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## The Impact of the Intra-seasonal Intensity Variation of Asian Summer Monsoon Anticyclone on Chemical Constituents Distribution in the Upper Troposphere and Lower Stratosphere

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During the Asian summer monsoon (ASM) season, the stratosphere-troposphere exchange (STE) process has a significant effect on the stratospheric chemical constituent concentration and spatial distribution. In order to further explain the STE process during the ASM season, the impact of ASMA intensity on chemical species within the anticyclone escaping process during the ASM season is studied. Using the MERRA 2, NCEP reanalysis data and MLS satellite data in June, July and August (JJA) of 2004-2017, the relationship between the day-to-day intensity variation of the ASMA and the horizontal distribution of ozone (O<sub>3</sub>) and carbon monoxide (CO) during the intra-seasonal east-west oscillation is discussed based on an ASMA intensity index we defined. The results show that the intensity of the ASMA varied during the intra-seasonal east-west oscillation. The ASMA intensity index increased continuously from early June and peaked during mid-July to early August. ASMA has a constraints effect on the air inside. Its intra-seasonal oscillation and its intensity influenced the chemical distribution in the upper troposphere and lower stratosphere (UTLS). The distribution of chemical substances during its strong periods (SP) were relatively concentrated than that in weaker periods (WP). The air inside of the ASMA was easier to mix into stratosphere when the intensity was weak, and vice versa. The intensity variation of the ASMA caused by its intra-seasonal oscillation may affect the STE process during the Asian summer monsoon season.