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**UVVS Calibration Changes for PDS Delivery 7**

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Removal of solar background and dark counts in the MASCS UVVS data retrieval algorithm was refined in the latest PDS delivery. The UVVS data have both a dark component and a solar scattering component to the background signal. In daylight conditions, these two terms add together. In previous deliveries the sum of these two terms was estimated by examining the counts in the first and last elements of an observation, which contain no atmospheric emission. By isolating the effect of each separately with a new approach we are able to more effectively remove these sources of background.

1. An empirical relationship between the temperature of the photomultiplier tube (PMT) and the dark counts was determined using high-solar-zenith-angle observations that contain only dark counts. This relationship is used to provide a dark count estimate for all observations, regardless of sunlight conditions.
2. An improvement was made to the removal of solar scattering contamination that enters the field of view of the UVVS directly or from solar scattering off Mercury's surface. We fit the shape of each spectral scan (per observed species) to a solar spectrum in the specified wavelength region. The fit effectively scales the magnitude of the solar contamination at the pertinent emission lines. This is an improvement over the previous solar background subtraction. However, low signal-to-noise values appear in some of the subtracted spectra due to thermally induced shifts in the UVVS wavelength scale. This will be mitigated in an upcoming release.

The solar background subtraction routine is not applied to the cruise phase data. It is currently only applicable in the VIS channel. A correction scheme is in development for the MUV channel. A number of VIS macros are excluded from passing through the solar routine. Macros excluded are:

Instrument/maintenance macros: 1, 2, 3, 4, 8

Calibration macros: 5, 6, 7, 12, 20

Surface scans: 24, 48, 49, 50, 51

Long "Discovery" scans. 76, 77, 78, 79, 80, 81, 82, 83