Observing intraseasonal changes of plant growth by ultrasonic distance sensor with surface heat budget

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Herbal plant height change was automatically observed by the ultrasonic distance sensor in the observatory of Meteorological Research Institute, Tsukuba science city. Influences of plant growth to surface hydro-meteorological elements and surface heat budget fluctuation were evaluated through May to December 2008. The distance sensor detected two major layers indicated by the canopy with stepwise growth stage which did not relate to the change of meteorological factors. Height of the strong signal layer relatively changed at 0.1m lower than the actual plant height. Monthly scale growth rate of the plant height estimated by the distance sensor and the manual measurements was almost equal. Daily heat budget was calculated by the Bowen ratio method. Ratio of latent (sensible) heat to net radiation has increased (decreased) with the growth of vegetation. Namely, automatic measurement by the ultrasonic distance sensor is useful to grasp the long term changes of plant growth to compare with surface heat budget.

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