



XVII EPGMET

Encontro dos alunos de pós-graduação em meteorologia do CPTEC/INPE



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IS THE AEROSOL NUMBER CONCENTRATION ADEQUATE TO DESCRIBE AEROSOLS' EFFECTS ON CLOUDS?

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RESUMO

Previously thought to be inefficient for controlling cloud properties, ultrafine aerosol particles were recently linked to convection invigoration in the Amazon. However, current models may fail to reproduce this feature because they are based on a standardized aerosol size distribution shape. We use the number concentration-effective diameter phase space to test the sensitivities of cloud-top evolution to variations in the main parameters related to the aerosol effect in models, such as the aerosol size distribution, number concentration and hygroscopicity. It is shown that the cloud-top evolution can be very sensitive to aerosol properties, but the relative importance of each parameter is variable. Moreover, we show that aerosol properties, such as the size distribution shape and hygroscopicity, can have impacts as significant as the particle number concentration on cloud microphysical properties, especially if the median radius of the aerosol size distribution is smaller than 0.05 microns.