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Estimation of the Land Surface State in Japan Using Meteorological Data and Land Surface Model

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Recently, in Japan, the approach on operational forecast of local weather phenomena of the horizontal scale less than 100km has been activated. Meanwhile, the land surface state and the surface heating are also important of forecast accuracy for local weather phenomena, such as isolated cumulonimbus clouds in summer. There are, however, few studies about the time series and horizontal distribution of land surface state in Japan and the effect of land surface state on precipitation. In this study, land surface state (e.g. soil moisture) in Japan is estimated using land surface model (LSM) called SiBUC and the time series and horizontal distribution of estimated land surface state, especially soil moisture in summer is investigated. The dataset used as forcing data for LSM is created using Radar-AMeDAS Precipitation and other operational meteorological data provided by JMA (e.g. AMeDAS, surface weather observation and upper air observation). The test estimation is carried out for 18 months from August 1999. The domain extends throughout Honshu and the grid size is about 5km. From the analysis of the estimated soil moisture in summer, it is found that the variation in time series of soil moisture varies with areas and can be large even in Japan, which has very humid climate.