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GEMS ozone product evaluation using ozonesonde measurements during the ACCLIP campaign

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This study presents a comprehensive evaluation of Geostationary Environment Monitoring Spectrometer (GEMS) ozone products using daily ozonesonde data measured during the Asian Summer Monsoon Chemical and Climate Impact Project (ACCLIP). The analysis uses a total of 38 ozonesonde measurements along with atmospheric reanalysis to better understand ozone variability and circulation impacts during the Asian summer monsoon. It shows significant variability of tropospheric and lower stratospheric ozone related to convective activities associated with the Asian monsoon rainband and strong anticyclone in the upper troposphere and lower stratosphere (a.k.a. Tibet high). The comparison of the ozonesonde data and GEMS ozone products reveals GEMS's capability to capture these variabilities, and also highlights its potential utility in the studies of chemical transport and regional-scale air quality in Asia.