

Boundary layer cloud, aerosol, entrainment, and climate

Frontiers in Global Change
Seminar Series

Presented by...

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Abstract:

The response of boundary layer cloud to anthropogenic changes in aerosol concentration is an important issue for climate change. For stratocumulus clouds, an important aspect of the response is changes in turbulent entrainment of dry air from aloft. We illustrate the nature and importance of entrainment feedbacks using large-eddy, and mixed layer simulations of marine stratocumulus-topped boundary layers. Wang et al. (2011) found that in comparison with PNNL's superparameterized version of CAM, the default CAM5 parameterizations excessively thicken marine stratocumulus as aerosol concentrations increase, causing a strong aerosol indirect effect. We show a comparison of LES and single-column simulations of an idealized stratocumulus to trade cumulus transition that gives the same result, and that may provide a nice model problem for improving the representation of aerosol-cloud-entrainment interaction in CAM5.

<http://www.atmos.washington.edu/~breth/>

Please join us for a meet and greet opportunity
with Dr. Bretherton after the seminar.
~Refreshments will be served~

Date: Wednesday,
July 11th

Location: EMSL
Auditorium

Time: 10:00 am