DYCOMS PIs:

The following gives a brief description of calibration history for the PVM-100A used on the C-130 to measure liquid water content (LWC). This information may be useful for probe comparisons:

Figure 1 shows measurements of the PVM response as a function of droplet diameter. The solid curve is the theoretical ideal curve for the response of the FSSP-100. The glass bead data are for monodisperse glass spheres dropped through the sensitive volume of the PVM, the ECN data are form the original

ECN data are from the original calibration work done in the cloud chamber at ECN, Petten the Netherlands (Gerber et al, 1994), and the SCMS data are from the PVM-100A use on the C-130 during the Florida Small Cumulus Experiment. Both ECN and SCMS data are for narrow droplet spectra, where the abscissa of Fig. 1 is now given in terms of MVD (median volume diameter) of the droplet spectra).

The "TRUE LWC" is based on manufacturer's data for the glass beads, on comparisons with a filter-collection and -weighing of LWC in the ECN calibration, and





on droplet spectra measured in adiabatic cores in Florida Cu.

Other recent performance tests of the PVM-100A by Wendisch et al. (2000) compare well with the results shown in Fig. 1

The data in Fig. 1 could be used, for example, to correct PVM-100A LWC with relative volume distributions measured with the FSSP. Such a correction is generally not needed, because properly scaled PVM and FSSP (and King probe) should agree quite well even in heavily drizzling Sc (see such comparisons made from ASTEX data; Gerber, 1999). This comes about, since most of the LWC in the range from 0 um to 47um diameter is often found in the small droplet mode (say < 25-um diameter) where the PVM-100A response is reasonably linear with LWC.

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