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TRACKING TROPICAL CLOUD SYSTEMS - OBSERVATIONS FOR THE DIAGNOSIS OF SIMULATIONS BY THE WEATHER RESEARCH AND FORECASTING (WRF) MODEL

A. Vogelmann, W. Lin, A. Cialella, E. Luke, and M. Jensen
Brookhaven National Laboratory

M. Zhang
State University of New York at Stony Brook

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Brookhaven National Laboratory
P.O. Box, Upton, NY
www.bnl.gov

ABSTRACT

To aid in improving model parameterizations of clouds and convection, we examine the capability of models, using explicit convection, to simulate the life cycle of tropical cloud systems in the vicinity of the ARM Tropical Western Pacific sites. The cloud life cycle is determined using a satellite cloud tracking algorithm (Boer and Ramanathan, 1997), and the statistics are compared to those of simulations using the Weather Research and Forecasting (WRF) Model. Using New York Blue, a Blue Gene/L supercomputer that is co-operated by Brookhaven and Stony Brook, simulations are run at a resolution comparable to the observations. Initial results suggest a computational paradox where, even though the size of the simulated systems are about half of that observed, their longevities are still similar. The explanation for this seeming incongruity will be explored.

Boer, E., and V. Ramanathan. 1997. Lagrangian approach for deriving cloud characteristics from satellite observations and its implications to cloud parameterization. Journal of Geophysical Research, 102, 21,383-21,399.