日本における土壌水分量分布推定と
それが夏季の熱雷に与える影響の検討

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要　旨

　　本研究では現実的な地表面状態の違いを考慮するために，現業の気象観測データと陸面過程モデルを用いて日本の地表面状態量分布を推定する手法を構築した。また，地表面状態量の中でも時間変動が緩やかで初期値に対する依存性が大きい土壌水分量を取り上げ，メソスケール大気陸面結合モデル ARPS-SiBUC に入力して夏季の熱雷に対する影響を検討した。その結果、現実的な土壌水分量分布の変化が熱雷に十分大きな影響を与えうることが示された。またその影響は山地域よりも平野部で大きくなり，水平一様な土壌水分量を入力した場合と比べて，現実的な土壌水分量を入力することで降水分布の再現精度が向上した。

キーワード：土壌水分量分布，降水短期予報，熱雷，数値気象モデル

Estimation of Soil Moisture Distribution and Investigation of its Effect on a Heat Thunderstorm in Summer Time in Japan

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Synopsis

　　In this study, distribution and day-to-day variation of soil moisture in Japan is estimated by using land surface model (LSM) called SiBUC. The datasets for the forcing data of LSM are created by using the Radar-AMeDAS Precipitation and other operational meteorological data provided by JMA (e. g. AMeDAS, surface weather observation and upper air observation). The estimation is carried out for 25 months from August 1999. The domain extends throughout Honshu and the grid size is about 5km. The time series and spatial distribution of estimated soil moisture is investigated and it is found that the day-to-day variation of soil moisture is significantly large even in summer season in Japan, which has very humid climate. Numerical simulations are carried out to investigate the effect of distribution and day-to-day variation of soil moisture on a heat thunderstorm observed on 15th Aug. 2001 over the central Japan by using estimated soil moisture. The first experiment called ACTD considers estimated soil wetness distribution on 15th August 2001. The second one called WETD considers homogeneously wet soil condition, which is chosen from Jun. to Aug. 2001. the comparison of the ACTD and WETD indicates that distribution of the realistic initial soil wetness can improve the accracy of prediction of the summertime heat thunderstorm in Japan.

Keywords: Soil wetness distribution, short-term wether prediction, heat thunderstorm, numerical weather prediction model