Calibration Report: Brewer #176 – Kathmandu, Nepal September 20-26, 2006

This calibration was completed at Kirtipur Campus, Tribhuvan University site near Kathmandu, Nepal by Ken Lamb, with support from the World Meteorological Organization (WMO). The instrument was installed in early 2001 and operated for 2 years, but has been out of service for the past 3 years. The instrument was found to need re-programming of the new electronics and a main power supply. The support of Dr. Shekhar Gurung was appreciated in completing this work.

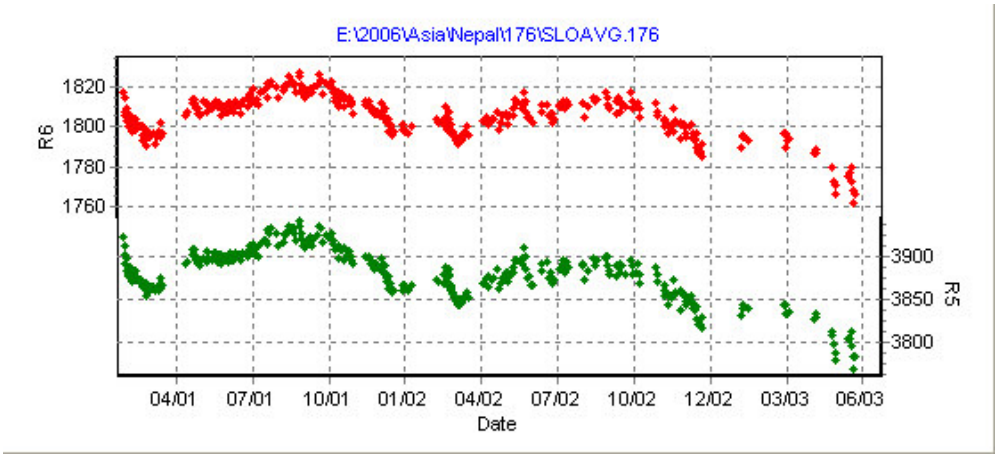
Ozone/SO_2 Calibration Results:

The weather was cloudy most of the time and so only ~3 good direct sun observations were obtained on the last day. The previous ETC constant for ozone gave good agreement but the SO_2 was low.

The final ETC constants are **2940/3320** with the previous absorption coefficients of **0.3405/1.1411**. The final standard lamp (SL) ratios R6/R5 were **1770/3630.**

Mechanical and Optical Performance:

No sun scan tests were possible at this time but will analyze some future data, the present setting is cal step of 295. A dispersion test (DSP), scanning a series of mercury and cadmium lamp spectral lines, was completed. The wavelength to step differences were only up to 4 steps and so the existing file DCF2300.176 was left in operation. Below is graph of standard lamp ratios for the period of operation of #176 in Nepal, which show reasonable stability, and it is good that the ratios presently are still very similar.



UV Calibration:

The calibration was completed with IOS small lamps #67, #848 and the resulting response file **UVR26606.176** was lower by ~18% the last file UVR26200. No comparative UV scans were possible due to location on side of roof.

Servicing and software:

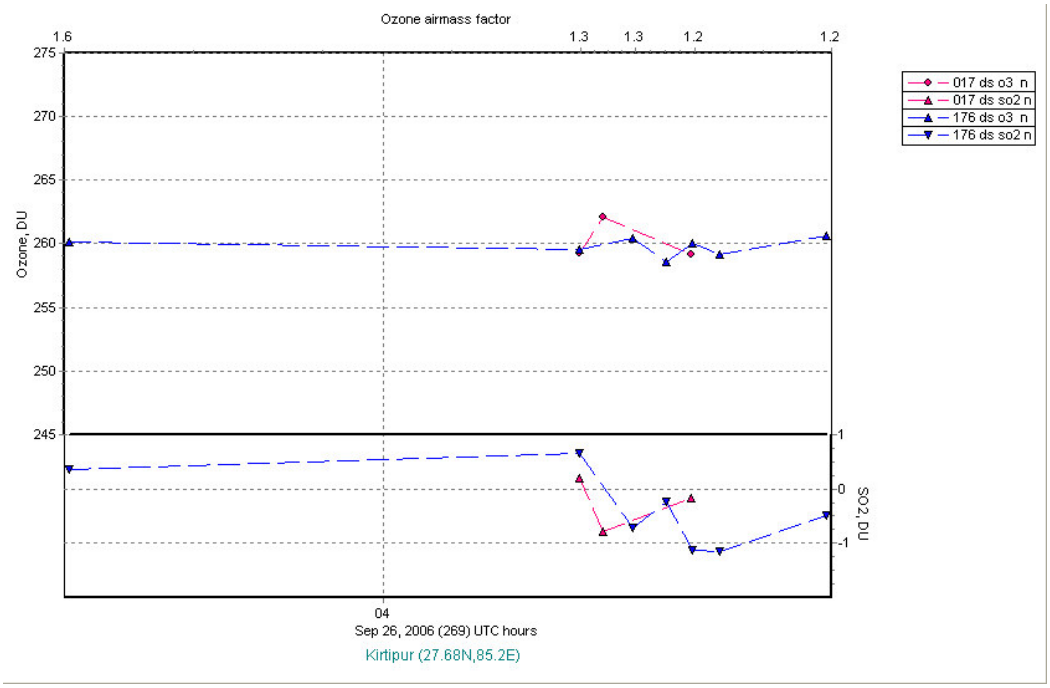
The re-programming of the configuration file into the new electronics of #176 was very time consuming but finally was completed successfully. The flash memory battery had to be replaced.

Servicing included replacement of the viewing window and the rubber seals under shock mounts. The micrometer pushrod bearing and end pivot were lubricated. A paper humidity indicator was installed under the viewing window and desiccant was replaced. The tracker drive wheels were cleaned and system leveled.

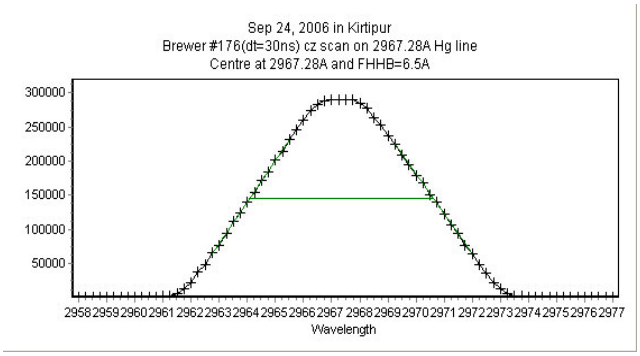
V375F control software was left in operation and the O3brewer data processing program from M. Stanek was demonstrated and recommended for use to help with the submission of data to the WOUDC. The IOS program Reportpro was also provided to make graphs of average files and other data.

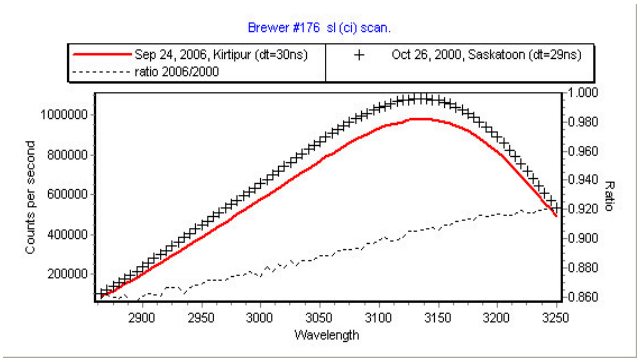
Graphs of test results:

Below are the initial and final ozone/SO_2 results from the only direct sun (DS) measurements obtained during this calibration period from the two instruments.

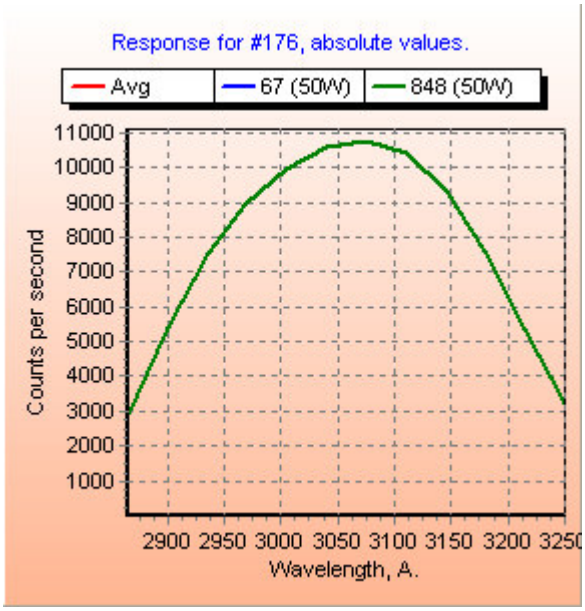


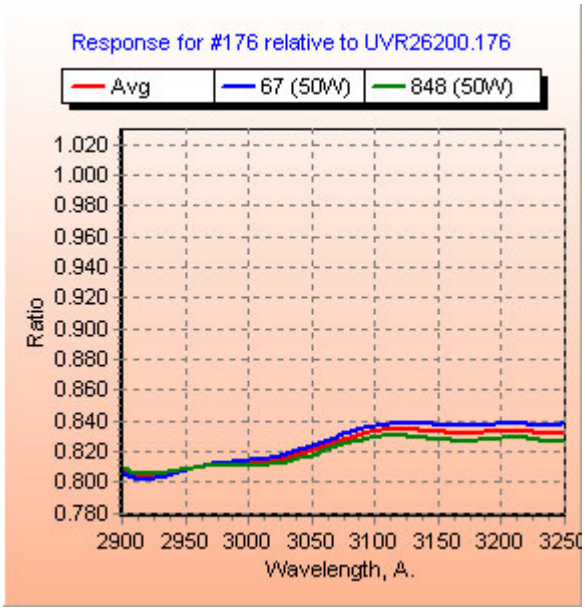
Below is graph of a CZ scan of the 2967A line using internal Hg lamp, which is normal. Next is a graph of two standard lamp CI scans from now and in 2000.





Below graph of new UV response file (uvr25206.116) and next a graph of the ratio difference of this new file to the last calibration file in 2001.





Below is a picture of the two instruments and Dr. S. Gurung at Kirtipur campus of Tribhuvan University.

