Ozone total columns measured at twilight using a zenith-sky UV-Visible spectrometer installed at the NDACC Izaña Subtropical Observatory (28°16′, 16°W) in October 1998 are compared with the RBCG reference instrument Brewer #157 at the same location. DOAS retrievals were performed in the visible range (400-525 nm) according to improved settings recommended by the NDACC and using homogenized daily AMFs based on the TOMS V8 (T6V) column-resolved ozone profile climatology. The station is located at 2370 masl well above the Marine Boundary Layer and outside of pollution emission. Comparisons have been performed for the 13-years dataset using daily AMFs to minimize the impact of instruments differences in measurements time. Overall results show an excellent agreement. The UV-Visible to Brewer mean difference is ±1.0% with a standard deviation of 3% and a negligible trend on the amount of ozone. Discrepancies on individual days due to changes in the tropospheric O3 content and different air masses sampling in fast O3 changing conditions were identified. The temperature dependence of the UV-cross sections has been found to have a negligible impact at these low latitudes. Seasonal discrepancies are of only few tens of a percent. The station being affected by desert dust from Sahara, cloud filtered data have been split in two sets to examine the potential influence of aerosol scattering and absorption on measured O3. Results show a similar behavior of both techniques also under high aerosol loading conditions. Comparisons with satellite instruments show an average agreement better than 1% for TOMS-V8, OMI and SCIAMACHY and of 1.1 and 1.6% for GOME and GOME-2, respectively with a standard deviation of 3%. However, considering that 2.7 ± 0.3 % of the total column values below the station, these values actually point to an underestimation of the satellite instruments in comparison to our ground-based data. Possible causes of these differences are discussed.

**Abstract**

Ozone total columns measured at twilight using a zenith-sky UV-Visible spectrometer installed at the NDACC Izaña Subtropical Observatory (28°16′, 16°W) in October 1998 are compared with the RBCG reference instrument Brewer #157 at the same location. DOAS retrievals were performed in the visible range (400-525 nm) according to improved settings recommended by the NDACC and using homogenized daily AMFs based on the TOMS V8 (T6V) column-resolved ozone profile climatology. The station is located at 2370 masl well above the Marine Boundary Layer and outside of pollution emission. Comparisons have been performed for the 13-years dataset using daily AMFs to minimize the impact of instruments differences in measurements time. Overall results show an excellent agreement. The UV-Visible to Brewer mean difference is ±1.0% with a standard deviation of 3% and a negligible trend on the amount of ozone. Discrepancies on individual days due to changes in the tropospheric O3 content and different air masses sampling in fast O3 changing conditions were identified. The temperature dependence of the UV-cross sections has been found to have a negligible impact at these low latitudes. Seasonal discrepancies are of only few tens of a percent. The station being affected by desert dust from Sahara, cloud filtered data have been split in two sets to examine the potential influence of aerosol scattering and absorption on measured O3. Results show a similar behavior of both techniques also under high aerosol loading conditions. Comparisons with satellite instruments show an average agreement better than 1% for TOMS-V8, OMI and SCIAMACHY and of 1.1 and 1.6% for GOME and GOME-2, respectively with a standard deviation of 3%. However, considering that 2.7 ± 0.3 % of the total column values below the station, these values actually point to an underestimation of the satellite instruments in comparison to our ground-based data. Possible causes of these differences are discussed.