SSBUV Ozone Data

The Shuttle Solar Backscatter Ultraviolet (SSBUV) instrument was the engineering model of the SBUV/2 profile ozone and total ozone instrument that has been flown by NOAA on polar-orbiting satellites since 1985. SSBUV was flown on the Space Shuttle eight times between 1989 and 1996. The primary purpose of SSBUV was to validate the SBUV/2 ozone data, using discrete measurements at 12 ultraviolet wavelengths between 252-340 nm. Further details about the SSBUV program can be found in Cebula et al. [1989] and Hilsenrath et al. [1993].

SSBUV also measured solar spectral UV irradiance data over the wavelength range 200-406 nm with a resolution of 1.1 nm. Solar spectral data were collected on multiple days during each Shuttle flight, with numerous measurement sequences taken each day (see ssbuvirr data products). The SSBUV instrument was calibrated in the laboratory both before and after each flight, and additional onboard calibration measurements were made during each flight.

SSBUV data are available for the following dates.

Flight #1: 1989 October 19, 20, 21. Flight #2: 1990 October 7, 8, 9. Flight #3: 1991 August 3, 4, 5, 6. Flight #4: 1992 March 29, 31. Flight #5: 1993 April 9, 11, 13, 15, 16. Flight #6: 1994 March 14, 15, 17. Flight #7: 1994 November 5, 7, 10, 13. Flight #8: 1996 January 12, 16, 18.

A separate ASCII data file is available for each flight. File format is similar to the SBUV data. Each file contains retrieved ozone profile, total column ozone, aerosol index and effective reflectivity values for the observations made during each flight.

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References

Hilsenrath, E., R.P. Cebula, M.C. Bories, P.W. DeCamp, L.-K. Huang, C.N. Hui, S.J. Janz, T.J. Kelly, K.R. McCullough, J.J. Mederios, J.T. Riley, B.K. Rice, and C.D. Thorpe, 1996: Contributions of the SSBUV Experiment to Long-Term Ozone Monitoring, in Proc. 18th Quadrennial Ozone Symposium, L'Aquila 1996.

Fleig, A. J., R. D. McPeters, P. K. Bhartia, B. Schlesinger, R. P. Cebula, K. F. Klenk, S. L. Taylor, and D. Heath, "Nimbus 7 Solar Backscatter Ultraviolet (SBUV) Ozone Products User's Guide", NASA Reference Publication 1234, (1990)

Cebula, R. P., E. Hilsenrath, T. J. Kelly, G. Batluck, "On the Radiometric Stability of the Shuttle Borne Solar Backscatter Ultraviolet Spectrometer", Proc. SPIE, 1493, 91-99, (1991)

Hilsenrath, E., P.A. Newman, R.P. Cebula, P.W. DeCamp, T.J. Kelly and L. Coy, "Ozone Change from 1992 to 1993 as Observed from SSBUV on the Atlas-1 and Atlas-2 Missions," Geophy. Res. Lett., 23 2305-2308, 1996.

Hilsenrath, E., R.P. Cebula, M.T. Deland, K. Laamann, S. Taylor, C. Wellemeyer, and P.K. Bhartia, 1995: Calibration of the NOAA-11 Solar Backscatter Ultraviolet (SBUV/2) Ozone Data Set from 1989 to 1993 using In-Flight Calibration Data and SSBUV, J. Geophys. Res., 100, 1351-1366, 1995.

Hilsenrath, E., D.E. Williams, R.T. Caffrey, R.P. Cebula, and S.J. Hynes, "Calibration and Radiometric Stability of the Shuttle Solar Backscatter Ultraviolet (SSBUV) Experiment," Metrologia, 30, 243-248, 1993.

Hilsenrath, E., R.P. Cebula, and C.H. Jackman, "Ozone Depletion in the Upper Stratosphere Estimated from Satellite and Space Shuttle Data," Nature, 358, 131-133, 1992.

Hilsenrath, E., R.P. Cebula, S.J. Hynes, and R.T. Caffrey, "Implications of Space Shuttle Flight on the Calibration of Instruments Observing Atmospheric Ozone and the Solar Irradiance," Metrologia, 28, 301-308, 1991.

Hilsenrath, E., D. Williams, and J. Frederick, "Calibration of Long Term Data Sets from Operational Satellites using the Space Shuttle," SPIE Proc., 924, 215-222, 1988.

Cebula, R. P., et al. (1989), Calibration of the Shuttle-borne Solar Backscatter Ultraviolet spectrometer, Proc. SPIE, 1109, 205-218.

Hilsenrath, E., et al. (1993), Calibration and radiometric stability of the Shuttle Solar Backscatter Ultraviolet (SSBUV) experiment, Metrologia, 30, 243-248.