An eight-year record of ozone profiles and tropospheric column ozone from GOME

X. Liu and K. Chance

Atomic and Molecular Physics Division, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA (xliu@cfa.harvard.edu / Phone: +1-617-496-2136)

This paper presents an eight-year record of ozone profiles and tropospheric column ozone retrieved from GOME. The ozone values are derived from back scattered radiance spectra in the ultraviolet using the optimal estimation technique, including detailed treatments of wavelength and radiometric calibrations, undersampling correction, and forward radiative transfer modeling. The agreement with SAGE measurements down to 15 km is usually within 15%. The total column ozone agrees with TOMS and Dobson/Brewer measurements to within 1-2%. The retrievals are capable of capturing the spatiotemporal evolution of TCO in response to regional or short time-scale events such as the 1997-1998 El Niño event and a 10-20 DU change within a few days. The mean biases relative to ozonesonde observations are usually within 3 DU (15%) and the standard deviations are within 3-8 DU (13-27%). The global distribution of TCO displays nearly zonal bands of enhanced TCO of 36-48 DU at 20^{o}S-30^{o}S during the austral spring and at 25^{o}N-45^{o}N during the boreal spring and summer. This method will be extended to SCIAMACHY, OMI, and GOME-2 measurements to derive ozone profiles, total ozone and tropospehric ozone.