

## Flux observation and its assessment over the Lake Kasumigaura

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The flux observation using the eddy correlation method was carried out at the center of Lake Kasumigaura from June to November in 2007. Sensible heat, latent heat and CO<sub>2</sub> fluxes were measured, and the variation was found in the range of -50~80 W/m<sup>2</sup>, 0~350 W/m<sup>2</sup> and -0.5~0.4 mg/m<sup>2</sup>/s, respectively. The main characteristic of the heat balance over the lake surface is that the much of the radiative energy was transferred into the lake water and was used to store the heat in summer. This is why the ratio of sensible and latent heat to the net radiation was very small in summer, when water temperature was rising at a rate of 3°C in 10 days. In winter, however, the stored heat was released from the surface, which resulted in a steady amount of sensible and latent heat fluxes.

The amount of monthly total evaporation determined from the latent heat flux was the largest in August with its value of 97mm. In other months, however, evaporation from the surface of the lake remained nearly constant at around 70mm, and a significant seasonal change was not observed. Estimated values of evaporation by the bulk transfer method showed a good agreement with those by the eddy correlation method. This should be very helpful when evaporation needs to be determined with routine meteorological observations.

The amount of total CO<sub>2</sub> absorption was also calculated for each month from the observed flux data. The result clearly showed a seasonal variation, which amounted 160 g/m<sup>2</sup> in August and kept decreasing till 62g/m<sup>2</sup> in November. Although the absorbed amount of CO<sub>2</sub> decreased toward the winter, the direction of the mean flux never changed to emission. This implies that not only the oceans but also should lakes play important roles in solving the problem of global warming.