

## UHSAS - HIPPO-2 Post-project Calibration

PSL's were used for checking the aerosol size measurement performance of the UHSAS in the hangar on Dec.3, 2009. The results are summarized here. Calibration checks for other sensors in the UHSAS have not been done yet (pressure, temperature, flow rates).

### Size calibrations.

Figure 1 shows two hours of calibration tests using a range of PSL's. **DBARU** is the average diameter, calculated from the measured size distribution. **DBARU** changes whenever a different sample is used, but the values don't follow correspond to PSL size.

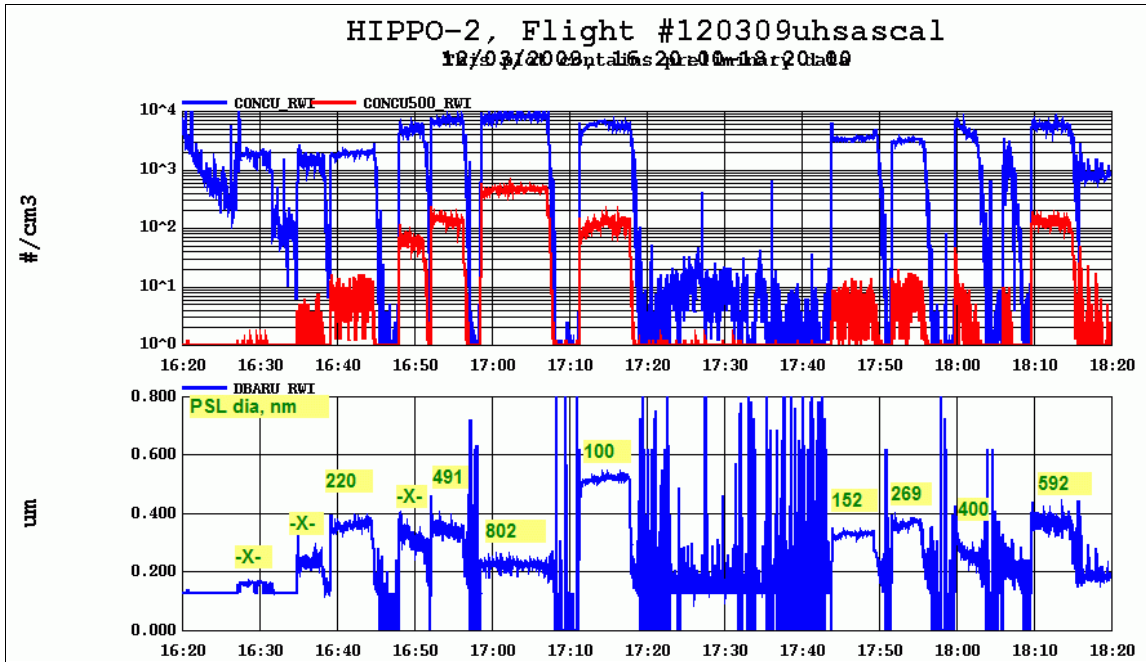


Figure 1: Time history of PSL calibrations of UHSAS on Dec 3, 2009

This discrepancy is apparent when plotted as DBARU versus PSL diameter, Figure 2.

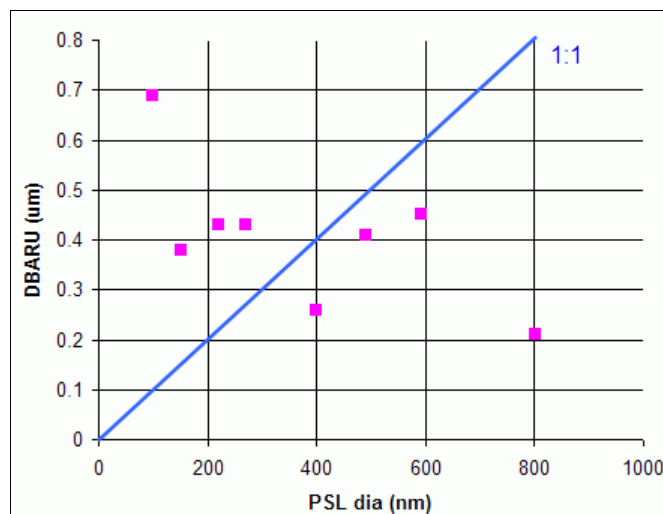


Figure 2: DBARU plotted versus PSL diameter, same data as Figure 1.

The difference arises because the UHSAS measurements don't have narrow, well-defined peaks. The error is related to a recurring problem of size gaps and bumps at the gain stage boundaries. Also, the PSL's are significantly beyond their expiration date, and this may contribute to the error as well.

The following 8 plots show the size distribution data averaged over each time period for the different PSL's in Figure 1, arranged to show increasing PSL size. Both bumps and gaps are apparent at the same bin locations in every plot. It is very difficult to find a narrow peak that corresponds to the expected PSL size.

