



A parameterization scheme for the cloud-topped boundary-layer, and its validation using a regional model

A.T. Noda (1), T. Iwasaki (2) and M. Ujiie (3)

(1) Frontier Research Center for Global Change, Japan Agency for Marine-Earth Science and Technology, (2) Graduate School of Science, Tohoku University, (3) Japan Meteorological Agency (a_noda@jamstec.go.jp)

A parameterization scheme for the cloud-topped boundary-layer is developed by using a single-column modeling. A verification study by comparing the single-column model implemented the parameterization and LES shows that the parameterization comparably reproduces the time evolution of the boundary-layer and cloud observed in LES such as a thermal structure as well the turbulent statistics. In order to test its performance, also performed is sensitivity study using a regional model with 10km-mesh. A comparison with a satellite observation shows that the model using the parameterization improves the cloud production mainly because the parameterization reproduces the vertical transport of heat by subgrid-scale turbulence.