Abstract for WMO Workshop on Ozone Profiles

A New SBUV Ozone Profile Time Series

Under NASA's MEaSUREs program for creating long term multi-instrument data sets, our group at Goddard has re-processed ozone profile data from a series of SBUV instruments. We have processed data from the Nimbus 7 SBUV instrument (1979-1990) and data from SBUV/2 instruments on NOAA-9 (1985-1998), NOAA-11 (1989-1995), NOAA-16 (2001-2010), NOAA-17 (2002-2010), and NOAA-18 (2005-2010). This re-processing uses the version 8 ozone profile algorithm but now uses the Brion, Daumont, and Malicet (BMD) ozone cross sections instead of the Bass and Paur cross sections. The new cross sections have much better resolution, an extended wavelength range, and a more consistent temperature dependence. The re-processing also uses an improved cloud height climatology based on the Raman cloud retrievals of OMI. Finally, the instrument-to-instrument calibration is set using matched scenes so that ozone diurnal variation in the upper stratosphere does not alias into the ozone trends. Where there is no instrument overlap, SAGE and MLS are used to estimate calibration offsets.

Preliminary analysis shows a more coherent time series as a function of altitude. The net effect on profile total column ozone is on average an absolute reduction of about one percent. Comparisons with ground-based systems are significantly better at high latitudes.