

***A COMPARISON OF CLOUD MICROPHYSICAL QUANTITIES WITH FORECASTS
FROM CLOUD PREDICTION MODELS***

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ABSTRACT

Numerical weather prediction models (ECMWF, NCEP) are evaluated using ARM observational data collected at the Southern Great Plains (SGP) site. Cloud forecasts generated by the models are compared with cloud microphysical quantities, retrieved using a variety of parameterizations. Information gained from this comparison will be utilized during the FASTER project, as models are evaluated for their ability to reproduce fast physical processes detected in the observations. Here the model performance is quantified against the observations through a statistical analysis.

Observations from remote sensing instruments (radar, lidar, radiometer and radiosonde) are used to derive the cloud microphysical quantities: ice water content, liquid water content, ice effective radius and liquid effective radius. Unfortunately, discrepancies in the derived quantities arise when different retrieval schemes are applied to the observations. The uncertainty inherent in retrieving the microphysical quantities using various retrievals is estimated from the range of output microphysical values. ARM microphysical retrieval schemes (Microbase, Mace) are examined along with the CloudNet retrieval processing of data from the ARM sites for this purpose. Through the interfacing of CloudNet and "ARM" processing schemes an ARMNET product is produced and employed as accepted observations in the assessment of cloud model predictions.