



Aerosol indirect effects in low clouds

Graeme Stephens
United States (graeme.stephens@jpl.nasa.gov)

Graeme L Stephens
JPL, Center for Climate Sciences
California Institute of Technology
Pasadena, CA, 91101

Feingold and Stevens (2009) describe the cloud aerosol interaction problem as a buffered system. Such systems involve a complex set of feedbacks that buffer the cloud and precipitation responses to given aerosol perturbation. The nature of this buffering as it applies to cloud albedo changes in response to aerosol changes is examined through the use of satellite data applied to the study of both low cloud ship tracks and to synoptic scale low clouds. The analysis reveals a similar picture - that the observed correlations between albedo and aerosol are a complicated function of opposing meteorological influences. These buffering influences will be demonstrated in terms of the cloud water path, precipitation and effects on albedo. Implications of these findings on the estimate of indirect radiative effects will be described.