfer coefficient.