

***AN ARSCL-BASED CLOUD TYPE CLIMATOLOGY FROM RETRIEVALS AND IT'S  
USE IN MODEL EVALUATION STUDIES***

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*For Presentation at the  
ARM Science Team Meeting,  
Albuquerque, NM  
March 27-31, 2006*

February 2006

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**ABSTRACT**

A climatology of cloud types is developed using long-term (6.5 years) ARSCL data at the ARM SGP site. The primary goal of the derived climatology is to be used in tandem with satellite observations for model cloud layering and property evaluation. Therefore, satellite cloud classifications are imitated in deriving cloud type definitions from the radar retrievals. The use of the radar cloud types allows us to examine controversial issues such as the retrieval of excess amounts of middle level clouds from satellites and the underestimate of middle cloud cover in global models. Since satellites cannot distinguish between middle level clouds and overlapping cloud layers, we use here the radar layering to separate the two and to evaluate cloud representation in output from the ECMWF model. What we find is that the model simulates middle cloud amounts properly but misses situations where cirrus clouds overlay low cloud layers. These are mostly prefrontal situations accompanied by mid-tropospheric subsidence and weak southerly winds.

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