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Ozone profile and tropospheric ozone retrievals from OMI and OMPS using the Optimal Estimation method over China from 2013 to 2017

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Ozone pollution caused by photochemical reaction becomes a serious problem in China in the recent years. In this study, ozone profiles retrieved from the Ozone Monitoring Instrument (OMI) and the Ozone Mapper and Profiler Suite (OMPS) using the Optimal Estimation method (OEM) over China from 2013 to 2017. We apply soft calibration to OMI and OMPS radiance to eliminate the systematic component of fitting residuals. Tropospheric Ozone Columns (TOCs) is directly derived from the total column using the known tropopause. Hyper-spectral resolution Fourier transform infrared spectrometry (FTS) data at Hefei (31.86˚N, 117.27˚E), ozonesonde data at Hong Kong (22.20˚N, 114.10˚E) and Beijing (39.92˚N, 116.46˚E) are used to validate the tropospheric ozone column (TOC). The monthly variation of tropospheric ozone column (TOC) from 2013 to 2017 are also evaluated. In addition, we characterize the ozone and aerosol concentrations in the troposphere and surface UV irradiance to quantify the effects of aerosol particles and surface UV irradiance on the variability of tropospheric ozone.