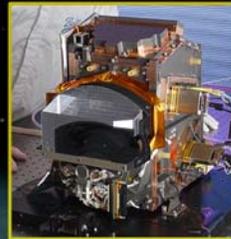
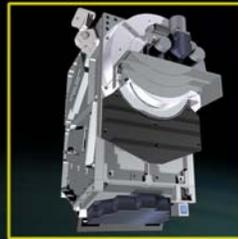
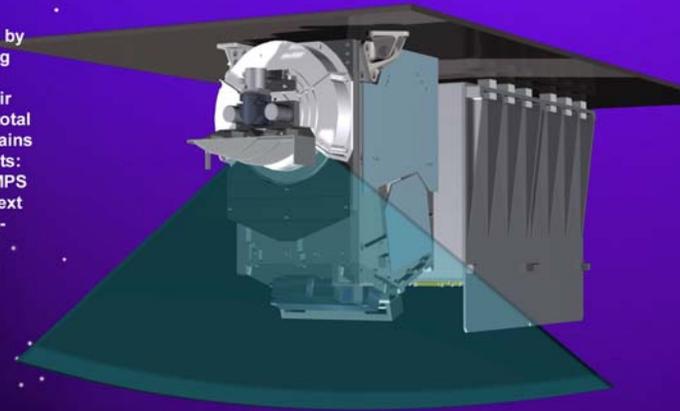


OMPS – The Next Generation Sensor Suite For Global Ozone Monitoring

Scott Asbury, Jim Sneary, Stein Cass, Quinn Remund, and Juan Rodriguez

Ozone Mapping and Profiler Suite (OMPS)

The Ozone Mapping and Profiler Suite (OMPS) will monitor ozone from space in continuation of daily global data produced by the current ozone monitoring systems – the Solar Backscatter Ultraviolet radiometer (SBUV/2) and the Total Ozone Mapping Spectrometer (TOMS). OMPS will collect total column and vertical profile ozone data. The continuous monitoring of ozone depletion data contributes to fulfilling the U.S. treaty obligation for the Montreal Protocol. The OMPS is comprised of a nadir viewing mapping sensor and dual-redundant main electronics. Measurements from the nadir sensor are used to generate total column ozone Environmental Data Records (EDRs) with better than 50 x 50 km resolution at nadir. The nadir sensor maintains long-term data product stability by periodic solar irradiance measurements. The OMPS will create three ozone data products: Total Column EDRs; heritage TOMS V7 total column data records; and heritage SBUV/2 Nadir Profiler data records. The OMPS was selected to fly on the National Polar-orbiting Operational Environmental Satellite System (NPOESS) spacecraft – the next generation of polar orbiting environmental satellites. The OMPS will also fly on the NPOESS Preparatory Project (NPP) risk-reduction mission. Delivery of the first OMPS flight unit for NPP is expected June 2008.



Nadir Sensor Status

- NPP sensor fully integrated
- Environmental acceptance test complete
- Final characterization and calibration testing January – July 2007

Nadir Sensor Characteristics

One telescope feeds two separate grating CCD spectrometers (total column and profile)

Spectral Range

mapper 300 to 380 nm
profiler 250 to 310 nm

Spectral Sampling Interval (Full Width Half Maximum)

mapper 2.4 pixels per FWHM
profiler 2.4 pixels per FWHM

Spectral Resolution (FWHM)

mapper 1.0 nm
profiler 1.0 nm

Field of View (FOV) (cross-track x along-track)

mapper 110.4 x 1.0 deg
profiler 16.6 x 1.0 deg

Swath Width

mapper 2800 km (35 cells,
50 km at nadir)
profiler 250 km (single cell at nadir)



OMPS Mission Characteristics

Orbit: Sun-synchronous
NPOESS: 833 km Altitude
98.7-deg Inclination
1330 Local Time Ascending Node
NPP: 824 km Altitude
1330 Local Time Ascending Node

OMPS Mission Products

Primary
Ozone Total Column
Nadir Vertical Ozone Profile
Calibrated Spectral Radiances

Secondary

SO₂ Index
Aerosol Index
Surface Albedo

Main Electronics Box Characteristics

PPC603r-based payload control processor board, Ball Aerospace-developed flight software

14-bit analog-to-digital converters

On-board linearity and gain corrections, data binning, hot pixel removal

Complete dual redundancy for 7-year reliability



MEB Status

- NPP compatibility tests completed August 2005
- Risk reduction testing completed August 2006
- Acceptance testing completion expected January 2008



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