

R:

Using Satellite- and Ground-based Simulators to Evaluate the ACME Simulated Clouds

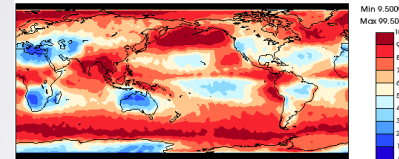
Yuying Zhang¹, Shaocheng Xie¹, Wuyin Lin², Steve Klein¹, Marcia Branstetter³, and Kate Evans³

Objective

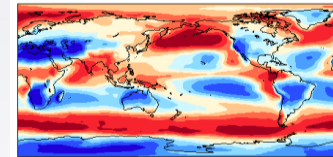
- Implement satellite simulators (COSP) and ARM ground-based radar simulator into ACME v1 for cloud evaluation
- Examine resolution dependency in clouds explored in ACME v0.3 ne30/ne120 runs
- Examine summertime diurnal cycle of clouds at SGP using ARM observations

Total Cloud Fraction

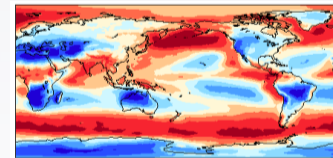
CALIPSO



ne30

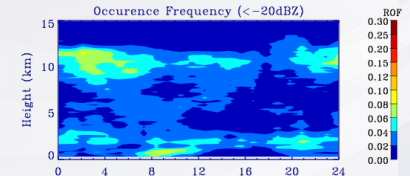


ne120

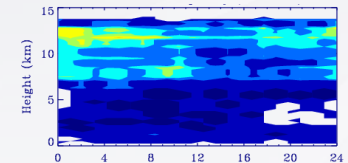


Diurnal cycle at ARM SGP site Summer 2009

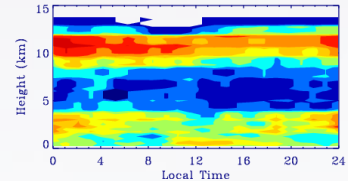
ARSCL



Control



CLUBB



Evaluate cloud simulations using simulators

- The ACME v0.3 model simulated clouds are not sensitive to change of model horizontal resolution, which is different from what we see in the ACME v1 ne120L72 model.
- The control run is lack of non-precipitating low clouds. CLUBB reduces this bias but overestimates low and high clouds. Both models show difficulty to capture the diurnal phase.