

Wednesday, December 2, 1998

Read-me file for merged UND/NCAR Citation data for STERAO-A

Files prepared by J. Walega and B. Ridley based on updates (dated Aug. 4/98) to original files from UND. —if you think there is a problem with any of the files then contact either of us.

Files include (when measured) 30-sec average CO data, and the NCAR can sample analysis results. The can sample data is repeated over the period of the sample.

Files include new Shawdow-Or, and other particle data-see message from Jeff Stith below

Vertical wind speed on June 28 and July 10 is likely in error often.

Comments from Jeff Stith re files:

“The first version of the shadow-or is indeed different from the second and we discovered a double problem. The first archive needs to be multiplied by a factor of 3.033 due to an error that we found in the first code put in the new data system. The file does contain the processed 2DC concentrations which might be a better measure in some respects anyway (as I discussed earlier).

“Small differences in airspeed and/or temperature due to the corrections I described above are evident for the days that were reprocessed.”

“Last year we were able to develop a correction algorithm that corrected the side slip for angle of attack effects (due to non symmetry in the radome system). This will slightly improve the vertical wind (very little change) and the calculated wind speed (used where the INS was not getting a good value for airspeed--see data inventory notes on the relative performance of the INS wind vs the calculated winds). The calculated winds were used on 6/26, 6/27, 7/9 (#1), 7/12 (#1), 7/16 (#1). So any data we reprocess will have these improvements included, unless we comment out all the new code.”

“The 1DC and 1DP data in the archive were processed in the "factory way" and do not have the corrections (developed by Baumgardner) for correcting the depth of field as a function of true air speed and also the corrections for dead time (bumps particles up one size bin). In the comparisons that we have made so far, these seem to provide some improvement to the size distribution, as far as the overlap between the probes. We might want to include these corrections as a "best effort" for the archive. However, the existing concentrations do represent the data from the probes in a fairly standard way. As far as the chemistry is concerned, we might want to just pick out one variable (e.g. 2DC concentration, which do have the Baumgardner corrections, by the way) and save the more detailed stuff for those that are interested in getting into the size distribution data.”

I have not checked all the new files for strange spikes, you can omit things that are obviously out of place, but they should be pretty clean. All the humidity variables will be out to lunch when the dew point is bad (RH, Mixing Ratio). For about half the flights the dewpoint was only reasonable at low levels. The other flights are a bit better, but still not up to par at high altitudes. I tried to be generous in omitting the dewpoint at high levels in the book I sent you.

The updated files do not contain the Baumgardner corrections. This can make a significant difference in concentration, but the correction is somewhat dependent on particle size and airspeed and more evident in looking at comparisons of individual size spectra. Jim and I will be looking at how well these corrections do in the TRMM data, so we will be learning more about them. In general, they seem to improve the data, when we compare them with replicator data (Mike Poellot and Pat Arnott's work), but there are still areas where the probes often do not overlap. This seems to be a somewhat universal situation.