

Squawk List for flight 1899,
flown on Wednesday, 12 December 2001,
IMPROVE II CV-580 flight 9.

Instruments not mentioned as having a problem are believed to have worked satisfactorily.

OVERALL LOOK-WEATHER

Art was in California. Moderate FROPA occurred during the flight.

OVERALL LOOK-INSTRUMENTATION

CPI was being repaired on the ground.

Hot wire LWCs did not work.

The 2-DC did not work on this flight as well as on previous flights according to Tom. A software error is precluding an examination of these data, however. (I just learned of the 2-DC problem on this flight from Tom in a telecon.)

1. AIRCRAFT PARAMETERS

Both true airspeed measurements ramped to out-of-bounds values well above 130 m s⁻¹ twice during the flight causing chaos in some measurements such as temperature and those dependent of TAS for sample volume calculations. Caution is required when using data between 0112 and 0139 UTC and again between 0148 and 0231 UTC when these ramp-ups occurred (probably due to icing or ice particles).

2. STATE PARAMETERS

Rosemount static temperature (tstat): Noise spikes remain absent in this trace since we have begun powering down the J-W before the flight.

The Rosemount temperature is virtually the same as the tstatr at takeoff, but then diverges to several degrees C higher than tstatr by mid-flight. After mid-flight, the two temperatures converge to within about 1 ° C by the end of the flight.

Thus, tstat cannot be considered a reliable measure of temperature except in rare circumstances, usually near the beginning of the flight. No correspondence with TAS has been noted (as has always been the case.)

Cambridge chilled mirror dewpoint (dp): Heating cooling cycles were of irregular amplitudes again on this flight.

Ophir dewpoint (dp_o): Higher than the Cambridge dewpoints by a few degrees most of the flight, and often higher than the ambient temperature.

Rosemount analog pressure transducer (pstat): Continues to exhibit spurious changes in pressure of up to several mb in per second.

3. Cloud Microstructure Probes

DMT Hot wire device: Did not work; no response whatever to cloud penetrations.

JW Hot wire device: Power was shutoff to the J-W to eradicate the noise spikes seen in several other parameters.

FSSP-100: Prolonged exposure to icing conditions that surpassed the ability of the FSSP heaters to keep up with caused a degradation of the spectra and LWC calculated from it between 0316 and 0432 UTC except in those cases where the ambient LWC (as measured by the PVM-100) is very low ($<0.1 \text{ g m}^{-3}$). Good agreement is indicated in these cases. This is the longest outage of FSSP-100 spectra to date due to icing conditions.

PMS 2-DC Cloud Probe: Not yet Qc-ed yet due to a software problem that is preventing the display of the images and data.

PMS 1-D Cloud Probe: Counts in clear air compromise in-cloud data since the spectra look similar. Seems to be the same problem that we have been having for some time. I don't believe now that the 1-DC probe has worked properly now since it was moved from the right to left wing and interchanged positions with the FSSP-300 in spite of some spectra that, on first consideration, appeared to be satisfactory. A look back into a previous project (ASTEX) where it worked produced rather different spectra (akin to Marshall-Palmer—steady decrease in concentration as the size channels increase) than those that we are seeing now (semi-Gaussian or inverted Gaussian where the peaks are in the larger and smaller size channels. Looks now like all the recent 1-DC spectra are suspect.

SPEC CPI: Not installed, being repaired in consultation with SPEC by Charlie Black. Progress was made, but it is not yet fixed.

4. AEROSOLS

Not QC-ed.